

JOB No.: TCS01267/22


CEDD SERVICE CONTRACT NO. WD/07/2022

**YUEN LONG SOUTH FIRST PHASE DEVELOPMENT -
ENVIRONMENTAL TEAM**

**BASELINE MONITORING REPORT FOR AIR QUALITY,
NOISE AND WATER QUALITY**

PREPARED FOR

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Date	Reference No.	Certified By
22 May 2024	TCS01267/22/600/R0044v6	 Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	30 June 2023	First Submission
2	5 July 2023	Amended according to the IEC's comment
3	6 July 2023	Amended according to the IEC's comment
4	7 July 2023	Amended according to the IEC's comment
5	23 Nov 2023	Amended according to the EPD's comment
6	22 May 2024	Amended according to the EPD's comment

Our Ref: TCS01267/22/300/L0255

AECOM
12/F, Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, Hong Kong

Attn: Mr. Alex Chan

9 October 2024
By email

Dear Sir,

Re: Contract No. WD/07/2022
Yuen Long South First Phase Development – Environmental Team
Environmental Team Leader's Certification Letter for
Environmental Permit No. EP-548/2018/A, EP-549/2018, EP-550/2018/A,
EP-551/2018/A & EP-553/2018/A Condition 3.3
Submission of Baseline Monitoring Report for Air Quality, Noise & Water
Quality (Version 6)

We hereby certify the Baseline Monitoring Report for Air Quality, Noise and Water Quality (Version 6) in accordance with Environmental Permit No. EP-548/2018/A, EP-549/2018, EP-550/2018/A, EP-551/2018/A & EP-553/2018/A Condition 3.3.

Should you have any queries or require further information, please feel free to contact us or the undersigned at Tel: 2959-6059 or Fax: 2959-6079.

Yours sincerely,
For and on Behalf of
Ford Business International Limited



Tam Tak Wing
Environmental Team Leader

Encl.

cc Telemax

Mr. Nelson TAM

By email



Our Ref. : TEEM/816/24/L/220/JYT
Job No. : TM0816-22
Date : 10 October 2024

By Email

AECOM Asia Co., Ltd.

12/F, Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, Hong Kong

Attn.: Mr. Alex Chan

Dear Alex,

Contract No. WD/06/2022

**Site Formation and Infrastructure Works for
Yuen Long South First Phase Development**

Independent Environmental Checker's Verification Letter for

Environmental Permit No. EP-548/2018/A, EP-549/2018, EP-550/2018/A, EP-551/2018/A & EP-553/2018/A Condition 3.3

Submission of Baseline Monitoring Report for Air Quality, Noise & Water Quality (Version 6)

With reference to the Baseline Monitoring Report (Ref. No.: TCS01267/22/600/R0044v6) dated 22 May 2024 submitted by the Environmental Team (ET) via email on 9 October 2024, we are pleased to inform that we have no adverse comment on the captioned submission. In accordance with the Condition 3.3 of the captioned Environmental Permits, we hereby verify this submission.

Should you have any queries, please do not hesitate to contact the undersigned at (852) 3610 8701 or our Mr. Michael Fong at (852) 3610 8706 or our Mr. Vince Lo at (852) 3610 8787 or our Mr. Jacky Tsang at (852) 3610 8735.

Yours faithfully,

For and on behalf of

Telex Environmental and Energy Management Limited



Ir Nelson Tam
Independent Environmental Checker

c.c. Ford Business International Ltd. (ET) - Attn: Mr. Tam Tak Wing / Ms. Nicola Hon

EM / NT / MF / VL / JYT



EXECUTIVE SUMMARY

- ES.01 The Yuen Long South (YLS) Planning and Engineering is a Designated Project (DP) under *Item 1 Schedule 3* of the Environmental Impact Assessment Ordinance (EIAO). In November 2017, Environmental Impact Assessment (EIA) report for YLS Development was approved by Director of Environmental Protection pursuant to EIAO. The approved EIA report (AEIAR-215/2017), the approval letter with conditions and recommendations and the relevant Environmental Permit (EPs) issued subsequently. To implement the Project, there are various infrastructure items among some of which are classified as DPs under *Schedule 2 of the EIA Ordinance*.
- ES.02 Currently, YLS Development is implemented by three phases: First Phase, Second Phase and Third Phase. The site formation and engineering infrastructure works to support First Phase Development will be delivered under three works contracts as below:-
- (a) CEDD Contract No. YL/2021/03 - Site Formation and Infrastructure Works for Yuen Long South First Phase Development - Contract 1
 - (b) CEDD Contract No. YL/2021/04 - Site Formation and Infrastructure Works for Yuen Long South First Phase Development - Contract 2 (the designated works of Contract 2 are governed by EP-549/2018 & EP-553/2018/A)
 - (c) CEDD Contract No. YL/2022/01 - Site Formation and Infrastructure Works for Yuen Long South First Phase Development - Contract 3 (the designated works of Contract 3 are governed by EP-548/2018/A, EP-549/2018, EP-550/2018/A, EP-551/2018/A)
- ES.03 Ford Business International Limited (hereinafter called “Ford”) was awarded the CEDD Agreement Contract No. WD/07/2022 – Yuen Long South First Phase Development - Environmental Team. The Contractor period is 78 months which covered the construction period and the first-year operation period for the Works Contracts 1, 2 and 3 under the Yuen Long South First Phase Development (hereinafter named as “the Project”).
- ES.04 In accordance with the updated Environmental Monitoring and Audit Manual (Rev.10) (hereinafter named as “updated EM&A Manual”) the Project, baseline monitoring for air quality, noise and water quality shall be conducted at all monitoring stations to obtain the baseline condition before commencement of YLS Development Project. According to Condition 3.3 of relevant EPs of YLS First Phase Development (i.e., EP-548/2018/A, EP-549/2018, EP-550/2018/A, EP-551/2018/A & EP-553/2018/A), Baseline Monitoring Report shall be submitted to the Director at least 2 weeks before commencement of the construction of the Project.
- ES.05 The Baseline monitoring for air quality, noise and water quality monitoring was conducted during the period of 8 March 2023 to 4 June 2023 at the agreed monitoring locations by the Environmental Team of YLS First Phase Development according to the updated EM&A Manual. During the monitoring period, no construction activities under the Project or other external influencing factors of significant concern were observed.
- ES.06 This Baseline Monitoring Report for air quality, noise and water quality presents the baseline data and determine a set of Action and Limit Levels (A/L Levels) for the YLS First Phase Development and later phase of YLS Development.

Air Quality

- ES.07 Baseline air quality monitoring for the parameter of 1-hour TSP was conducted at all air monitoring stations, for at least 3 times per day and 14 consecutive days, prior to the commissioning of major construction work. The baseline air quality monitoring is summarized in **Table ES-1**.

Table ES-1 Summary of Baseline Air Quality Monitoring

Monitoring Station ID	Description of Location	Baseline Monitoring Period
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Monitoring Station ID	Description of Location	Baseline Monitoring Period
DM-1	Shan Ha Tsuen House No. 613F	28 Mar 2023 to 10 Apr 2023
DM-2	No. 118G Kung Um Road - Golden Villa	28 Mar 2023 to 10 Apr 2023
DM-3	Village House No. 431 Pak Sha Tsuen	14 Apr to 27 Apr 2023
DM-4	House no. 128, Kung Um Road	14 Apr to 27 Apr 2023
DM-5a (*)	Village House outside Park Villa No. 33	13 Mar to 26 Mar 2023
DM-6	Village House of Sha Tseng Tsuen	22 May to 4 Jun 2023

(*) DM-5a is alternative location to replace DM-5 as proposed in updated EM&A Manual.

ES.08 The derived Action and Limit Levels for 1-hour TSP are given in **Table ES-2** below.

Table ES-2 Action and Limit Levels of 1-Hour TSP Air Quality Monitoring

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
DM-1	268	500
DM-2	268	500
DM-3	283	500
DM-4	277	500
DM-5a	281	500
DM-6	279	500

Construction Noise

ES.09 Continuous baseline noise monitoring for the A-weighted levels L_{eq} , L_{10} and L_{90} was conducted at ten existing noise sensitive receivers as monitoring stations for at least 2 weeks prior to the commencement of the construction works. Besides, at each planned NSRs, baseline noise monitoring had carried out for two normal weekdays and two holidays (or Sundays) to obtain the baseline condition. The baseline noise monitoring is summarized in **Table ES-3**.

Table ES-3 Summary of Baseline Noise Monitoring

Monitoring Station ID	Description of Location	Baseline Monitoring Period
Existing Noise Sensitive Receivers		
CM1a (*)	Squatter house near Shan Ha Tsuen Village house no. 354	13 Mar to 26 Mar 2023
CM2a (*)	Village house No. 126E in Tin Lung Yuen	28 Mar to 10 Apr 2023
CM3	Village house at 66 Kiu Hing Road	28 Mar to 10 Apr 2023
CM4	Village house in Tin Liu Tsuen - Kam Fong Yuen	28 Mar to 10 Apr 2023
CM5a (*)	Village house No. 19B of Ha Tsuen Shi	2 May to 15 May 2023
CM6	Kwong Ming Ying Loi School	2 May to 15 May 2023
CM7a (*)	Workshop near Recours La Serre	13 Mar to 26 Mar 2023
CM8a (*)	Village house in Sha Tseng Tsuen (lot no. DD1211462A)	13 Mar to 26 Mar 2023
CM9a (*)	Village house No. 12 of Pak Sha Tsuen	14 Apr to 27 Apr 2023
CM10a (*)	Village House No. 127 Wong Nai Tun Tsuen	14 Apr to 27 Apr 2023
Planned Noise Sensitive Receivers		
CM11	Public housing	24, 28, 30 May & 4 June 2023
CM12	Public housing	24, 28, 30 May & 4 June 2023
CM13	Village rehousing	24, 28, 30 May & 4 June 2023
CM14	Public housing	24, 28, 30 May & 4 June 2023
CM15	Planned primary school (opposite to Pak Sha Tsuen)	24, 28, 30 May & 4 June 2023

(*) CM1a, CM2a, CM5a, CM7a, CM8a, CM9a, CM10a are alternative locations to replace CM1, CM2, CM5, CM7, CM8, CM9 and CM10 as proposed in updated EM&A Manual.

ES.10 During the baseline noise monitoring period, there were not any major construction activities in the vicinity of the monitoring stations. However, it was observed that road traffic and social noise in the village would be the possible influencing factors which may affect the baseline monitoring results at existing NSRs, especially during the evening time.

ES.11 The derived Action and Limit Levels for construction are given in **Tables ES-4** as follows:

Table ES-4 Action and Limit Levels of Construction Noise Monitoring

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
CM1a, CM2a, CM3, CM4, CM5a, CM7a, CM8a, CM9a, CM10a, CM11, CM12, CM13, CM14	When one or more documented complaints are received	75 dB(A)
CM6, CM15		70 dB(A) and 65 dB(A) during examination period
<i>Note: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.</i>		

Water Quality

ES.12 Baseline water quality monitoring was conducted at all monitoring stations for at least 4 weeks prior to the commencement of construction works. The interval between two sets of monitoring shall not be less than 36 hours. The baseline water quality monitoring is summarized in **Table ES-5**.

Table ES-5 Summary of Baseline Water Quality Monitoring

WSR	Stream	Monitoring Station ID	Baseline Monitoring Period
S01	Yuen Long Nullah	U1a, U1b, U2a, U3, U4a, M1a, M2a, M3, M4 and D1a	11 Apr to 6 May 2023
S05	Yeung Ka Tsuen Ecologically Important Stream (EIS)	EIS-1a	
S13	Near Chuk San Tsuen	U9a D4a	
S04	near proposed YLS STW	U8a, D3	
S13	Near Chuk San Tsuen	U9a, D4a	
S02	near TYST	U5a and M5a	8 Mar to 3 Apr 2023
S03	near Windsor Garden	U6a, U7a and M6a	
S02/S03	near TYST & Windsor Garden	D2a	
S17	Along Kiu Hung Road	M7a and D5a	
S20	Near the north of proposed Reclaimed Water Service Reservoir	U10a	

ES.13 According to baseline water quality monitoring results, the derived Action and Limit Levels for the Gradient / Impact Stations are given in **Table ES-6**.

Table ES-6 Action/Limit Levels for Water Quality Monitoring

Water Sensitive Receiver (WSR)	Gradient / Impact Monitoring Location	Parameter						Upstream / Control Station as related WSR
		DO (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	
S01	@M1a	1.3	1.2	106.9	131.6	242.5	273.5	U1a, U1b, U2a, U3 and U4a
	@M2a	6.4	4.0	8.4	8.5	8.7	8.8	
	@M3	3.0	2.9	20.5	22.6	30.2	30.3	
	@M4	6.1	4.0	30.9	35.9	18.6	20.1	

Water Sensitive Receiver (WSR)	Gradient / Impact Monitoring Location	Parameter						Upstream / Control Station as related WSR
		DO (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	
	*D1a	2.1	2.0	21.6	22.6	37.0	40.3	
S02	@M5a	5.1	4.0	22.8	24.3	109.3	129.6	U5a
S03	@M6a	6.3	4.0	14.1	14.3	8.1	8.7	U6a and U7a
S02/S03	*D2a	6.7	4.0	21.7	22.0	88.3	151.6	U5a, U6a & U7a
S04	*D3	3.0	3.0	30.4	32.5	33.6	38.3	U8a
S05	*EIS-1a	5.4	4.0	18.9	19.2	25.8	31.9	NA
S13	*D4a	3.6	3.5	11.9	12.3	22.3	24.8	U9a
S17	@M7a	6.1	4.0	12.6	12.7	12.0	13.1	N/A
	*D5a	5.1	4.0	19.1	19.6	57.1	67.5	
S20	None	N/A	N/A	N/A	N/A	N/A	N/A	U10a

Notes:

(i) The proposed Action Level for Dissolved Oxygen are 5%-ile of the baseline data
 (ii) The proposed Limit Level for Dissolved Oxygen are 4 mg/L or 1%-ile of the baseline data
 (iii) The proposed Action Level of the Turbidity and Suspended Solids are 95%-ile of baseline data AND 120% of upstream control station
 (iv) The proposed Limit Level of the Turbidity and Suspended Solids are 99%-ile of baseline data AND 130% of upstream control station

Remarks

@ Gradient Monitoring Location
 * Impact Monitoring Location

ES.14 The baseline survey for ecology and landscape & visual would be conducted by the ecologist of the ET. Due to phasing of vegetation clearance and commencement of works which would lead to watercourse loss, baseline survey for ecology and landscape & visual aspect would be conducted in phases and reported separately. To facilitate reporting, separate baseline report for ecology and landscape & visual monitoring will be submitted in accordance with the project's works programme. The following submission will be provided as supplementary to the baseline report monitoring.

- Baseline Report for landscape & visual for YLS First Phase Development
- Vegetation Survey Report for YLS First Phase Development
- Egret Survey Report
- Aquatic Fauna Survey Report

Table of Contents

1	INTRODUCTION	1
1.1	BACKGROUND	1
1.2	PROJECT SCOPE	1
1.3	DESIGNATED WORKS	2
1.4	IMPLEMENTATION OF EM&A PROGRAMME	3
1.5	REPORT STRUCTURE	4
2	AIR QUALITY	5
2.1	MONITORING REQUIREMENT	5
2.2	MONITORING PARAMETER, FREQUENCY AND DURATION	5
2.3	MONITORING EQUIPMENT	5
2.4	MONITORING PROCEDURES	6
2.5	MONITORING LOCATIONS	6
2.6	RESULTS OF AIR QUALITY MONITORING	6
3	NOISE	8
3.1	MONITORING REQUIREMENT	8
3.2	MONITORING PARAMETER, FREQUENCY AND DURATION	8
3.3	MONITORING EQUIPMENT	8
3.4	MONITORING PROCEDURES	9
3.5	MONITORING LOCATIONS	9
3.6	RESULTS OF NOISE MONITORING	10
4	WATER QUALITY	13
4.1	MONITORING REQUIREMENT	13
4.2	MONITORING PARAMETER, FREQUENCY AND DURATION	13
4.3	MONITORING EQUIPMENT	13
4.4	MONITORING PROCEDURES	14
4.5	LABORATORY MEASUREMENT / ANALYSIS	15
4.6	MONITORING LOCATIONS	15
4.7	RESULTS OF WATER QUALITY MONITORING	16
5	CONCLUSIONS AND RECOMMENTATIONS	20
5.1	CONCLUSIONS	20
5.2	RECOMMENDATIONS	21

LIST OF TABLES

TABLE 1-1	SUMMARIES OF SCHEDULE 2 DPs
TABLE 2-1	AIR QUALITY MONITORING EQUIPMENT
TABLE 2-2	CONSTRUCTION DUST MONITORING LOCATIONS
TABLE 2-3	SUMMARY 1-HOUR TSP BASELINE MONITORING RESULTS
TABLE 2-4	GUIDELINES FOR ESTABLISHING ACTION AND LIMIT LEVELS FOR AIR QUALITY
TABLE 2-5	ACTION AND LIMIT LEVELS FOR AIR QUALITY MONITORING
TABLE 3-1	CONSTRUCTION NOISE MONITORING EQUIPMENT
TABLE 3-2	CONSTRUCTION NOISE MONITORING STATIONS
TABLE 3-3	SUMMARY OF BASELINE NOISE MONITORING
TABLE 3-4	SUMMARIES OF NOISE MONITORING RESULTS AT DAY TIME
TABLE 3-5	SUMMARIES OF NOISE MONITORING RESULTS AT RESTRICTED HOURS
TABLE 3-6	SUMMARIES OF NOISE MONITORING RESULTS FOR PLANNED NSR
TABLE 3-7	ACTION AND LIMIT LEVELS OF CONSTRUCTION NOISE MONITORING
TABLE 4-1	WATER QUALITY MONITORING PROGRAMME FOR BASELINE MONITORING
TABLE 4-2	WATER QUALITY MONITORING EQUIPMENT
TABLE 4-3	LABORATORY ANALYSIS
TABLE 4-4	LOCATIONS OF WATER QUALITY MONITORING STATIONS FOR BASELINE MONITORING
TABLE 4-5	SUMMARY OF BASELINE WATER QUALITY MONITORING
TABLE 4-6	SUMMARY OF WATER QUALITY MONITORING RESULTS
TABLE 4-7	SUMMARY OF WATER QUALITY MONITORING RESULTS
TABLE 4-8	PROPOSED ACTION/LIMIT LEVELS FOR WATER QUALITY MONITORING
TABLE 4-9	PROPOSED ACTION/LIMIT LEVELS FOR WATER QUALITY MONITORING FOR CONTRACT 1 OF FIRST PHASE YLS DEVELOPMENT
TABLE 4-10	PROPOSED ACTION/LIMIT LEVELS FOR WATER QUALITY MONITORING FOR CONTRACT 2 OF FIRST PHASE YLS DEVELOPMENT
TABLE 4-11	PROPOSED ACTION/LIMIT LEVELS FOR WATER QUALITY MONITORING FOR CONTRACT 3 OF FIRST PHASE YLS DEVELOPMENT

LIST OF APPENDICES

APPENDIX A	The Location of YLS Development
APPENDIX B	THE Construction contracts under YLS First Phase Development
APPENDIX C	LOCATION OF DESIGNATED PROJECT OF YUEN LONG SOUTH DEVELOPMENT
APPENDIX D1	COPIES OF CALIBRATION CERTIFICATE OF AIR QUALITY MONITORING EQUIPMENT
APPENDIX D2	LOCATIONS OF DUST MONITORING STATIONS
APPENDIX D3	DETAILED BASELINE 1-HOUR TSP MONITORING DATA
APPENDIX D4	GRAPHICAL PRESENTATION OF BASELINE 1-HOUR TSP DATA
APPENDIX D5	PHOTOGRAPHIC RECORDS FOR AIR QUALITY MONITORING STATIONS
APPENDIX D6	METEOROLOGICAL DATA DURING THE BASELINE MONITORING PERIOD
APPENDIX E1	COPIES OF CALIBRATION CERTIFICATES OF NOISE MONITORING EQUIPMENT
APPENDIX E2	LOCATIONS OF NOISE MONITORING STATIONS
APPENDIX E3	DETAILED BASELINE NOISE MONITORING DATA
APPENDIX E4	GRAPHICAL PRESENTATION OF BASELINE NOISE MONITORING DATA
APPENDIX E5	PHOTOGRAPHIC RECORDS FOR NOISE MONITORING STATIONS
APPENDIX F1	COPIES OF CALIBRATION CERTIFICATES OF WATER QUALITY MONITORING EQUIPMENT
APPENDIX F2	HOKLAS-ACCREDITATION CERTIFICATE OF THE TESTING LABORATORY
APPENDIX F3	LOCATIONS OF WATER QUALITY MONITORING STATIONS
APPENDIX F4	DETAILED BASELINE WATER QUALITY MONITORING DATA
APPENDIX F5	GRAPHICAL PRESENTATION OF BASELINE WATER QUALITY MONITORING DATA
APPENDIX F6	PHOTOGRAPHIC RECORDS FOR WATER QUALITY MONITORING STATIONS

1 INTRODUCTION

1.1 BACKGROUND

- 1.1.1 Yuen long South (YLS) is located to the immediate south of Yuen Long New Town and is positioned as Yuen Long New Town Extension. It will serve as one of the major sources of land supply to meet the territory's medium to long-term housing needs through comprehensive planning and improvement of infrastructure including the linkage to Yuen Long New Town and the Hung Shui Kui/Ha Tsuen New Development Area (HSK/HT NDA).
- 1.1.2 Planning Department (PlanD) and Civil Engineering and Development Department (CEDD) of the HKSAR jointly commissioned the Planning and Engineering Study (YLS P&E Study) under Agreement No. CE 35/2012 (CE) in November 2012 to carry out planning, engineering and environmental studies with view to formulating a development proposal for YLS Development. It confirmed the feasibility of implementing the proposal for YLS Development to meet the medium and long-term housing, social, economic and environmental needs, and formulated the implementation strategies and programme for the YLS Development with first population intake by the year of 2028.
- 1.1.3 YLS P&E Study Project is a Designated Project (DP) under Schedule 3 of the Environmental Impact Assessment Ordinance (EIAO). In November 2017, Environmental Impact Assessment (EIA) report for YLS Development was approved by Director of Environmental Protection (DEP) pursuant to EIAO. The approved EIA report (AEIAR-215/2017), the approval letter with conditions and recommendations and the relevant Environmental Permit (EPs) issued subsequently. The location of YLS Development is shown in *Appendix A*.
- 1.1.4 Under the YLS P&E Study, YLS Development was tentatively to be implemented in four stages including Stage 1, Stage 2, Stage 3 and Stage 4. Subsequently, the Stage 2 is further split into (i) stage 2A (previously known as stage 2, phase 1) and (i i) stage 2B (previously known as stage 2 remaining works). The design and construction consultancies of YLS Development stage 1 works (under Agreement No. CE 32/2017 (CE)) and stage 2A works (under Agreement No. CE 58/2019 (CE)) commenced in February 2018 and March 2020 respectively. First population intake of YLS Development is expected in 2028. The whole YLS Development is expected to be completed by 2038.
- 1.1.5 Currently, YLS Development will be implemented by three phases, namely First Phase, Second Phase and Third Phase Development. The site formation and engineering infrastructure works to support First Phase Development, covering stage 1 works and stage 2A works (hereafter referred to as “the Project”) is funded under the following PWP items:
- 1) PWP Item No. 7817CL – Yuen Long South Development – stage 1 works; and
 - 2) PWP Items No. 7872CL – Yuen Long South Development – stage 2 works – site formation and engineering infrastructure and stages 2B and 3 works – detailed design and site investigation.

1.2 PROJECT SCOPE

- 1.2.1 The Yuen Long South First Phase Development, which covering stage 1 works and stage 2A works, will be delivered under three works contracts. The construction contracts under YLS First Phase Development is shown in *Appendix B* and list below:-

CEDD Contract No. YL/2021/03 - Site Formation and Infrastructure Works for Yuen Long South First Phase Development - Contract 1

- 1.2.2 The works are scheduled to commence in September 2022 and will take about 32 months to complete. The scope of works covered in this contract is listing in the following:
- Site clearance and formation (including land decontamination works) for about five hectares of land, together with the provision of associated engineering infrastructure;
 - Construction of a single two-lane carriageway of about 130 metres long connecting to Lam

Tai West Road;

- Construction of a single two-lane carriageway of about 130 metres long connecting to Long Hon Road;
- Construction of associated works including footpaths, slopes, retaining wall, landscaping works, water supply system, sewerage system and drainage system; and
- Implementation of environmental mitigation measures for the works mentioned above.

CEDD Contract No. YL/2021/04 - Site Formation and Infrastructure Works for Yuen Long South First Phase Development - Contract 2

1.2.3 The works are scheduled to commence in the 4th Quarter of 2022 and will take about 64 months to complete. The scope of works covered in this contract is listing in the following:

- Site clearance and formation (including land decontamination works);
- Nullah deckings at various locations;
- Construction of proposed Road D1, Road D2, Road L1A, Road L1B and slip road at the existing Shap Pat Heung Interchange;
- Improvement to sections of existing Kung Um Road, Kiu Hing Road, Wong Nai Tun Tsuen Road, Lam Tai East Road, Tai Kei Leng Road, Tai Tong Road, Lam Hi Road, Lam Yu Road, Shap Pat Heung Road and Sham Chung Road;
- Construction of associated works including water mains, drainage works and sewerage systems, cycle tracks, footpaths, common utility tunnel, box culverts, junction improvement works, slope works, retaining walls, landscaping works, electrical and mechanical works and other ancillary works; and
- Implementation of environmental mitigation measures (including noise semi-enclosures, noise barriers and low-noise road surfacing) and environmental monitoring works for the works mentioned above.

CEDD Contract No. YL/2022/01 - Site Formation and Infrastructure Works for Yuen Long South First Phase Development - Contract 3

1.2.4 The works are scheduled to commence in 4th Quarter of 2022 and will take about 64 months to complete. The scope of works covered in this contract is listing in the following:

- Site clearance and formation (including land decontamination works);
- Reconstruction of Tong Yan San Tsuen Interchange;
- Improvement to sections of existing Shan Ha Road, Long Hon Road and Tong Tai Road, and other road works;
- Construction of associated works including water mains, drainage and sewerage works, subways, cycle tracks, footpaths, box culverts, nullah deckings, junction improvement works, slope works, retaining walls, landscaping works, electrical and mechanical works and other ancillary works; and
- Implementation of environmental mitigation measures (including noise enclosures, noise barriers and low-noise road surfacing) and environmental monitoring works for the works mentioned above.

1.2.5 The general layout plan of the Works Contracts under YLS First Phase Development is shown in **Appendix B**.

1.3 DESIGNATED WORKS

1.3.1 To implement the Project, there are various infrastructure items among some of which are classified as DPs under *Schedule 2 of the EIA Ordinance*. The designated works of YLS First Phase Development are governed by five Environmental Permit No. which are EP-548/2018/A, EP-549/2018, EP-550/2018/A, EP-551/2018/A and EP-553/2018/A. Location of Designated Project of YLS First Phase Development are listed in **Table 1-1** and shown in **Appendix C**.

Table 1-1 Summaries of Schedule 2 DPs

DP Reference No.	Schedule 2 Designated Project		Work Component / Reference in RODP	Environmental Permit	Related to YLS First Phase Development
DP2	Part I, A.1	A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing road	Construction of new Primary Distributor Roads (TYST Interchange)	EP-548/2018 /A	Related to <u>Contract 3</u> of YLS First Phase Development
DP3	Part I, A.1	A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing road	Construction of two new Distributor Roads (Road D1 to Road D2)	EP-549/2018	Related to <u>Contract 2 & Contract 3</u> of YLS First Phase Development
DP5	Part I, A.8	A road or railway bridge more than 100 m in length between abutments	Construction of slip roads at the TYST Interchange	EP-550/2018 /A	Related to <u>Contract 3</u> of YLS First Phase Development
DP6	Part I, A.9	A road fully enclosed by decking above and by structure on the sides for more than 100 m	Construction of partly depressed road/ underpass located at TSWW Interchange and full enclosures at TYST Interchange	EP-551/2018 /A	Related to <u>Contract 3</u> of YLS First Phase Development
DP10	Part I, I.1(b)(vi)	A drainage channel or river training and diversion works less than 300 m from the nearest boundary of an existing conservation area	Yuen Long Nullah revitalisation/decking along Kung Um Road and Kiu Hing Road	EP-553/2018 /A	Related to <u>Contract 2</u> of YLS First Phase Development

NOTE: DP reference no is according to approved EIA report (AEIAR-215/2017) and EM&A Manual (AEIAR-215/2017)

1.4 IMPLEMENTATION OF EM&A PROGRAMME

- 1.4.1 Ford Business International Limited (hereinafter called “Ford”) was awarded the CEDD Agreement Contract No. WD/07/2022 – Yuen Long South First Phase Development - Environmental Team (hereinafter called “the Service Contract”) on 26 October 2022. The Contractor period is 78 months which covered the construction period and the first-year operation period for the Works Contracts 1, 2 and 3 under the YLS First Phase Development (hereinafter named as “the Project”).
- 1.4.2 Pursuant to the Services Contract, Ford as an Environmental Team (hereinafter referred as the “ET”) shall perform relevant Environmental Monitoring & Auditing (EM&A) programme in accordance with the approved EM&A Manual under the Environmental Impact Assessment Ordinance (EIAO) in relation to the Works Contracts 1, 2 and 3 of the Project to ensure that environmental performance of fully compliance with the requirements specified in Environmental Permit(s) (EP(s)), Environmental Impact Assessment (EIA) Report, EM&A Manual and other relevant statutory.
- 1.4.3 In accordance with relevant EPs condition 2.4, an updated EM&A Manual for YLS First Phase Development has been submitted to EPD to include the latest EM&A requirement in accordance with the information and recommendation described in the EIA Report and by taking into account any specific site conditions that may be changed before the construction of the Project. It outlines the monitoring and audit programme for the Project for the construction phase and provided systematic procedures for monitoring, auditing and minimizing environmental impacts ensure compliance with the EIA recommendations.

- 1.4.4 Baseline air quality, noise and water quality monitoring was conducted during the period of 8 March 2023 to 4 June 2023. During the monitoring period, no construction activities under the Project or other external influencing factors of significant concern were observed.
- 1.4.5 The Baseline Monitoring Report for air quality, noise and water quality is prepared by the Environmental Team to present the baseline data and determine a set of Action and Limit Levels (A/L Levels) for the YLS First Phase Development and later phase of YLS Development. These A/L Levels will serve as the yardsticks for assessing the acceptability of the environmental impact during construction phase of the Project. They are statistical in nature and derived according to the criteria set out in the Updated EM&A Manual.
- 1.4.6 According to Condition 3.3 of relevant EPs of YLS First Phase Development (i.e., EP-548/2018/A, EP-549/2018, EP-550/2018/A, EP-551/2018/A & EP-553/2018/A), Baseline Monitoring Report shall be submitted to the Director at least 2 weeks before commencement of the construction of the Project.

1.5 REPORT STRUCTURE

- 1.5.1 The Baseline Monitoring Report is structured into the following sections:-
- Section 1** Introduction
 - Section 2** Air Quality
 - Section 3** Noise
 - Section 4** Water Quality
 - Section 5** Conclusion and Recommendation

2 AIR QUALITY

2.1 MONITORING REQUIREMENT

- 2.1.1 According to the updated EM&A Manual, baseline air quality monitoring shall be carried out at all the designated monitoring locations for at least 14 consecutive days prior to the commissioning of major construction works of YLS First Phase Development to obtain 1-hour TSP samples. The baseline monitoring stations should reflect baseline conditions at the impact stations. One-hour sampling should also be done at least 3 times per day.
- 2.1.2 During the baseline monitoring, there should not be any major construction or dust generation activities in the vicinity of the monitoring stations. Before commencing baseline monitoring, the ET shall inform the IEC of the baseline monitoring programme such that, if required, the ER can conduct on-site audit to ensure accuracy of the baseline monitoring results.
- 2.1.3 All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and any other local atmospheric factors affecting or affected by site conditions, etc., shall be recorded down in detail.

2.2 MONITORING PARAMETER, FREQUENCY AND DURATION

- 2.2.1 Monitoring frequency for air quality baseline monitoring is as follows:
- 1-hour TSP 3 sets of 1-hour TSP monitoring shall be carried out daily for a period of at least 14 consecutive days

2.3 MONITORING EQUIPMENT

- 2.1.4 Portable direct reading dust meters brand named “Sibata LD-3B Laser Dust monitor Particle Mass Profiler & Counter” were used to 1-hour TSP measurement. The portable direct reading dust meters provided a real time 1-hour TSP measurement based on 90° light scattering.
- 2.1.5 The portable direct reading dust meters were used within the valid period following manufacturer’s Operation and Service Manual. It was calibrated annually and determined periodically by the calibrated High-Volume Sampler to check the validity and accuracy of the results measured by direct reading method. The proposed use of portable direct reading dust meters was submitted to the IEC and obtained agreement and stated in Section 4.3 of the Updated EM&A Manual.
- 2.1.6 The equipment used for baseline air quality monitoring is listed in **Table 2-1**. The copies of calibration certificates for air quality monitoring equipment are shown in **Appendix D1**.

Table 2-1 Air Quality Monitoring Equipment

Equipment	Model	Serial No.
<i>1-Hour TSP</i>		
Portable Dust Meter	Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter	3Y6502
		456658
		456659

Wind Data Monitoring Equipment

- 2.1.7 In consideration of the safety concerns of setting up wind sensor at 10m above ground, the ETL had proposed alternative method to obtain representative wind data in the updated EM&A Manual. Meteorological information at Wetland Park Station collected from the Hong Kong Observatory were used for the Project. It is located nearby the Project site and the meteorological data is considered representative of the Project area. This station can also provide other meteorological information include air temperature, relative humidity, wind direction, wind speed and mean sea level pressure. In additional, adoption of meteorological

information from Hong Kong Observatory is a common alternative method for a lot of EM&A projects in Hong Kong.

2.4 MONITORING PROCEDURES

- 2.4.1 The portable direct reading dust meters brand named “Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter” was used for baseline monitoring. It is a portable, battery-operated laser photometer and provides a real time 1-hour TSP measurement based on 90° light scattering.
- 2.4.2 The 1-hour TSP meter used is within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument was checked before and after each monitoring event. Operation of the 1-hour TSP meter was follow manufacturer’s Operation and Service Manual.

2.5 MONITORING LOCATIONS

- 2.5.1 After reviewing the status of monitoring stations, it has been proposed in the updated EM&A Manual that DM-5a be used as an alternative location to replace DM-5. The locations of construction dust monitoring stations are summarized in **Table 2-2** and illustrated in **Appendix D2**.
- 2.5.2 Baseline air quality monitoring was conducted at all monitoring stations before commencement of construction works of the Project. As the phasing of the Project has been addressed in the approved EIA report and approved EM&A Manual. (AEIAR-215/2017), DM-1 and DM2 would be the monitoring stations for First Phase of YLS Development, while the others would be used in later phases of YLS development project.

Table 2-2 Construction Dust Monitoring Locations

ID	Monitoring Locations	Description of Location	Phases of Project ^[1]	Purpose of Monitoring Station ^[2]
Existing Air Sensitive Receivers				
DM-1	Shan Ha Tsuen House No. 613F	Shan Ha Tsuen House No. 613F	Stage 1	For First Phase of YLS Development
DM-2	Village House along Kung Um Road	No. 118G Kung Um Road - Golden Villa	Stage 2	For First Phase of YLS Development
DM-3	Village House, Kung Um Road	Village House No. 431 Pak Sha Tsuen	Stage 3	For later Phase of YLS Development
DM-4	House no. 128, Kung Um Road	House no. 128, Kung Um Road	Stage 3	For later Phase of YLS Development
DM-5a	Village House near Park Villa	Village House outside Park Villa No. 33	Stage 4	For later Phase of YLS Development
DM-6	Village House, Sha Tseng Tsuen	Village House of Sha Tseng Tsuen	Stage 4	For later Phase of YLS Development

Note:

[1] Phasing of the Project is referred to the approved EIA report and approved EM&A Manual. (AEIAR-215/2017)

[2] The impact monitoring period is subject to the construction programme of the relevant contracts in the Construction Stage.

2.6 RESULTS OF AIR QUALITY MONITORING

- 2.6.1 Baseline air quality monitoring was conducted at all air quality monitoring stations in phases during the period of **13 March to 4 June 2023**. The baseline monitoring results for 1-hour TSP are summarized in **Table 2-3**. The detailed 1-hour TSP monitoring data are shown in **Appendix D3**. Graphical presentation of the baseline 1-hour TSP data at each monitoring

stations are shown in *Appendix D4*. Photographic records for air quality monitoring stations are shown in *Appendix D5*.

Table 2-3 Summary 1-hour TSP Baseline Monitoring Results

Monitoring Station	Baseline Monitoring Period	Average 1-hour TSP Concentration ($\mu\text{g}/\text{m}^3$) (range)
DM-1 - Shan Ha Tsuen House No. 613F	28 Mar 2023 to 10 Apr 2023	28 (22 – 33)
DM-2 - Village House along Kung Um Road	28 Mar 2023 to 10 Apr 2023	27 (23 – 34)
DM-3 - Village House, Kung Um Road	14 Apr to 27 Apr 2023	50 (25 – 69)
DM-4 - House no. 128, Kung Um Road	14 Apr to 27 Apr 2023	42 (23 – 53)
DM-5a - Village House near Park Villa	13 Mar to 26 Mar 2023	47 (37 – 65)
DM-6 - Village House, Sha Tseng Tsuen	22 May to 4 Jun 2023	45 (34 – 63)

2.6.2 During the baseline air quality monitoring period, there were not any major construction or dust generation activities in the vicinity of the monitoring stations. However, it was observed that road traffic dust would be the influencing factors which may affect the results of baseline monitoring. The meteorological data during the baseline monitoring period are summarized in *Appendix D6*.

Action/Limit Levels for Air Quality

2.6.3 Guidelines for establishing the Action and Limit Levels for air quality monitoring during the construction of the Project are presented in *Table 2-4*.

Table 2-4 Guidelines for establishing Action and Limit Levels for Air Quality

Parameters	Action	Limit
1-hour TSP Level in $\mu\text{g}/\text{m}^3$	<ul style="list-style-type: none"> For baseline level $384 \mu\text{g}/\text{m}^3$, Action level = (baseline level * 1.3 + Limit level)/2; For baseline level $> 384 \mu\text{g}/\text{m}^3$, Action level = Limit level 	500 $\mu\text{g}/\text{m}^3$

2.6.4 Following the guidelines for establishing the Action and Limit Levels for air quality monitoring, the Action and Limit Levels of the Project and later Phase of YLS and are presented in *Table 2-5*.

Table 2-5 Action and Limit Levels for Air Quality Monitoring

Monitoring Station	Purpose of Monitoring Station	Action Level ($\mu\text{g} / \text{m}^3$)	Limit Level ($\mu\text{g} / \text{m}^3$)
DM-1	for First Phase of YLS Development	268	500
DM-2		268	500
DM-3	for later Phase of YLS Development	283	500
DM-4		277	500
DM-5a		281	500
DM-6		279	500

3 NOISE

3.1 MONITORING REQUIREMENT

- 3.1.1 According to the updated EM&A Manual, baseline noise monitoring shall be carried out at all existing monitoring stations for at least 2 weeks prior to the commencement of the construction works. There shall not be any construction activities in the vicinity of the stations during the baseline monitoring.
- 3.1.2 At existing Noise Sensitive Receivers (NSR), continuous baseline noise monitoring for the A-weighted levels L_{eq} , L_{10} and L_{90} shall be carried out daily for a period of at least two weeks in a sample period of 30 minutes between 0700 and 1900, and 5 minutes between 1900 and 0700. A schedule on the baseline monitoring shall be submitted to the ER and IEC for approval before the monitoring starts. For the planned NSRs, baseline noise monitoring for the A-weighted levels L_{eq} , L_{10} and L_{90} at each planned NSRs will be carried out for two normal weekdays and two holidays (or Sundays).
- 3.1.3 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET shall liaise with the IEC and EPD to agree on an appropriate set of data to be used as a baseline reference and submit to the ER for approval.

3.2 MONITORING PARAMETER, FREQUENCY AND DURATION

- 3.2.1 At existing NSR, continuous baseline noise monitoring for the A-weighted levels L_{eq} , L_{10} and L_{90} shall be carried out daily for a period of at least two weeks in a sample period of 30 minutes between 0700 and 1900, and 5 minutes between 1900 and 0700.
- 3.2.2 For the planned NSRs, since these are future development and not yet existed, continuous baseline monitoring will be not practicable. In order to obtain the background noise before commencement of the Project, baseline noise monitoring for the A-weighted levels L_{eq} , L_{10} and L_{90} at each planned NSRs were carried out for two normal weekdays and two holidays (or Sundays) on the following basis:
- (a) One set of $L_{eq(30min)}$ for the time period between 0700 and 1900 hours on both normal weekdays and holidays (or Sunday);
 - (b) 3 consecutive $L_{eq(5min)}$ for the time period between 1900 and 2300 hours on both normal weekdays and holidays (or Sunday); and
 - (c) 3 consecutive $L_{eq(5min)}$ for the time period between 2300 and 0700 hours of next day on both normal weekdays and holidays (or Sunday)

3.3 MONITORING EQUIPMENT

- 3.3.1 As referred to in the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications were used for carrying out the noise monitoring. Immediately prior to and following each noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements would be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0 dB.
- 3.3.2 Noise measurements were made in accordance with standard acoustical principles and practices in relation to weather conditions.
- 3.3.3 The ET was responsible for the provision, installation, operation, maintenance, dismantle of the monitoring equipment. Sufficient noise measuring equipment and associated instrumentation are available for carrying out the baseline monitoring. The equipment and associated instrumentation have been clearly labelled.

3.3.4 Noise monitoring equipment used for baseline monitoring is listed in **Table 3-1**.

Table 3-1 Noise Monitoring Equipment

Equipment	Model	Serial No.
Integrating Sound Level Meter	B&K Type 2238	2285722
	Rion NL-52	00921191
	Rion NL-52	00464681
	Rion NL-52	00809405
	Rion NL-52A	00620666
Calibrator	Rion NC-74	34657231

3.3.5 Sound level meter listed above comply with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as recommended in Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), which was used for baseline noise monitoring. The copies of calibration certificates of noise monitoring equipment were shown in **Appendix E1**.

3.4 MONITORING PROCEDURES

- 3.4.1 The microphone of the sound level meter was normally set at a height of about 1.2m to 2.8m subject to site condition and oriented pointed to the site, with the microphone facing perpendicular to the line of sight. Where there a building façade, monitoring was conducted 1 m from the exterior of the building façade. For free field measurement, the microphone was positioned away from any reflective surface, and a correction of +3 dB(A) has been made for the free field measurements.
- 3.4.2 For existing NSR, noise monitoring was carried out continuously for 24 hours during the 14 days baseline monitoring period. For planned NSR, noise monitoring was carried at each location according to the agreed monitoring frequency. Monitoring data were recorded and stored automatically within the sound level meter system. At the end of the monitoring period, noise levels in term of L_{eq} , L_{90} and L_{10} were recorded.
- 3.4.3 Prior baseline noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The calibration level from before and after the noise measurement agrees to within 1.0dB.
- 3.4.4 All the monitoring data stored in the sound level meter system were downloaded through the computer software, and all these data were checked and reviewed on computer.

3.5 MONITORING LOCATIONS

- 3.5.1 Due to the villager had rejected for noise monitoring arrangement, the status of monitoring stations has been reviewed. It has been proposed in the updated EM&A Manual that CM1a, CM2a, CM5a, CM7a, CM8a, CM9a and CM10a would be used as an alternative location to replace CM1, CM2, CM5, CM7, CM8, CM9 and CM10. The locations of noise monitoring stations are summarized in **Table 3-2** and illustrated in **Appendix E2**.
- 3.5.2 Baseline noise monitoring was conducted at all monitoring stations before commencement of construction works of the Project. As the phasing of the Project has been addressed in the approved EIA report and approved EM&A Manual. (AEIAR-215/2017), CM1, CM2, CM3, CM4 and CM9 would be the monitoring stations for the First Phase of YLS Development, while the other would be used in later phases of the YLS Development project. For planned NSRs CM11, CM12, CM13, CM14 and CM15, they are future developments and not yet constructed. Construction noise monitoring shall perform after these NSRs being occupied.

Table 3-2 Construction Noise Monitoring Stations

Monitoring Station ID	Monitoring Location	Description of location	Purpose of Monitoring Stations ^[1]
Existing Noise Sensitive Receivers			
CM1a	Village house in Shan Ha Tsuen	Squatter house near Shan Ha Tsuen Village house no. 354	For First Phase of YLS Development
CM2a	Village house in Tin Lung Yuen	Village house No. 126E in Tin Lung Yuen	For First Phase of YLS Development
CM3	Village house in Lung Tin Tsuen	Village house at 66 Kiu Hing Road	For First Phase of YLS Development
CM4	Village house in Tin Liu Tsuen	Village house in Tin Liu Tsuen - Kam Fong Yuen	For First Phase of YLS Development
CM5a	Village house in Ha Tsuen Shi	Village house No. 19B of Ha Tsuen Shi	For later Phase of YLS Development
CM6	Kwong Ming Ying Loi School	Kwong Ming Ying Loi School	For later Phase of YLS Development
CM7a	Residential block near Recours La Serre	Workshop near Recours La Serre	For later Phase of YLS Development
CM8a	Village House in Eldorado	Village House in Sha Tseng Tsuen (lot no. DD1211462A)	For later Phase of YLS Development
CM9a	Village house in Pak Sha Tsuen	Village house No. 12 of Pak Sha Tsuen	For First Phase of YLS Development
CM10a	Village house in Wong Nai Tun Tsuen	Village House No. 127 Wong Nai Tun Tsuen	For later Phase of YLS Development
Planned Noise Sensitive Receivers			
CM11	Public housing		No measurement before occupation of planned receivers ^[2]
CM12	Public housing		
CM13	Village rehousing		
CM14	Public housing		
CM15	Planned primary school (opposite to Pak Sha Tsuen)		

Note:

[1] The impact monitoring period is subject to the construction programme of the relevant contracts in the Construction Stage.

[2] These planned NSRs are future developments, noise monitoring will NOT be conducted for any planned receivers (CM11 – CM15) before occupation

3.6 RESULTS OF NOISE MONITORING

3.6.1 Baseline noise monitoring was conducted at all noise monitoring stations in phases during the period of **13 March to 4 June 2023**. The baseline noise monitoring is summarized in **Table 3-3**.

Table 3-3 Summary of Baseline Noise Monitoring

Monitoring Station ID	Description of Location	Baseline Monitoring Period	Measurement point
Existing Noise Sensitive Receivers			
CM1a	Village house in Shan Ha Tsuen	13 Mar to 26 Mar 2023	Façade
CM2a	Village house in Tin Lung Yuen	28 Mar to 10 Apr 2023	free field
CM3	Village house in Lung Tin Tsuen	28 Mar to 10 Apr 2023	Façade
CM4	Village house in Tin Liu Tsuen	28 Mar to 10 Apr 2023	Façade
CM5a	Village house in Ha Tsuen Shi	2 May to 15 May 2023	free field
CM6	Kwong Ming Ying Loi School	2 May to 15 May 2023	free field
CM7a	Residential block near Recours La Serre	13 Mar to 26 Mar 2023	Façade
CM8a	Village House in Eldorado	13 Mar to 26 Mar 2023	free field
CM9a	Village house in Pak Sha Tsuen	14 Apr to 27 Apr 2023	free field

Monitoring Station ID	Description of Location	Baseline Monitoring Period	Measurement point
CM10a	Village house in Wong Nai Tun Tsuen	14 Apr to 27 Apr 2023	free field
Planned Noise Sensitive Receivers			
CM11	Public housing	24, 28, 30 May & 4 June 2023	free field
CM12	Public housing	24, 28, 30 May & 4 June 2023	free field
CM13	Village rehousing	24, 28, 30 May & 4 June 2023	free field
CM14	Public housing	24, 28, 30 May & 4 June 2023	free field
CM15	Planned primary school (opposite to Pak Sha Tsuen)	24, 28, 30 May & 4 June 2023	free field

3.6.2 The baseline noise monitoring result are summarized *Table 3-4* and *Table 3-6*. The detailed baseline noise monitoring data are shown in *Appendix E3*. Graphical presentation of baseline noise monitoring data of existing NSRs are shown in *Appendix E4*. Photographic records for air quality monitoring stations are shown in *Appendix E5*.

Table 3-4 Summaries of Noise Monitoring Results at Day Time

Monitoring Station	Normal day (Monday to Saturday): Daytime 0700-1900, Leq(30min)			Public Holiday or Sunday: Daytime 0700-1900, Leq(5min)		
	Average	Min	Max	Average	Min	Max
CM1a	54.4	52.4	63.3	53.7	52.1	59.9
CM2a	59.4	54.9	70.3	58.7	54.3	68.9
CM3	64.9	61.2	71.0	65.1	58.8	76.4
CM4	70.5	65.4	80.3	68.3	64.6	76.0
CM5a	61.9	56.0	76.1	60.7	54.7	77.6
CM6	67.4	64.1	75.6	64.8	58.3	78.1
CM7a	53.6	45.1	78.0	50.5	41.6	65.8
CM8a	60.5	55.3	82.1	59.2	54.4	74.1
CM9a	55.7	46.5	67.0	54.1	45.1	70.3
CM10a	54.8	46.5	69.1	52.1	46.1	63.2

Table 3-5 Summaries of Noise Monitoring Results at Restricted Hours

Monitoring Station	Evening time 1900-2300 Leq(5min)			Night time 2300-0700 hrs of the next day Leq(5min)		
	Average	Min	Max	Average	Min	Max
CM1a	53.2	51.8	64.2	52.6	51.6	59.3
CM2a	54.8	53.0	72.9	49.5	47.6	63.8
CM3	63.7	60.2	84.7	59.6	49.9	75.7
CM4	67.8	62.6	82.7	64.1	49.8	75.4
CM5a	57.1	52.3	69.8	52.5	44.4	77.5
CM6	63.3	59.7	72.2	59.9	55.5	74.5
CM7a	45.1	33.7	82.4	42.7	32.6	72.1
CM8a	58.4	53.0	85.4	53.8	47.3	90.8
CM9a	52.9	43.9	74.0	51.8	45.4	91.4
CM10a	51.2	42.9	69.7	51.5	40.7	82.5

Table 3-6 Summaries of Noise Monitoring Results for Planned NSR

Monitoring Station	Normal day (all days): Daytime 0700-1900, Leq(30min)			Evening time 1900-2300 Leq(5min)			Night time 2300-0700 hrs of the next day Leq(5min)		
	Average	Min	Max	Average	Min	Max	Average	Min	Max
CM11	63.3	55.8	70.1	52.6	45.3	69.1	49.1	47.6	50.7
CM12	58.8	42.0	70.0	51.2	42.7	61.4	45.9	41.0	52.2
CM13	62.7	52.3	73.3	48.0	43.3	50.9	45.3	41.8	48.8
CM14	57.5	53.1	60.5	46.8	38.5	51.8	48.1	41.7	53.6
CM15	65.6	63.0	67.8	60.4	58.7	62.5	56.9	52.0	61.7

3.6.3 During the baseline noise monitoring period, the weather was generally sunny and cloudy. There were not any major construction activities in the vicinity of the monitoring stations. However, it was observed that road traffic and social noise in the village would be the possible influencing factors which may affect the baseline monitoring results, especially during the evening time.

3.6.4 During baseline noise monitoring at Planned NSRs, the developments had not yet been constructed, so monitoring was conducted at an open ground area. The baseline noise data collected at Planned NSRs are generally lower than those at existing NSRs, and the data appeared to be more steady.

Action/Limit Levels

3.6.5 Following the Action and Limit Levels for construction noise established in the updated EM&A Manual. The Action and Limit Levels of the Project and later Phase of YLS and are presented in *Table 3-7*.

Table 3-7 Action and Limit Levels of Construction Noise Monitoring

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
CM1a, CM2a, CM3, CM4, CM5a, CM7a, CM8a, CM9a, CM10a, CM11, CM12, CM13, CM14	When one or more documented complaints are received	75 dB(A)
CM6, CM15		70 dB(A) and 65 dB(A) during examination period

Note: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.

4 WATER QUALITY

4.1 MONITORING REQUIREMENT

- 4.1.1 According to the updated EM&A Manual, baseline conditions for water quality shall be established, verified by IEC and agreed with EPD prior to commencement of construction works. The purpose of the baseline monitoring is to establish ambient conditions prior to the commencement of the construction works and to demonstrate the suitability of the proposed impact and control monitoring stations.
- 4.1.2 The baseline monitoring shall be conducted for at least 4 weeks prior to the commencement of construction works. The proposed water quality monitoring schedule shall be submitted to IEC and EPD by the ET at least 2 weeks before the first day of the monitoring month. The interval between two sets of monitoring shall not be less than 36 hours. EPD shall also be notified immediately for any changes in schedule.
- 4.1.3 In general, where the difference in value between the first and second in-situ measurement of DO or turbidity parameters is more than 25% of the value of the first reading, the reading shall be discarded and further readings should be taken.
- 4.1.4 There should be no construction work in the vicinity of the stations during the baseline monitoring. The baseline data will be used to establish the Action and Limit Levels.

4.2 MONITORING PARAMETER, FREQUENCY AND DURATION

- 4.2.1 **Table 4-1** below summarizes the monitoring frequency and water quality parameters for baseline monitoring.

Table 4-1 Water Quality Monitoring Programme for Baseline Monitoring

Item	Baseline Monitoring
Monitoring Period	At least 4 weeks prior to the commencement of construction work
Monitoring Frequency	3 Days in a week and the interval between two sets of monitoring shall not be less than 36 hours.
Monitoring Locations	All stations in the updated EM&A Manual
Monitoring Parameters	Dissolved oxygen (DO), dissolved oxygen saturation (DO%), temperature, turbidity, salinity, pH and suspended solids (SS)
Intervals between 2 Sets of Monitoring	Not less than 36 hours

4.3 MONITORING EQUIPMENT

Positioning of Monitoring Locations

- 4.3.1 A digital Global Positioning System (GPS) was used during water monitoring to ensure the monitoring vessel is at the correct location when taking measurement and samples.

Dissolved Oxygen, Dissolved Oxygen Saturation, Temperature, Turbidity, Salinity and pH value

- 4.3.2 The *YSI Professional DSS Multiparameter Sampling Instrument* was used for water in-situ measures, which automates the measurements and data logging of temperature, dissolved oxygen, dissolved oxygen saturation, turbidity, pH and salinity simultaneously.

Water Depth Detector

- 4.3.3 Measures tape was used for water depths determination at each designated monitoring station throughout the monitoring programme.

Water Sampling Equipment

- 4.3.4 Water sample collection was directly from water surface use sampling plastic bottle or sampling bucket to avoid inclusion of bottom sediment or humus. Teflon/stainless steel bailer maybe used for water sampling. The use of water sampling equipment depends on the depths of

sampling locations.

Sample Containers and Storage

- 4.3.5 Water samples for SS should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and shipment to the testing laboratory. The samples shall be delivered to the laboratory within 24 hours of collection and be analysed as soon as possible after collection.

Calibration

- 4.3.6 The YSI Professional DSS Multiparameter Sampling Instrument was certified by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at quarterly basis throughout all stages of the water quality monitoring. Responses of sensors and electrodes should be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter shall be carried out before measurement at each monitoring station.

Back-up Equipment

- 4.3.7 Backup monitoring equipment shall also be made available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, malfunction, etc.
- 4.3.8 Water quality monitoring equipment used for the baseline monitoring are listed in **Table 4-2**. All in-situ measurement equipment were calibrated by HOKLAS accredited laboratory of three-month interval. Copies of calibration certificates for water quality monitoring equipment are shown in **Appendix F1**.

Table 4-2 Water Quality Monitoring Equipment

Equipment	Model	Serial No.
Water Depth Detector	Measure tape	N/A
Thermometer & DO meter	YSI Professional DSS Multiparameter Sampling Instrument	[20J101862/ 15H103928]/ [EQW018]
pH meter		&
Turbidimeter		[17B102764/17B100758]/
Salinometer		[EQW019]
Sample Container	High density polythene bottles (provided by laboratory)	N/A
Storage Container	'Willow' 33-litter plastic cool box with Ice pad	N/A

4.4 MONITORING PROCEDURES

- 4.4.1 Water quality monitoring was conducted at all designated monitoring locations. In-situ of replicate measurements was undertaken during baseline monitoring; where the difference in value between the first and second in-situ measurement of DO or turbidity parameters is more than 25% of the value of the first reading, the reading was discarded then further readings to be take. Moreover, duplicate sample collection was also conducted from each monitoring location. The sampling and in-situ measurement process are below:

Sampling Procedure

- 4.4.2 A Digital Global Positioning System (GPS) was used to identify the designated monitoring stations. Prior to water sampling, measure tape was used for the determination of water depth at each station.
- 4.4.3 Where water depth is allowed, sampling should be conducted at three water depths which are 1m below water surface, mid-depth, and 1m above the river bed. If the sampling water depth is less than 6m, the mid-depth may be omitted. If the water depth is less than 3m, only the

mid-depth may be omitted.

- 4.4.4 During the baseline water quality monitoring, the water depths of all stations were less than 3m, therefore, water samples were collected from 0.1m below water surface or water surface to prevent the river bed sediment for stirring.
- 4.4.5 The sample container was rinsed with a portion of the water sample. The water sample then was transferred to the high-density polythene bottles as provided by the laboratory, labeled with a unique sample number and sealed with a screw cap.
- 4.4.6 Before commencement of the sampling, general information such as the date and time of sampling and weather condition as well as the personnel responsible for the monitoring were recorded on the monitoring field data sheet.
- 4.4.7 A ‘Willow’ 33-liter plastic cool box packed with ice was used to preserve the collected water samples prior to arrival at the laboratory for chemical determination. The water temperature of the cool box was maintained at a temperature as close to 4°C as possible without being frozen. Samples collected were delivered to the laboratory upon collection.

In-situ Measurement

- 4.4.8 YSI Professional DSS Multiparameter Sampling Instrument was used for water in-situ measures, which automates the measurements and data logging of water temperature, dissolved oxygen & dissolved oxygen saturation, pH unit and salinity. Before each round of monitoring, the instrument was checked in accordance with the manufactory manual instruction to sure it is valid.

4.5 LABORATORY MEASUREMENT / ANALYSIS

- 4.5.1 Two replicate samples from each independent sampling event are required for the SS analysis. Sufficient water samples shall be collected at the monitoring stations for carrying out the laboratory measurement and analysis. The SS analysis were carried out by a local HOKLAS-accredited laboratory - *ALS Technichem (HK) Pty Ltd* and the HOKLAS-accreditation certificate of the testing laboratory is shown in **Appendix F2**. The laboratory determination work shall start within 24 hours after collection of the water samples. The analysis for suspended solids is presented in **Table 4-3**.

Table 4-3 Laboratory Analysis

Parameters	Analytical Method	Reporting Limit
Suspended Solid (SS)	APHA 2540-D	0.5mg/L

4.6 MONITORING LOCATIONS

- 4.6.1 There are 23 water quality monitoring locations of the inland water nearby the project site recommended in the EM&A Manual. After inspecting these locations, some of them were updated in the Updated EM&A Manual to ensure safe and accessible sampling locations. The updated co-ordinates of water quality monitoring locations are summarized in **Table 4-4** and their locations are shown in **Appendix F3**.

Table 4-4 Locations of Water Quality Monitoring Stations for Baseline Monitoring

WSR	Stream	Updated Monitoring Station ID	Description	Updated Co-ordinates	
				Easting	Northing
S01	Yuen Long Nullah	U1a	Upstream monitoring	819753	830555
		U1b	Upstream monitoring	820120	831191
		U2a	Upstream monitoring	820303	830757
		U3	Upstream monitoring	820872	832455
		U4a	Upstream monitoring	821366	832458

WSR	Stream	Updated Monitoring Station ID	Description	Updated Co-ordinates	
				Easting	Northing
		M1a	Gradient monitoring	820476	832295
		M2a	Gradient monitoring	820133	832282
		M3	Gradient monitoring	820688	833127
		M4	Gradient monitoring	820910	833138
		D1a	Impact monitoring	820714	833480
S02	near TYST	U5a	Upstream monitoring	818829	832120
		M5a	Gradient monitoring	819327	832535
S03	near Windsor Garden	U6a	Upstream monitoring	819101	832032
		U7a	Upstream monitoring	819278	832055
		M6a	Gradient monitoring	819335	832170
S02/S03	near TYST & Windsor Garden	D2a	Impact monitoring	819867	833939
S04	near proposed YLS STW	U8a	Upstream monitoring	819611	830886
		D3	Impact monitoring	819874	830827
S05	Yeung Ka Tsuen Ecologically Important Stream (EIS)	EIS-1a	Baseline / Impact monitoring	820341	830555
S13	Near Chuk San Tsuen	U9a	Upstream monitoring	822155	833133
		D4a	Impact monitoring	821740	833692
S17	Along Kiu Hung Road	M7a	Gradient monitoring	818761	832798
		D5a	Impact monitoring	818484	833362
S20	Near the north of proposed Reclaimed Water Service Reservoir	U10a	Upstream monitoring	818804	832375

4.7 RESULTS OF WATER QUALITY MONITORING

4.7.1 The baseline water quality monitoring in phases at all monitoring stations during the period of **8 March to 6 April 2023**. The baseline water quality monitoring is summarized in **Table 4-5**.

Table 4-5 Summary of Baseline Water Quality Monitoring

WSR	Stream	Monitoring Station ID	Baseline Monitoring Period	Observation
S01	Yuen Long Nullah	U1a, U1b, U2a, U3, U4a, M1a, M2a, M3, M4, D1a	11 Apr to 6 May 2023	N/A
S05	Yeung Ka Tsuen EIS	EIS-1a		N/A
S13	Near Chuk San Tsuen	U9a		N/A
		D4a		N/A
S13	Near Chuk San Tsuen	U9a, D4a		N/A
S04	near proposed YLS STW	U8a, D3	N/A	
S02	near TYST	U5a and M5a	8 Mar to 3 Apr 2023	Station U5a was dried out and stockpile of general waste was observed near station U5a
S03	near Windsor Garden	U6a, U7a and M6a		Station U6a and Station U7a were dried out
S02/S03	near TYST & Windsor Garden	D2a		N/A

WSR	Stream	Monitoring Station ID	Baseline Monitoring Period	Observation
S17	Along Kiu Hung Road	M7a and D5a		N/A
S20	Near the north of proposed Reclaimed Water Service Reservoir	U10a		Stream of U10a was not found and the onward path was inaccessible.

4.7.2 The monitoring results for key parameters including DO, Turbidity, SS at each designated monitoring stations are summarized in *Tables 4-6 to 4-7*. Detailed baseline water quality monitoring data are shown in *Appendix F4* and graphical presentation of baseline water quality monitoring data are shown in *Appendix F5*.

Table 4-6 Summary of Water Quality Monitoring Results

WSR	Station ID	Monitoring Period: 11 Apr to 6 May 2023								
		DO (mg/L)			Turbidity (NTU)			SS		
		Ave.	Min.	Max.	Ave.	Min.	Max.	Ave.	Min.	Max.
S01	U1a	3.8	2.5	7.2	100.5	16.3	210.6	163.0	23.0	341.5
	U1b	4.1	2.4	7.5	39.4	10.3	110.5	73.5	18.9	208.0
	U2a	6.7	5.4	7.4	6.6	3.7	23.5	5.3	3.5	15.6
	U3	7.0	4.2	8.8	6.2	4.2	10.7	7.5	4.7	9.5
	U4a	4.0	3.1	5.6	6.8	3.3	17.8	8.5	5.6	11.9
	M1a	2.8	1.2	5.9	30.8	8.6	126.5	69.3	13.0	270.5
	M2a	7.3	6.3	8.2	6.2	4.4	8.5	6.3	4.2	8.8
	M3	4.1	2.9	6.1	9.2	6.3	22.5	18.0	8.4	30.2
	M4	7.3	6.1	8.2	8.3	3.7	35.6	6.0	2.5	20.0
	D1a	3.7	2.0	6.1	10.0	6.0	22.5	18.5	9.3	39.9
YKT-EIS	EIS-1a	6.1	5.4	6.9	8.7	3.6	19.2	8.4	2.4	30.1
S13	U9a	8.0	7.1	9.3	6.8	2.1	28.8	5.9	2.2	35.1
	D4a	4.1	3.5	4.9	6.5	2.3	12.3	8.8	5.8	24.4
S04	U8a	5.8	4.1	7.9	15.4	5.0	41.5	26.1	4.7	157.0
	D3	3.7	3.0	6.6	13.9	7.1	32.5	22.0	12.8	37.1

Table 4-7 Summary of Water Quality Monitoring Results

WSR	Station ID	Monitoring Period: 8 Mar to 3 Apr 2023								
		DO (mg/L)			Turbidity (NTU)			SS		
		Ave.	Min.	Max.	Ave.	Min.	Max.	Ave.	Min.	Max.
S02	U5a	U5a was dried out								
	M5a	5.8	5.1	6.5	13.4	7.6	24.3	32.2	2.5	125.5
S03	U6a	U6a was dried out								
	U7a	U7a was dried out								
	M6a	7.2	6.3	8.2	11.3	9.2	14.3	3.2	0.7	8.6
S02/S03	D2a	7.0	6.7	7.7	14.8	9.3	21.9	20.4	3.1	133.5
S17	M7a	6.8	6.1	7.6	10.9	9.1	12.5	4.4	2.3	13.0
	D5a	6.0	4.9	6.9	15.0	12.6	19.5	23.9	4.7	57.9
S20	U10a	stream at U10a could not be found								

4.7.3 During the baseline monitoring period, it was observed that the streams at U5a, U6a and U7a were dried out, and stream at U10a was not found and onward path was inaccessible. Therefore, water monitoring could not be carried out at these stations. Photographic records for each water quality monitoring stations and the general condition of the stream during the baseline monitoring are shown in *Appendix E6*.

4.7.4 As the upstream stations U7a, U6a, U5a, and U10a were dried out or inaccessible for monitoring, it was not feasible to establish the baseline water control stations during this stage

of the project. However, since the dried-out rivers/ channels are located at more than 350m upstream from YLS First Phase Development project boundary, it is not anticipated that effluent discharge from construction activities will lead to deterioration of water quality at these stations. It is recommended that baseline conditions at these stations be reviewed and alternative control stations be identified during a later construction phase, when sufficient water is flowing in the river/channel.

Action/Limit Levels for Water Quality

4.7.5 The proposed environmental performance criteria are recommended according to the updated EM&A Manual. The Action and Limit Levels have been established for Impact and Gradient Stations according to the baseline data. The proposed Action and Limit Levels for water quality for the Project are shown in **Table 4-8**.

Table 4-8 Proposed Action/Limit Levels for Water Quality Monitoring

Water Sensitive Receiver (WSR)	Gradient / Impact Monitoring Location	Parameter						Upstream / Control Station as related WSR
		DO (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	
S01	@M1a	1.3	1.2	106.9	131.6	242.5	273.5	U1a, U1b, U2a, U3 and U4a
	@M2a	6.4	4.0	8.4	8.5	8.7	8.8	
	@M3	3.0	2.9	20.5	22.6	30.2	30.3	
	@M4	6.1	4.0	30.9	35.9	18.6	20.1	
	*D1a	2.1	2.0	21.6	22.6	37.0	40.3	
S02	@M5a	5.1	4.0	22.8	24.3	109.3	129.6	U5a
S03	@M6a	6.3	4.0	14.1	14.3	8.1	8.7	U6a and U7a
S02/S03	*D2a	6.7	4.0	21.7	22.0	88.3	151.6	U5a, U6a & U7a
S04	*D3	3.0	3.0	30.4	32.5	33.6	38.3	U8a
S05	*EIS-1a	5.4	4.0	18.9	19.2	25.8	31.9	N/A
S13	*D4a	3.6	3.5	11.9	12.3	22.3	24.8	U9a
S17	@M7a	6.1	4.0	12.6	12.7	12.0	13.1	None
	*D5a	5.1	4.0	19.1	19.6	57.1	67.5	
S20	None	N/A	N/A	N/A	N/A	N/A	N/A	U10a

Notes:

- (i) The proposed Action Level for Dissolved Oxygen are 5%-ile of the baseline data
- (ii) The proposed Limit Level for Dissolved Oxygen are 4 mg/L or 1%-ile of the baseline data
- (iii) The proposed Action Level of the Turbidity and Suspended Solids are 95%-ile of baseline data AND 120% of upstream control station
- (iv) The proposed Limit Level of the Turbidity and Suspended Solids are 99%-ile of baseline data AND 130% of upstream control station

Remarks

@ Gradient Monitoring Location
 * Impact Monitoring Location

Action/Limit Levels for Water Quality for YLS First Phase Development

4.7.6 According to the geographic locations of Contract 1, Contract 2 and Contract 3 under the First Phase YLS Development, the proposed water quality monitoring locations with the purpose of monitoring are proposed in the updated EM&A Manual. The selection criterion for monitoring locations is based on the separation distance between work boundary of YLS First Phase Development and the river / stream. Based on the baseline data and geographic locations of Contract 1, Contract 2 and Contract 3, the proposed Action and Limit Levels for water quality for the YLS First Phase Development are shown in **Table 4-9 to Table 4-11**.

Table 4-9 Proposed Action/Limit Levels for Water Quality Monitoring for Contract 1 of First Phase YLS Development

Water Sensitive Receiver (WSR)	Impact Monitoring Location	Parameter						Upstream / Control Station
		DO (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	
S01	@M2a	6.4	4.0	8.4	8.5	8.7	8.8	N/A
	*M3	3.0	4.0	20.5	22.6	30.2	30.3	N/A
Remarks @ Gradient Monitoring Location * Impact Monitoring Location								

Table 4-10 Proposed Action/Limit Levels for Water Quality Monitoring for Contract 2 of First Phase YLS Development

Water Sensitive Receiver (WSR)	Gradient / Impact Monitoring Location	Parameter						Upstream / Control Station as related WSR
		DO (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	
S01	@M1a	1.3	1.2	106.9	131.6	242.5	273.5	U1b & U2a
	@M2a	6.4	4.0	8.4	8.5	8.7	8.8	N/A
	*M3	3.0	2.9	20.5	22.6	30.2	30.3	U1b & U2a
	*M4	6.1	4.0	30.9	35.9	18.6	20.1	U3 & U4a
S05	*EIS-1a	5.4	4.0	18.9	19.2	25.8	31.9	N/A
Remarks @ Gradient Monitoring Location * Impact Monitoring Location								

Table 4-11 Proposed Action/Limit Levels for Water Quality Monitoring for Contract 3 of First Phase YLS Development

Water Sensitive Receiver (WSR)	Gradient / Impact Monitoring Location	Parameter						Upstream / Control Station as related WSR
		DO (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	
S02/S03	*D2a	6.7	4.0	21.7	22.0	88.3	151.6	M5a & M6a
S17	@M7a	6.1	4.0	12.6	12.7	12.0	13.1	None
	*D5a	5.1	4.0	19.1	19.6	57.1	67.5	
Remarks @ Gradient Monitoring Location * Impact Monitoring Location								

5 CONCLUSIONS AND RECOMMENTATIONS

5.1 CONCLUSIONS

5.1.1 The Baseline monitoring for air quality, noise and water quality monitoring was conducted during the period of 8 March 2023 to 4 June 2023 at the designated monitoring locations by the ET according to the updated EM&A Manual. During the monitoring period, no construction activities under the Project or other external influencing factors of significant concern were observed.

5.1.2 Based on the baseline monitoring results, the recommended environmental performance criteria for air quality, construction noise and water quality are summarized as follows:

Recommended Action & Limit Levels of 1-hour TSP Air Quality		
Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
DM-1	268	500
DM-2	268	500
DM-3	283	500
DM-4	277	500
DM-5a	281	500
DM-6	279	500

Recommended Action & Limit Levels of Construction Noise		
Monitoring Location	Action Level	Limit Level
	0700-1900 hours on normal weekdays	
CM1a, CM2a, CM3, CM4, CM5a, CM7a, CM8a, CM9a, CM10a, CM11, CM12, CM13, CM14	When one or more documented complaints are received	75 dB(A)
CM6, CM15		70 dB(A) and 65 dB(A) during examination period
<i>Note: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.</i>		

Recommended Action & Limit Levels of Water Quality								
Water Sensitive Receiver (WSR)	Gradient / Impact Monitoring Location	Parameter						Upstream / Control Station as related WSR
		DO (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	
S01	@M1a	1.3	1.2	106.9	131.6	242.5	273.5	U1a, U1b, U2a, U3 and U4a
	@M2a	6.4	4.0	8.4	8.5	8.7	8.8	
	@M3	3.0	2.9	20.5	22.6	30.2	30.3	
	@M4	6.1	4.0	30.9	35.9	18.6	20.1	
	*D1a	2.1	2.0	21.6	22.6	37.0	40.3	
S02	@M5a	5.1	4.0	22.8	24.3	109.3	129.6	U5a
S03	@M6a	6.3	4.0	14.1	14.3	8.1	8.7	U6a and U7a
S02/S03	*D2a	6.7	4.0	21.7	22.0	88.3	151.6	U5a, U6a & U7a
S04	*D3	3.0	3.0	30.4	32.5	33.6	38.3	U8a
S05	*EIS-1a	5.4	4.0	18.9	19.2	25.8	31.9	NA
S13	*D4a	3.6	3.5	11.9	12.3	22.3	24.8	U9a
S17	@M7a	6.1	4.0	12.6	12.7	12.0	13.1	N/A
	*D5a	5.1	4.0	19.1	19.6	57.1	67.5	
S20	None	N/A	N/A	N/A	N/A	N/A	N/A	U10a
Notes:								

Recommended Action & Limit Levels of Water Quality								
Water Sensitive Receiver (WSR)	Gradient / Impact Monitoring Location	Parameter						Upstream / Control Station as related WSR
		DO (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	
(i) The proposed <u>Action Level</u> for Dissolved Oxygen are 5%-ile of the baseline data (ii) The proposed <u>Limit Level</u> for Dissolved Oxygen are 4 mg/L or 1%-ile of the baseline data (iii) The proposed <u>Action Level</u> of the Turbidity and Suspended Solids are 95%-ile of baseline data AND 120% of upstream control station (iv) The proposed <u>Limit Level</u> of the Turbidity and Suspended Solids are 99%-ile of baseline data AND 130% of upstream control station (v) All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered necessary. Remarks @ Gradient Monitoring Location * Impact Monitoring Location								

5.2 RECOMMENDATIONS

- 5.2.1 The baseline monitoring of air quality, noise and water quality was conducted during typical wet season in Hong Kong. It is important to note that influence of seasonal changes should be taken into account when interpreting monitoring data obtained during dry season. Review of the baseline conditions may need to be conducted regularly, in particular during seasonal changes. If the changes in baseline conditions are evident, the environmental performance criteria should be re-established by agreement of the ER and IEC and submitted for EPD endorsement.
- 5.2.2 In accordance with the updated EM&A Manual, baseline monitoring for air quality, noise and water quality shall be conducted at all monitoring stations to obtain the baseline condition before commencement of YLS Development Project. Since the Project of YLS Development will be implemented in several phases, with construction commencing at different times, the proposed A/L Level for air quality, construction noise and water quality will be proposed by Phases subject to review and adjustment over time.
- 5.2.3 As the upstream stations U7a, U6a, U5a, and U10a were dried out or inaccessible for monitoring, it was not feasible to establish the baseline water control stations during this stage of the project. However, since the dried-out rivers/ channels are located at more than 350m upstream from YLS First Phase Development project boundary, it is not anticipated that effluent discharge from construction activities will lead to deterioration of water quality at these stations. It is recommended that baseline conditions at these stations be reviewed and alternative control stations be identified during a later construction phase, when sufficient water is flowing in the river/channel.

Appendix A

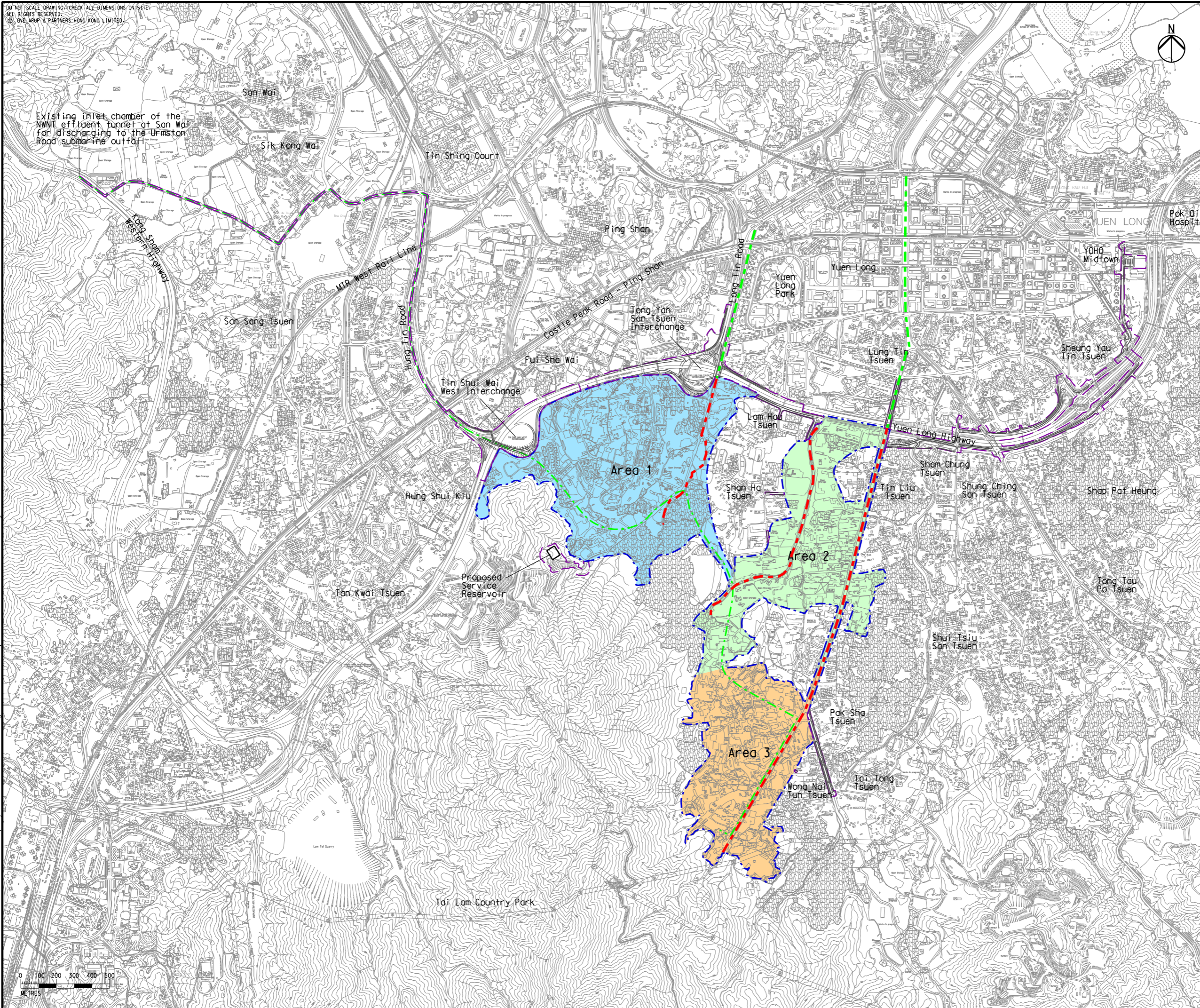
The Location of YLS Development

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Existing inlet chamber of the
NWNT effluent tunnel at San Wai
for discharging to the Urmston
Road submarine outfall



- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - Area 1
 - Area 2
 - Area 3



Rev	Description	By	Date
B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17


Consultant
ARUP

Contract No. and Title
Agreement No. CE 35/2012(CE)
Planning and Engineering Study for
Housing Sites in Yuen Long South
- Investigation


Drawing title
Location of Project

Drawing no. Figure 1.1		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
Scale 1:20000 @A3		Status PRELIMINARY	

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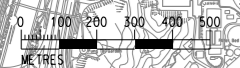


土木工程拓展署
Civil Engineering and
Development Department



規劃署
Planning
Department

Printed by : 7/22/2017
Filename : \\HKGNTS22\acoustic\env\project\228228\13 Drawing Deliverables\Report\EM&A Manual\03 Final Figure 1.1 - Location of Project.dgn

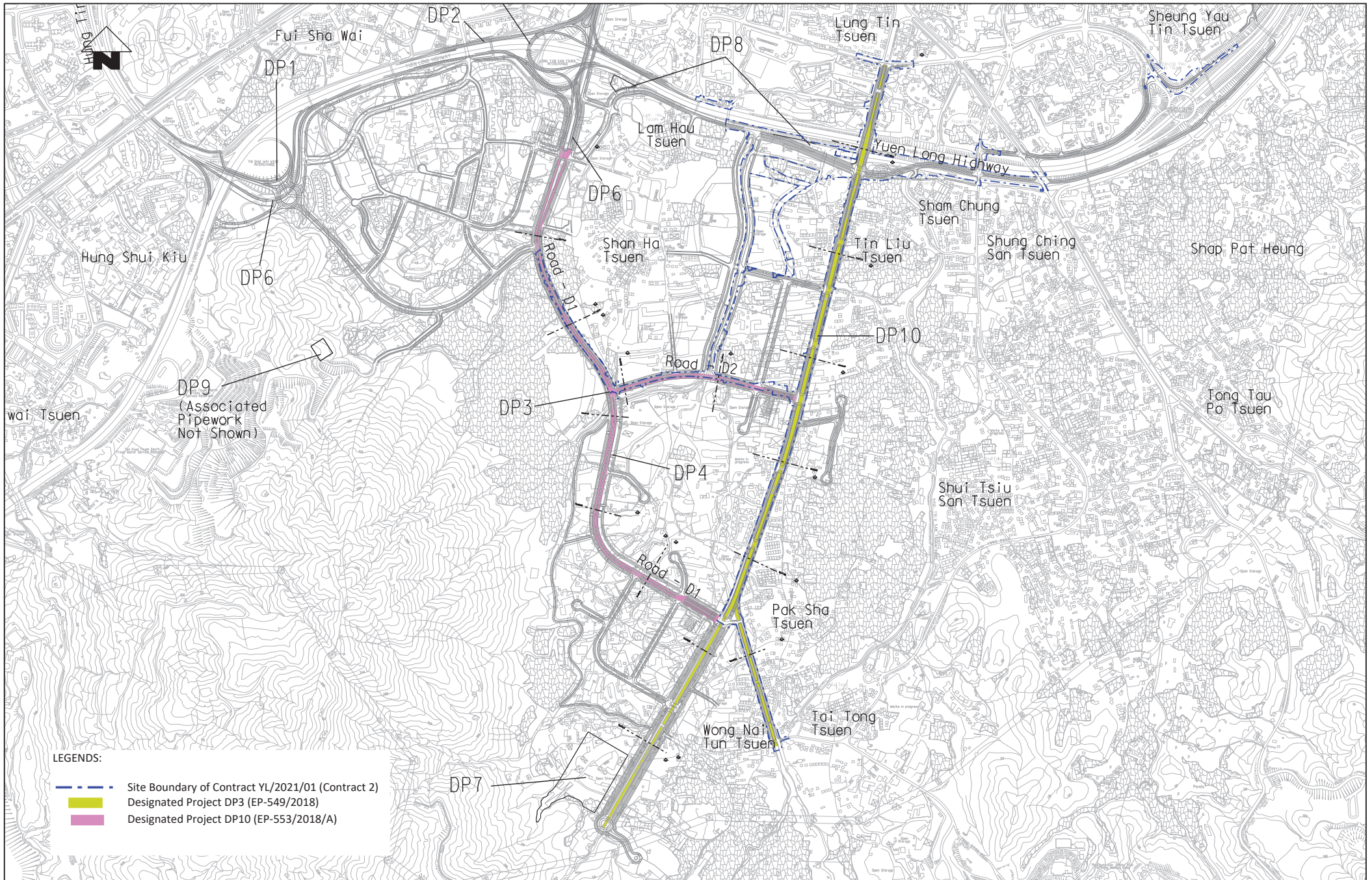


Appendix B

The construction contracts under YLS First Phase Development

Appendix C

Location of Designated Project of Yuen Long South Development



LEGENDS:

- - - - Site Boundary of Contract YL/2021/01 (Contract 2)
- Designated Project DP3 (EP-549/2018)
- Designated Project DP10 (EP-553/2018/A)

CONTRACT No. YL/2021/04
 SITE FORMATION AND INFRASTRUCTURE
 WORKS FOR YUEN LONG SOUTH
 FIRST PHASE DEVELOPMENT -
 CONTRACT 2

TITLE :

Layout Plan of YL/2021/04 (Contract 2)

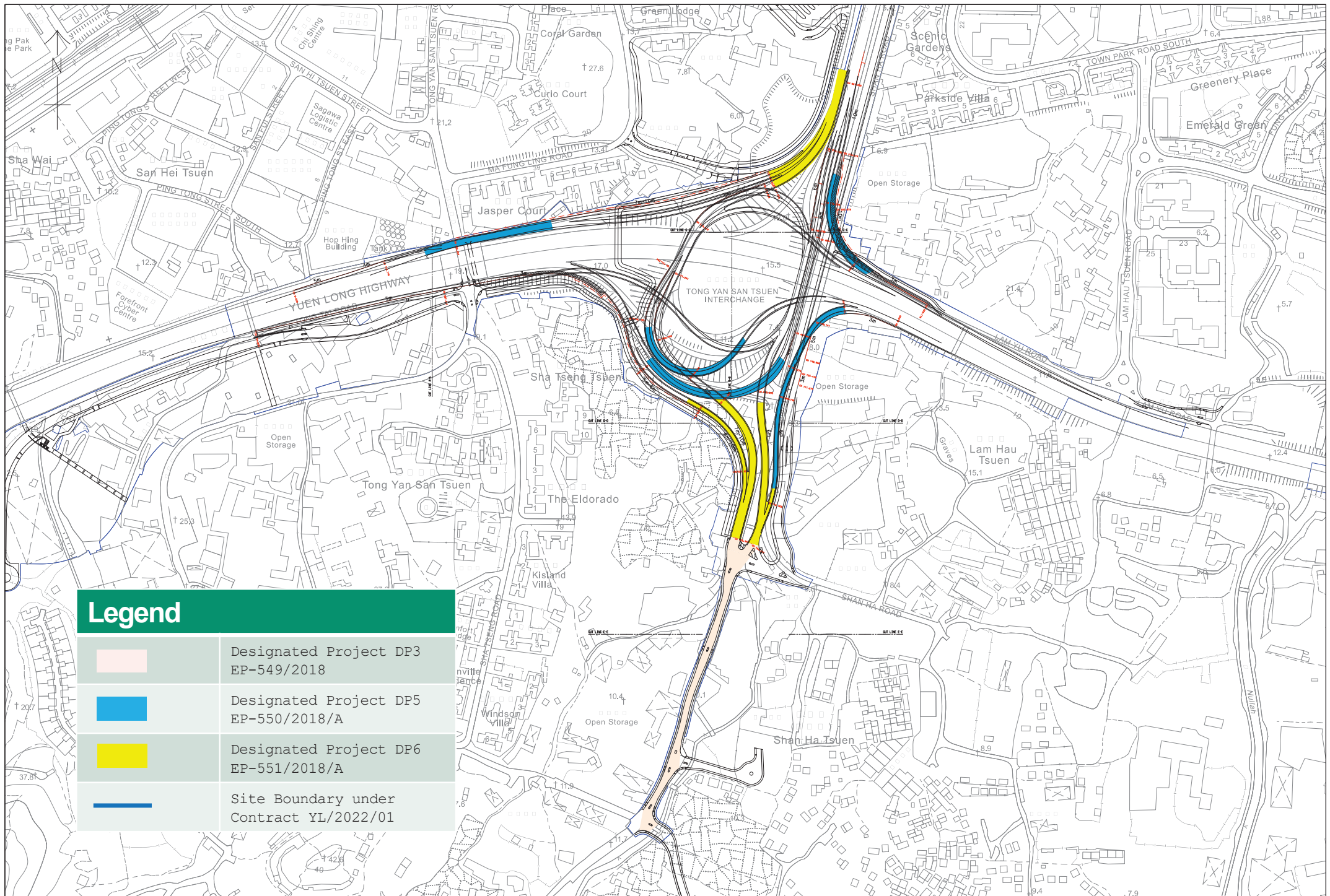
SHEET 1 OF 1





SCALE 1:12000 (A3)

CHECK --

CONTRACT No.
 YL/2021/04

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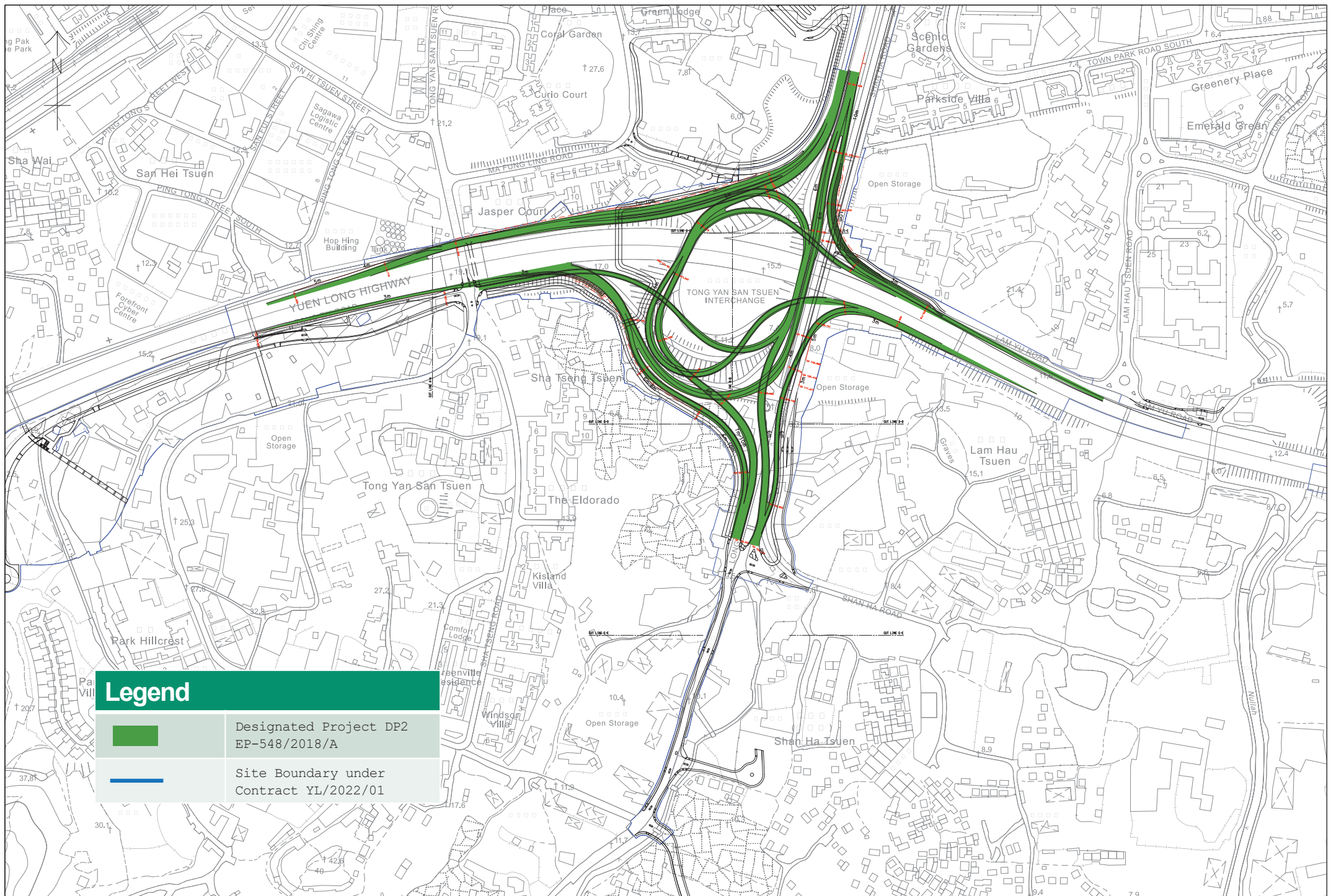


Legend	
	Designated Project DP3 EP-549/2018
	Designated Project DP5 EP-550/2018/A
	Designated Project DP6 EP-551/2018/A
	Site Boundary under Contract YL/2022/01

DRAWING TITLE

Layout Plan of YL/2022/01 (Contract 3)

By: -



Legend

- Designated Project DP2 EP-548/2018/A
- Site Boundary under Contract YL/2022/01

DRAWING TITLE

Layout Plan of YL/2022/01 (Contract 3)

By: -

Appendix D1

Copies of Calibration Certificate of Air Quality Monitoring Equipment



SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK2311530
CLIENT	: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 23-MAR-2023
		DATE OF ISSUE	: 30-MAR-2023
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.
 - Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.
 - Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified.
 - Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.
-

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

WORK ORDER : HK2311530
SUB-BATCH : 1
CLIENT : ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2311530-001	S/N: 3Y6502	AIR	23-Mar-2023	S/N: 3Y6502

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor
 Manufacturer: Sibata LD-3B
 Serial No. 3Y6502
 Equipment Ref: EQ113

Standard Equipment:

Standard Equipment: Higher Volume Sampler (TSP)
 Location & Location ID: AUES office (calibration room)
 Equipment Ref: HVS 018 & HVS 019
 Last Calibration Date: 27 February 2023 & 10 January 2023

Equipment Verification Results:

Verification Date: 6 & 9 March 2023

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
6-Mar-23	2hr01mins	09:35 ~ 11:36	20	1022.4	82.5	4537	37.6
6-Mar-23	2hr01mins	11:43 ~ 13:44	20	1022.4	29.5	2117	17.5
6-Mar-23	2hr11mins	13:45 ~ 15:56	20	1022.4	30.4	2306	17.6
9-Mar-23*	61mins	11:03 ~ 12:04	22.5	1017.7	144	4408	72.7
9-Mar-23*	61mins	12:06 ~ 13:07	22.5	1017.7	116	3761	61.5

(* Suspended particle was added into calibration room of HVS019 for high concentration test.

Sensitivity Adjustment Scale Setting (Before Calibration) 655 (CPM)

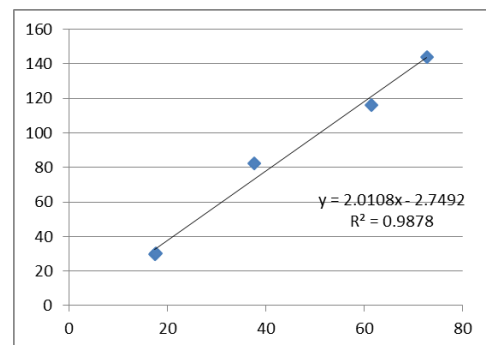
Sensitivity Adjustment Scale Setting (After Calibration) 660 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.0108 (µg/m³)/CPM

Correlation Coefficient (R) 0.9939

Date of Issue 20 March 2023



Remarks:

- Strong** Correlation (R>0.8)
- Factor 2.0108 (µg/m³)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Fai So Signature :  Date : 20 March 2023

QC Reviewer : Ben Tam Signature :  Date : 20 March 2023

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung Date of Calibration: 27-Feb-23
 Location ID : Calibration Room(HVS 018) Next Calibration Date: 27-May-23

CONDITIONS

Sea Level Pressure (hPa)	1024	Corrected Pressure (mm Hg)	768
Temperature (°C)	17.8	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Calibration Date->	15-Dec-22	Expiry Date->	15-Dec-23

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.689	55	55.97	Slope = 32.9819 Intercept = 0.0741 Corr. coeff. = 0.9968
13	4.8	4.8	9.6	1.512	48	48.85	
10	3.7	3.7	7.4	1.330	44	44.78	
8	2.6	2.6	5.2	1.118	37	37.65	
5	1.6	1.6	3.2	0.881	28	28.49	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

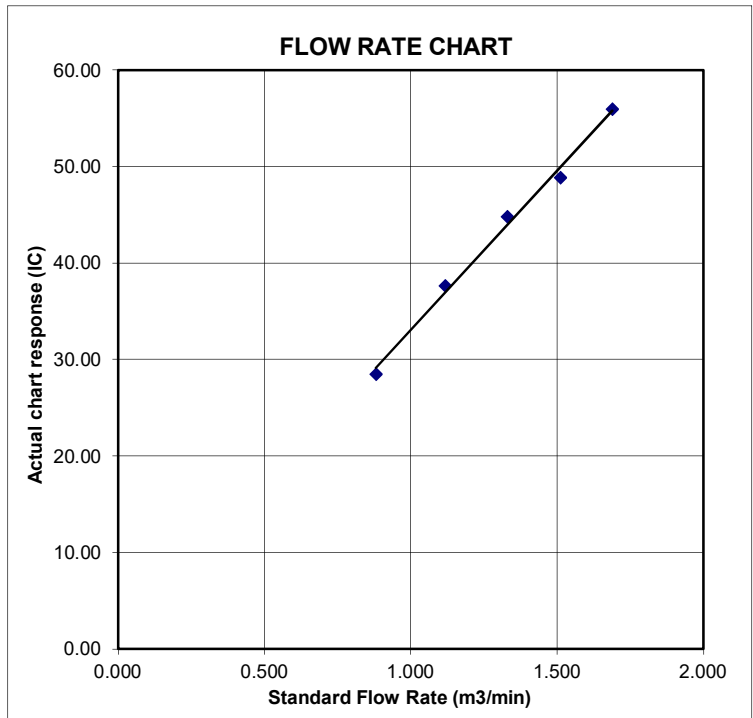
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 10-Jan-23
Location ID :	Calibration Room(HVS 019)	Next Calibration Date: 9-Apr-23

CONDITIONS

Sea Level Pressure (hPa)	1018.8	Corrected Pressure (mm Hg)	764.1
Temperature (°C)	18.2	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Calibration Date->	15-Dec-22	Expiry Date->	15-Dec-23

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.683	55	55.79	Slope = 31.4802 Intercept = 1.9499 Corr. coeff. = 0.9967
13	4.9	4.9	9.8	1.523	48	48.69	
10	3.9	3.9	7.8	1.361	44	44.63	
8	2.4	2.4	4.8	1.071	36	36.52	
5	1.5	1.5	3.0	0.851	28	28.40	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

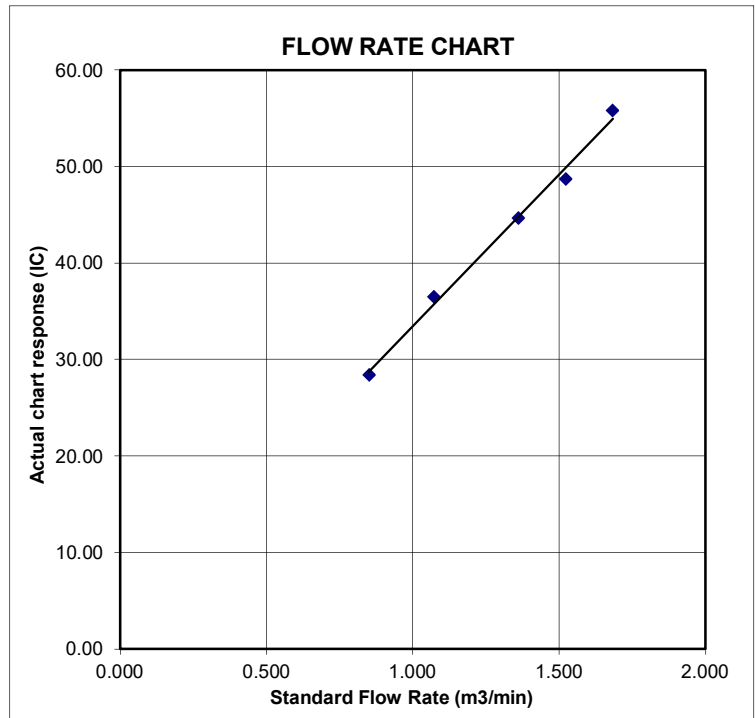
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure





Certificate of Calibration

Calibration Certification Information			
Cal. Date: December 15, 2022	Rootsmeter S/N: 438320	Ta: 295	°K
Operator: Jim Tisch		Pa: 748.0	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 4064		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4430	3.2	2.00
2	3	4	1	1.0210	6.4	4.00
3	5	6	1	0.9170	7.9	5.00
4	7	8	1	0.8730	8.8	5.50
5	9	10	1	0.7210	12.8	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
0.9900	0.6861	1.4101	0.9957	0.6900	0.8881
0.9858	0.9655	1.9943	0.9914	0.9711	1.2560
0.9838	1.0728	2.2296	0.9894	1.0790	1.4042
0.9826	1.1255	2.3385	0.9882	1.1320	1.4728
0.9772	1.3554	2.8203	0.9829	1.3632	1.7762
QSTD	m=	2.10977	QA	m=	1.32110
	b=	-0.03782		b=	-0.02382
	r=	0.99998		r=	0.99998

Calculations			
Vstd=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH:	calibrator manometer reading (in H2O)
ΔP:	rootsmeter manometer reading (mm Hg)
Ta:	actual absolute temperature (°K)
Pa:	actual barometric pressure (mm Hg)
b:	intercept
m:	slope

RECALIBRATION
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30



SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK2311531
CLIENT	: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 23-MAR-2023
		DATE OF ISSUE	: 30-MAR-2023
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.
 - Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.
 - Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified.
 - Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.
-

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

WORK ORDER : HK2311531
SUB-BATCH : 1
CLIENT : ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2311531-001	S/N: 456658	AIR	23-Mar-2023	S/N: 456658

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor
Manufacturer: Sibata LD-3B
Serial No. 456658
Equipment Ref: EQ115

Standard Equipment:

Standard Equipment: Higher Volume Sampler (TSP)
Location & Location ID: AUES office (calibration room)
Equipment Ref: HVS 018 & HVS 019
Last Calibration Date: 27 February 2023 & 10 January 2023

Equipment Verification Results:

Verification Date: 6 & 9 March 2023

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
6-Mar-23	2hr01mins	09:35 ~ 11:36	20	1022.4	82.5	4485	37.2
6-Mar-23	2hr01mins	11:43 ~ 13:44	20	1022.4	29.5	2128	17.6
6-Mar-23	2hr11mins	13:45 ~ 15:56	20	1022.4	30.4	2267	17.3
9-Mar-23*	61mins	11:03 ~ 12:04	22.5	1017.7	144	4263	70.3
9-Mar-23*	61mins	12:06 ~ 13:07	22.5	1017.7	116	3667	59.9

(* Suspended particle was added into calibration room of HVS019 for high concentration test.

Sensitivity Adjustment Scale Setting (Before Calibration) 702 (CPM)

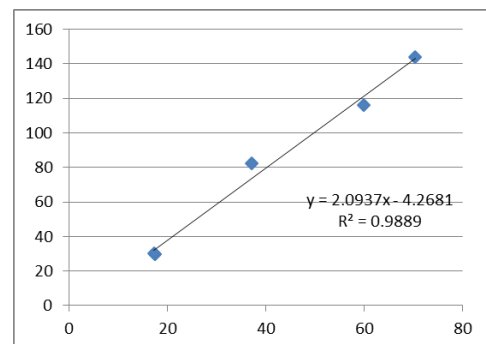
Sensitivity Adjustment Scale Setting (After Calibration) 708 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.0937 (µg/m³)/CPM

Correlation Coefficient (R) 0.9944

Date of Issue 20 March 2023



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.0937 (µg/m³)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Fai So Signature : [Signature] Date : 20 March 2023

QC Reviewer : Ben Tam Signature : [Signature] Date : 20 March 2023

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung Date of Calibration: 27-Feb-23
 Location ID : Calibration Room(HVS 018) Next Calibration Date: 27-May-23

CONDITIONS

Sea Level Pressure (hPa)	1024	Corrected Pressure (mm Hg)	768
Temperature (°C)	17.8	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Calibration Date->	15-Dec-22	Expiry Date->	15-Dec-23

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.689	55	55.97	Slope = 32.9819 Intercept = 0.0741 Corr. coeff. = 0.9968
13	4.8	4.8	9.6	1.512	48	48.85	
10	3.7	3.7	7.4	1.330	44	44.78	
8	2.6	2.6	5.2	1.118	37	37.65	
5	1.6	1.6	3.2	0.881	28	28.49	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

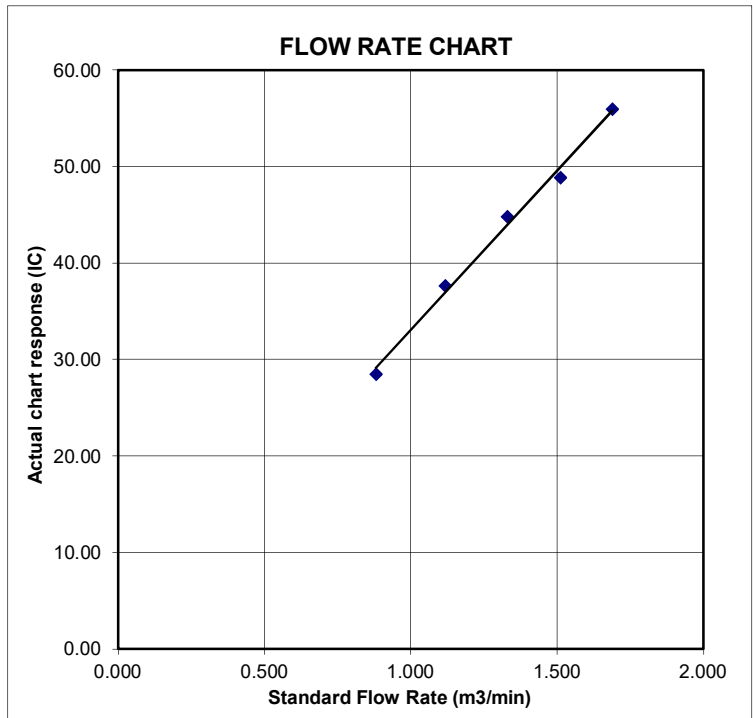
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 10-Jan-23
Location ID :	Calibration Room(HVS 019)	Next Calibration Date: 9-Apr-23

CONDITIONS

Sea Level Pressure (hPa)	1018.8	Corrected Pressure (mm Hg)	764.1
Temperature (°C)	18.2	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Calibration Date->	15-Dec-22	Expiry Date->	15-Dec-23

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.683	55	55.79	Slope = 31.4802 Intercept = 1.9499 Corr. coeff. = 0.9967
13	4.9	4.9	9.8	1.523	48	48.69	
10	3.9	3.9	7.8	1.361	44	44.63	
8	2.4	2.4	4.8	1.071	36	36.52	
5	1.5	1.5	3.0	0.851	28	28.40	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

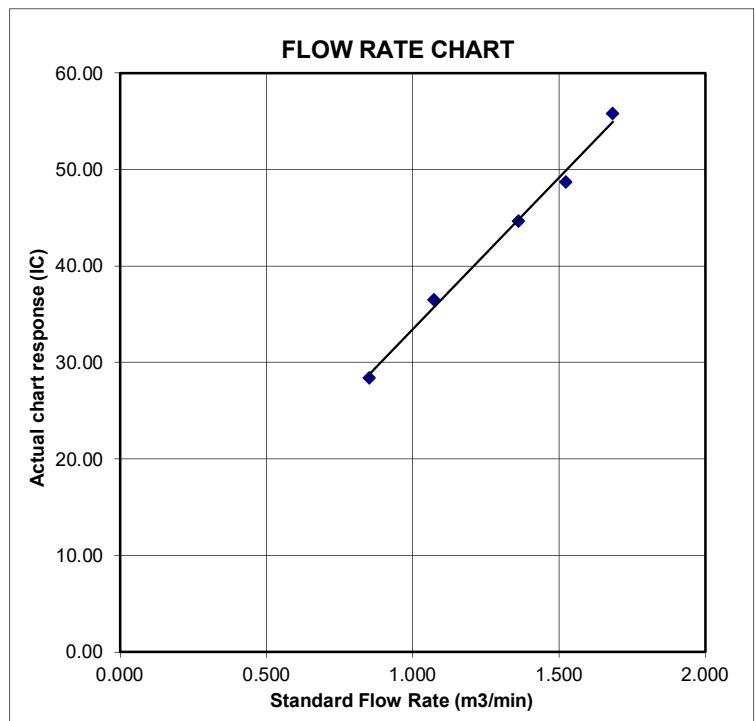
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure





Certificate of Calibration

Calibration Certification Information			
Cal. Date: December 15, 2022	Rootsmeter S/N: 438320	Ta: 295	°K
Operator: Jim Tisch		Pa: 748.0	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 4064		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4430	3.2	2.00
2	3	4	1	1.0210	6.4	4.00
3	5	6	1	0.9170	7.9	5.00
4	7	8	1	0.8730	8.8	5.50
5	9	10	1	0.7210	12.8	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
0.9900	0.6861	1.4101	0.9957	0.6900	0.8881
0.9858	0.9655	1.9943	0.9914	0.9711	1.2560
0.9838	1.0728	2.2296	0.9894	1.0790	1.4042
0.9826	1.1255	2.3385	0.9882	1.1320	1.4728
0.9772	1.3554	2.8203	0.9829	1.3632	1.7762
QSTD	m=	2.10977	QA	m=	1.32110
	b=	-0.03782		b=	-0.02382
	r=	0.99998		r=	0.99998

Calculations			
Vstd=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30



SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK2311532
CLIENT	: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 23-MAR-2023
		DATE OF ISSUE	: 30-MAR-2023
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.
 - Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.
 - Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified.
 - Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.
-

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

WORK ORDER : HK2311532
SUB-BATCH : 1
CLIENT : ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2311532-001	S/N: 456659	AIR	23-Mar-2023	S/N: 456659

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor
Manufacturer: Sibata LD-3B
Serial No. 456659
Equipment Ref: EQ116

Standard Equipment:

Standard Equipment: Higher Volume Sampler (TSP)
Location & Location ID: AUES office (calibration room)
Equipment Ref: HVS 018 & HVS 019
Last Calibration Date: 27 February 2023 & 10 January 2023

Equipment Verification Results:

Verification Date: 6 & 9 March 2023

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
6-Mar-23	2hr01mins	09:35 ~ 11:36	20	1022.4	82.5	4624	38.3
6-Mar-23	2hr01mins	11:43 ~ 13:44	20	1022.4	29.5	2204	18.2
6-Mar-23	2hr11mins	13:45 ~ 15:56	20	1022.4	30.4	2457	18.8
9-Mar-23*	61mins	11:03 ~ 12:04	22.5	1017.7	144	4357	71.9
9-Mar-23*	61mins	12:06 ~ 13:07	22.5	1017.7	116	3881	63.4

(* Suspended particle was added into calibration room of HVS019 for high concentration test.

Sensitivity Adjustment Scale Setting (Before Calibration) 726 (CPM)

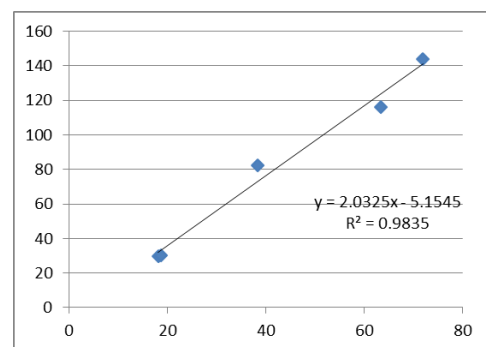
Sensitivity Adjustment Scale Setting (After Calibration) 729 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.0325 (ug/m³)/CPM

Correlation Coefficient (R) 0.9917

Date of Issue 20 March 2023



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.0325 (ug/m³)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Fai So Signature :  Date : 20 March 2023

QC Reviewer : Ben Tam Signature :  Date : 20 March 2023

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung Date of Calibration: 27-Feb-23
 Location ID : Calibration Room(HVS 018) Next Calibration Date: 27-May-23

CONDITIONS

Sea Level Pressure (hPa)	1024	Corrected Pressure (mm Hg)	768
Temperature (°C)	17.8	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Calibration Date->	15-Dec-22	Expiry Date->	15-Dec-23

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.689	55	55.97	Slope = 32.9819 Intercept = 0.0741 Corr. coeff. = 0.9968
13	4.8	4.8	9.6	1.512	48	48.85	
10	3.7	3.7	7.4	1.330	44	44.78	
8	2.6	2.6	5.2	1.118	37	37.65	
5	1.6	1.6	3.2	0.881	28	28.49	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

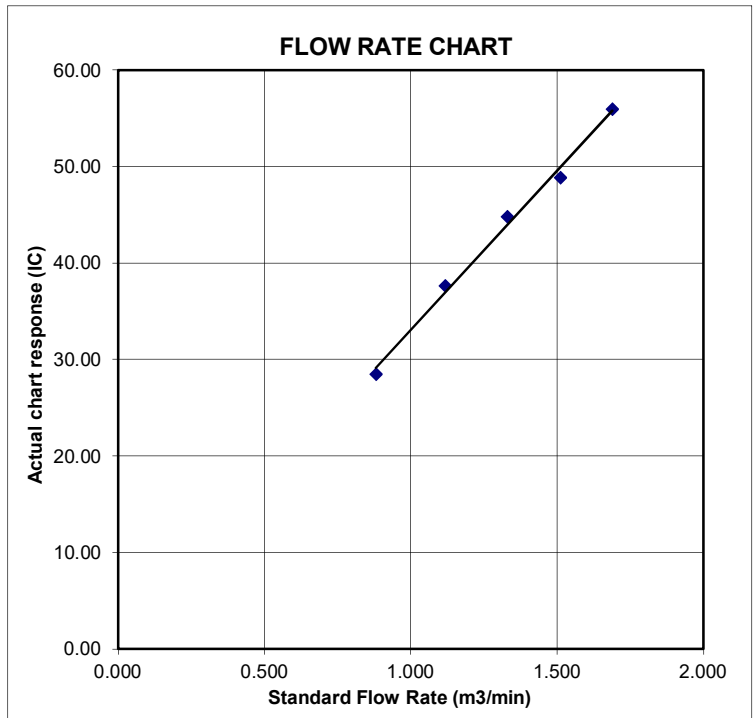
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 10-Jan-23
Location ID :	Calibration Room(HVS 019)	Next Calibration Date: 9-Apr-23

CONDITIONS

Sea Level Pressure (hPa)	1018.8	Corrected Pressure (mm Hg)	764.1
Temperature (°C)	18.2	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Calibration Date->	15-Dec-22	Expiry Date->	15-Dec-23

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.683	55	55.79	Slope = 31.4802 Intercept = 1.9499 Corr. coeff. = 0.9967
13	4.9	4.9	9.8	1.523	48	48.69	
10	3.9	3.9	7.8	1.361	44	44.63	
8	2.4	2.4	4.8	1.071	36	36.52	
5	1.5	1.5	3.0	0.851	28	28.40	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

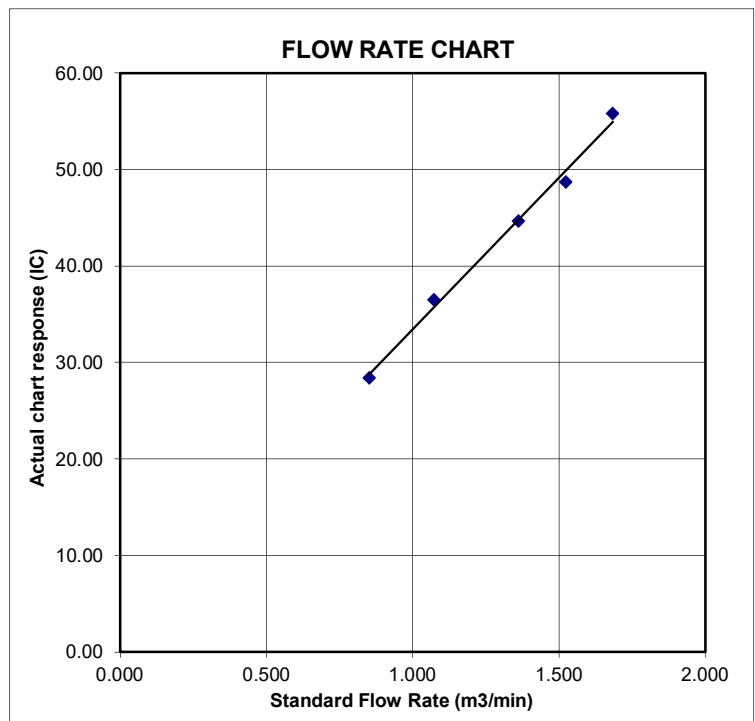
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure





Certificate of Calibration

Calibration Certification Information			
Cal. Date: December 15, 2022	Rootsmeter S/N: 438320	Ta: 295	°K
Operator: Jim Tisch		Pa: 748.0	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 4064		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4430	3.2	2.00
2	3	4	1	1.0210	6.4	4.00
3	5	6	1	0.9170	7.9	5.00
4	7	8	1	0.8730	8.8	5.50
5	9	10	1	0.7210	12.8	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
0.9900	0.6861	1.4101	0.9957	0.6900	0.8881
0.9858	0.9655	1.9943	0.9914	0.9711	1.2560
0.9838	1.0728	2.2296	0.9894	1.0790	1.4042
0.9826	1.1255	2.3385	0.9882	1.1320	1.4728
0.9772	1.3554	2.8203	0.9829	1.3632	1.7762
QSTD	m=	2.10977	QA	m=	1.32110
	b=	-0.03782		b=	-0.02382
	r=	0.99998		r=	0.99998

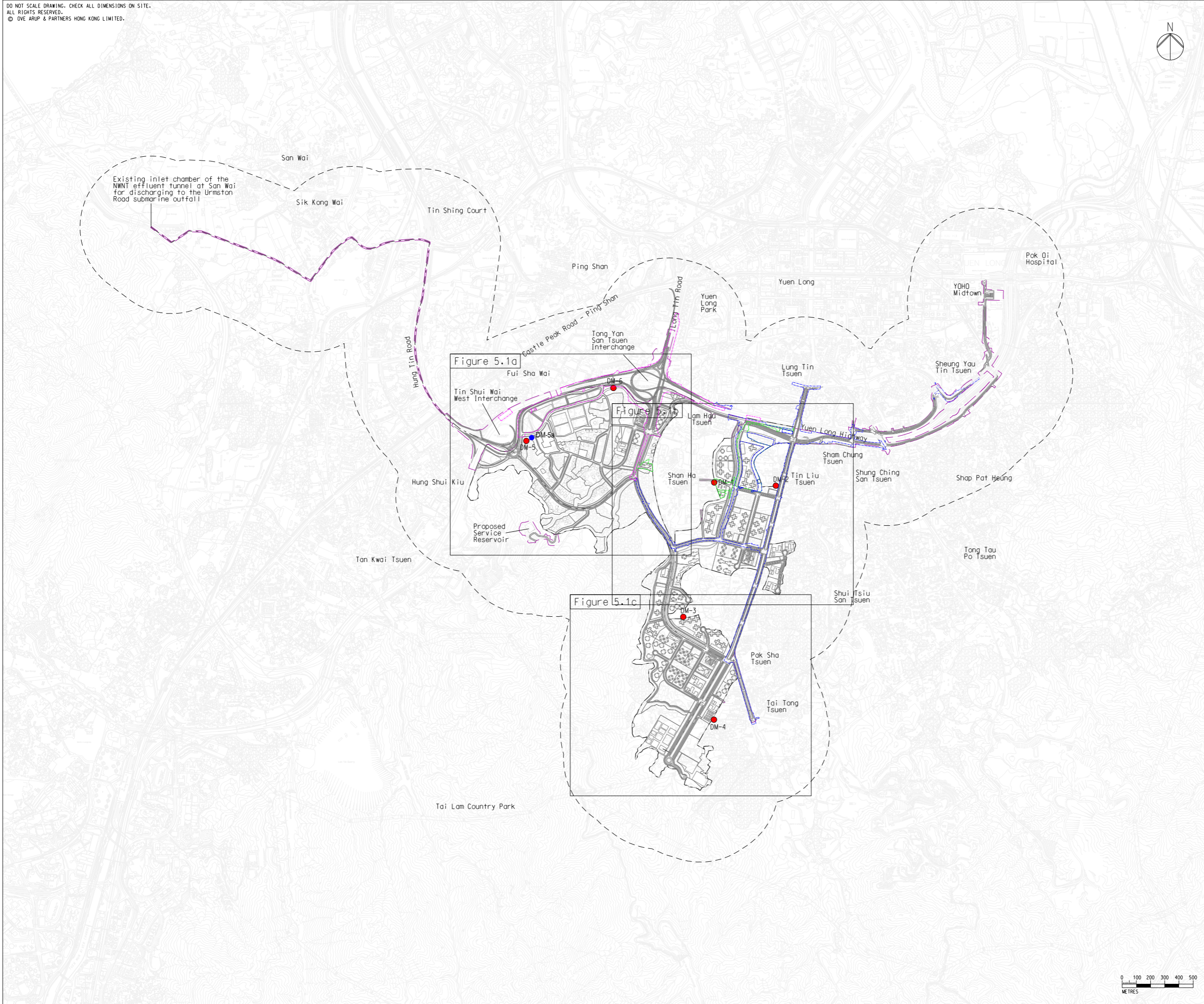
Calculations			
Vstd=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa=	$1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Appendix D2

Locations of Dust Monitoring Stations



- Legend
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 500m Assessment Area
 - R5 (Existing Development Area within PDA)
 - Construction Dust Monitoring Station
 - Proposed alternative Construction Dust Monitoring
 - C1 SITE BOUNDARY
 - C2 SITE BOUNDARY
 - C3 SITE BOUNDARY

B	SECOND ISSUE	GL	07/17
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Rev	Description	By	Date

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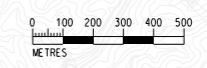
Locations of Construction Dust Monitoring Stations (Sheet 1 of 4)

Drawing no. Figure 5.1	Rev. B		
Drawn GL	Date 07/17	Checked FC	Approved FC
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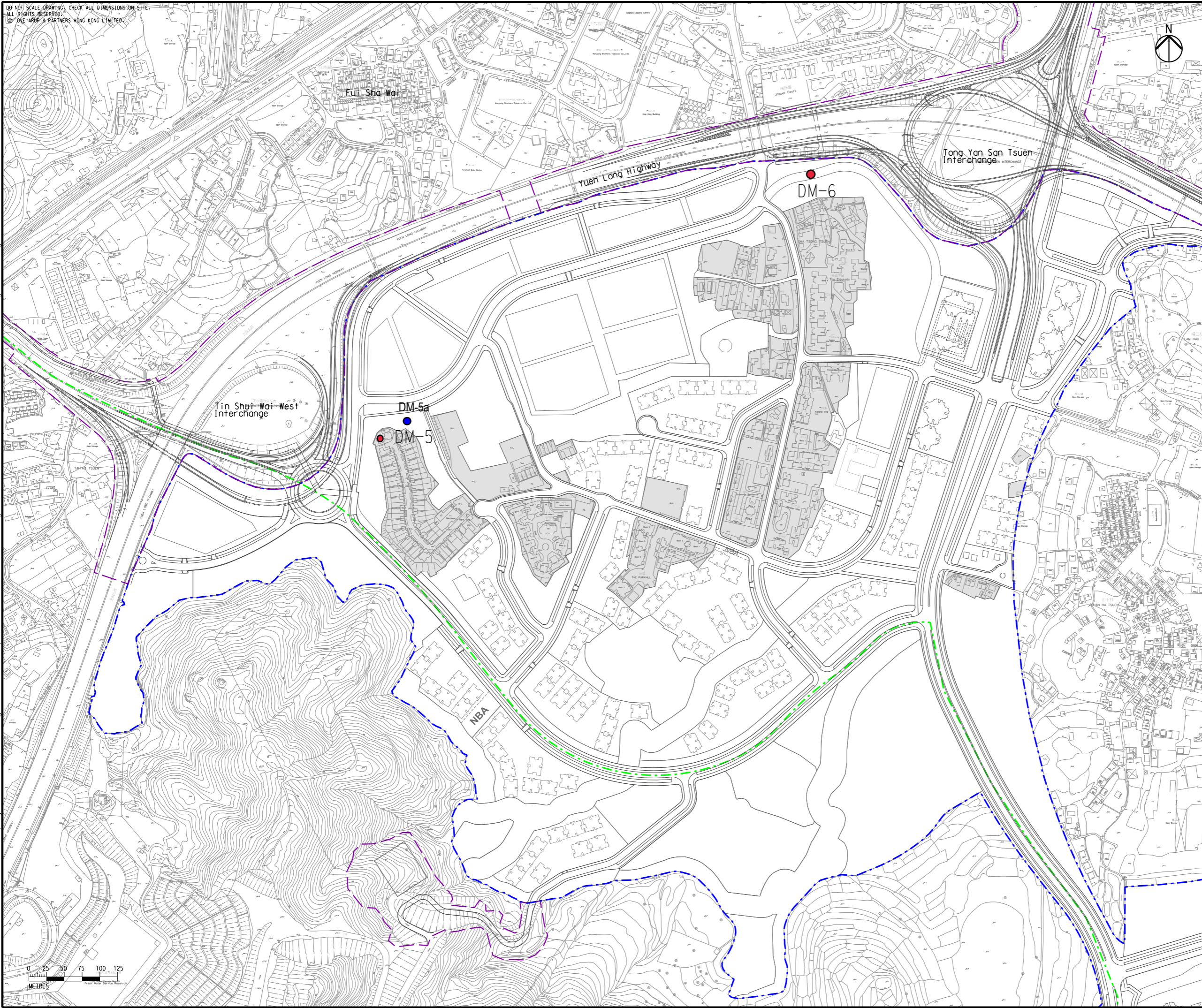
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Legend

- Potential Development Area (PDA)
- Works Boundary Outside PDA
- New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
- R5 (Existing Development Area within PDA)
- Construction Dust Monitoring Station
- Proposed alternative Construction Dust Monitoring

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Drawing title
 Locations of Construction Dust Monitoring Stations (Sheet 2 of 4)

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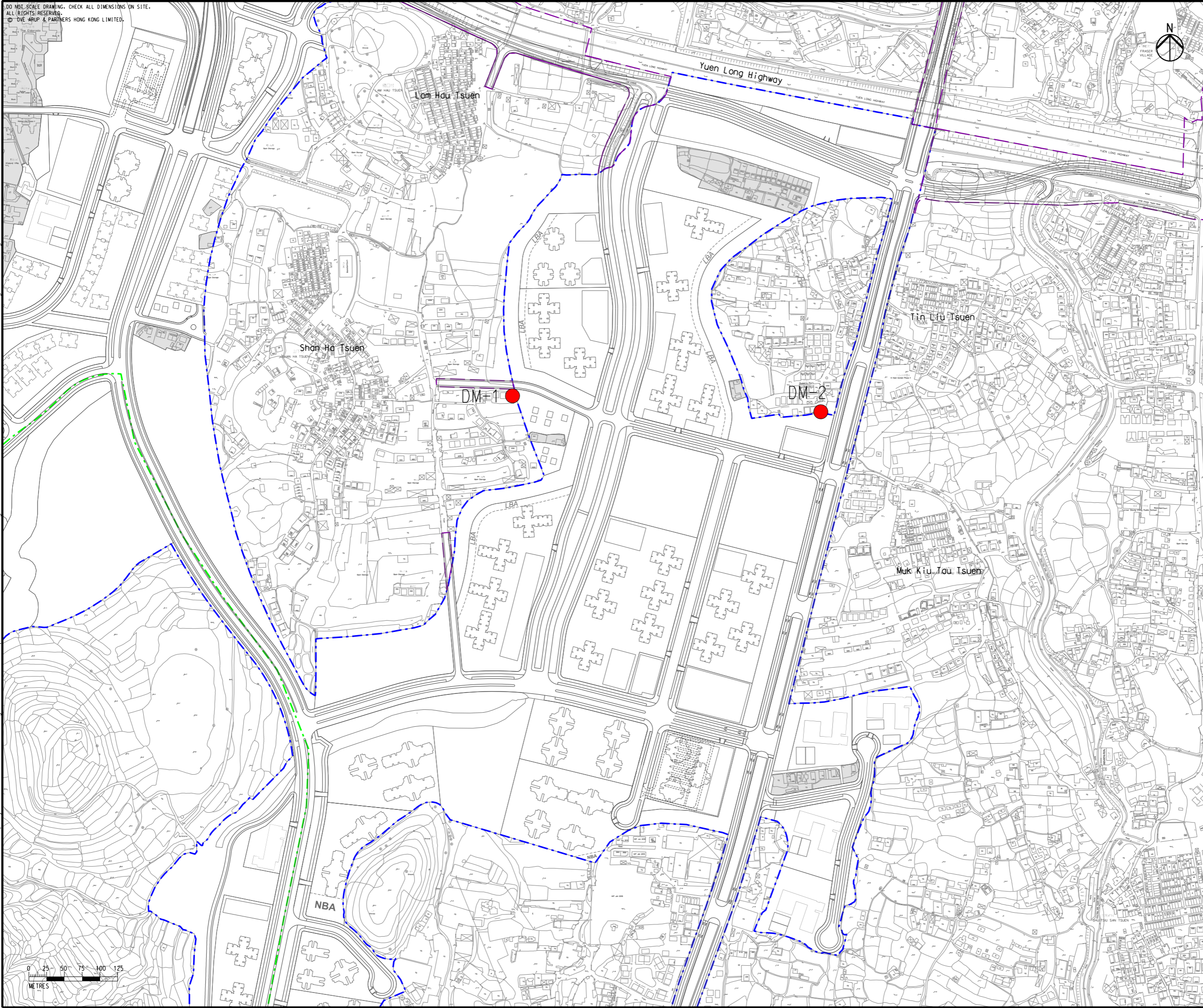
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 Filename : \\HKGNTS22\acoustic\env\project\228228\13 Drawing Deliverables\Report\EM&A Manual\03 Final\Figure 5.1b - Locations of Construction Dust Monitoring Stations.dgn



- Legend
- - - Potential Development Area (PDA)
 - - - Works Boundary Outside PDA
 - - - New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - R5 (Existing Development Area within PDA)
 - Construction Dust Monitoring Station

Rev	Description	By	Date
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A	FIRST ISSUE	GL	05/17


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Drawing title
 Locations of Construction Dust Monitoring Stations (Sheet 3 of 4)

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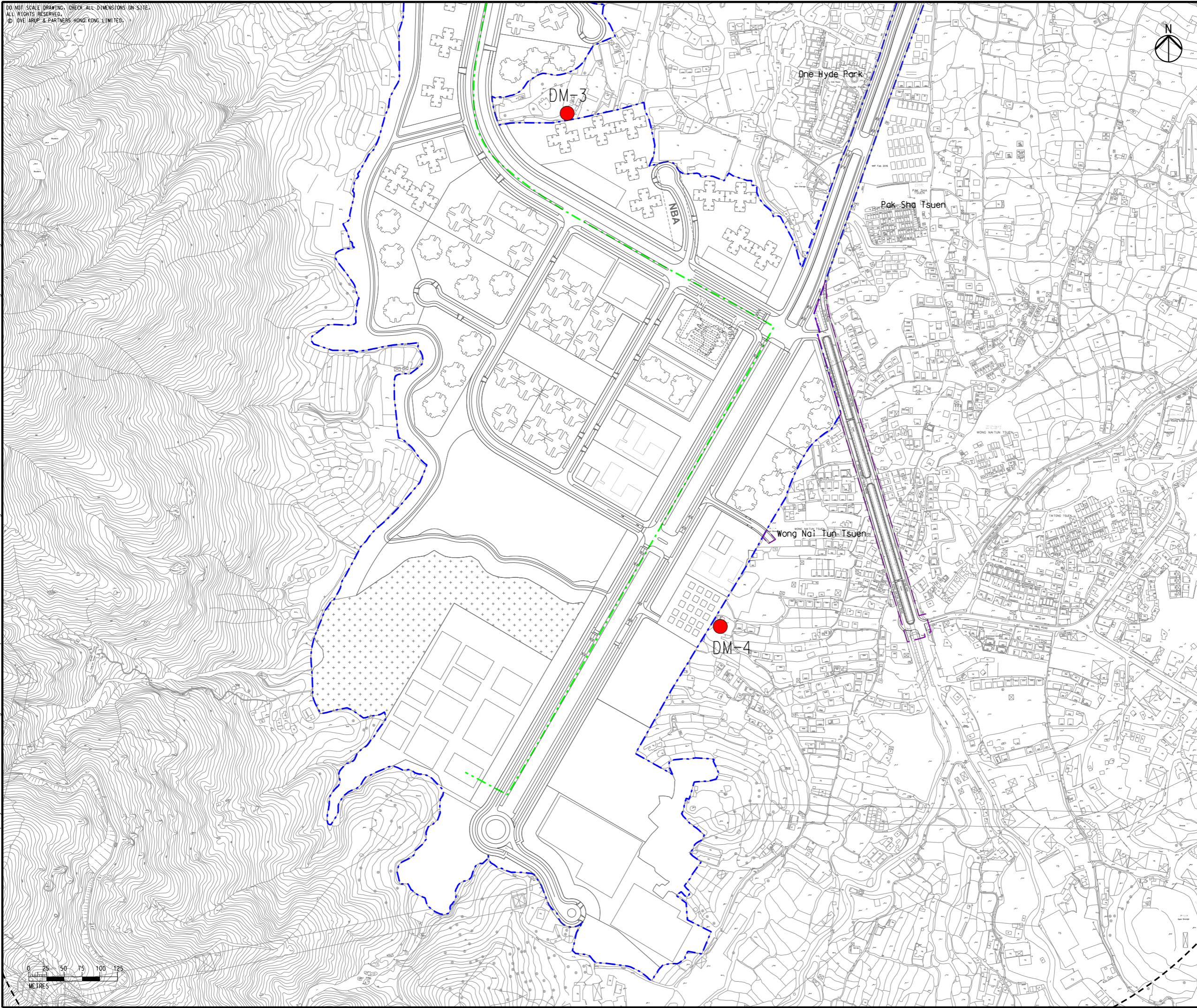
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- Legend
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - R5 (Existing Development Area within PDA)
 - Construction Dust Monitoring Station

Rev	Description	By	Date
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Drawing title
 Locations of Construction Dust Monitoring Stations (Sheet 4 of 4)

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Appendix D3

Detailed Baseline 1-hour TSP Monitoring Data

Appendix D3
Location

Baseline 1-hour TSP Monitoring Data
DM-1

Date	Start Time	Finish Time	Wether	1-hour TSP (ug/m ³)
29 Mar 23	9:48	10:48	Sunny	24
29 Mar 23	10:48	11:48	Sunny	27
29 Mar 23	11:48	12:48	Sunny	26
30 Mar 23	12:38	13:38	Cloudy	25
30 Mar 23	13:38	14:38	Cloudy	24
30 Mar 23	14:38	15:38	Cloudy	26
31 Mar 23	9:32	10:32	Cloudy	27
31 Mar 23	10:32	11:32	Cloudy	25
31 Mar 23	11:32	12:32	Cloudy	22
1 Apr 23	9:36	10:36	Cloudy	29
1 Apr 23	10:36	11:36	Cloudy	27
1 Apr 23	11:36	12:36	Cloudy	30
2 Apr 23	9:41	10:41	Sunny	31
2 Apr 23	10:41	11:41	Sunny	28
2 Apr 23	11:41	12:41	Sunny	29
3 Apr 23	9:43	10:43	Cloudy	28
3 Apr 23	10:43	11:43	Cloudy	26
3 Apr 23	11:43	12:43	Cloudy	25
4 Apr 23	9:38	10:38	Cloudy	32
4 Apr 23	10:38	11:38	Cloudy	27
4 Apr 23	11:38	12:38	Cloudy	30
5 Apr 23	9:55	10:55	Cloudy	27
5 Apr 23	10:55	11:55	Cloudy	25
5 Apr 23	11:55	12:55	Cloudy	29
6 Apr 23	9:27	10:27	Sunny	26
6 Apr 23	10:27	11:27	Sunny	28
6 Apr 23	11:27	12:27	Sunny	24
7 Apr 23	9:19	10:19	Sunny	27
7 Apr 23	10:19	11:19	Sunny	25
7 Apr 23	11:19	12:19	Sunny	31
8 Apr 23	9:30	10:30	Cloudy	28
8 Apr 23	10:30	11:30	Cloudy	32
8 Apr 23	11:30	12:30	Cloudy	27
9 Apr 23	9:37	10:37	Sunny	26
9 Apr 23	10:37	11:37	Sunny	29
9 Apr 23	11:37	12:37	Sunny	30
10 Apr 23	9:22	10:22	Sunny	31
10 Apr 23	10:22	11:22	Sunny	28
10 Apr 23	11:22	12:22	Sunny	26
11 Apr 23	9:28	10:28	Sunny	33
11 Apr 23	10:28	11:28	Sunny	30
11 Apr 23	11:28	12:28	Sunny	17

Average	27
Min	17
Max	33
Action Level	268
Limit Level	500

Appendix D3
Location

Baseline 1-hour TSP Monitoring Data
DM-2

Date	Start Time	Finish Time	Wether	1-hour TSP (ug/m ³)
29 Mar 23	10:23	11:23	Sunny	28
29 Mar 23	11:23	12:23	Sunny	26
29 Mar 23	12:23	13:23	Sunny	25
30 Mar 23	9:16	10:16	Cloudy	24
30 Mar 23	10:16	11:16	Cloudy	26
30 Mar 23	11:16	12:16	Cloudy	23
31 Mar 23	9:47	10:47	Cloudy	27
31 Mar 23	10:47	11:47	Cloudy	23
31 Mar 23	11:47	12:47	Cloudy	25
1 Apr 23	10:07	11:07	Cloudy	28
1 Apr 23	11:07	12:07	Cloudy	25
1 Apr 23	12:07	13:07	Cloudy	27
2 Apr 23	10:18	11:18	Sunny	30
2 Apr 23	11:18	12:18	Sunny	26
2 Apr 23	12:18	13:18	Sunny	28
3 Apr 23	10:22	11:22	Cloudy	27
3 Apr 23	11:22	12:22	Cloudy	29
3 Apr 23	12:22	13:22	Cloudy	26
4 Apr 23	12:52	13:52	Cloudy	29
4 Apr 23	13:52	14:52	Cloudy	31
4 Apr 23	14:52	15:52	Cloudy	26
5 Apr 23	9:15	10:15	Cloudy	30
5 Apr 23	10:15	11:15	Cloudy	25
5 Apr 23	11:15	12:15	Cloudy	28
6 Apr 23	12:42	13:42	Sunny	27
6 Apr 23	13:42	14:42	Sunny	24
6 Apr 23	14:42	15:42	Sunny	25
7 Apr 23	9:43	10:43	Sunny	25
7 Apr 23	10:43	11:43	Sunny	30
7 Apr 23	11:43	12:43	Sunny	28
8 Apr 23	9:54	10:54	Cloudy	29
8 Apr 23	10:54	11:54	Cloudy	30
8 Apr 23	11:54	12:54	Cloudy	27
9 Apr 23	9:58	10:58	Sunny	28
9 Apr 23	10:58	11:58	Sunny	27
9 Apr 23	11:58	12:58	Sunny	29
10 Apr 23	9:48	10:48	Sunny	32
10 Apr 23	10:48	11:48	Sunny	29
10 Apr 23	11:48	12:48	Sunny	28
11 Apr 23	9:46	10:46	Sunny	31
11 Apr 23	10:46	11:46	Sunny	29
11 Apr 23	11:46	12:46	Sunny	34

Average	27
Min	23
Max	34
Action Level	268
Limit Level	500

Appendix D3
Location

Baseline 1-hour TSP Monitoring Data
DM-3

Date	Start Time	Finish Time	Wether	1-hour TSP (ug/m ³)
14 Apr 23	12:46	13:46	Cloudy	66
14 Apr 23	13:46	14:46	Cloudy	68
14 Apr 23	14:46	15:46	Cloudy	64
15 Apr 23	9:33	10:33	Cloudy	61
15 Apr 23	10:33	11:33	Cloudy	69
15 Apr 23	11:33	12:33	Cloudy	65
16 Apr 23	9:32	10:32	Sunny	57
16 Apr 23	10:32	11:32	Sunny	62
16 Apr 23	11:32	12:32	Sunny	58
17 Apr 23	9:36	10:36	Sunny	58
17 Apr 23	10:36	11:36	Sunny	64
17 Apr 23	11:36	12:36	Sunny	68
18 Apr 23	12:38	13:38	Cloudy	53
18 Apr 23	13:38	14:38	Cloudy	57
18 Apr 23	14:38	15:38	Cloudy	56
19 Apr 23	9:51	10:51	Cloudy	27
19 Apr 23	10:51	11:51	Cloudy	25
19 Apr 23	11:51	12:51	Cloudy	29
20 Apr 23	9:26	10:26	Cloudy	29
20 Apr 23	10:26	11:26	Cloudy	34
20 Apr 23	11:26	12:26	Cloudy	30
21 Apr 23	10:03	11:03	Sunny	30
21 Apr 23	11:03	12:03	Sunny	31
21 Apr 23	12:03	13:03	Sunny	36
22 Apr 23	9:42	10:42	Rainy	51
22 Apr 23	10:42	11:42	Rainy	47
22 Apr 23	11:42	12:42	Rainy	46
23 Apr 23	9:38	10:38	Rainy	48
23 Apr 23	10:38	11:38	Rainy	50
23 Apr 23	11:38	12:38	Rainy	45
24 Apr 23	9:57	10:57	Cloudy	52
24 Apr 23	10:57	11:57	Cloudy	51
24 Apr 23	11:57	12:57	Cloudy	46
25 Apr 23	14:06	15:06	Cloudy	49
25 Apr 23	15:06	16:06	Cloudy	48
25 Apr 23	16:06	17:06	Cloudy	53
26 Apr 23	9:52	10:52	Sunny	54
26 Apr 23	10:52	11:52	Sunny	58
26 Apr 23	11:52	12:52	Sunny	55
27 Apr 23	13:13	14:13	Cloudy	56
27 Apr 23	14:13	15:13	Cloudy	54
27 Apr 23	15:13	16:13	Cloudy	57

Average	50
Min	25
Max	69
Action Level	283
Limit Level	500

Appendix D3
Location

Baseline 1-hour TSP Monitoring Data
DM-4

Date	Start Time	Finish Time	Wether	1-hour TSP (ug/m ³)
14 Apr 23	9:14	10:14	Cloudy	48
14 Apr 23	10:14	11:14	Cloudy	52
14 Apr 23	11:14	12:14	Cloudy	51
15 Apr 23	9:17	10:17	Cloudy	50
15 Apr 23	10:17	11:17	Cloudy	49
15 Apr 23	11:17	12:17	Cloudy	53
16 Apr 23	9:09	10:09	Sunny	49
16 Apr 23	10:09	11:09	Sunny	51
16 Apr 23	11:09	12:09	Sunny	48
17 Apr 23	9:20	10:20	Sunny	46
17 Apr 23	10:20	11:20	Sunny	49
17 Apr 23	11:20	12:20	Sunny	50
18 Apr 23	9:18	10:18	Cloudy	45
18 Apr 23	10:18	11:18	Cloudy	48
18 Apr 23	11:18	12:18	Cloudy	47
19 Apr 23	9:32	10:32	Cloudy	26
19 Apr 23	10:32	11:32	Cloudy	27
19 Apr 23	11:32	12:32	Cloudy	23
20 Apr 23	12:56	13:56	Cloudy	32
20 Apr 23	13:56	14:56	Cloudy	36
20 Apr 23	14:56	15:56	Cloudy	37
21 Apr 23	9:42	10:42	Sunny	33
21 Apr 23	10:42	11:42	Sunny	28
21 Apr 23	11:42	12:42	Sunny	29
22 Apr 23	9:18	10:18	Rainy	34
22 Apr 23	10:18	11:18	Rainy	38
22 Apr 23	11:18	12:18	Rainy	35
23 Apr 23	9:13	10:13	Rainy	35
23 Apr 23	10:13	11:13	Rainy	36
23 Apr 23	11:13	12:13	Rainy	39
24 Apr 23	9:32	10:32	Cloudy	37
24 Apr 23	10:32	11:32	Cloudy	41
24 Apr 23	11:32	12:32	Cloudy	38
25 Apr 23	13:42	14:42	Cloudy	42
25 Apr 23	14:42	15:42	Cloudy	46
25 Apr 23	15:42	16:42	Cloudy	43
26 Apr 23	9:34	10:34	Sunny	47
26 Apr 23	10:34	11:34	Sunny	50
26 Apr 23	11:34	12:34	Sunny	49
27 Apr 23	9:39	10:39	Cloudy	45
27 Apr 23	10:39	11:39	Cloudy	47
27 Apr 23	11:39	12:39	Cloudy	51

Average	42
Min	23
Max	53
Action Level	277
Limit Level	500

Appendix D3
Location

Baseline 1-hour TSP Monitoring
Data DM-5a

Date	Start Time	Finish Time	Wether	1-hour TSP (ug/m ³)
13 Mar 23	9:03	10:03	Sunny	47
13 Mar 23	10:03	11:03	Sunny	50
13 Mar 23	11:03	12:03	Sunny	52
14 Mar 23	9:18	10:18	Sunny	53
14 Mar 23	10:18	11:18	Sunny	50
14 Mar 23	11:18	12:18	Sunny	52
15 Mar 23	9:42	10:42	Sunny	45
15 Mar 23	10:42	11:42	Sunny	44
15 Mar 23	11:42	12:42	Sunny	47
16 Mar 23	9:33	10:33	Sunny	55
16 Mar 23	10:33	11:33	Sunny	52
16 Mar 23	11:33	12:33	Sunny	49
17 Mar 23	11:40	12:40	Sunny	48
17 Mar 23	12:40	13:40	Sunny	53
17 Mar 23	13:40	14:40	Sunny	50
18 Mar 23	9:10	10:10	Sunny	45
18 Mar 23	10:10	11:10	Sunny	42
18 Mar 23	11:10	12:10	Sunny	47
19 Mar 23	9:32	10:32	Cloudy	43
19 Mar 23	10:32	11:32	Cloudy	40
19 Mar 23	11:32	12:32	Cloudy	46
20 Mar 23	9:15	10:15	Sunny	50
20 Mar 23	10:15	11:15	Sunny	47
20 Mar 23	11:15	12:15	Sunny	51
21 Mar 23	9:35	10:35	Sunny	46
21 Mar 23	10:35	11:35	Sunny	51
21 Mar 23	11:35	12:35	Sunny	48
22 Mar 23	9:25	10:25	Sunny	44
22 Mar 23	10:25	11:25	Sunny	47
22 Mar 23	11:25	12:25	Sunny	46
23 Mar 23	9:03	10:03	Cloudy	39
23 Mar 23	10:03	11:03	Cloudy	40
23 Mar 23	11:03	12:03	Cloudy	37
24 Mar 23	9:01	10:01	Cloudy	65
24 Mar 23	10:01	11:01	Cloudy	56
24 Mar 23	11:01	12:01	Cloudy	59
25 Mar 23	9:30	10:30	Cloudy	38
25 Mar 23	10:30	11:30	Cloudy	42
25 Mar 23	11:30	12:30	Cloudy	40
26 Mar 23	9:21	10:21	Sunny	40
26 Mar 23	10:21	11:21	Sunny	38
26 Mar 23	11:21	12:21	Sunny	42

Average	47
Min	37
Max	65
Action Level	281
Limit Level	500

Appendix D3
Location

Baseline 1-hour TSP Monitoring Data
DM-6

Date	Start Time	Finish Time	Wether	1-hour TSP (ug/m ³)
22 May 23	10:06	11:06	Sunny	42
22 May 23	11:06	12:06	Sunny	38
22 May 23	12:06	13:06	Sunny	36
23 May 23	9:37	10:37	Cloudy	49
23 May 23	10:37	11:37	Cloudy	45
23 May 23	11:37	12:37	Cloudy	50
24 May 23	10:52	11:52	Sunny	41
24 May 23	11:52	12:52	Sunny	39
24 May 23	12:52	13:52	Sunny	43
25 May 23	9:56	10:56	Sunny	54
25 May 23	10:56	11:56	Sunny	49
25 May 23	11:56	12:56	Sunny	48
26 May 23	9:40	10:40	Cloudy	58
26 May 23	10:40	11:40	Cloudy	53
26 May 23	11:40	12:40	Cloudy	47
27 May 23	9:32	10:32	Sunny	44
27 May 23	10:32	11:32	Sunny	42
27 May 23	11:32	12:32	Sunny	39
28 May 23	9:56	10:56	Sunny	39
28 May 23	10:56	11:56	Sunny	42
28 May 23	11:56	12:56	Sunny	44
29 May 23	9:43	10:43	Sunny	46
29 May 23	10:43	11:43	Sunny	55
29 May 23	11:43	12:43	Sunny	52
30 May 23	9:14	10:14	Rainy	40
30 May 23	10:14	11:14	Rainy	55
30 May 23	11:14	12:14	Rainy	63
31 May 23	9:42	10:42	Sunny	41
31 May 23	10:42	11:42	Sunny	45
31 May 23	11:42	12:42	Sunny	44
1 Jun 23	10:13	11:13	Cloudy	34
1 Jun 23	11:13	12:13	Cloudy	37
1 Jun 23	12:13	13:13	Cloudy	36
2 Jun 23	9:11	10:11	Cloudy	55
2 Jun 23	10:11	11:11	Cloudy	62
2 Jun 23	11:11	12:11	Cloudy	58
3 Jun 23	9:10	10:10	Cloudy	40
3 Jun 23	10:10	11:10	Cloudy	39
3 Jun 23	11:10	12:10	Cloudy	37
4 Jun 23	9:52	10:52	Cloudy	37
4 Jun 23	10:52	11:52	Cloudy	40
4 Jun 23	11:52	12:52	Cloudy	38

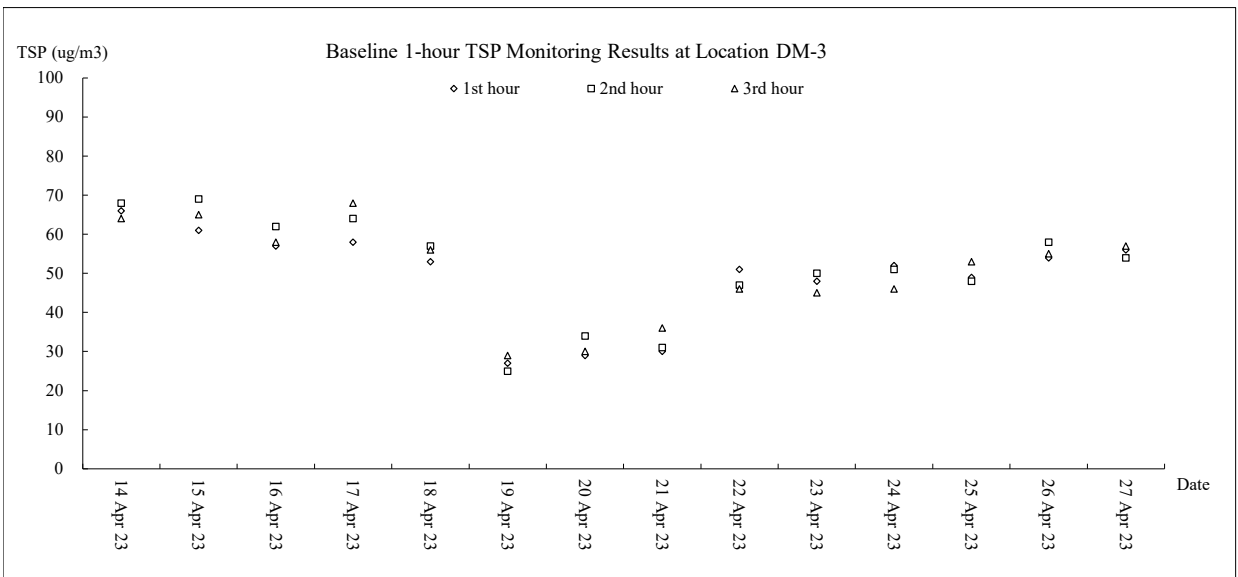
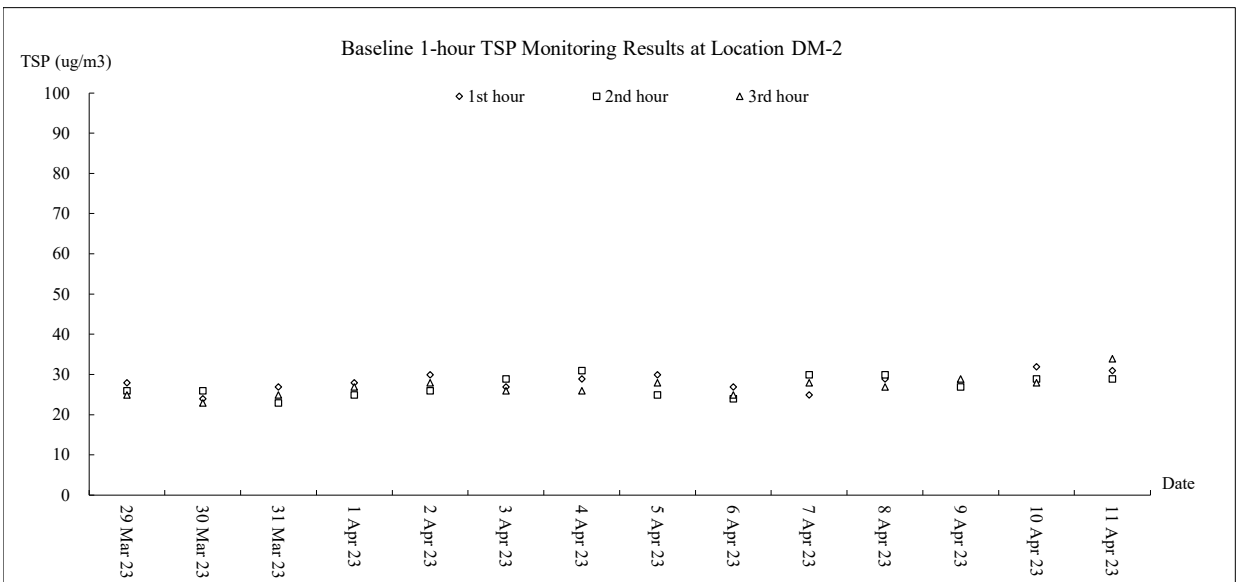
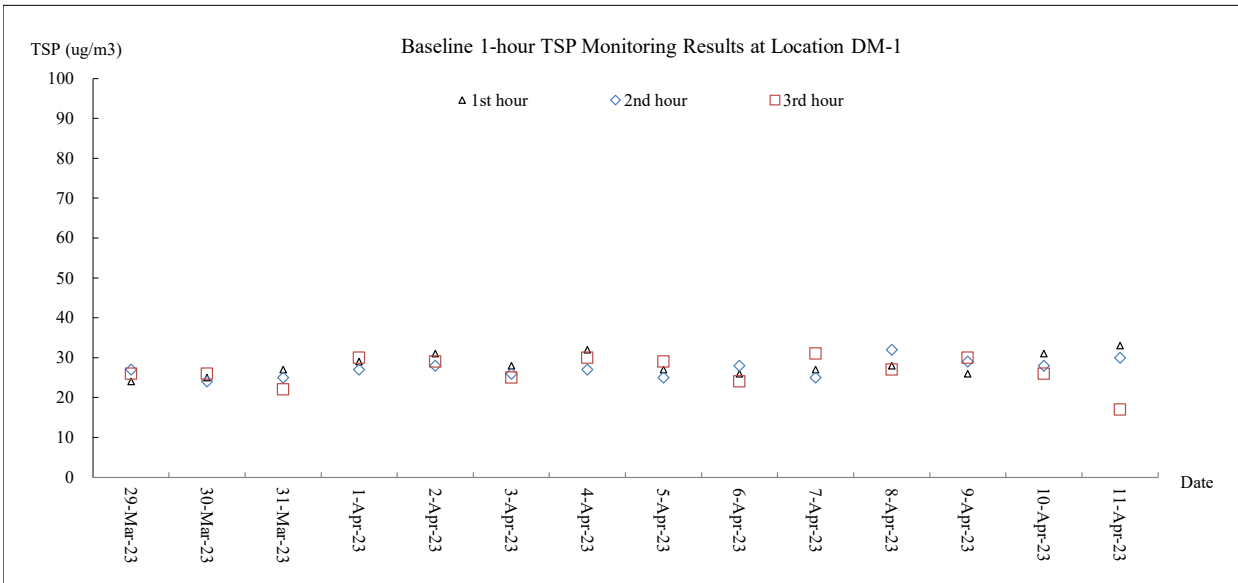
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Limit Level	500

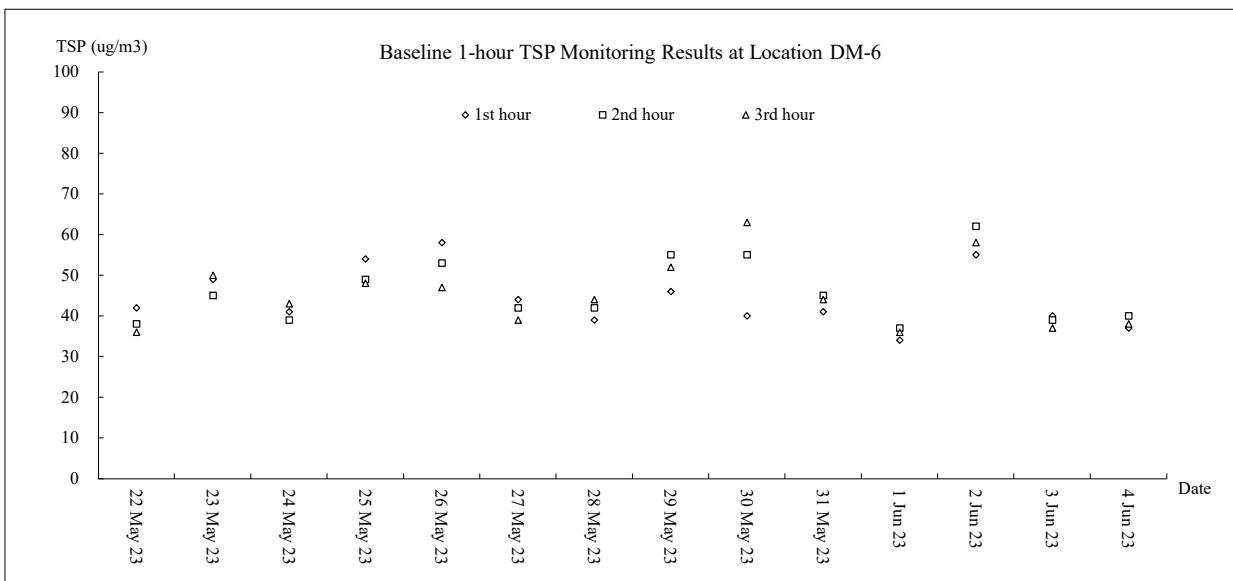
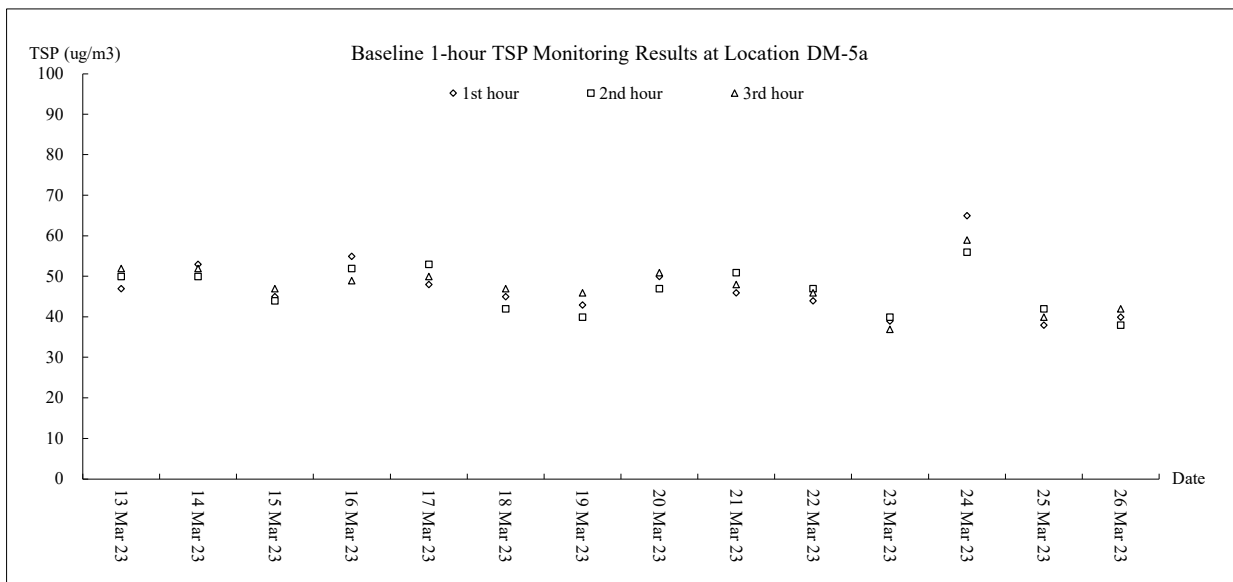
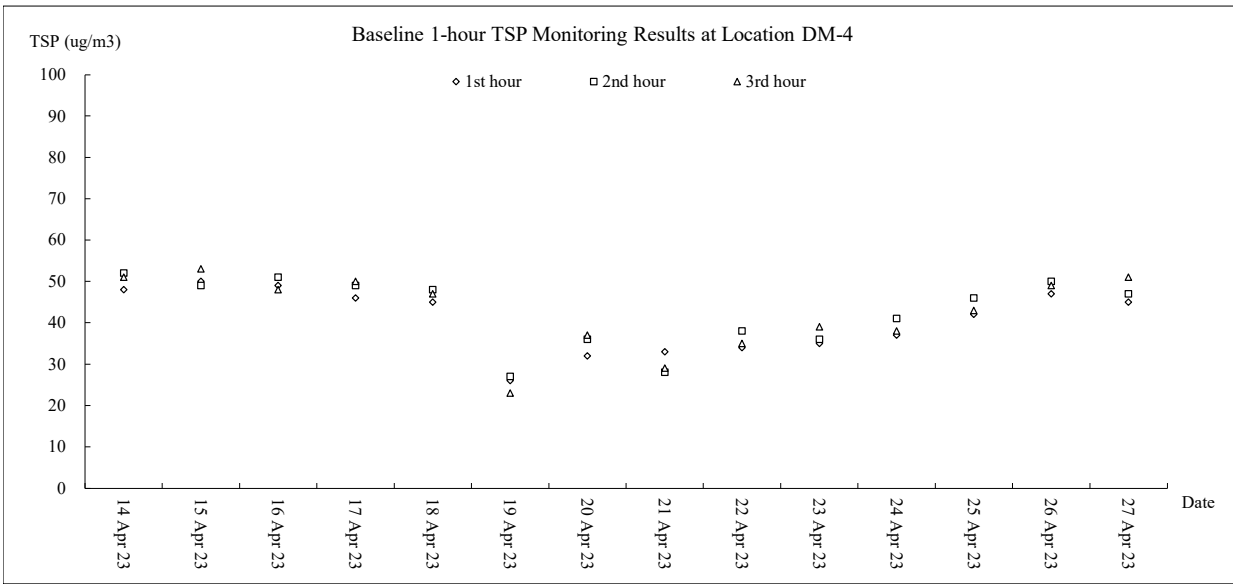
Appendix D4

Graphical Presentation of Baseline 1-hour TSP Data

Appendix D4

Graphical Presentation of Baseline 1-hour TSP Monitoring Data





Appendix D5

Photographic Records for Air Quality Monitoring Stations

Appendix D5 Photographic Records for Air Quality Monitoring Stations



DM1



DM2



DM3



DM4



DM5-a



DM6

Appendix D6

Meteorological Data during the Baseline Monitoring Period

Date		Weather	Total Rainfall (mm)	Wetland Park			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
6-Mar-23	Mon	Fine. Warm and very dry during the day.	0	19.6	5.6	52	E
7-Mar-23	Tue	Fine and dry. Warm	0	19.4	3.3	59	E
8-Mar-23	Wed	Fine and dry.	0	20.1	2.8	81	S
9-Mar-23	Thu	Moderate easterly winds.	0	22	3.8	80	S
10-Mar-23	Fri	Fine and dry	0	22.3	5.3	67	NE
11-Mar-23	Sat	Fine. Warm and very dry.	0	21.9	4.2	75	NE
12-Mar-23	Sun	Mainly cloudy..	0.1	22.1	2.8	77	N
13-Mar-23	Mon	Mainly cloudy. Sunny intervals in the afternoon.	Trace	20.4	4.5	60	N
14-Mar-23	Tue	Dry with sunny periods	0	19.4	3.3	79	S
15-Mar-23	Wed	Mainly fine. Dry	0	20.3	3.2	83	S
16-Mar-23	Thu	Moderate easterly winds.	Trace	21.4	4.2	73	NE
17-Mar-23	Fri	Moderate to fresh easterly winds	0.5	23	5	83	E/NE
18-Mar-23	Sat	Moderate southerly winds.	0	22.7	7.2	77.9	E/NE
19-Mar-23	Sun	Mainly cloudy.	0.6	22.2	6.2	82.5	E/NE
20-Mar-23	Mon	Coastal mist	0.3	23.7	8.7	81	S
21-Mar-23	Tue	Sunny intervals	Trace	22.8	7.4	79.5	S
22-Mar-23	Wed	Sunny intervals	Trace	Maintenance	7.5	Maintenance	S/SW
23-Mar-23	Thu	Mainly cloudy with isolated showers.	0	Maintenance	6.2	Maintenance	S/SE
24-Mar-23	Fri	Mainly cloudy with isolated showers.	0	Maintenance	8.7	Maintenance	S/S
25-Mar-23	Sat	Cloudy with occasional rain.	53.5	Maintenance	8.8	Maintenance	S/SE
26-Mar-23	Sun	Fresh easterly winds	5.9	18.8	10	95	E/NE
27-Mar-23	Mon	Cloudy with occasional rain.	6.3	17.6	7	88	E/NE
28-Mar-23	Tue	Cloudy with a few rain patches.	Trace	16.9	5	89.7	N/NE
29-Mar-23	Wed	Moderate to fresh easterly winds	0.9	21.3	5	80	NE
30-Mar-23	Thu	Cloudy with a few showers.	0.3	20.5	7.5	90.7	NE
1-Apr-23	Sat	Mainly cloudy with a few showers.	22.1	7	88.2	E/NE	22.1
2-Apr-23	Sun	Moderate to fresh east to southeasterly winds	21.5	6	91.2	E/NE	21.5
3-Apr-23	Mon	Mainly cloudy with a few showers.	22.3	8.5	85	E/NE	22.3
4-Apr-23	Tue	Mainly cloudy with a few showers.	24.1	12	87	S/SE	24.1
5-Apr-23	Wed	Mainly cloudy with a few showers.	25.1	7.5	90.7	S/SE	25.1
6-Apr-23	Thu	Sunny intervals in the morning.	26	8.7	85	S/SE	26
7-Apr-23	Fri	Moderate southerly winds	25.8	10.2	86.2	S/SE	25.8
8-Apr-23	Sat	Mainly cloudy. Sunny periods	24.7	9.8	87	S/SE	24.7
9-Apr-23	Sun	Sunny intervals	24.2	8.8	79	S/SE	24.2
10-Apr-23	Mon	Moderate southerly winds	24.3	5	77	S/SE	24.3
11-Apr-23	Tue	Light to moderate east to southeasterly winds.	24.4	7.5	78.2	S/SE	24.4
12-Apr-23	Wed	Light to moderate east to southeasterly winds.	24.4	4.5	79	W/NW	24.4
13-Apr-23	Thu	Moderate southerly winds	25.1	6.7	10.7	E/NE	25.1

Date		Weather	Total Rainfall (mm)	Wetland Park			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
14-Apr-23	Fri	Mainly cloudy with a few showers.	24.7	6	67.5	E/NE	24.7
15-Apr-23	Sat	Mainly cloudy. Sunny intervals and a few showers	26.1	8.7	84.2	S/SE	26.1
16-Apr-23	Sun	Moderate easterly winds	27.5	7.5	72	S/SE	27.5
17-Apr-23	Mon	Sunny intervals and a few showers tomorrow.	25.5	6.2	81.2	E/SE	25.5
18-Apr-23	Tue	Mainly cloudy. Sunny intervals and a few showers	24.2	7	85	E/SE	24.2
19-Apr-23	Wed	Mainly cloudy with showers and severe squally thunderstorms.	23.8	7.5	87.2	S/SE	23.8
20-Apr-23	Thu	Mainly cloudy with a few showers.	25.8	3.7	86.5	NE	25.8
21-Apr-23	Fri	Light to moderate southeasterly winds.	24.8	6.2	87	S/SE	24.8
22-Apr-23	Sat	Isolated squally thunderstorms	26.0	7	81.0	E	26.0
23-Apr-23	Sun	Showers will be heavier with a few squally thunderstorms	26.0	6.2	82.2	E/NE	26.0
24-Apr-23	Mon	Mainly cloudy with a few showers.	24.6	3.7	86.2	N/NW	24.6
25-Apr-23	Tue	Mainly cloudy with one or two rain patches	22.0	3.7	93.7	N/NW	22.0
26-Apr-23	Wed	Dry with sunny periods.	22.2	6	71.2	E/NE	22.2
27-Apr-23	Thu	Mainly cloudy with sunny intervals.	24.2	7.4	74	E/NE	24.2
28-Apr-23	Fri	Moderate easterly winds.	26.4	8	76.7	E/NE	26.4
29-Apr-23	Sat	Hot with sunny periods during the day.	26.7	7.9	78	E	26.7
30-Apr-23	Sun	Mainly cloudy.	26.5	8.2	75	E/NE	26.5
1-May-23	Mon	Mainly cloudy. Sunny intervals	0.3	26.1	7	71.7	E/SE
2-May-23	Tue	Moderate easterly winds, fresh offshore	0	25.2	7	71.2	E/NE
3-May-23	Wed	Sunny periods	0.1	21.2	8.7	78.7	E/NE
4-May-23	Thu	Cloudy periods	0	28.4	8.7	77.5	S/SE
5-May-23	Fri	Mainly fine. Hot	0	22.2	5	91.2	E/NE
6-May-23	Sat	Mainly fine and hot	0	24.7	6.8	88	E/NE
7-May-23	Sun	Mainly cloudy with occasional showers.	35.5	26.5	7	87	S/SE
8-May-23	Mon	Showers will ease off gradually later.	39.2	22	6	90	N/NE
9-May-23	Tue	Isolated thunderstorms	0.1	24.4	6.2	80.7	E/NE
10-May-23	Wed	Mainly cloudy tonight.	0	24.3	8.5	73.5	E/NE
11-May-23	Thu	Sunny periods.	0.5	24.2	6.2	80.2	NE
12-May-23	Fri	Mainly cloudy tonight.	Trace	24.2	3.7	80.2	E/NE
13-May-23	Sat	Light to moderate east to northeasterly winds.	9.5	21.2	3.7	98.5	NE
14-May-23	Sun	Mainly cloudy.	39.9	21.5	3.5	91	NE
15-May-23	Mon	Light to moderate south to southeasterly winds.	0.1	25.3	5	82.5	W/NW
16-May-23	Tue	Hot with sunny periods.	0.4	25.9	8.7	85	S/SE
17-May-23	Wed	Mainly cloudy with a few showers.	32.7	28	8	87.5	S/SE
18-May-23	Thu	Hot with sunny periods	0	29.6	6.2	80.2	S/SE
19-May-23	Fri	Hot with sunny periods	0	29.1	7.2	87	S/SE
20-May-23	Sat	Moderate south to southwesterly winds.	Trace	29.3	7.9	81.2	S/SE
21-May-23	Sun	A few showers.	1.5	29.6	8.5	81.5	S/SE
22-May-23	Mon	Hot with sunny periods.	0	29.8	8.5	77.5	S/SW

Date		Weather	Total Rainfall (mm)	Wetland Park			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
23-May-23	Tue	Mainly cloudy with a few showers.	8.3	Maintenance	8.7	Maintenance	E/NE
24-May-23	Wed	Hot with sunny	14.5	Maintenance	6.2	Maintenance	E/NE
25-May-23	Thu	Light winds.	Trace	Maintenance	7.5	Maintenance	E/NE
26-May-23	Fri	Some haze at first.	0.2	Maintenance	6.9	Maintenance	E/NE
27-May-23	Sat	Light to moderate west to northwesterly winds.	0	29.4	6.5	75.7	E/SE
28-May-23	Sun	Sunny periods during the day.	Trace	29.4	6.2	72	S/SE
29-May-23	Mon	Mainly fine. Very hot during the day. Light winds.	0	28.6	4	73.2	W/SW
30-May-23	Tue	Very hot with a few showers and isolated thunderstorms.	0	31.3	5	74.5	W/SW
31-May-23	Wed	Very hot with sunny periods.	Trace	32.7	7.5	75.7	E/NE
1-Jun-23	Thu	Cloudy with showers.	6	28.9	6.2	80.7	W/SW
2-Jun-23	Fri	Mainly cloudy with a few showers	0	31.4	6.2	71.7	S/SE
3-Jun-23	Sat	Hot with sunny intervals	0.6	31.5	6.2	74.5	E/SE
4-Jun-23	Sun	A few squally thunderstorm.	5.1	30.7	6.2	73.7	E/SE

Appendix E1

Copies of Calibration Certificate of Noise Monitoring Equipment

Certificate of Calibration

校正證書

Certificate No. : C224784
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-1539) Date of Receipt / 收件日期 : 4 August 2022
Description / 儀器名稱 : Integrating Sound Level Meter (EQ009)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2285722
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

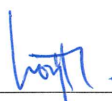
DATE OF TEST / 測試日期 : 20 August 2022

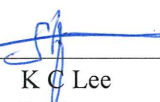
TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By : 
測試 : _____
H T Wong
Assistant Engineer

Certified By : 
核證 : _____
K C Lee
Engineer

Date of Issue : 23 August 2022
簽發日期

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C224784
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C220381
CL281	Multifunction Acoustic Calibrator	AV210017

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFP}	A	F	94.00	1	93.9

6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.1
				114.00		114.2

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C224784
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.0	Ref.
	L _{ASP}		S			94.0	± 0.1
	L _{AIP}		I			94.1	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L _{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L _{ASP}	S	Continuous		106.0	Ref.	
	L _{ASMax}		500 ms		102.0	-4.1 ± 1.0	

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	54.5	-39.4 ± 1.5
					63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.8	-1.1 (+1.5 ; -3.0)
12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)					

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Certificate of Calibration

校正證書

Certificate No. : C224784
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	90.9	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.1	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.7	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
			60 sec.					90	89.8	± 0.5
			5 min.					80	79.4	± 1.0
								70	69.3	± 1.0

- Remarks :
- UUT Microphone Model No. : 4188 & S/N : 2812706
 - Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1
 - Uncertainties of Applied Value :

94 dB	: 31.5 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
	104 dB : 1 kHz	: ± 0.10 dB (Ref. 94 dB)
	114 dB : 1 kHz	: ± 0.10 dB (Ref. 94 dB)
	Burst equivalent level	: ± 0.2 dB (Ref. 110 dB continuous sound level)
 - The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Certificate of Calibration

校正證書

Certificate No. : C226777
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-2282) Date of Receipt / 收件日期 : 8 November 2022

Description / 儀器名稱 : Sound Level Meter (EQ013)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00921191
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 November 2022

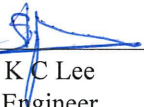
TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By : 
測試 : _____
H T Wong
Assistant Engineer

Certified By : 
核證 : _____
K C Lee
Engineer

Date of Issue : 21 November 2022
簽發日期

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C226777

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C220381
CL281	Multifunction Acoustic Calibrator	AV210017

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.8	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	93.8 (Ref.)
				104.00		103.9
				114.00		113.9

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.8	Ref.
			Slow			93.8	± 0.3

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Certificate of Calibration

校正證書

Certificate No. : C226777

證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	67.6	-26.2 ± 1.5
					125 Hz	77.6	-16.1 ± 1.5
					250 Hz	85.1	-8.6 ± 1.4
					500 Hz	90.5	-3.2 ± 1.4
					1 kHz	93.8	Ref.
					2 kHz	95.0	+1.2 ± 1.6
					4 kHz	94.8	+1.0 ± 1.6
					8 kHz	92.8	-1.1 (+2.1 ; -3.1)
					16 kHz	85.8	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	92.9	-0.8 ± 1.5
					125 Hz	93.6	-0.2 ± 1.5
					250 Hz	93.8	0.0 ± 1.4
					500 Hz	93.8	0.0 ± 1.4
					1 kHz	93.8	Ref.
					2 kHz	93.6	-0.2 ± 1.6
					4 kHz	93.0	-0.8 ± 1.6
					8 kHz	90.9	-3.0 (+2.1 ; -3.1)
					16 kHz	83.9	-8.5 (+3.5 ; -17.0)

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Certificate of Calibration

校正證書

Certificate No. : C226777
證書編號

- Remarks : - UUT Microphone Model No. : UC-59 & S/N : 12910
- Mfr's Spec. : IEC 61672 Class 1
- Uncertainties of Applied Value :
- | | | |
|--------|------------------|--------------------------|
| 94 dB | : 63 Hz - 125 Hz | : ± 0.35 dB |
| | 250 Hz - 500 Hz | : ± 0.30 dB |
| | 1 kHz | : ± 0.20 dB |
| | 2 kHz - 4 kHz | : ± 0.35 dB |
| | 8 kHz | : ± 0.45 dB |
| | 16 kHz | : ± 0.70 dB |
| 104 dB | : 1 kHz | : ± 0.10 dB (Ref. 94 dB) |
| 114 dB | : 1 kHz | : ± 0.10 dB (Ref. 94 dB) |

- The uncertainties are for a confidence probability of not less than 95 %.

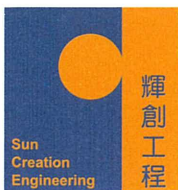
Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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輝
創
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程

輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C226781

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-2282) Date of Receipt / 收件日期 : 8 November 2022

Description / 儀器名稱 : Sound Level Meter (EQ016)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00464681
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(50 \pm 25)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 November 2022

TEST RESULTS / 測試結果


The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

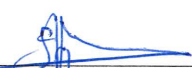
Tested By
測試

:


H T Wong
Assistant Engineer

Certified By
核證

:


K C Lee
Engineer

Date of Issue
簽發日期

:

21 November 2022

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室
c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606

Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Certificate of Calibration

校正證書

Certificate No. : C226781

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C220381
CL281	Multifunction Acoustic Calibrator	AV210017

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.6	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	93.6 (Ref.)
				104.00		103.5
				114.00		113.5

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.6	Ref.
			Slow			93.6	± 0.3

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Certificate of Calibration

校正證書

Certificate No. : C226781

證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	67.3	-26.2 ± 1.5
					125 Hz	77.4	-16.1 ± 1.5
					250 Hz	84.9	-8.6 ± 1.4
					500 Hz	90.3	-3.2 ± 1.4
					1 kHz	93.6	Ref.
					2 kHz	94.8	+1.2 ± 1.6
					4 kHz	94.6	+1.0 ± 1.6
					8 kHz	92.5	-1.1 (+2.1 ; -3.1)
					16 kHz	85.6	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	92.7	-0.8 ± 1.5
					125 Hz	93.4	-0.2 ± 1.5
					250 Hz	93.6	0.0 ± 1.4
					500 Hz	93.6	0.0 ± 1.4
					1 kHz	93.6	Ref.
					2 kHz	93.4	-0.2 ± 1.6
					4 kHz	92.8	-0.8 ± 1.6
					8 kHz	90.6	-3.0 (+2.1 ; -3.1)
					16 kHz	83.7	-8.5 (+3.5 ; -17.0)

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Certificate of Calibration 校正證書

Certificate No. : C226781
證書編號

- Remarks : - UUT Microphone Model No. : UC-59 & S/N : 17434
- Mfr's Spec. : IEC 61672 Class 1
- Uncertainties of Applied Value :
- | | | |
|--------|------------------|--------------------------|
| 94 dB | : 63 Hz - 125 Hz | : ± 0.35 dB |
| | 250 Hz - 500 Hz | : ± 0.30 dB |
| | 1 kHz | : ± 0.20 dB |
| | 2 kHz - 4 kHz | : ± 0.35 dB |
| | 8 kHz | : ± 0.45 dB |
| | 16 kHz | : ± 0.70 dB |
| 104 dB | : 1 kHz | : ± 0.10 dB (Ref. 94 dB) |
| 114 dB | : 1 kHz | : ± 0.10 dB (Ref. 94 dB) |
- The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。



Certificate of Calibration

校正證書

Certificate No. : C221365
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-0258) Date of Receipt / 收件日期 : 14 February 2022
Description / 儀器名稱 : Sound Level Meter (EQ018)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00809405
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 12 March 2022


TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Fluke Everett Service Center, USA
- Agilent Technologies / Keysight Technologies

Tested By : 
測試 : K C Lee
Engineer

Certified By : 
核證 : H C Chan
Engineer

Date of Issue : 16 March 2022
簽發日期

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C221365

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C220381
CL281	Multifunction Acoustic Calibrator	AV210017

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	94.0	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.3

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Certificate of Calibration

校正證書

Certificate No. : C221365
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.5
					250 Hz	85.4	-8.6 ± 1.4
					500 Hz	90.8	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.0	+1.2 ± 1.6
					4 kHz	94.7	+1.0 ± 1.6
					8 kHz	92.9	-1.1 (+2.1 ; -3.1)
					16 kHz	85.5	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.1	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.6	-0.2 ± 1.6
					4 kHz	92.9	-0.8 ± 1.6
					8 kHz	91.0	-3.0 (+2.1 ; -3.1)
					16 kHz	83.5	-8.5 (+3.5 ; -17.0)

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Certificate of Calibration

校正證書

Certificate No. : C221365
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 16463

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	16 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

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The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration 校正證書

Certificate No. : C231629
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC23-0436) Date of Receipt / 收件日期 : 28 February 2023
Description / 儀器名稱 : Sound Level Meter (EQ021)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52A
Serial No. / 編號 : 00620666
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 21 March 2023

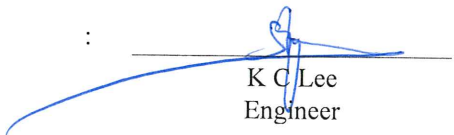
TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed specified limits.
These limits refer to manufacturer's published tolerances as requested by the customer.
The results are detailed in the subsequent page(s).

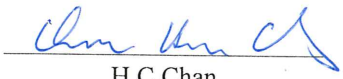
The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By
測試


K C Lee
Engineer

Certified By
核證


H C Chan
Engineer

Date of Issue : 21 March 2023
簽發日期

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Certificate of Calibration

校正證書

Certificate No. : C231629

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C230306
CL281	Multifunction Acoustic Calibrator	AV210017

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	94.0	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 61672 Class 1 Limit : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	94.0	Ref.
			Slow				± 0.3

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Certificate No. : C231629

證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.8	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					16 kHz	86.1	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Limit (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					16 kHz	84.1	-8.5 (+3.5 ; -17.0)

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Certificate No. : C231629
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Remarks : - UUT Microphone Model No. : UC-59 & S/N : 21627

- Mfr's Limit : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	16 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606

Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



Certificate of Calibration 校正證書

Certificate No. : C226780
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-2282) Date of Receipt / 收件日期 : 8 November 2022
Description / 儀器名稱 : Sound Calibrator (EQ087)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-74
Serial No. / 編號 : 34657231
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(50 \pm 25)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 November 2022

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

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

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By : 
測試 : _____
H T Wong
Assistant Engineer

Certified By : 
核證 : _____
K C Lee
Engineer

Date of Issue : 21 November 2022
簽發日期

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C226780

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
2. The results presented are the mean of 3 measurements at each calibration point.
3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C223647
CL281	Multifunction Acoustic Calibrator	AV210017
TST150A	Measuring Amplifier	C221750

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.1	± 0.3	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.001	1 kHz $\pm 1\%$	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

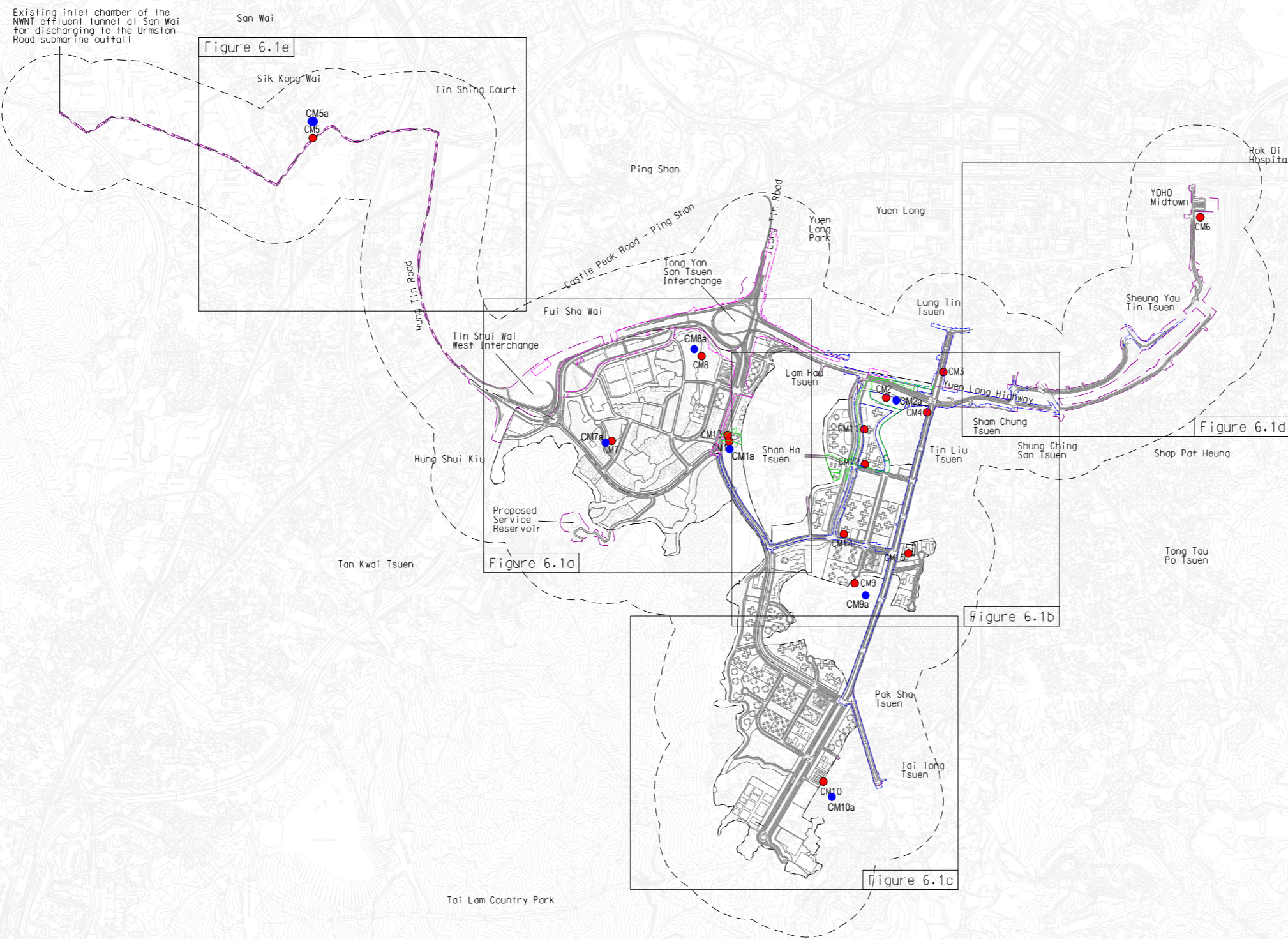
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Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Appendix E2

Locations of Noise Monitoring Stations



- Legend
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 300m Assessment Area
 - R5 (Existing Development Area within PDA)
 - Construction Airborne Noise Monitoring Station
 - Proposed Alternative Airborn Noise Monitoring Station
 - C1 SITE BOUNDARY
 - C2 SITE BOUNDARY
 - C3 SITE BOUNDARY
 - Alternative Building Orientation

Rev	Description	By	Date
B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17


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Drawing title
 Locations of Construction Noise Monitoring Stations (Sheet 1 of 6)

Drawing no. Figure 6.1		Rev. B	
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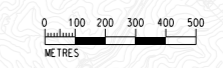
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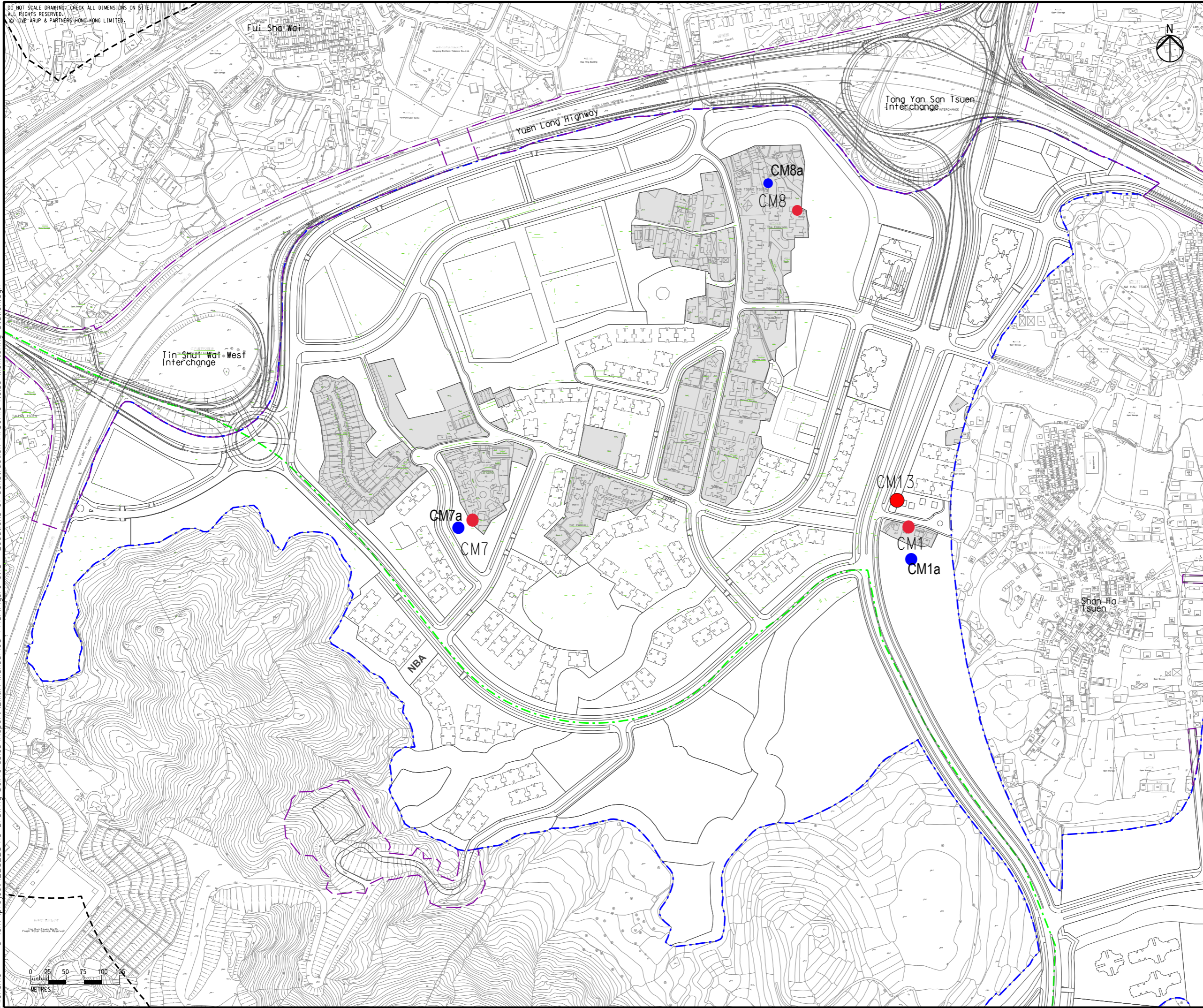


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- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 300m Assessment Area
 - R5 (Existing Development Area within PDA)
 - Construction Airborne Noise Monitoring Station
 - Proposed alternative Construction Airborn Noise Monitoring Station

Rev	Description	By	Date
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Drawing title
Locations of Construction Noise Monitoring Stations (Sheet 2 of 6)

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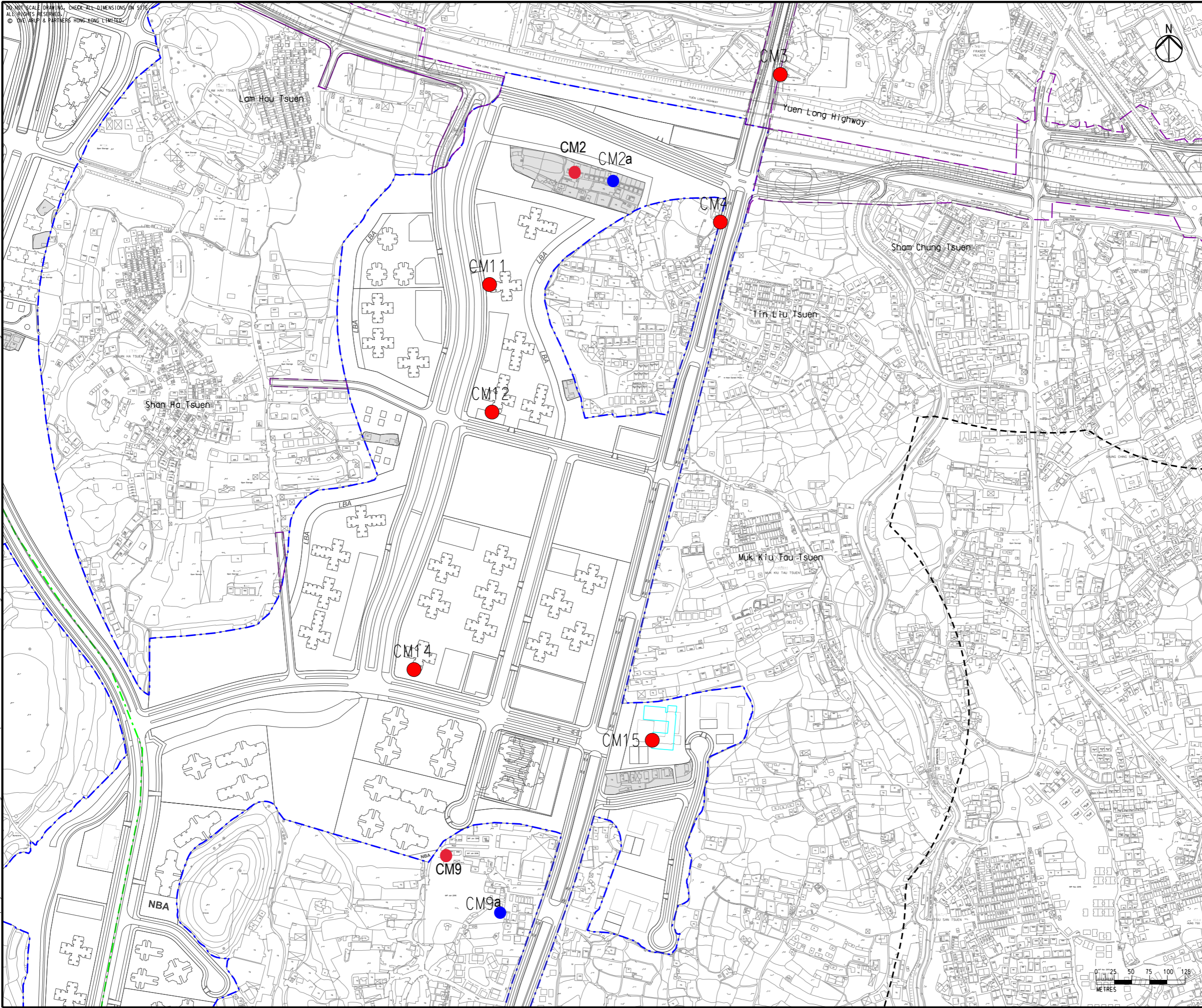
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- Legend
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 300m Assessment Area
 - R5 (Existing Development Area within PDA)
 - Construction Airborne Noise Monitoring Station
 - Alternative Building Orientation
 - Proposed alternative Construction Airborn Noise Monitoring Station

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Drawing title
 Locations of Construction Noise Monitoring Stations (Sheet 3 of 6)

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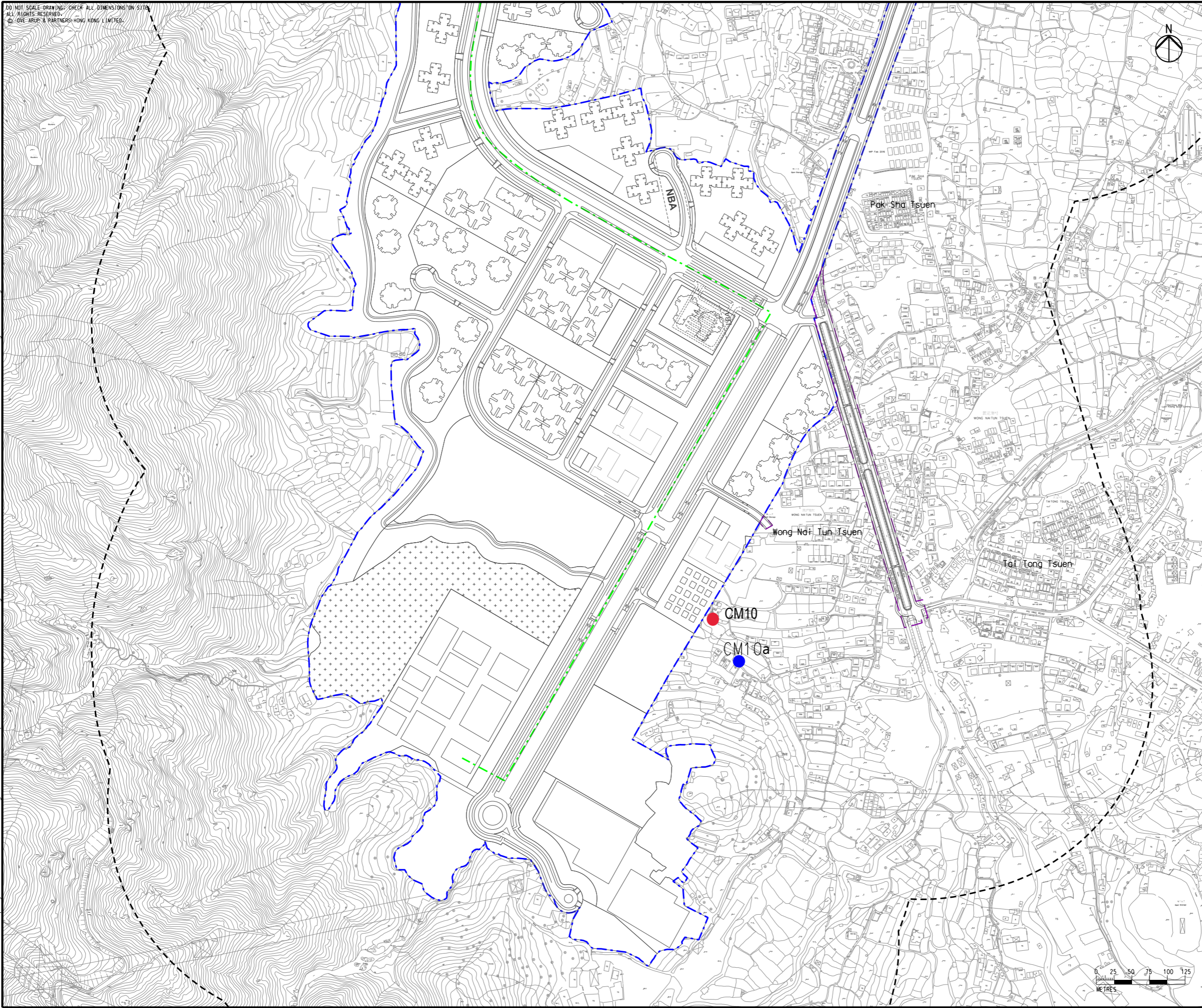
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- Legend
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 300m Assessment Area
 - R5 (Existing Development Area within PDA)
 - Construction Airborne Noise Monitoring Station
 - Proposed alternative Construction Airborn Noise

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 Locations of Construction Noise Monitoring Stations
 (Sheet 4 of 6)

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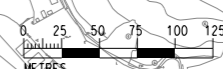
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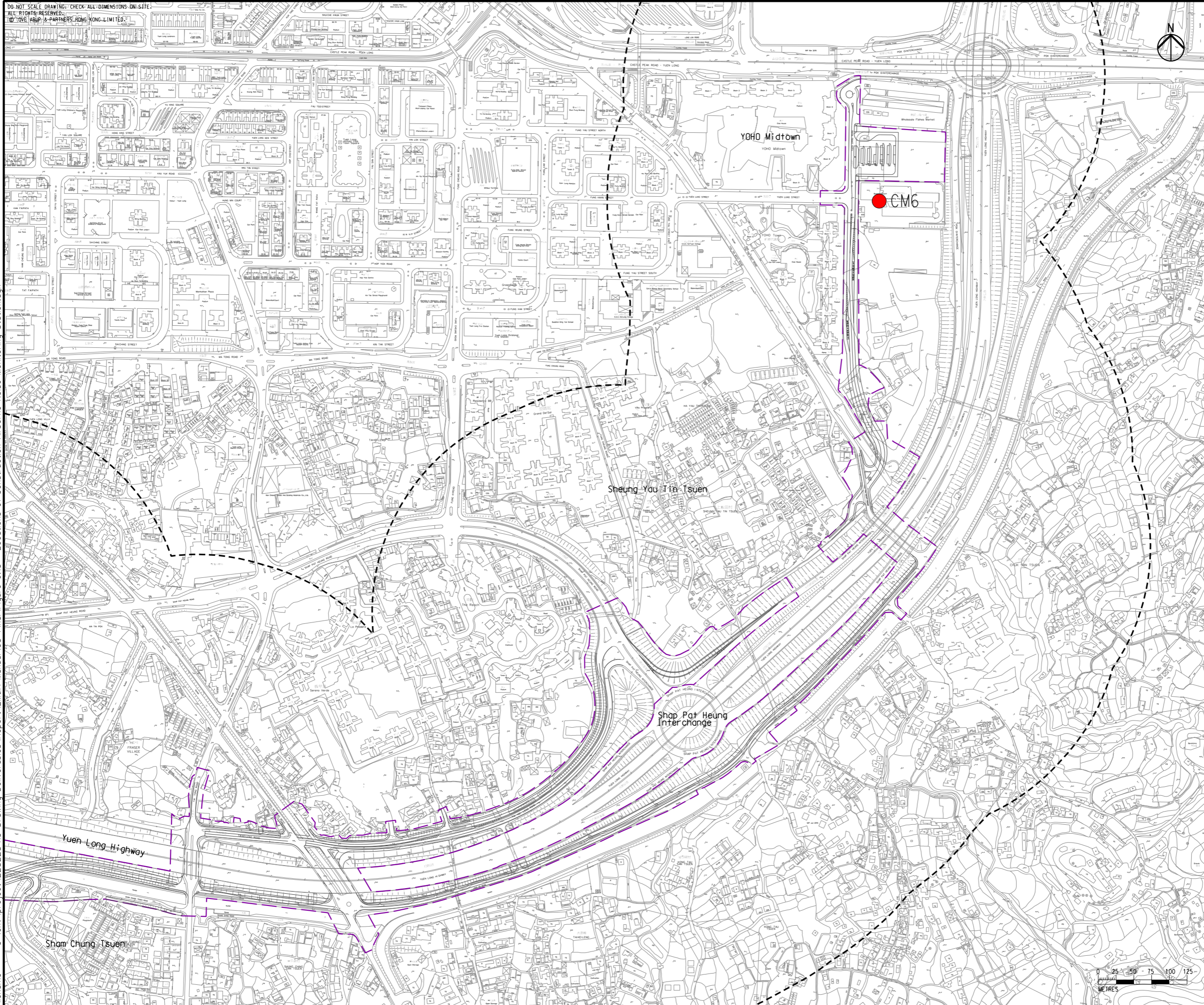
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- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 300m Assessment Area
 - R5 (Existing Development Area within PDA)
 - Construction Airborne Noise Monitoring Station

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 Locations of Construction Noise Monitoring Stations
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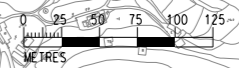


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Legend

- [---] Potential Development Area (PDA)
- [---] Works Boundary Outside PDA
- [---] New Sewer from YLS STW to the Existing Inlet Chamber of the NWT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
- 300m Assessment Area
- R5 (Existing Development Area within PDA)
- Construction Airborne Noise Monitoring Station
- Proposed alternative Construction Airborn Noise Monitoring Station

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 Locations of Construction Noise Monitoring Stations (Sheet 6 of 6)

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Appendix E3

Detailed Baseline Noise Monitoring Data

CEDD CONTRACT NO. WD/07/2022 - ENVIRONMENTAL TEAM FOR Yuen Long South First Phase Development

Baseline Noise Measurement Result Data - CM2a

Measurement				Reference				Reference				Reference				Reference				Reference				Reference																				
Date		Time		L _{eq}		L ₁₀		L ₅₀		L ₉₀		L _{eq}		L ₁₀		L ₅₀		L ₉₀		L _{eq}		L ₁₀		L ₅₀		L ₉₀		L _{eq}		L ₁₀		L ₅₀		L ₉₀		L _{eq}		L ₁₀		L ₅₀		L ₉₀		
Year	Month	Day	Hour	LAeq	LA10	LA50	LA90	LAeq	LA10	LA50	LA90	LAeq	LA10	LA50	LA90	LAeq	LA10	LA50	LA90	LAeq	LA10	LA50	LA90	LAeq	LA10	LA50	LA90	LAeq	LA10	LA50	LA90	LAeq	LA10	LA50	LA90	LAeq	LA10	LA50	LA90	LAeq	LA10	LA50	LA90	
2023	03	01	11:00	60.5	66.0	62.5	58.5	58.5	54.0	54.0	50.0	50.0	54.5	58.0	58.0	54.0	54.0	50.0	50.0	50.0	50.0	54.5	58.0	58.0	54.0	54.0	50.0	50.0	54.5	58.0	58.0	54.0	54.0	50.0	50.0	50.0	54.5	58.0	58.0	54.0	54.0	50.0	50.0	50.0

Wednesday 8/29/2023				Thursday 8/30/2023				Friday 8/31/2023				Saturday 9/1/2023				Sunday 9/2/2023				Monday 9/3/2023				Tuesday 9/4/2023				Wednesday 9/5/2023				Thursday 9/6/2023																													
Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO	Time	Lane	LAMP (20min)	LAPSO																		
15:27	60.1	57.9	58	15:27	62.2	64.3	58	15:29	70.2	62.2	58.5	15:29	58.3	59.3	57.2	15:29	60.1	61.1	58.4	15:29	60.4	61.2	59.4	15:29	59.8	61.1	57.9	15:29	58.4	58.9	54.9	15:29	56.7	57.8	55.8	15:29	61.3	61.7	58.1	15:29	59.8	61.1	57.2	15:29	56.9	57.2	55.8	15:29	55.9	61.1	57.2	15:29	56.9	57.8	55.8	15:29	55.9	57.8	55.8	15:29	55.9

Remark: * The highlighted data is incomplete due to maintenance, and supplementary measurements have been conducted to ensure that the baseline data covers a full two-week period.

CEDD CONTRACT NO. WD/07/2022 - ENVIRONMENTAL TEAM FOR Yuen Long South First Phase Development
Baseline Noise Measurement Result Data - CM3

Time	M200					M400					M800					M1600					M3200					M6400					M12800									
	L _{max}		L _{min}		L _{avg}	L _{max}		L _{min}		L _{avg}	L _{max}		L _{min}		L _{avg}	L _{max}		L _{min}		L _{avg}	L _{max}		L _{min}		L _{avg}	L _{max}		L _{min}		L _{avg}	L _{max}		L _{min}		L _{avg}					
	L ₁	L ₂	L ₁	L ₂		L ₁	L ₂	L ₁	L ₂		L ₁	L ₂	L ₁	L ₂		L ₁	L ₂	L ₁	L ₂		L ₁	L ₂	L ₁	L ₂		L ₁	L ₂	L ₁	L ₂		L ₁	L ₂	L ₁	L ₂						
00:00	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1	68.1

CEDD CONTRACT NO. WD/07/2022 - ENVIRONMENTAL TEAM FOR Yuen Long South First Phase Development
Baseline Noise Measurement Result Data - CM4

Table with columns for Measurement Location (e.g., L1A01, L1A02), Date (2022), Time, and Noise Level (LAeq). The table contains a dense grid of noise measurement data points across various locations and times.

Appendix E3 Detailed Baseline Noise Monitoring Data
Location CM11

Baseline Noise Monitoring results at CM11 (Day Time)																					
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)			4th Leq (5min)			5th Leq (5min)			6th Leq (5min)			Leq30min, dB(A)	Corrected Leq 30min
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)		
24-May-23	14:40	68.7	72.4	60.0	65.3	68.1	59.6	66.8	71.1	59.5	67.2	70.5	59.9	68.1	72.1	59.9	65.5	68.7	59.3	67.1	70.1
28-May-23	11:04	65.6	64.0	60.7	60.9	62.0	59.6	57.5	59.5	48.0	52.3	52.6	45.6	50.0	52.5	45.2	47.0	49.6	44.3	59.8	62.8
30-May-23	12:09	52.6	53.8	48.7	53.2	54.0	49.5	50.6	51.9	49.0	53.6	53.6	50.4	52.6	49.6	49.3	53.3	55.0	50.7	52.8	55.8
4-Jun-23	14:06	50.0	53.4	44.2	47.8	5.2	44.8	60.6	66.0	46.0	65.8	66.3	64.9	63.9	65.2	59.7	60.0	61.1	59.4	61.5	64.5

min	55.8
max	70.1
average	63.3

Baseline Noise Monitoring results at Evening Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	22:05	58.3	53.6	49.7	53.1	51.7	48.7	51.0	52.9	47.8
28-May-23	21:02	52.2	54.3	45.1	51.0	52.8	44.8	49.3	51.8	45.3
30-May-23	21:11	52.2	54.5	47.0	51.5	54.4	46.7	69.1	52.5	45.2
4-Jun-23	22:15	49.9	50.6	39.4	45.3	46.7	40.2	48.0	52.6	41.3

min	45.3
max	69.1
average	52.6

Baseline Noise Monitoring results at Night Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	23:43	49.9	49.6	47.3	49.3	50.6	47.8	48.9	49.5	48.3
28-May-23	23:52	49.6	50.3	45.9	48.2	49.2	47.2	48.0	48.1	47.4
30-May-23	23:32	50.7	52.0	47.7	49.6	51.7	47.6	48.5	48.4	45.1
4-Jun-23	0:31	50.6	51.8	47.6	48.5	49.5	40.3	47.6	49.2	44.2

min	47.6
max	50.7
average	49.1

Appendix E3 Detailed Baseline Noise Monitoring Data
Location CM12

Baseline Noise Monitoring results at CM12 (Day Time)																					
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)			4th Leq (5min)			5th Leq (5min)			6th Leq (5min)			Leq30min, dB(A)	Corrected Leq 30min
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)		
24-May-23	15:18	67.8	72.2	54.9	66.8	71.4	54.7	67.4	71.9	53.1	63.5	66.4	53.2	67.9	71.8	54.0	67.3	71.7	52.7	67.0	70.0
28-May-23	11:36	49.0	50.7	40.4	48.4	52.4	42.2	50.1	53.9	40.2	50.3	54.5	42.9	47.3	49.3	41.2	48.1	51.7	42.5	49.0	52.0
30-May-23	12:43	53.4	54.3	50.3	54.8	56.8	50.9	54.8	55.7	50.7	55.8	58.5	53.3	57.3	57.7	55.5	57.4	57.9	56.2	55.8	58.8
4-Jun-23	13:34	53.2	53.0	38.8	45.9	47.9	41.9	51.7	53.6	41.9	54.5	57.0	44.8	46.8	49.5	42.2	50.1	53.2	44.2	51.4	54.4

min	52.0
max	70.0
average	58.8

Baseline Noise Monitoring results at Evening Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	22:25	51.7	54.2	44.5	45.9	47.3	43.9	46.1	47.5	44.3
28-May-23	21:21	57.2	56.5	45.1	52.9	51.9	39.0	52.1	46.8	38.5
30-May-23	21:29	49.8	50.8	41.4	42.7	44.0	41.0	48.6	51.2	41.7
4-Jun-23	21:56	47.9	48.2	42.3	57.9	53.0	43.5	61.4	56.1	42.6

min	42.7
max	61.4
average	51.2

Baseline Noise Monitoring results at Night Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	23:21	50.9	51.7	49.7	52.2	52.2	50.5	50.8	51.4	50.2
28-May-23	0:12	41.3	42.7	39.3	41.0	42.4	39.3	43.7	45.7	39.4
30-May-23	23:55	44.8	45.2	41.1	49.0	48.6	40.8	42.7	44.8	40.5
4-Jun-23	0:05	46.4	45.0	39.6	43.8	43.5	40.2	44.6	48.2	39.4

min	41.0
max	52.2
average	45.9

Appendix E3 Detailed Baseline Noise Monitoring Data
Location CM13

Baseline Noise Monitoring results at CM13 (Day Time)																					
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)			4th Leq (5min)			5th Leq (5min)			6th Leq (5min)			Leq30min, dB(A)	Corrected Leq 30min
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)		
24-May-23	13:38	68.7	72.4	60.0	65.3	68.1	59.6	66.8	71.1	59.5	67.2	70.5	59.9	68.1	72.1	59.9	65.5	68.7	59.3	67.1	70.1
28-May-23	10:23	53.9	54.2	45.4	47.2	48.9	45.6	47.3	48.9	45.8	47.2	49.2	45.9	47.6	49.5	45.9	46.6	48.9	40.1	49.3	52.3
30-May-23	11:21	70.6	72.1	68.4	70.3	71.5	69.1	70.7	71.5	69.3	70.0	71.2	68.5	70.4	71.4	68.9	70.0	70.9	69.2	70.3	73.3
4-Jun-23	15:42	52.6	52.2	44.4	46.8	48.7	43.4	47.2	49.0	44.3	46.6	48.5	43.8	52.5	51.5	42.8	56.5	56.1	48.3	52.0	55.0

min	52.3
max	73.3
average	62.7

Baseline Noise Monitoring results at Evening Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	20:32	47.8	49.9	40.6	49.0	46.0	40.2	43.3	46.0	40.1
28-May-23	22:30	50.9	48.0	41.1	50.2	52.6	41.4	49.2	52.4	42.1
30-May-23	20:19	45.5	47.0	44.0	44.8	45.4	44.2	45.1	45.9	44.3
4-Jun-23	20:12	50.0	50.0	47.2	50.2	51.6	47.7	49.7	52.3	46.5

min	43.3
max	50.9
average	48.0

Baseline Noise Monitoring results at Night Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	0:54	45.4	47.3	39.5	41.8	42.5	39.1	43.0	43.3	39.9
28-May-23	23:05	46.5	48.4	42.3	46.8	47.3	41.4	48.4	49.7	43.6
30-May-23	23:10	44.3	47.3	42.1	44.5	47.1	42.5	45.4	47.3	44.2
4-Jun-23	23:18	44.5	46.6	42.7	44.8	46.0	43.1	48.1	51.2	43.8

min	41.8
max	48.4
average	45.3

Appendix E3 Detailed Baseline Noise Monitoring Data
Location CM14

Baseline Noise Monitoring results at CM14 (Day Time)																					
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)			4th Leq (5min)			5th Leq (5min)			6th Leq (5min)			Leq30min, dB(A)	Corrected Leq 30min
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)		
24-May-23	15:59	57.1	57.5	56.8	57.6	58.7	56.8	57.5	58.6	57.0	59.5	61.7	57.0	58.7	60.5	53.8	49.6	50.4	48.6	57.5	60.5
28-May-23	12:13	56.9	61.4	44.8	56.1	60.4	42.4	43.6	46.4	40.7	43.2	46.4	41.1	42.7	44.5	40.8	53.8	55.8	41.5	53.0	56.0
30-May-23	13:19	56.8	57.5	56.4	56.9	57.4	56.6	58.0	61.1	56.6	57.0	58.0	56.4	57.9	58.4	56.3	57.3	58.1	55.3	57.3	60.3
4-Jun-23	13:02	45.2	47.1	41.8	43.3	44.7	41.1	52.9	53.7	41.3	53.7	56.7	43.1	47.6	49.2	42.8	48.4	51.1	41.4	50.1	53.1

min	53.1
max	60.5
average	57.5

Baseline Noise Monitoring results at Evening Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	22:44	51.8	53.4	44.7	51.1	54.4	40.1	50.9	54.8	46.2
28-May-23	21:41	46.0	48.5	36.6	38.5	39.6	36.4	45.6	41.0	35.3
30-May-23	21:49	51.4	47.3	41.9	44.0	46.4	42.0	45.1	46.8	43.1
4-Jun-23	21:24	46.4	48.5	43.0	45.4	46.3	43.1	45.0	46.0	43.2

min	38.5
max	51.8
average	46.8

Baseline Noise Monitoring results at Night Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	23:01	53.6	51.8	49.9	51.0	51.1	49.4	53.1	51.2	50.1
28-May-23	0:30	41.7	42.4	39.1	41.7	42.8	39.6	44.8	46.5	40.8
30-May-23	0:14	44.9	44.1	41.3	44.1	46.3	41.7	48.0	51.6	44.2
4-Jun-23	23:47	52.7	53.6	49.7	52.0	52.0	49.2	49.3	50.7	48.0

min	41.7
max	53.6
average	48.1

Appendix E3 Detailed Baseline Noise Monitoring Data
Location CM15

Baseline Noise Monitoring results at CM15 (Day Time)																					
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)			4th Leq (5min)			5th Leq (5min)			6th Leq (5min)			Leq30min, dB(A)	Corrected Leq 30min
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)		
24-May-23	11:30	64.8	67.8	54.7	63.3	66.3	54.4	64.4	67.7	54.7	63.7	67.7	54.7	63.5	66.4	52.6	67.5	73.3	56.0	64.8	67.8
28-May-23	13:10	60.0	62.0	47.0	62.3	64.8	42.8	60.3	63.1	39.8	63.5	67.1	45.0	61.3	64.2	45.3	60.8	64.6	40.4	61.5	64.5
30-May-23	14:10	64.2	67.6	53.1	64.6	66.9	49.8	65.2	68.0	48.9	63.2	67.3	52.6	66.0	69.6	55.8	57.4	59.1	53.7	64.1	67.1
4-Jun-23	14:48	60.7	61.6	49.5	60.6	63.1	44.7	60.1	62.5	43.4	60.3	61.1	41.0	59.0	61.7	45.0	59.2	62.5	52.0	60.0	63.0

min	63.0
max	67.8
average	65.6

Baseline Noise Monitoring results at Evening Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	21:38	62.0	64.5	45.3	60.6	64.2	46.4	58.7	61.8	44.8
28-May-23	20:29	59.9	64.5	47.0	59.4	62.0	46.1	59.0	65.3	47.0
30-May-23	22:20	59.4	62.3	47.7	61.7	62.8	46.7	59.4	63.9	50.2
4-Jun-23	20:49	61.4	64.4	48.8	62.5	65.9	46.9	61.0	61.9	49.5

min	58.7
max	62.5
average	60.4

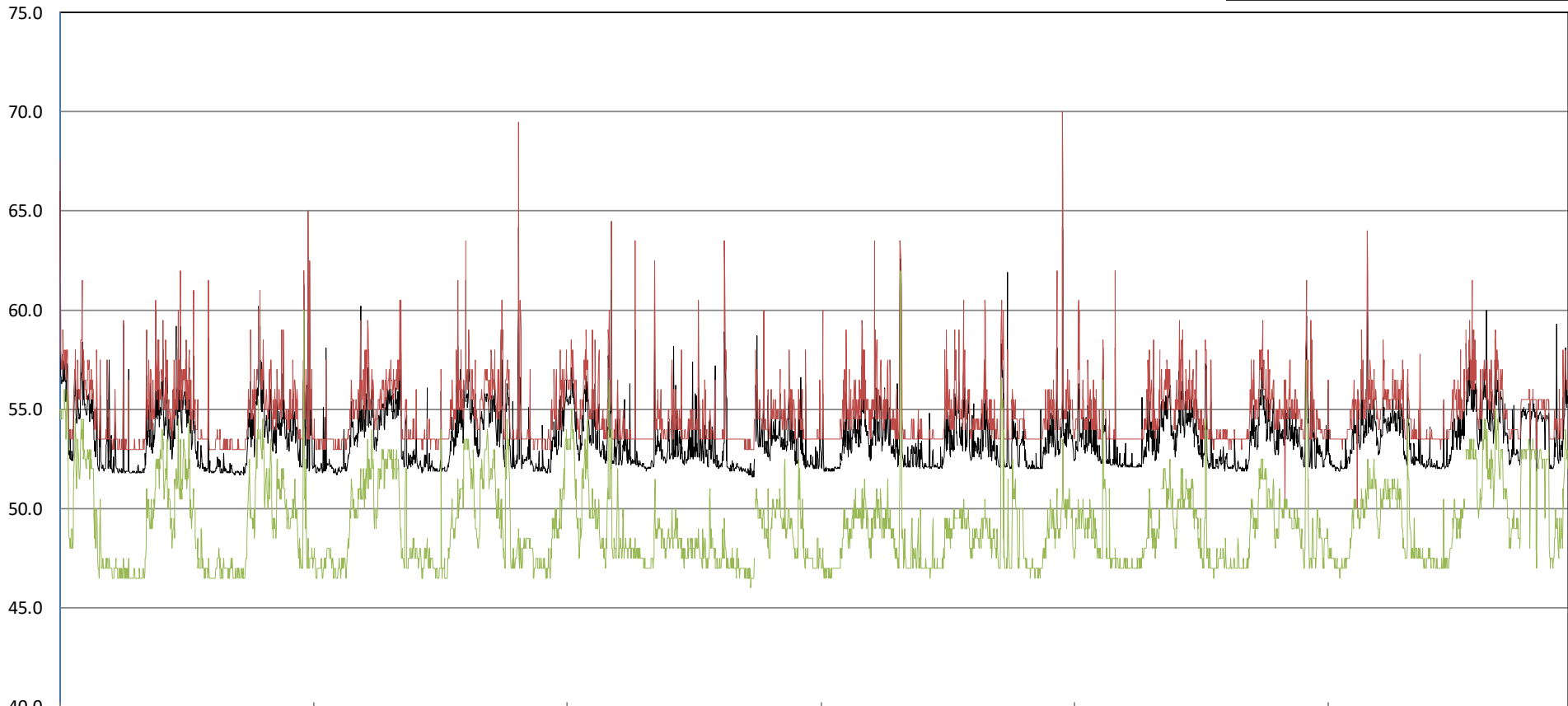
Baseline Noise Monitoring results at Night Time										
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)
24-May-23	0:22	58.5	62.4	46.1	52.3	56.9	48.4	54.2	57.6	43.6
28-May-23	0:57	60.4	62.4	43.8	53.9	59.9	43.3	53.7	58.4	42.9
30-May-23	0:43	61.6	64.7	46.3	58.4	60.9	45.5	52.0	61.7	46.2
4-Jun-23	0:51	58.3	63.1	40.8	61.7	61.0	41.2	58.3	61.1	40.0

min	52.0
max	61.7
average	56.9

Appendix E4

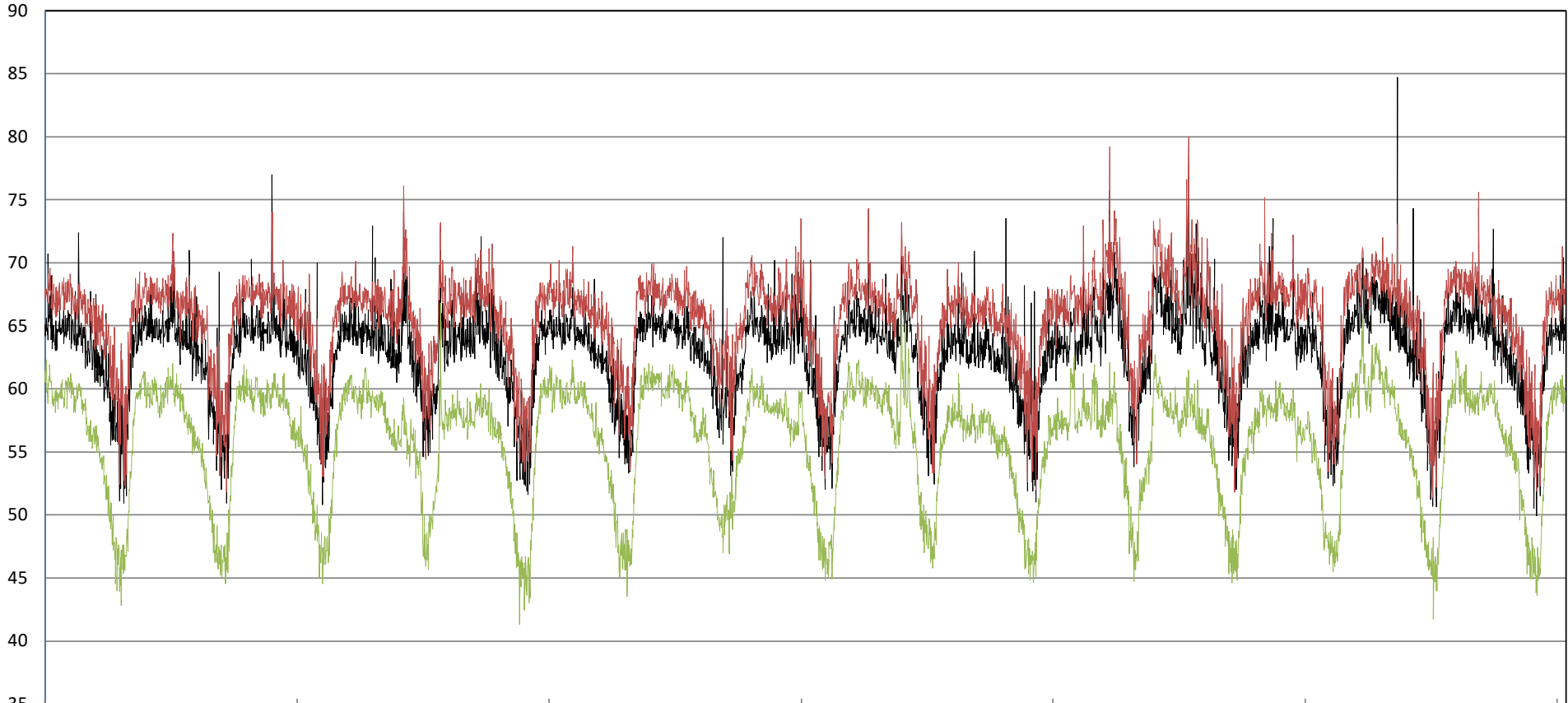
Graphical Presentation of Baseline Noise Monitoring Data

Continous Baseline Noise Monitoring for CM1a



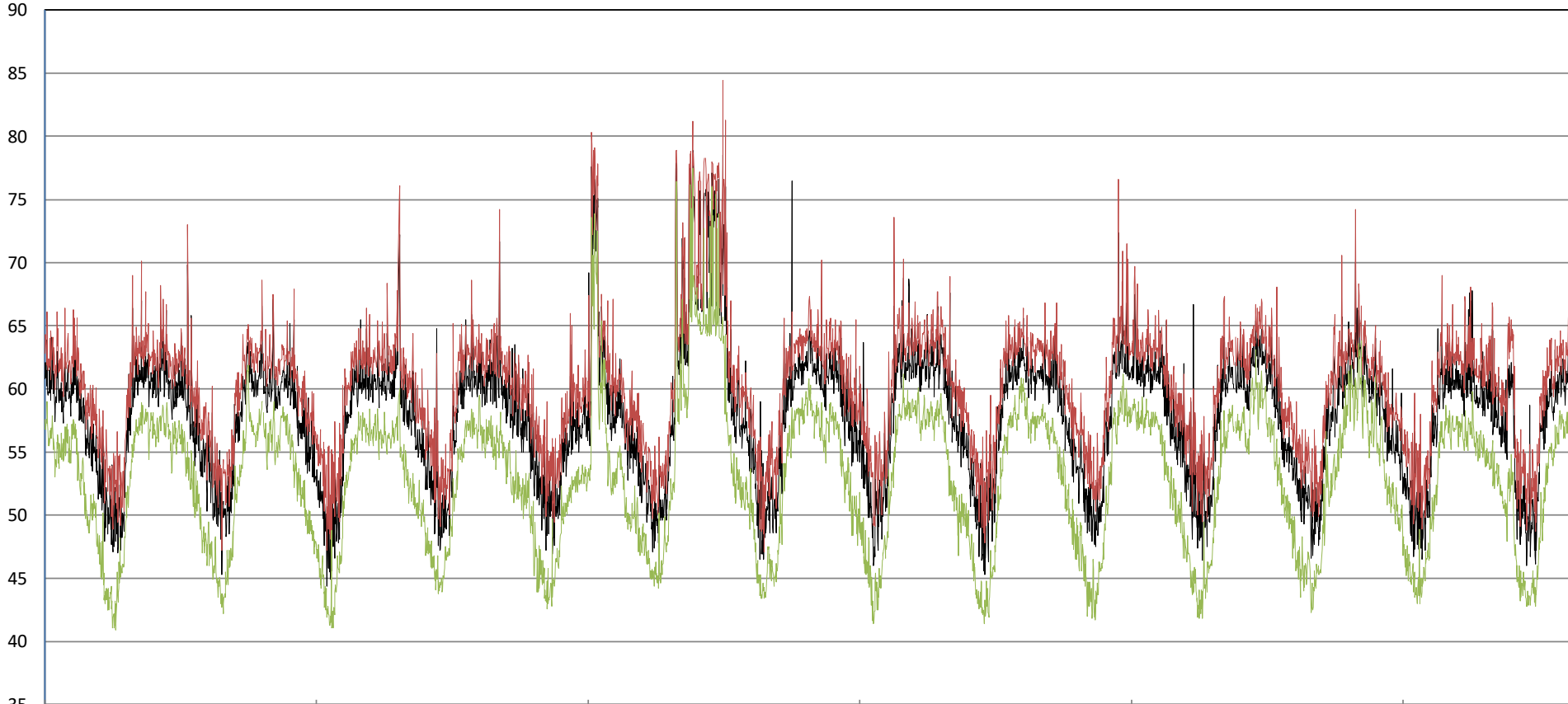
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Continous Baseline Noise Monitoring for CM3



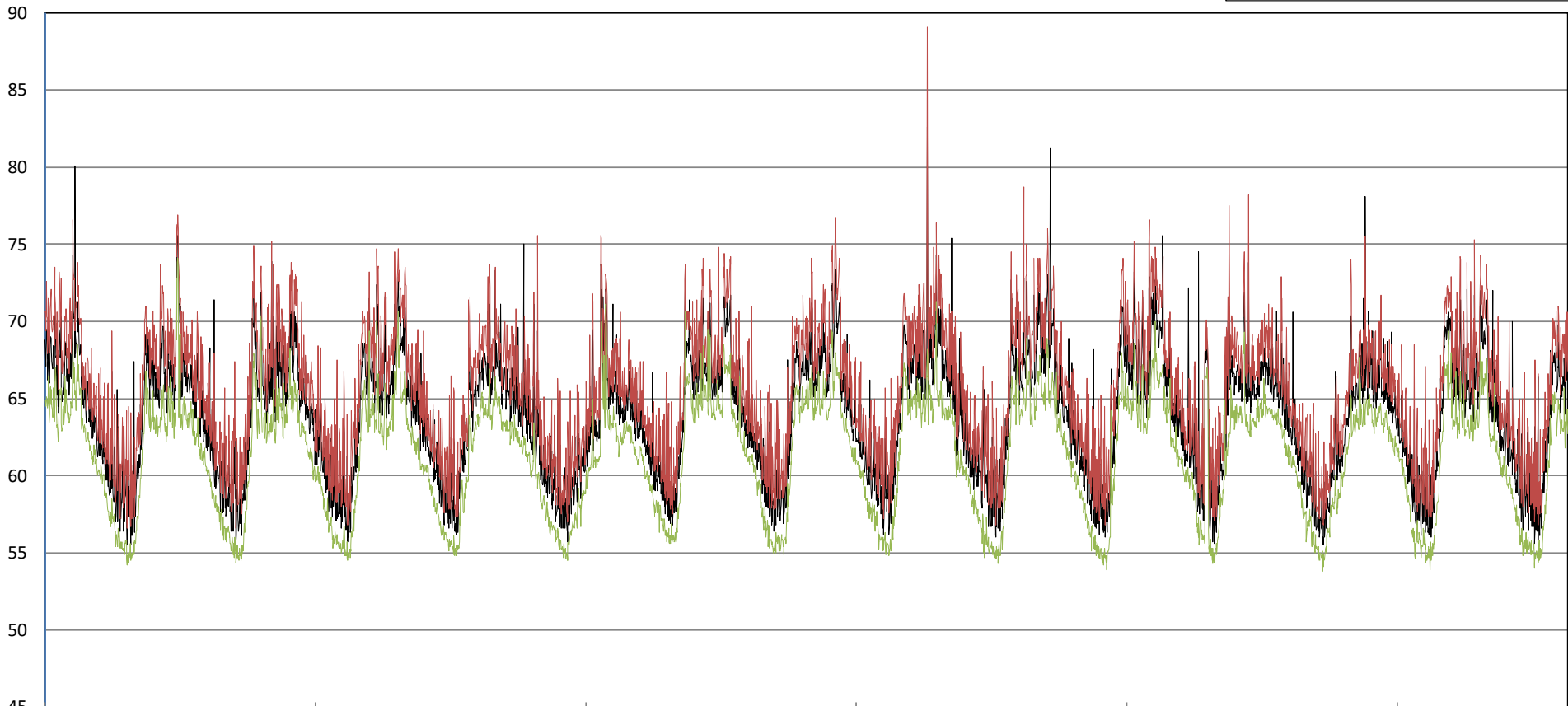
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Continous Baseline Noise Monitoring for CM5a



2 05 2 05 3 05 3 05 4 05 4 05 4 05 5 05 5 05 6 05 6 05 7 05 7 05 8 05 8 05 9 05 9 05 9 05 10 05 10 05 11 05 11 05 12 05 12 05 12 05 13 05 13 05 14 05 14 05 14 05 15 05 15 05 16 05
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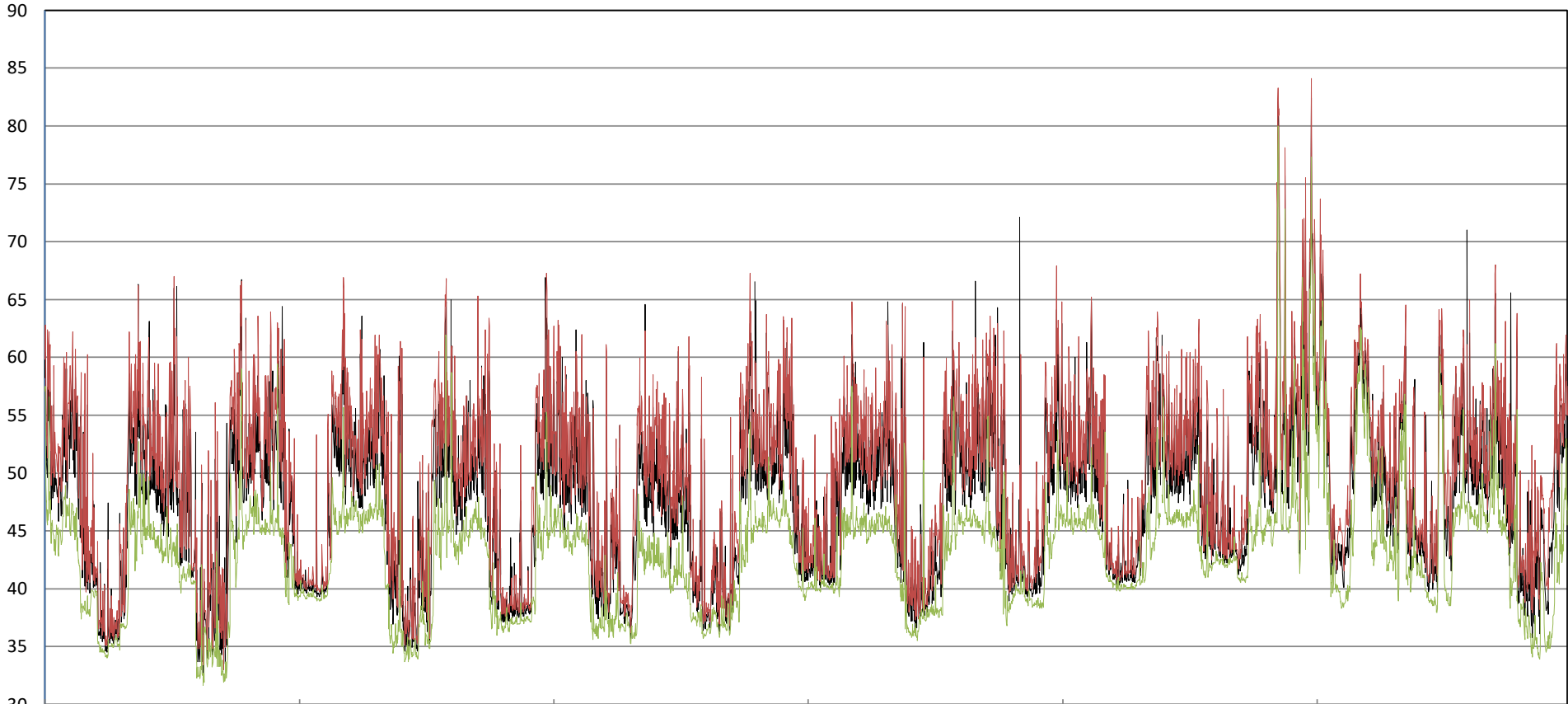
Continous Baseline Noise Monitoring for CM6



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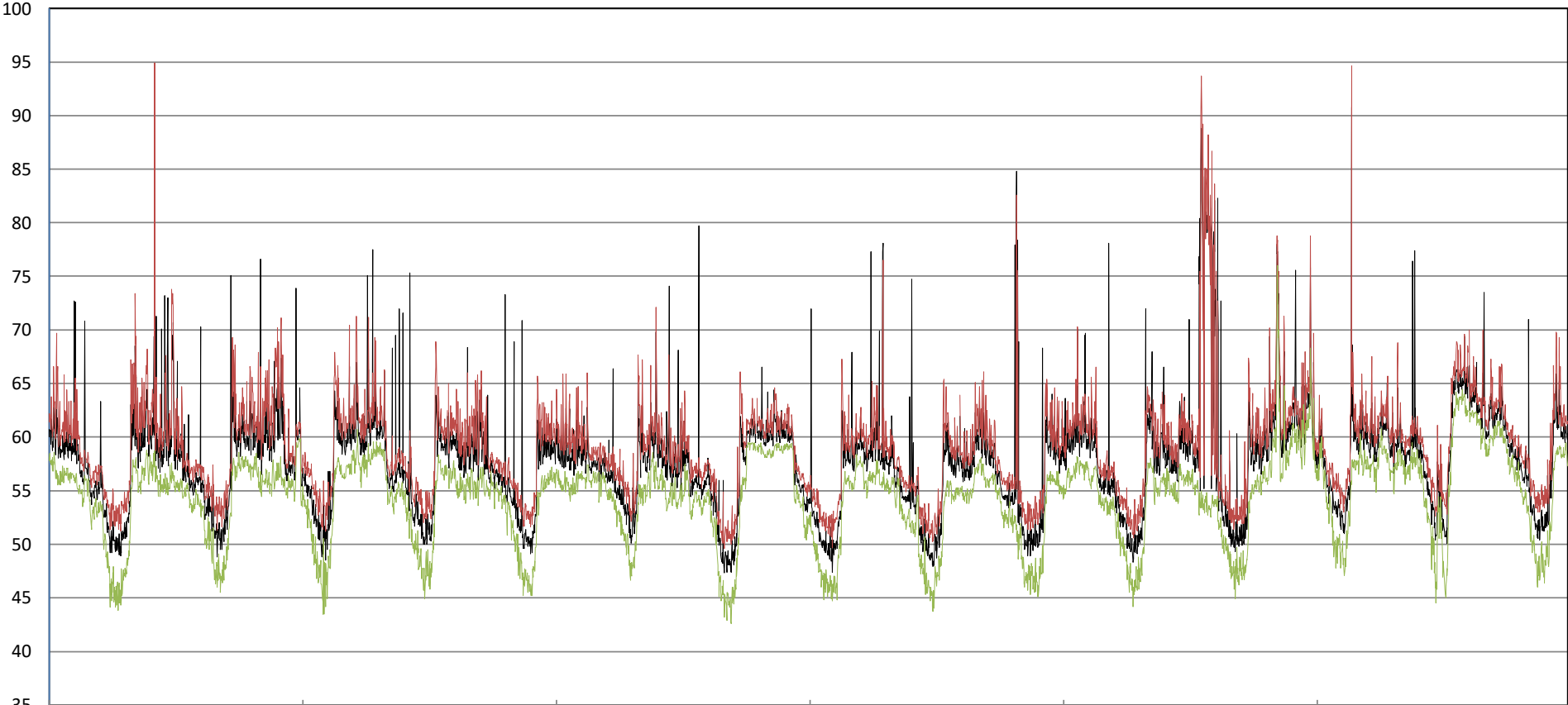
Continous Baseline Noise Monitoring for CM7a

— Leq 5min — L10 — L90



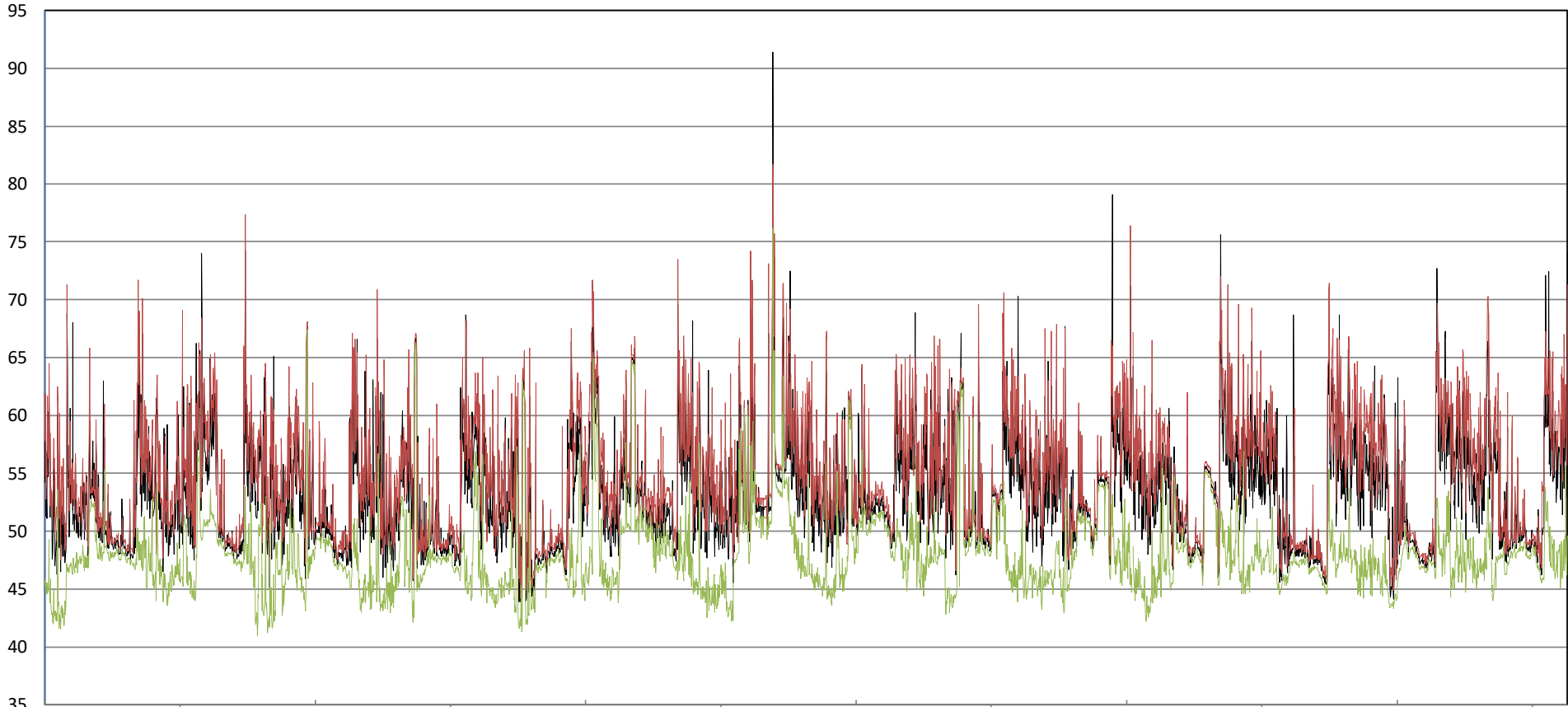
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Continous Baseline Noise Monitoring for CM8a



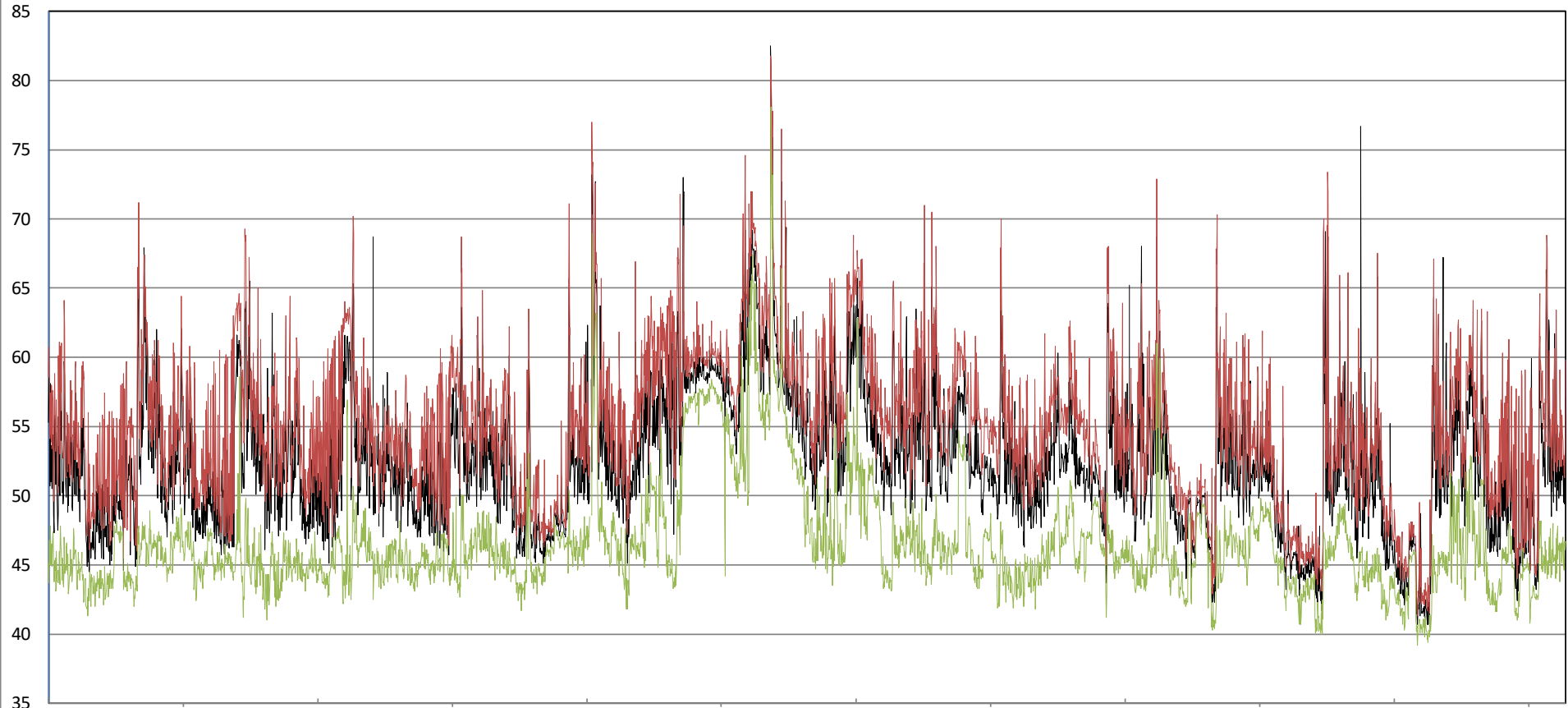
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21 03 2023 18:29
22 03 2023 4:29
22 03 2023 14:22
23 03 2023 0:22
23 03 2023 10:22
23 03 2023 20:22
24 03 2023 6:22
24 03 2023 16:16
25 03 2023 2:16
25 03 2023 12:16
25 03 2023 22:16
26 03 2023 8:16
26 03 2023 18:16
27 03 2023 4:16
27 03 2023 14:11
28 03 2023 0:11

Continous Baseline Noise Monitoring for CM9a



14 04	14 04	15 04	15 04	16 04	16 04	16 04	17 04	17 04	18 04	18 04	18 04	19 04	19 04	20 04	20 04	21 04	21 04	21 04	22 04	22 04	23 04	23 04	23 04	24 04	24 04	25 04	25 04	26 04	26 04	26 04	27 04	27 04	28 04
2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023
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Continuous Baseline Noise Monitoring for CM10a



14 04 2023 9:48 14 04 2023 19:48 15 04 2023 5:48 15 04 2023 15:48 16 04 2023 1:48 16 04 2023 11:48 16 04 2023 21:48 17 04 2023 7:48 17 04 2023 17:41 18 04 2023 3:41 18 04 2023 13:41 18 04 2023 23:41 19 04 2023 9:41 19 04 2023 19:34 20 04 2023 5:34 20 04 2023 15:34 21 04 2023 1:34 21 04 2023 11:25 21 04 2023 21:25 22 04 2023 7:25 22 04 2023 17:25 23 04 2023 3:25 23 04 2023 13:25 23 04 2023 23:25 24 04 2023 9:25 24 04 2023 19:16 25 04 2023 5:16 25 04 2023 15:16 26 04 2023 1:16 26 04 2023 11:16 26 04 2023 21:09 27 04 2023 7:09 27 04 2023 17:09 28 04 2023 3:09

Appendix E5

Photographic Records for Noise Monitoring Stations

Appendix E5 Photographic Records for Noise Monitoring Stations



CM1a



CM2a



CM3



CM4



CM5a



CM6



CM7a



CM8a



CM9a



CM10a



CM11



CM12



CM13



CM14



CM15

Appendix F1

Copies of Calibration Certificate of Water Quality Monitoring Equipment



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES &
CONSULTING
ADDRESS: RM A 20/F., GOLD KING IND BLDG,
NO. 35-41 TAI LIN PAI ROAD,
KWAI CHUNG, N.T.

WORK ORDER: HK2312949
SUB-BATCH: 0
LABORATORY: HONG KONG
DATE RECEIVED: 04-Apr-2023
DATE OF ISSUE: 18-Apr-2023

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type: Multifunctional Meter
Service Nature: Performance Check
Scope: Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 18-April-2023

GENERAL COMMENTS

This report superseded any previous report(s) with same work order number.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2312949
SUB-BATCH: 0
DATE OF ISSUE: 18-Apr-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 18-April-2023 Date of Next Calibration: 18-July-2023

PARAMETERS:

Conductivity

Method Ref: APHA (23rd edition), 2510B

Expected Reading ($\mu\text{S}/\text{cm}$)	Displayed Reading ($\mu\text{S}/\text{cm}$)	Tolerance (%)
146.9	155.6	+5.9
6667	7056	+5.8
12890	13643	+5.8
58670	57773	-1.5
	Tolerance Limit (%)	± 10.0

Dissolved Oxygen

Method Ref: APHA (23rd edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.65	2.71	+0.06
5.61	5.59	-0.02
7.08	7.05	-0.03
	Tolerance Limit (mg/L)	± 0.20

pH Value

Method Ref: APHA (23rd edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.86	-0.14
7.0	6.97	-0.03
10.0	10.07	+0.07
	Tolerance Limit (pH unit)	± 0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2312949
SUB-BATCH: 0
DATE OF ISSUE: 18-Apr-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 18-April-2023 Date of Next Calibration: 18-July-2023

PARAMETERS:

Turbidity

Method Ref: APHA (23rd edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	-0.04	--
4	4.22	+5.5
40	39.62	-1.0
80	75.70	-5.4
400	397.80	-0.5
800	736.18	-8.0
	Tolerance Limit (%)	±10.0

Salinity

Method Ref: APHA (23rd edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.43	+4.3
20	21.18	+5.9
30	32.17	+7.2
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2312949
SUB-BATCH: 0
DATE OF ISSUE: 18-Apr-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 18-April-2023 Date of Next Calibration: 18-July-2023

PARAMETERS:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
6.5	7.2	+0.7
24.5	23.9	-0.6
44.0	43.4	-0.6
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES &
CONSULTING
ADDRESS: RM A 20/F., GOLD KING IND BLDG,
NO. 35-41 TAI LIN PAI ROAD,
KWAI CHUNG, N.T.

WORK ORDER: HK2303241
SUB-BATCH: 0
LABORATORY: HONG KONG
DATE RECEIVED: 21-Jan-2023
DATE OF ISSUE: 31-Jan-2023

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type: Multifunctional Meter

Service Nature: Performance Check

Scope: Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature

Brand Name/ Model No.: [YSI]/ [Professional DSS]

Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]

Date of Calibration: 27-January-2023

GENERAL COMMENTS

This report superseded any previous report(s) with same work order number.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2303241
SUB-BATCH: 0
DATE OF ISSUE: 31-Jan-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 27-January-2023 Date of Next Calibration: 27-April-2023

PARAMETERS:

Conductivity

Method Ref: APHA (23rd edition), 2510B

Expected Reading ($\mu\text{S}/\text{cm}$)	Displayed Reading ($\mu\text{S}/\text{cm}$)	Tolerance (%)
146.9	145.7	-0.8
6667	6485	-2.7
12890	12675	-1.7
58670	54694	-6.8
	Tolerance Limit (%)	± 10.0

Dissolved Oxygen

Method Ref: APHA (23rd edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.64	2.84	+0.20
4.85	5.01	+0.16
6.89	7.03	+0.14
	Tolerance Limit (mg/L)	± 0.20

pH Value

Method Ref: APHA (23rd edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.88	-0.12
7.0	7.08	+0.08
10.0	9.96	-0.04
	Tolerance Limit (pH unit)	± 0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2303241
SUB-BATCH: 0
DATE OF ISSUE: 31-Jan-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 27-January-2023 Date of Next Calibration: 27-April-2023

PARAMETERS:

Turbidity

Method Ref: APHA (23rd edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.75	--
4	4.31	+7.7
40	36.22	-9.5
80	74.31	-7.1
400	395.27	-1.2
800	772.08	-3.5
	Tolerance Limit (%)	±10.0

Salinity

Method Ref: APHA (23rd edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.25	+2.5
20	20.81	+4.0
30	30.80	+2.7
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2303241
SUB-BATCH: 0
DATE OF ISSUE: 31-Jan-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 27-January-2023 Date of Next Calibration: 27-April-2023

PARAMETERS:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
9.0	8.6	-0.4
19.5	18.8	-0.7
40.0	38.6	-1.4
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

A handwritten signature in blue ink, appearing to read 'Nis'.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

Appendix F2

HOKLAS-accreditation Certificate of the Testing Laboratory



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

ALS TECHNICHEM (HK) PTY LIMITED

11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong
香港新界葵涌永業街1-3號忠信針織中心11樓

*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 : 28 February 2020
簽發日期：二零二零年二月二十八日

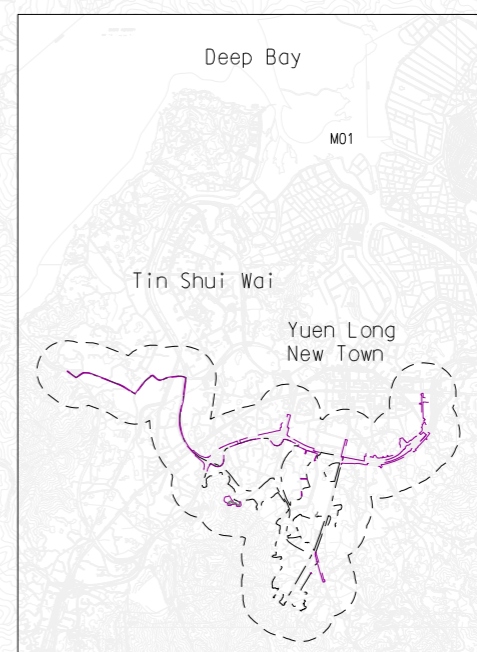
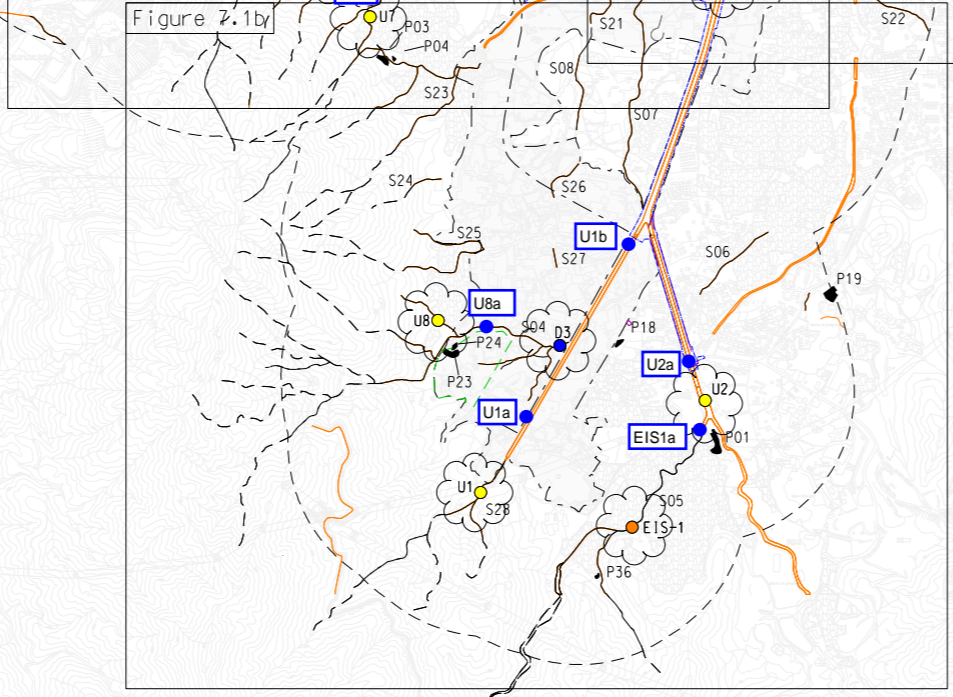
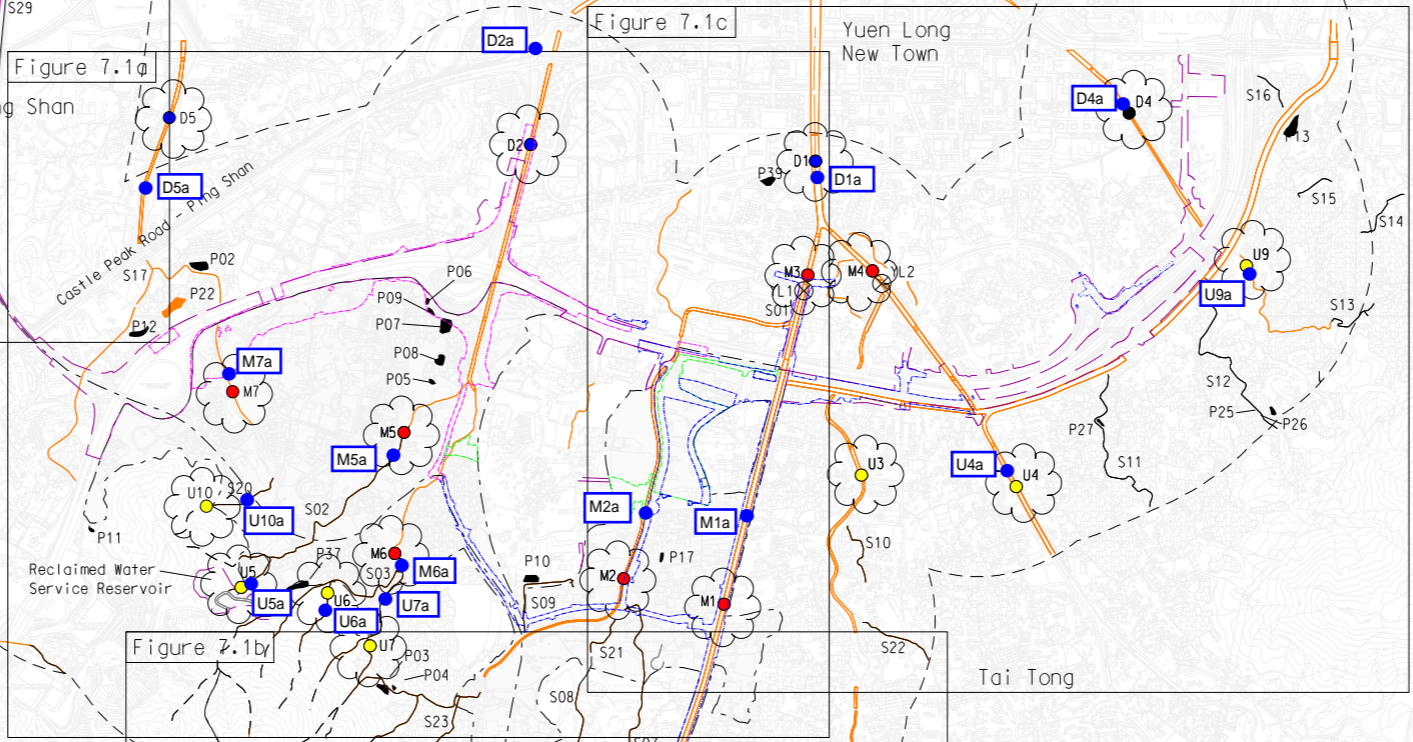
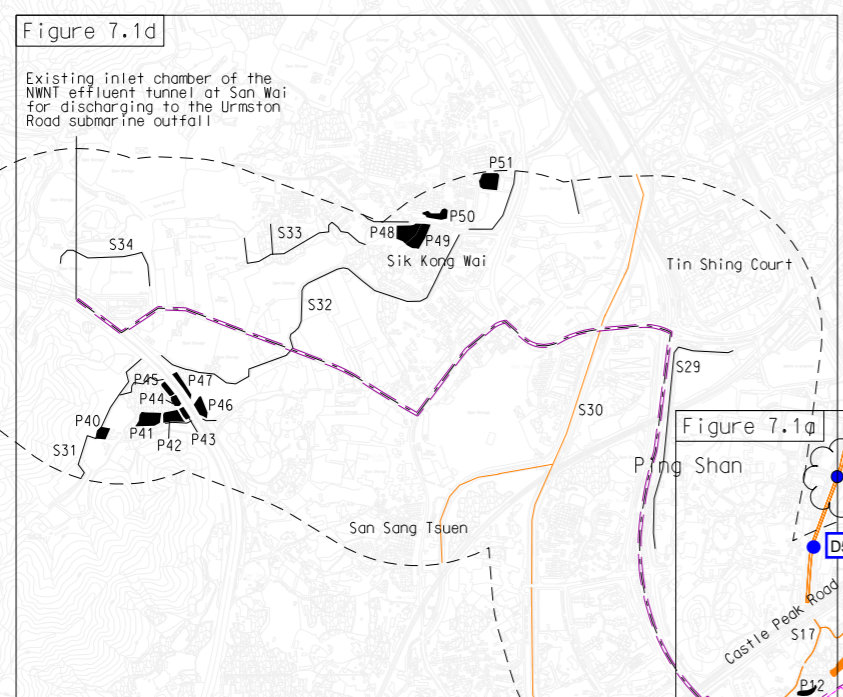
Registration Number : **HOKLAS 066**
註冊號碼：



Date of First Registration : 15 September 1995
首次註冊日期：一九九五年九月十五日

Appendix F3

Locations of Water Quality Monitoring Stations



- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWN Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 500m Assessment Area
 - Reedbed
 - Natural Watercourse
 - Seasonally Watercourse
 - Channelised Watercourse
 - Yuen Ka Tsuen EIS
 - Active Fish Pond
 - Inactive Fish Pond
 - Abandoned Fish Pond
 - EPD Water Monitoring Station
 - Proposed Upstream Water Quality Monitoring Station
 - Proposed Gradient Water Quality Monitoring Station
 - Proposed Impact Water Quality Monitoring Station
 - EIS-1 Proposed EIS Water Quality Monitoring Station
 - Proposed alternative water quality monitoring station
 - C1 SITE BOUNDARY
 - C2 SITE BOUNDARY
 - C3 SITE BOUNDARY

Rev	Description	By	Date
B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17

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Contract No. and Title
 Agreement No. CE 35/2012(CE)
Planning and Engineering Study for Housing Sites in Yuen Long South - Investigation

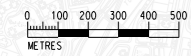
Drawing title
 Locations of Water Quality Sensitive Receivers (Sheet 1 of 5)

Drawing no. Figure 7.1		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
Scale 1:25000 ON A3		Status PRELIMINARY	

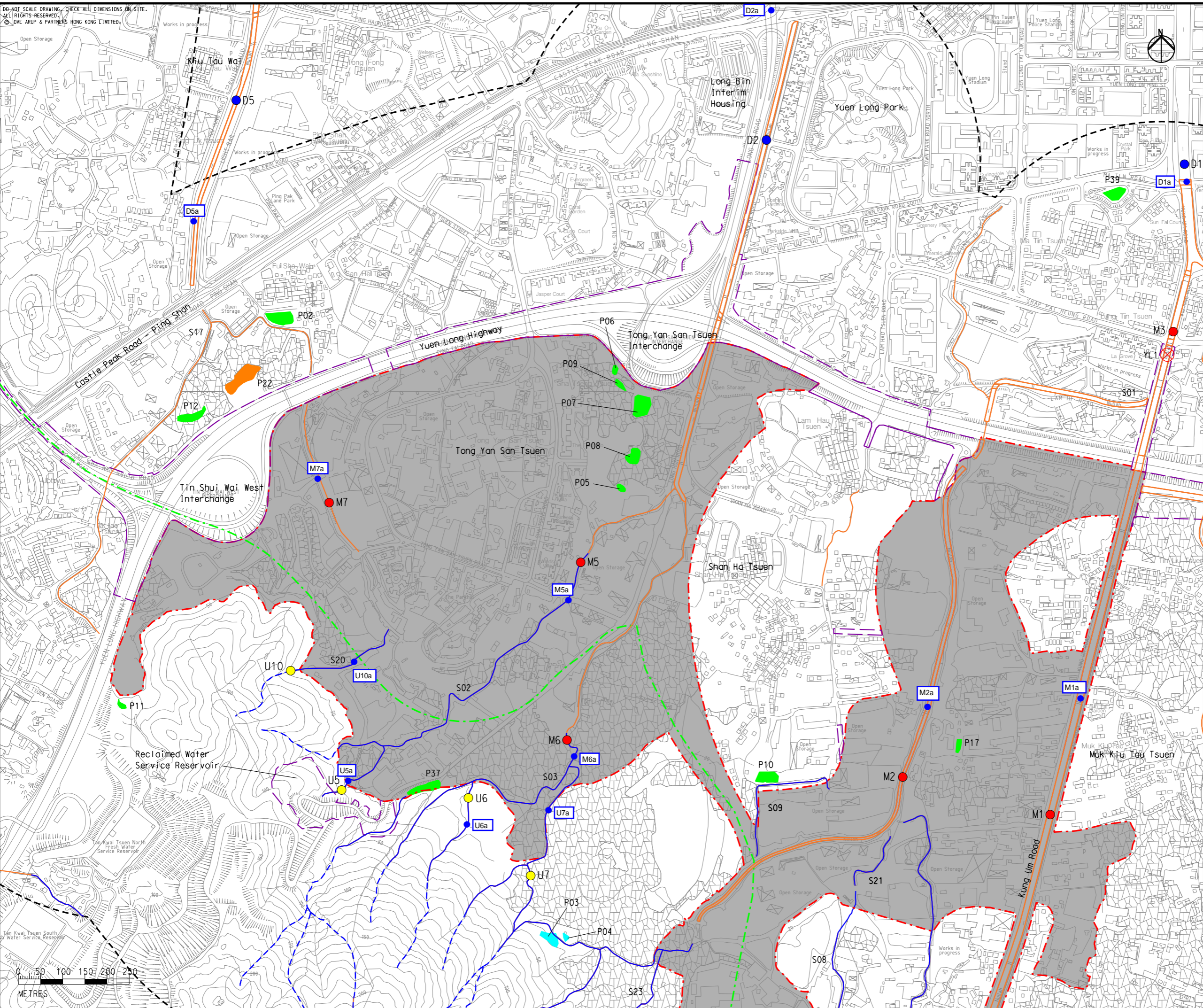
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Printed by : 7/22/2017
 File name : \\HKGN\GIS22\acoustic\env\project\228228\13 Drawing Deliverables\Report\EM&A Manual\03 Final Figure 7.1a - Locations of Water Quality Sensitive Receivers.dgn



- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 500m Assessment Area
 - Reedbed
 - Natural Watercourse
 - Seasonally Watercourse
 - Channelised Watercourse
 - Yuen Ka Tsuen EIS
 - Active Fish Pond
 - Inactive Fish Pond
 - Abandoned Fish Pond
 - EPD Water Monitoring Station
 - U1 Proposed Upstream Water Quality Monitoring Station
 - M1 Proposed Gradient Water Quality Monitoring Station
 - D1 Proposed Impact Water Quality Monitoring Station
 - EIS-1 Proposed EIS Water Quality Monitoring Station
 - D1a Proposed alternative water quality monitoring station

B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17
Rev	Description	By	Date

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Drawing title
 Locations of Water Quality Sensitive Receivers (Sheet 2 of 5)

Drawing no. Figure 7.1a		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
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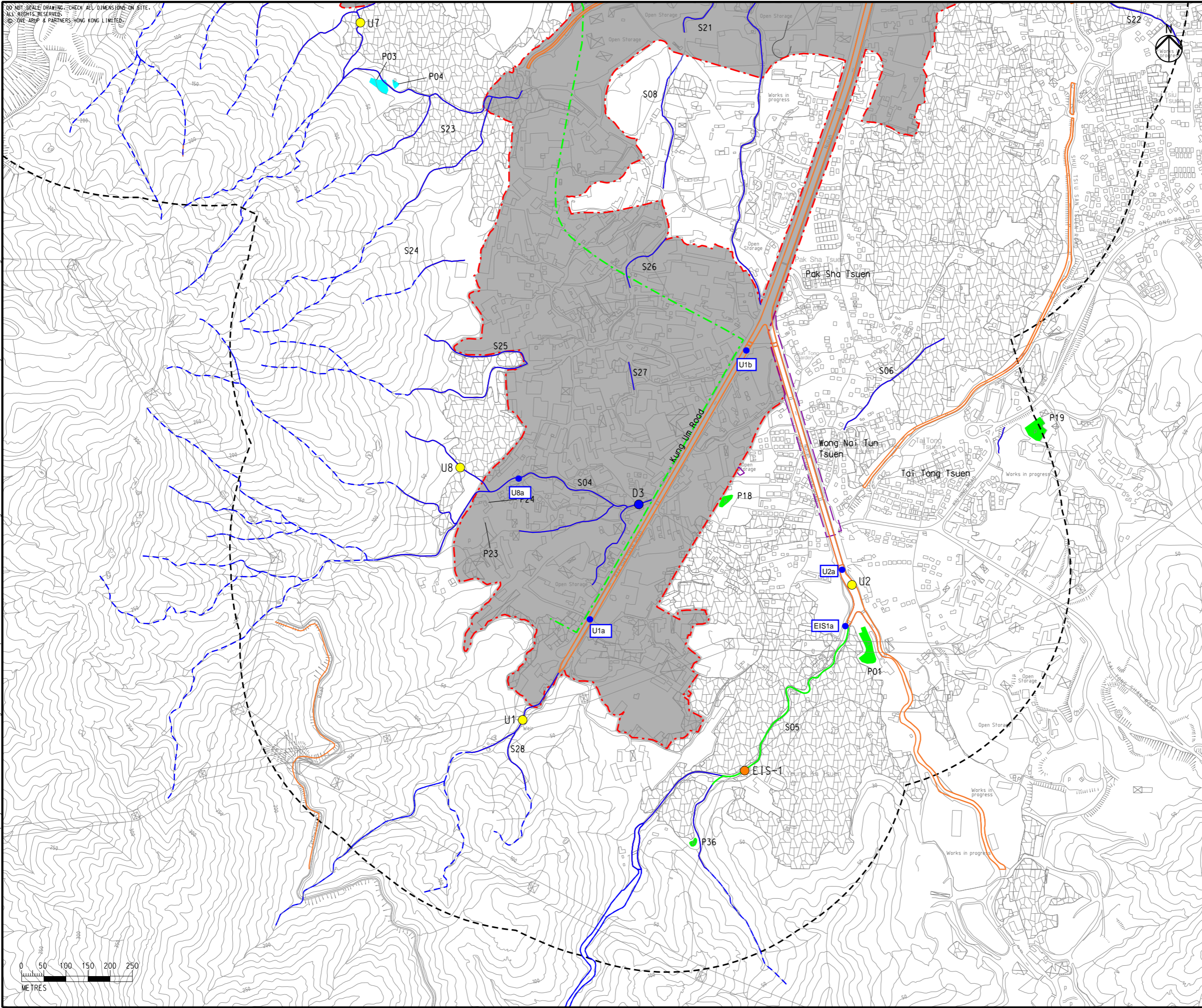
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Civil Engineering and Development Department



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Planning Department

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- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 500m Assessment Area
 - Reedbed
 - Natural Watercourse
 - Seasonally Watercourse
 - Channelised Watercourse
 - Yuen Ka Tsuen EIS
 - Active Fish Pond
 - Inactive Fish Pond
 - Abandoned Fish Pond
 - EPD Water Monitoring Station
 - U1 Proposed Upstream Water Quality Monitoring Station
 - M1 Proposed Gradient Water Quality Monitoring Station
 - D1 Proposed Impact Water Quality Monitoring Station
 - EIS-1 Proposed EIS Water Quality Monitoring Station
 - D1a Proposed alternative water quality monitoring station

Rev	Description	By	Date
B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17

Consultant
ARUP

Contract No. and Title
 Agreement No. CE 35/2012(CE)
 Planning and Engineering Study for Housing Sites in Yuen Long South - Investigation

Drawing title
 Locations of Water Quality Sensitive Receivers (Sheet 3 of 4)

Drawing no. Figure 7.1b		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
Scale AS SHOWN		Status PRELIMINARY	

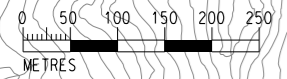
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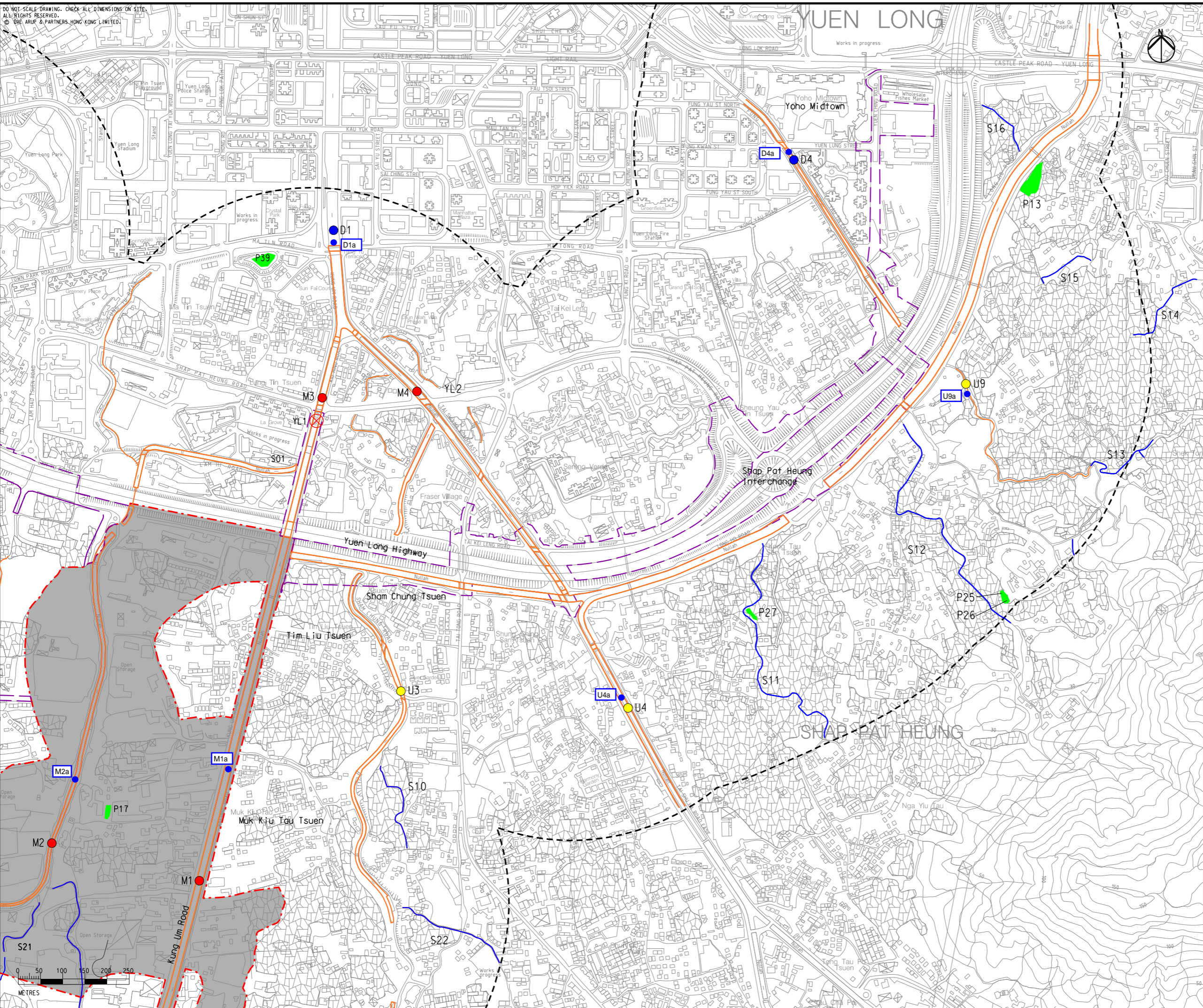
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Civil Engineering and Development Department



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Planning Department



Printed by : 7/22/2017
 Filename : \\HGNTS22\acoustic\env\project\228228\13 Drawing Deliverables\Report\EM&A Manual\03 Final Figure 7.1c - Locations of Water Quality Sensitive Receivers.dgn



- Legend**
- Potentials Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 500m Assessment Area
 - Reedbed
 - Natural Watercourse
 - Seasonally Watercourse
 - Channelised Watercourse
 - Yuen Ka Tsuen EIS
 - Active Fish Pond
 - Inactive Fish Pond
 - Abandoned Fish Pond
 - EPD Water Monitoring Station
 - U1 Proposed Upstream Water Quality Monitoring Station
 - M1 Proposed Gradient Water Quality Monitoring Station
 - D1 Proposed Impact Water Quality Monitoring Station
 - EIS-1 Proposed EIS Water Quality Monitoring Station
 - D1a Proposed alternative water quality monitoring station

Rev	Description	By	Date
B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17

Consultant
ARUP

Contract No. and Title
 Agreement No. CE 35/2012(CE)
 Planning and Engineering Study for Housing Sites in Yuen Long South - Investigation

Drawing title
Locations of Water Quality Sensitive Receivers (Sheet 4 of 5)

Drawing no. Figure 7.1c		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
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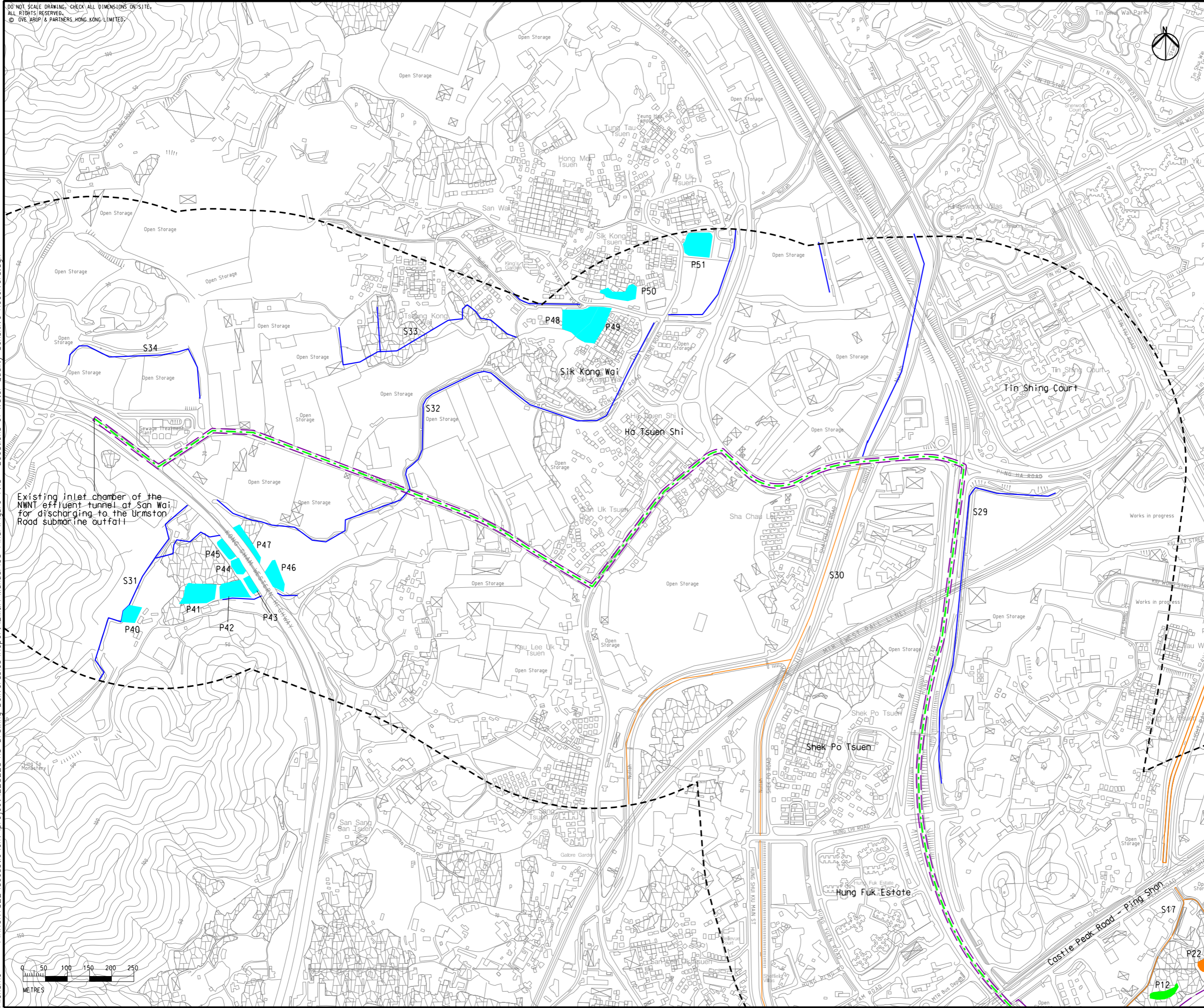
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Civil Engineering and Development Department



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- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - 500m Assessment Area
 - Reedbed
 - Natural Watercourse
 - Seasonally Watercourse
 - Channelised Watercourse
 - Yuen Ka Tsuen EIS
 - Active Fish Pond
 - Inactive Fish Pond
 - Abandoned Fish Pond
 - EPD Water Monitoring Station
 - U1 Proposed Upstream Water Quality Monitoring Station
 - M1 Proposed Gradient Water Quality Monitoring Station
 - O1 Proposed Impact Water Quality Monitoring Station
 - EIS-1 Proposed EIS Water Quality Monitoring Station

B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17
Rev	Description	By	Date

Consultant
ARUP

Contract No. and Title
Agreement No. CE 35/2012(CE)
Planning and Engineering Study for Housing Sites in Yuen Long South - Investigation

Drawing title
Locations of Water Quality Sensitive Receivers (Sheet 5 of 5)

Drawing no. Figure 7.1d		Rev. B	
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Department

Appendix F4

Detailed Baseline Water Quality Monitoring Data

Appendix F4 Detailed Baseline Water Quality Monitoring Data

Baseline Water Quality Monitoring at D4a

Baseline Water Quality Monitoring at D4a															
Date	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
11-Apr-23	9:30	0.15	21.9	21.9	4.0	4.0	45.9	45.6	10.1	10.2	0.26	0.26	7.9	7.9	6.2
			21.9		4.0		45.2		10.2		0.26		7.9		5.8
13-Apr-23	9:30	0.15	21.9	21.9	4.5	4.5	51.9	51.8	7.2	7.2	0.24	0.24	7.7	7.7	6.0
			21.9		4.5		51.6		7.1		0.24		7.7		5.8
15-Apr-23	9:30	0.14	23.5	23.5	4.1	4.0	48.0	47.9	8.7	8.7	0.70	0.39	7.7	7.7	23.5
			23.5		4.0		47.7		8.6		0.07		7.7		25.2
17-Apr-23	9:30	0.15	23.8	23.8	4.1	3.9	47.8	47.4	4.9	4.9	0.26	0.26	7.5	7.5	8.3
			23.8		3.6		46.9		4.9		0.26		7.5		7.8
19-Apr-23	9:30	0.14	23.8	23.8	3.6	3.5	41.9	41.6	6.7	6.4	0.27	0.27	7.7	7.7	9.8
			23.8		3.5		41.3		6.1		0.27		7.7		8.1
21-Apr-23	9:25	0.20	23.6	23.6	4.9	4.9	57.3	57.2	12.2	12.3	0.17	0.17	7.7	7.7	5.6
			23.6		4.8		57.0		12.3		0.17		7.7		6.2
24-Apr-23	9:25	0.16	23.7	23.7	4.0	4.0	47.0	46.9	4.3	4.3	0.25	0.25	7.8	7.8	6.6
			23.7		3.9		46.8		4.2		0.25		7.8		6.6
26-Apr-23	9:40	0.15	22.9	22.9	4.7	4.6	53.9	53.7	9.0	9.2	0.21	0.21	9.2	9.2	14.9
			22.9		4.6		53.5		9.4		0.21		9.2		15.5
28-Apr-23	9:35	0.14	23.0	23.0	4.4	4.4	52.0	51.6	4.9	5.1	0.23	0.23	7.8	7.8	6.7
			23.0		4.3		51.1		5.2		0.23		7.8		6.2
2-May-23	9:40	0.13	23.3	23.3	4.1	4.1	48.2	48.1	5.0	4.9	0.23	0.23	7.7	7.7	6.6
			23.3		4.1		48.0		4.7		0.23		7.7		7.0
4-May-23	10:00	0.15	25.9	25.9	3.9	3.9	48.2	48.1	3.3	3.3	0.22	0.22	7.6	7.6	5.9
			25.9		3.9		47.9		3.3		0.22		7.6		6.3
6-May-23	9:30	0.14	25.6	25.6	4.1	4.1	50.4	50.2	2.4	2.3	0.20	0.20	7.8	7.8	5.9
			25.6		4.0		49.9		2.3		0.20		7.8		5.6
			A/L		5%ile			11.9	95%ile					22.3	95%ile
			Level		1%ile			12.3	99%ile					24.8	99%ile

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	4.1	Average	6.5	Average	8.8
Min	3.5	Min	2.3	Min	5.8
Max	4.9	Max	12.3	Max	24.4

Baseline Water Quality Monitoring at U9a

Baseline Water Quality Monitoring at U9a															
Date	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
11-Apr-23	9:50	0.02	22.0	22.0	8.4	8.4	96.6	96.6	7.1	7.3	0.16	0.16	7.8	7.8	2.8
			22.0		8.4		96.5		7.5		0.16		7.8		3.5
13-Apr-23	9:50	0.02	22.5	22.5	9.3	9.3	106.9	106.9	5.7	5.8	0.17	0.17	8.0	8.0	6.5
			22.5		9.3		106.9		5.8		0.17		8.0		6.5
15-Apr-23	9:50	0.03	23.6	23.6	8.5	8.5	100.5	100.5	4.6	4.6	0.16	0.16	7.9	7.9	2.9
			23.6		8.5		100.5		4.6		0.16		7.9		2.4
17-Apr-23	9:50	0.02	23.6	23.6	8.0	8.0	94.1	94.1	4.5	4.4	0.16	0.16	7.8	7.8	2.4
			23.6		8.0		94.0		4.3		0.16		7.8		2.1
19-Apr-23	9:50	0.03	23.8	23.8	7.2	7.2	85.5	85.4	6.2	6.3	0.17	0.17	7.8	7.8	5.0
			23.8		7.2		85.3		6.3		0.17		7.8		4.5
21-Apr-23	9:45	0.19	23.4	23.4	7.8	7.8	90.9	90.9	28.9	28.8	0.12	0.12	7.8	7.8	34.9
			23.4		7.8		90.8		28.6		0.12		7.8		35.2
24-Apr-23	9:45	0.03	23.3	23.3	7.8	7.8	90.7	90.7	5.3	5.0	0.15	0.15	7.8	7.8	2.9
			23.3		7.7		90.6		4.7		0.15		7.8		3.2
26-Apr-23	10:00	0.02	21.0	21.0	8.3	8.3	93.5	93.5	5.2	5.0	0.15	0.15	8.3	8.3	2.6
			21.0		8.3		93.4		4.8		0.15		8.3		2.9
28-Apr-23	9:55	0.02	23.4	23.4	8.0	8.0	94.2	94.2	5.4	5.1	0.15	0.15	7.8	7.8	3.0
			23.4		8.0		94.2		4.8		0.15		7.8		2.9
2-May-23	10:00	0.02	23.4	23.4	8.2	8.2	95.0	95.1	5.6	5.4	0.16	0.16	7.9	7.9	3.0
			23.4		8.2		95.1		5.2		0.16		7.9		3.6
4-May-23	10:20	0.02	25.6	25.6	7.1	7.1	87.6	87.6	1.9	2.1	0.17	0.17	7.6	7.6	2.5
			25.6		7.1		87.5		2.2		0.17		7.6		2.5
6-May-23	9:50	0.02	26.7	26.7	7.9	7.9	99.4	99.4	2.2	2.1	0.16	0.16	7.8	7.8	2.0
			26.7		7.9		99.3		2.0		0.16		7.8		2.3
			A/L		5%ile			25.4	95%ile					30.6	95%ile
			Level		1%ile			28.8	99%ile					35.1	99%ile

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	8.0	Average	6.8	Average	5.9
Min	7.1	Min	2.1	Min	2.2
Max	9.3	Max	28.8	Max	35.1

Baseline Water Quality Monitoring at U4a

Baseline Water Quality Monitoring at U4a																	
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS		
11-Apr-23	10:10	0.15	22.7	22.7	3.8	3.8	44.5	44.4	7.6	7.6	0.22	0.22	7.5	7.5	5.7	5.6	
			22.7		3.8		44.2		7.6		0.22		7.5		5.5		
13-Apr-23	10:10	0.15	23.6	23.6	4.7	4.7	54.5	54.4	6.7	6.4	0.24	0.24	7.5	7.5	8.3	8.7	
			23.6		4.6		54.3		6.2		0.24		7.5		9.0		
15-Apr-23	10:10	0.16	24.0	24.0	3.9	3.8	45.9	45.5	5.4	5.3	0.25	0.25	7.5	7.5	7.6	8.2	
			24.0		3.8		45.1		5.2		0.25		7.5		8.8		
17-Apr-23	10:10	0.15	23.9	23.9	3.6	3.5	41.7	41.1	6.6	6.7	0.30	0.30	7.5	7.5	8.9	9.0	
			23.9		3.4		40.5		6.8		0.30		7.5		9.0		
19-Apr-23	10:10	0.15	24.0	24.0	3.2	3.1	36.9	36.5	6.3	6.3	0.17	0.17	7.3	7.3	8.2	8.3	
			24.0		3.0		36.1		6.3		0.17		7.3		8.4		
21-Apr-23	10:05	0.23	23.3	23.3	5.6	5.6	65.2	65.1	17.6	17.8	0.12	0.12	7.5	7.5	12.1	11.9	
			23.3		5.5		64.9		17.9		0.12		7.5		11.6		
24-Apr-23	10:05	0.16	23.7	23.7	3.8	3.8	44.8	44.6	3.8	3.8	0.20	0.11	7.3	7.3	5.9	5.9	
			23.7		3.8		44.4		3.8		0.02		7.3		5.8		
26-Apr-23	10:20	0.15	22.2	22.2	4.8	4.7	53.4	53.1	5.6	5.2	0.18	0.18	7.5	7.5	6.3	6.2	
			22.2		4.6		52.7		4.9		0.18		7.5		6.1		
28-Apr-23	10:15	0.15	23.7	23.7	4.6	4.5	53.6	53.3	7.4	7.3	0.21	0.21	7.5	7.5	8.6	8.7	
			23.7		4.4		52.9		7.1		0.21		7.5		8.8		
2-May-23	10:20	0.20	23.6	23.6	4.0	3.9	47.0	46.3	7.2	7.0	0.25	0.25	7.6	7.6	9.9	10.2	
			23.6		3.8		45.5		6.8		0.25		7.6		10.4		
4-May-23	10:40	0.17	25.9	25.9	3.5	3.5	42.6	42.4	3.3	3.3	0.25	0.25	7.5	7.5	9.4	9.2	
			25.9		3.4		42.2		3.3		0.25		7.5		8.9		
6-May-23	10:10	0.19	27.2	27.2	3.2	3.1	39.1	39.0	5.4	5.2	0.26	0.26	7.6	7.6	10.7	10.5	
			27.2		3.1		38.8		5.0		0.26		7.6		10.2		
			A/L		3.2	5%ile			16.1	95%ile					11.5	95%ile	
			Level		4.1	1%ile			17.8	99%ile					12.0	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)	
Average	4.0
Min	3.1
Max	5.6

Turbidity (NTU)	
Average	6.8
Min	3.3
Max	17.8

SS	
Average	8.5
Min	5.6
Max	11.9

Baseline Water Quality Monitoring at U3

Baseline Water Quality Monitoring at U3																	
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS		
11-Apr-23	10:35	0.13	23.7	23.7	8.5	8.5	100.5	100.4	9.7	9.7	0.21	0.21	8.0	8.0	9.3	9.5	
			23.7		8.5		100.3		9.7		0.21		8.0		9.7		
13-Apr-23	10:35	0.13	23.6	23.6	8.8	8.8	103.5	103.5	5.6	5.6	0.20	0.20	7.9	7.9	8.3	8.1	
			23.6		8.8		103.5		5.5		0.20		7.9		7.9		
15-Apr-23	10:30	0.13	24.3	24.3	7.8	7.8	93.6	93.6	4.7	4.7	0.19	0.19	7.8	7.8	8.1	7.7	
			24.3		7.8		93.5		4.7		0.19		7.8		7.2		
17-Apr-23	10:30	0.14	24.3	24.3	5.5	5.5	65.4	65.3	5.3	4.9	0.20	0.11	7.7	7.7	6.6	6.6	
			24.3		5.4		65.1		4.6		0.02		7.7		6.6		
19-Apr-23	10:30	0.14	24.2	24.2	4.3	4.2	50.6	50.2	5.3	5.2	0.10	0.10	7.6	7.6	5.8	7.4	
			24.2		4.1		49.7		5.0		0.10		7.6		8.9		
21-Apr-23	10:25	0.24	23.4	23.4	6.0	6.0	70.8	70.7	9.9	10.7	0.20	0.20	7.4	7.4	5.4	5.7	
			23.4		6.0		70.5		11.5		0.20		7.4		5.9		
24-Apr-23	10:25	0.14	23.9	23.9	6.9	6.9	82.4	82.2	5.6	5.2	0.21	0.21	7.8	7.8	4.6	4.7	
			23.9		6.8		82.0		4.8		0.21		7.8		4.8		
26-Apr-23	10:40	0.12	22.9	22.9	8.5	8.5	99.2	99.2	5.6	5.2	0.20	0.20	7.8	7.8	5.9	5.7	
			22.9		8.5		99.2		4.9		0.20		7.8		5.4		
28-Apr-23	10:35	0.11	24.6	24.6	8.1	8.1	98.5	98.6	6.8	6.6	0.20	0.20	7.8	7.8	7.8	7.6	
			24.6		8.1		98.6		6.4		0.20		7.8		7.3		
2-May-23	10:40	0.16	24.0	24.0	6.3	6.3	74.5	74.3	6.9	6.7	0.18	0.18	7.8	7.8	9.5	9.3	
			24.0		6.2		74.1		6.6		0.18		7.8		9.0		
4-May-23	11:00	0.16	27.2	27.2	6.8	6.8	85.3	85.2	4.2	4.2	0.21	0.21	7.8	7.8	8.8	9.3	
			27.2		6.7		85.0		4.3		0.21		7.8		9.8		
6-May-23	10:30	0.15	27.3	27.3	6.3	6.3	79.4	79.2	6.3	6.1	0.20	0.20	7.9	7.9	9.0	9.1	
			27.3		6.2		79.0		5.9		0.20		7.9		9.1		
			A/L		4.4	5%ile			9.9	95%ile					9.7	95%ile	
			Level		4.1	1%ile			11.1	99%ile					9.8	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)	
Average	7.0
Min	4.2
Max	8.8

Turbidity (NTU)	
Average	6.2
Min	4.2
Max	10.7

SS	
Average	7.5
Min	4.7
Max	9.5

Baseline Water Quality Monitoring at M4

Baseline Water Quality Monitoring at M4																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
11-Apr-23	10:55	0.08	24.9	24.9	7.5	7.5	91.2	91.2	7.1	7.1	0.39	0.39	7.6	7.6	2.3	2.5
			24.9		7.5		91.1		7.1		0.39		7.6		2.6	
13-Apr-23	10:55	0.09	24.5	24.5	8.1	8.1	98.5	98.4	36.2	35.6	0.50	0.50	7.7	7.7	20.2	20.0
			24.5		8.1		98.3		34.9		0.50		7.7		19.8	
15-Apr-23	10:50	0.08	25.0	25.0	7.9	7.9	96.2	96.2	5.3	5.2	0.19	0.19	7.7	7.7	2.7	3.0
			25.0		7.9		96.2		5.0		0.19		7.7		3.2	
17-Apr-23	10:50	0.10	25.0	25.0	6.4	6.4	78.1	78.0	6.2	6.2	1.47	1.47	7.6	7.6	7.1	7.2
			25.0		6.4		77.9		6.2		1.47		7.6		7.3	
19-Apr-23	10:50	0.08	24.7	24.7	6.8	6.8	82.3	82.2	8.0	7.9	0.47	0.47	7.5	7.5	11.6	10.6
			24.7		6.8		82.1		7.8		0.47		7.5		9.5	
21-Apr-23	10:45	0.19	23.6	23.6	6.1	6.1	72.0	71.8	8.5	8.2	0.28	0.28	7.8	7.8	5.4	5.4
			23.6		6.0		71.5		7.9		0.28		7.8		5.4	
24-Apr-23	10:45	0.10	24.5	24.5	8.1	8.1	97.9	97.9	6.1	5.6	0.32	0.32	7.8	7.8	2.6	2.7
			24.5		8.1		97.8		5.1		0.32		7.8		2.7	
26-Apr-23	11:00	0.18	23.4	23.4	8.3	8.2	97.7	97.7	4.8	4.6	0.35	0.35	7.7	7.7	3.4	3.3
			23.4		8.2		97.7		4.5		0.35		7.7		3.1	
28-Apr-23	10:55	0.08	26.4	26.4	8.2	8.2	102.3	102.3	4.7	4.5	0.16	0.16	7.7	7.7	4.3	4.0
			26.4		8.2		102.3		4.3		0.16		7.7		3.7	
2-May-23	11:00	0.17	24.3	24.3	6.6	6.6	79.6	79.4	6.4	6.5	0.74	0.74	7.8	7.8	6.1	5.9
			24.3		6.5		79.2		6.5		0.74		7.8		5.7	
4-May-23	11:20	0.13	27.8	27.8	7.5	7.5	96.1	96.1	3.8	3.7	0.44	0.44	7.8	7.8	3.9	3.5
			27.8		7.5		96.0		3.5		0.44		7.8		3.1	
6-May-23	10:50	0.13	27.7	27.7	6.8	6.8	86.7	86.6	4.2	4.3	0.34	0.34	7.7	7.7	3.4	3.7
			27.7		6.8		86.5		4.4		0.34		7.7		4.0	
			A/L	6.1		5%ile		30.9		95%ile		7.7		18.6		95%ile
			Level	6.0		1%ile		35.9		99%ile		7.7		20.1		99%ile

DO (mg/L)	Average	7.3
Min	6.1	
Max	8.2	

Turbidity (NTU)	Average	8.3
Min	3.7	
Max	35.6	

SS	Average	6.0
Min	2.5	
Max	20.0	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

Baseline Water Quality Monitoring at D1a

Baseline Water Quality Monitoring at D1a																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
11-Apr-23	11:15	0.17	23.6	23.6	2.1	2.1	25.0	24.9	8.3	8.4	0.24	0.24	7.3	7.4	18.5	17.9
			23.6		2.1		24.7		8.4		0.24		7.4		17.2	
13-Apr-23	11:15	0.16	23.7	23.7	2.1	2.0	24.0	23.8	12.7	12.7	0.25	0.25	7.3	7.3	25.4	25.0
			23.7		2.0		23.5		12.7		0.25		7.3		24.5	
15-Apr-23	11:10	0.17	25.2	25.2	3.3	3.6	38.7	38.2	7.8	8.3	0.22	0.22	7.5	7.5	20.0	20.6
			25.2		3.9		37.6		8.8		0.22		7.5		21.2	
17-Apr-23	11:10	0.18	24.3	24.3	2.9	2.9	34.4	34.2	18.5	17.5	0.35	0.35	7.6	7.6	40.7	39.9
			24.3		2.8		33.9		16.4		0.35		7.6		39.1	
19-Apr-23	11:10	0.18	24.7	24.7	3.5	3.3	39.6	39.3	7.4	7.2	0.27	0.27	7.5	7.5	18.8	18.0
			24.7		3.2		39.0		7.0		0.27		7.5		17.2	
21-Apr-23	11:05	0.31	23.1	23.1	6.1	6.1	71.2	71.0	22.1	22.5	0.18	0.18	7.6	7.6	13.6	13.3
			23.1		6.0		70.7		22.8		0.18		7.6		12.9	
24-Apr-23	11:05	0.18	24.5	24.5	3.9	3.8	46.2	45.6	6.8	6.8	0.24	0.24	7.6	7.6	9.6	9.3
			24.5		3.7		45.0		6.7		0.24		7.6		8.9	
26-Apr-23	11:20	0.17	22.8	22.8	4.9	4.8	56.4	56.2	7.3	7.3	0.27	0.27	7.6	7.6	10.3	9.9
			22.8		4.8		55.9		7.3		0.27		7.6		9.5	
28-Apr-23	11:15	0.16	25.6	25.6	4.5	4.4	54.0	53.7	5.9	6.0	0.21	0.21	7.7	7.7	21.4	21.7
			25.6		4.3		53.4		6.1		0.21		7.7		21.9	
2-May-23	11:20	0.21	24.2	24.2	4.7	4.7	56.2	56.0	7.5	7.5	0.31	0.31	7.7	7.7	12.4	12.5
			24.2		4.7		55.8		7.4		0.31		7.7		12.6	
4-May-23	11:40	0.22	27.3	27.3	3.3	3.2	41.2	41.0	7.2	8.0	0.32	0.32	7.5	7.5	15.7	15.9
			27.3		3.2		40.7		8.8		0.32		7.5		16.0	
6-May-23	11:10	0.21	27.7	27.7	3.1	3.0	37.7	37.5	8.6	8.5	0.30	0.30	7.7	7.7	18.4	18.8
			27.7		2.9		37.3		8.5		0.30		7.7		19.1	
			A/L	2.1		5%ile		21.6		95%ile		7.7		37.0		95%ile
			Level	2.0		1%ile		22.6		99%ile		7.7		40.3		99%ile

DO (mg/L)	Average	3.7
Min	2.0	
Max	6.1	

Turbidity (NTU)	Average	10.0
Min	6.0	
Max	22.5	

SS	Average	18.5
Min	9.3	
Max	39.9	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

Baseline Water Quality Monitoring at M3

Baseline Water Quality Monitoring at M3																	
Date	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS			
11-Apr-23	11:25	0.18	24.3	24.3	3.0	2.9	34.7	34.5	11.1	11.1	0.25	0.25	7.3	7.3	25.7	28.0	
					2.9		34.3		11.0		0.25		7.3		30.2		
13-Apr-23	11:35	0.19	24.3	24.3	3.2	3.2	37.5	37.4	11.7	11.1	0.25	0.25	7.1	7.1	30.0	30.2	
					3.1		37.2		10.4		0.25		7.1		30.3		
15-Apr-23	11:30	0.18	24.7	24.7	3.6	3.6	42.7	42.7	6.9	6.7	0.21	0.21	7.3	7.3	9.9	9.3	
					3.6		42.6		6.6		0.21		7.3		8.7		
17-Apr-23	11:30	0.18	24.8	24.8	3.1	3.1	36.7	36.3	7.6	7.6	0.26	0.26	7.6	7.6	21.2	21.0	
					3.0		35.8		7.7		0.26		7.6		20.8		
19-Apr-23	11:30	0.18	24.6	24.6	3.3	3.2	39.2	38.8	9.2	9.1	0.30	0.30	7.3	7.3	22.0	20.7	
					3.2		38.4		9.0		0.30		7.3		19.3		
21-Apr-23	11:25	0.31	23.1	23.1	6.1	6.1	71.2	71.0	22.1	22.5	0.18	0.18	7.6	7.6	19.8	20.2	
					6.0		70.7		22.8		0.18		7.6		20.6		
24-Apr-23	11:25	0.19	24.4	24.4	4.9	4.9	58.5	58.4	6.3	6.3	0.29	0.29	7.6	7.6	8.3	8.4	
					4.9		58.3		6.4		0.29		7.6		8.5		
26-Apr-23	11:40	0.18	23.0	23.0	5.2	5.1	60.1	60.0	7.8	7.9	0.14	0.14	7.5	7.5	11.2	11.4	
					5.0		59.9		7.9		0.14		7.5		11.6		
28-Apr-23	11:35	0.18	25.2	25.2	4.2	4.1	50.2	49.9	8.2	8.3	0.21	0.21	7.6	7.6	23.8	23.5	
					4.1		49.5		8.3		0.21		7.6		23.2		
2-May-23	11:40	0.20	24.1	24.1	4.6	4.5	54.2	54.0	6.9	6.8	0.35	0.35	7.6	7.6	9.8	10.0	
					4.5		53.7		6.7		0.35		7.6		10.2		
4-May-23	12:00	0.21	27.5	27.5	4.4	4.4	56.9	56.1	7.4	7.2	0.35	0.35	7.6	7.6	9.7	12.3	
					4.3		55.3		6.9		0.35		7.6		14.8		
6-May-23	11:30	0.20	27.6	27.6	4.1	4.0	51.4	50.9	6.5	6.5	0.27	0.27	7.6	7.6	21.6	21.2	
					3.9		50.3		6.4		0.27		7.6		20.8		
				A/L Level	3.0	5%ile			20.5	95%ile					30.2	95%ile	
					2.9	1%ile			22.6	99%ile					30.3	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	4.1	Average	9.2	Average	18.0
Min	2.9	Min	6.3	Min	8.4
Max	6.1	Max	22.5	Max	30.2

Baseline Water Quality Monitoring at M2a

Baseline Water Quality Monitoring at M2a																	
Date	Time	Depth (m)	Temp (oC)	DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS			
11-Apr-23	11:40	0.10	23.9	23.9	7.9	7.9	94.0	94.0	6.7	6.8	0.18	0.18	7.6	7.6	3.5	4.3	
					7.9		93.9		6.9		0.18		7.6		5.0		
13-Apr-23	11:50	0.09	23.6	23.6	7.1	7.1	83.3	83.2	6.3	5.7	0.18	0.18	7.6	7.6	6.1	6.4	
					7.0		83.1		5.2		0.18		7.6		6.7		
15-Apr-23	11:50	0.10	24.6	24.6	7.8	7.8	92.7	92.7	5.6	4.9	0.17	0.17	7.6	7.6	6.3	6.6	
					7.8		92.7		4.3		0.17		7.6		6.8		
17-Apr-23	11:50	0.10	25.1	25.1	7.2	7.2	87.2	87.1	5.6	5.6	0.18	0.18	7.7	7.7	7.6	7.3	
					7.2		87.0		5.7		0.18		7.7		7.0		
19-Apr-23	11:50	0.10	25.0	25.0	7.2	7.2	87.1	87.1	5.7	5.8	0.18	0.18	7.7	7.7	4.6	5.1	
					7.2		87.0		5.9		0.18		7.7		5.6		
21-Apr-23	11:45	0.21	23.1	23.1	6.8	6.7	78.4	78.1	7.6	7.9	0.18	0.18	7.5	7.5	6.2	6.0	
					6.6		77.8		8.1		0.18		7.5		5.8		
24-Apr-23	11:45	0.20	23.1	23.1	6.3	6.3	73.7	73.6	8.5	8.5	0.18	0.18	7.4	7.4	3.3	4.2	
					6.3		73.4		8.5		0.18		7.4		5.1		
26-Apr-23	12:00	0.10	22.3	22.3	8.2	8.2	94.7	94.6	6.0	5.6	0.18	0.18	7.9	7.9	4.3	4.4	
					8.2		94.5		5.3		0.18		7.9		4.5		
28-Apr-23	11:55	0.10	22.3	22.3	8.2	8.2	94.6	94.6	4.3	4.4	0.18	0.18	7.6	7.6	5.9	5.7	
					8.2		94.5		4.4		0.18		7.6		5.4		
2-May-23	12:00	0.15	24.0	24.0	7.2	7.2	84.5	84.4	6.7	6.6	0.18	0.18	7.8	7.8	8.1	8.2	
					7.1		84.2		6.4		0.18		7.8		8.3		
4-May-23	13:20	0.13	28.3	28.3	7.1	7.0	90.9	90.8	8.1	8.0	0.19	0.19	7.9	7.9	8.8	8.8	
					7.0		90.7		7.9		0.19		7.9		8.7		
6-May-23	11:50	0.14	28.4	28.4	6.9	6.9	88.9	88.9	4.9	4.9	0.18	0.18	7.7	7.7	8.4	8.5	
					6.9		88.8		5.0		0.18		7.7		8.6		
				A/L Level	6.4	5%ile			8.4	95%ile					8.7	95%ile	
					6.3	1%ile			8.5	99%ile					8.8	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	7.3	Average	6.2	Average	6.3
Min	6.3	Min	4.4	Min	4.2
Max	8.2	Max	8.5	Max	8.8

Baseline Water Quality Monitoring at M1a

Baseline Water Quality Monitoring at M1a																	
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS		
11-Apr-23	13:00	0.14	24.3	24.3	1.3	1.2	15.4	15.1	49.4	49.3	0.69	0.69	7.3	7.3	104.0	102.5	
			24.3		1.2		14.7		49.1		0.69		7.3		101.0		
13-Apr-23	13:00	0.14	24.4	24.4	2.2	2.1	25.6	25.4	136.0	126.5	0.79	0.79	7.3	7.3	265.0	270.5	
			24.4		2.1		25.2		117.0		0.79		7.3		276.0		
15-Apr-23	13:00	0.13	25.2	25.2	1.6	1.5	18.8	18.6	49.8	43.7	0.30	0.30	7.4	7.4	113.0	114.0	
			25.2		1.5		18.4		37.6		0.30		7.4		115.0		
17-Apr-23	13:00	0.15	24.8	24.8	2.6	2.6	31.2	30.8	10.8	10.7	0.39	0.39	7.3	7.3	99.5	88.4	
			24.8		2.5		30.4		10.5		0.39		7.3		77.3		
19-Apr-23	13:00	0.14	24.6	24.6	3.0	2.9	35.4	35.0	33.9	32.3	0.50	0.28	7.0	7.0	15.6	15.2	
			24.6		2.8		34.5		30.7		0.05		7.0		14.8		
21-Apr-23	12:05	0.25	23.0	23.0	6.0	5.9	69.0	68.8	26.1	26.0	0.14	0.14	7.3	7.3	99.5	88.4	
			23.0		5.9		68.5		25.8		0.14		7.3		77.3		
24-Apr-23	12:05	0.14	24.5	24.5	3.8	3.7	44.7	44.3	8.5	8.6	0.43	0.43	7.4	7.4	13.1	13.0	
			24.5		3.6		43.8		8.8		0.43		7.4		12.8		
26-Apr-23	13:20	0.14	23.0	23.0	2.1	2.1	24.1	23.9	34.9	35.1	0.59	0.58	7.5	7.5	46.2	47.8	
			23.0		2.0		23.7		35.2		0.57		7.5		49.3		
28-Apr-23	13:10	0.15	25.5	25.5	2.9	2.8	34.4	34.1	9.9	9.8	0.29	0.29	7.3	7.3	19.1	18.8	
			25.5		2.8		33.7		9.8		0.29		7.3		18.4		
2-May-23	13:20	0.17	23.9	23.9	3.4	3.3	40.3	39.8	9.4	9.4	0.48	0.48	7.5	7.5	17.7	17.4	
			23.9		3.2		39.2		9.5		0.48		7.5		17.1		
4-May-23	13:40	0.14	28.9	28.9	2.9	2.9	37.4	37.2	8.8	8.8	0.49	0.49	7.5	7.5	15.2	19.6	
			28.9		2.8		37.0		8.7		0.49		7.5		23.9		
6-May-23	12:10	0.13	28.0	28.0	2.9	2.9	36.7	36.5	9.3	9.5	0.26	0.26	7.2	7.2	35.1	34.6	
			28.0		2.8		36.2		9.6		0.26		7.2		34.0		
				A/L	1.3	5%ile			106.9	95%ile					242.5	95%ile	
				Level	1.2	1%ile			131.6	99%ile					273.5	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	2.8	Average	30.8	Average	69.2
Min	1.2	Min	8.6	Min	13.0
Max	5.9	Max	126.5	Max	270.5

Baseline Water Quality Monitoring at U1a

Baseline Water Quality Monitoring at U1a																	
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS		
11-Apr-23	13:20	0.05	25.8	25.8	2.8	2.8	34.5	34.3	94.0	93.5	1.85	1.85	7.7	7.7	106.0	107.0	
			25.8		2.7		34.0		93.0		1.85		7.7		108.0		
13-Apr-23	13:20	0.06	25.4	25.4	3.1	3.1	38.4	38.3	101.4	99.5	1.97	1.97	7.8	7.8	135.0	137.0	
			25.4		3.1		38.2		97.5		1.97		7.8		139.0		
15-Apr-23	13:20	0.03	25.9	25.9	3.7	3.6	45.2	45.0	108.8	107.7	1.70	1.70	7.9	7.9	133.0	134.5	
			25.9		3.5		44.8		106.7		1.70		7.9		136.0		
17-Apr-23	13:20	0.08	25.2	25.2	2.8	2.8	34.0	33.7	146.9	145.8	1.04	1.04	7.7	7.7	310.0	311.5	
			25.2		2.7		33.4		144.6		1.04		7.7		313.0		
19-Apr-23	13:20	0.08	25.0	25.0	2.5	2.5	30.3	30.0	198.0	198.1	1.79	1.79	7.7	7.7	320.0	325.5	
			25.0		2.4		29.7		198.2		1.79		7.7		331.0		
21-Apr-23	13:20	0.15	22.7	22.7	7.3	7.2	84.2	84.1	25.6	25.4	0.08	0.08	7.3	7.3	21.2	23.0	
			22.7		7.2		83.9		25.2		0.08		7.3		24.7		
24-Apr-23	13:30	0.14	25.1	25.1	5.9	5.8	71.3	70.7	16.4	16.3	0.15	0.15	7.4	7.4	41.1	38.5	
			25.1		5.7		70.1		16.1		0.15		7.4		35.9		
26-Apr-23	13:40	0.07	24.3	24.3	4.0	3.9	41.3	41.6	86.2	85.4	1.03	1.03	7.6	7.6	108.0	103.4	
			24.3		3.9		41.9		84.5		1.03		7.6		98.8		
28-Apr-23	13:30	0.13	26.3	26.3	3.0	2.9	36.7	36.5	211.4	210.6	0.15	0.15	7.2	7.2	343.0	341.5	
			26.3		2.9		36.2		209.8		0.15		7.2		340.0		
2-May-23	13:40	0.03	24.2	24.2	3.5	3.5	42.1	41.9	51.2	56.1	0.12	0.12	7.3	7.3	121.0	121.5	
			24.2		3.4		41.6		60.9		0.12		7.3		122.0		
4-May-23	14:00	0.18	29.1	29.1	4.2	4.1	54.7	54.4	70.3	82.8	1.75	1.75	8.1	8.1	158.0	156.0	
			29.1		4.1		54.1		95.2		1.75		8.1		154.0		
6-May-23	12:30	0.08	28.3	28.3	3.4	3.3	43.8	43.0	84.4	84.7	1.32	1.32	8.0	8.0	154.0	156.5	
			28.3		3.2		42.2		84.9		1.32		8.0		159.0		
				A/L	2.6	5%ile			208.1	95%ile					338.7	95%ile	
				Level	2.4	1%ile			211.0	99%ile					342.3	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	3.8	Average	100.5	Average	163.0
Min	2.5	Min	16.3	Min	23.0
Max	7.2	Max	210.6	Max	341.5

Baseline Water Quality Monitoring at D3

Baseline Water Quality Monitoring at D3																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
11-Apr-23	13:40	0.10	23.4	23.4	3.4	3.4	40.1	40.0	17.1	17.6	1.37	1.37	5.7	5.7	23.7	23.8
			23.4		3.4		39.8		18.0		1.37		5.7		23.8	
13-Apr-23	13:40	0.10	23.6	23.6	3.4	3.3	39.2	39.0	12.5	13.6	1.59	1.59	5.5	5.5	23.0	23.3
			23.6		3.2		38.7		14.6		1.59		5.5		23.6	
15-Apr-23	13:40	0.10	24.1	24.1	3.0	3.0	35.8	35.6	7.2	7.1	0.35	0.35	6.1	6.1	21.8	21.4
			24.1		3.0		35.4		7.0		0.35		6.1		21.0	
17-Apr-23	13:40	0.10	23.8	23.8	4.0	3.9	46.5	46.1	18.9	19.2	2.02	2.02	7.1	7.1	23.8	23.5
			23.8		3.8		45.7		19.4		2.02		7.1		23.2	
19-Apr-23	13:40	0.10	24.5	24.5	3.7	3.6	43.5	43.2	14.8	14.7	1.96	1.96	5.4	5.4	39.4	37.1
			24.5		3.6		42.8		14.6		1.96		5.4		34.8	
21-Apr-23	13:40	0.15	23.0	23.0	6.6	6.6	75.5	75.5	32.5	32.5	0.06	0.06	7.2	7.2	18.5	18.4
			23.0		6.5		75.4		32.4		0.06		7.2		18.2	
24-Apr-23	13:50	0.15	23.6	23.6	3.4	3.4	40.0	39.8	10.8	10.9	1.00	1.00	7.1	7.1	18.2	18.0
			23.6		3.3		39.5		10.9		1.00		7.1		17.7	
26-Apr-23	14:00	0.10	22.4	22.4	3.4	3.3	38.8	38.7	12.1	12.1	1.30	1.30	7.2	7.2	18.2	17.9
			22.4		3.3		38.5		12.0		1.30		7.2		17.5	
28-Apr-23	13:50	0.10	24.4	24.4	3.3	3.2	38.4	38.0	7.6	7.7	0.66	0.66	6.1	6.1	18.6	19.0
			24.4		3.1		37.6		7.7		0.66		6.1		19.4	
2-May-23	14:00	0.15	23.1	23.1	3.5	3.4	40.2	39.5	9.4	9.7	0.50	0.50	7.1	7.1	13.0	12.8
			23.1		3.3		38.7		10.0		0.50		7.1		12.6	
4-May-23	14:20	0.15	26.7	26.7	3.4	3.4	43.5	43.2	13.8	13.8	2.31	2.31	7.0	7.0	22.0	22.4
			26.7		3.4		42.9		13.7		2.31		7.0		22.7	
6-May-23	12:50	0.16	27.0	27.0	4.0	3.9	49.2	49.0	8.6	8.5	0.16	0.16	5.6	5.6	27.1	26.5
			27.0		3.9		48.7		8.3		0.16		5.6		25.8	
			A/L Level	3.0	5%ile			30.4	95%ile					33.6	95%ile	
				3.0	1%ile			32.5	99%ile					38.3	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	3.7	Average	13.9	Average	22.0
Min	3.0	Min	7.1	Min	12.8
Max	6.6	Max	32.5	Max	37.1

Baseline Water Quality Monitoring at U8a

Baseline Water Quality Monitoring at U8a																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
11-Apr-23	14:00	0.09	22.3	22.3	5.3	5.3	60.9	60.9	7.6	7.6	0.06	0.06	7.1	7.1	5.3	6.0
			22.3		5.3		60.8		7.6		0.06		7.1		6.6	
13-Apr-23	14:00	0.09	22.4	22.4	5.1	5.0	58.0	57.8	5.4	5.3	0.05	0.05	7.4	7.4	5.0	4.7
			22.4		5.0		57.6		5.2		0.05		7.4		4.4	
15-Apr-23	14:00	0.08	23.1	23.1	5.2	5.2	60.7	60.6	6.2	5.4	0.05	0.05	7.6	7.6	4.1	4.7
			23.1		5.1		60.4		4.7		0.05		7.6		5.3	
17-Apr-23	14:00	0.09	22.7	22.7	4.3	4.2	49.0	48.8	7.2	7.0	0.06	0.06	7.4	7.4	7.6	7.9
			22.7		4.2		48.6		6.8		0.06		7.4		8.2	
19-Apr-23	14:00	0.09	22.9	22.9	4.1	4.1	47.3	47.2	5.0	5.0	0.05	0.05	7.2	7.2	4.4	4.8
			22.9		4.1		47.1		4.9		0.05		7.2		5.1	
21-Apr-23	14:00	0.15	22.6	22.6	8.0	7.9	91.1	91.1	40.5	41.3	0.02	0.02	7.7	7.7	23.9	21.1
			22.6		7.9		91.0		42.0		0.02		7.7		18.3	
24-Apr-23	14:10	0.14	22.1	22.1	7.8	7.8	88.9	88.9	41.6	41.5	0.02	0.02	7.3	7.3	16.7	17.0
			22.1		7.8		88.8		41.4		0.02		7.3		17.3	
26-Apr-23	14:20	0.08	22.4	22.4	6.7	6.9	75.5	77.2	8.3	8.3	0.03	0.03	7.9	7.9	10.2	9.9
			22.4		7.1		78.9		8.2		0.03		7.9		9.6	
28-Apr-23	14:10	0.08	21.2	21.2	6.5	6.5	72.8	72.8	7.1	7.0	0.06	0.06	7.3	7.3	7.0	6.6
			21.2		6.4		72.7		7.0		0.06		7.3		6.1	
2-May-23	14:20	0.04	22.1	22.1	6.3	6.3	72.1	72.0	8.7	8.6	0.03	0.03	7.5	7.5	17.8	18.0
			22.1		6.3		71.9		8.4		0.03		7.5		18.2	
4-May-23	14:40	0.08	25.4	25.4	5.6	5.6	68.0	67.7	32.3	31.1	0.05	0.05	7.8	7.8	116.0	157.0
			25.4		5.5		67.4		29.9		0.05		7.8		198.0	
6-May-23	13:10	0.08	25.4	25.4	5.2	5.2	62.8	62.8	17.2	16.8	0.05	0.05	7.5	7.5	71.3	55.3
			25.4		5.1		62.8		16.3		0.05		7.5		39.3	
			A/L Level	4.1	5%ile			41.6	95%ile					109.3	95%ile	
				4.1	1%ile			41.9	99%ile					179.1	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	5.8	Average	15.4	Average	26.1
Min	4.1	Min	5.0	Min	4.7
Max	7.9	Max	41.5	Max	157.0

Baseline Water Quality Monitoring at U1b

Baseline Water Quality Monitoring at U1b																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
11-Apr-23	14:20	0.12	24.8	24.8	2.5	2.4	29.8	29.7	31.2	31.3	1.60	1.60	7.2	7.2	52.9	52.9
			24.8		2.4		29.6		31.4		1.60		7.2		52.8	
13-Apr-23	14:20	0.11	24.8	24.8	3.8	3.7	45.7	45.5	43.9	48.6	1.73	1.73	7.3	7.3	111.0	112.5
			24.8		3.7		45.2		53.2		1.73		7.3		114.0	
15-Apr-23	14:20	0.11	25.4	25.4	4.5	4.5	55.2	55.1	36.0	36.1	0.72	0.72	7.6	7.6	53.6	53.4
			25.4		4.5		54.9		36.1		0.72		7.6		53.1	
17-Apr-23	14:20	0.11	25.0	25.0	3.7	3.7	54.1	49.4	49.4	49.0	1.64	1.64	7.6	7.6	97.2	98.6
			25.0		3.6		44.6		48.6		1.64		7.6		99.9	
19-Apr-23	14:20	0.11	24.2	24.2	3.4	3.4	41.4	41.2	109.6	110.5	2.07	2.07	7.3	7.3	190.0	208.0
			24.2		3.4		41.0		111.3		2.07		7.3		226.0	
21-Apr-23	14:20	0.14	22.5	22.5	7.5	7.5	86.5	86.4	30.1	30.8	0.08	0.08	7.3	7.3	19.3	19.6
			22.5		7.4		86.3		31.4		0.08		7.3		19.9	
24-Apr-23	14:30	0.12	24.6	24.6	6.5	6.5	78.7	78.6	10.4	10.3	1.06	1.06	7.3	7.3	18.6	18.9
			24.6		6.5		78.5		10.3		1.06		7.3		19.1	
26-Apr-23	14:40	0.11	23.9	23.9	5.0	4.9	59.0	58.7	28.2	27.9	1.25	1.25	7.4	7.4	36.8	37.1
			23.9		4.9		58.4		27.6		1.25		7.4		37.4	
28-Apr-23	14:30	0.10	25.8	25.8	3.4	3.4	41.8	41.4	14.7	15.6	0.86	0.86	6.8	6.8	34.9	35.3
			25.8		3.3		41.0		16.4		0.86		6.8		35.6	
2-May-23	14:40	0.12	23.7	23.7	2.7	2.6	30.8	30.5	15.1	15.0	0.06	0.06	7.2	7.2	25.4	25.4
			23.7		2.5		30.2		14.9		0.06		7.2		25.3	
4-May-23	15:00	0.10	28.2	28.2	3.4	3.4	44.4	44.2	21.9	22.2	1.54	1.54	7.8	7.8	40.8	40.2
			28.2		3.3		44.0		22.4		1.54		7.8		39.6	
6-May-23	13:30	0.10	28.2	28.2	3.6	3.4	44.7	44.2	76.3	76.0	0.55	0.55	7.3	7.3	188.0	180.0
			28.2		3.3		43.6		75.7		0.55		7.3		172.0	
			A/L Level		2.5	5%ile			104.6	95%ile					189.7	95%ile
					2.4	1%ile			110.9	99%ile					217.7	99%ile

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	4.1	Average	39.4	Average	73.5
Min	2.4	Min	10.3	Min	18.9
Max	7.5	Max	110.5	Max	208.0

Baseline Water Quality Monitoring at EIS-1a

Baseline Water Quality Monitoring at EIS 1																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
11-Apr-23	14:40	0.20	23.9	23.9	6.2	6.2	73.8	73.7	7.1	7.2	0.05	0.05	6.9	6.9	2.2	2.7
			23.9		6.2		73.6		7.2		0.05		6.9		3.2	
13-Apr-23	14:40	0.21	23.9	23.9	6.3	6.3	74.7	74.4	4.7	4.4	0.07	0.07	3.4	3.4	4.8	4.5
			23.9		6.2		74.1		4.1		0.07		3.4		4.2	
15-Apr-23	14:40	0.21	24.4	24.4	6.3	6.3	75.1	74.8	5.6	5.1	0.06	0.06	7.3	7.3	2.6	2.4
			24.4		6.2		74.5		4.6		0.06		7.3		2.2	
17-Apr-23	14:40	0.21	23.5	23.5	6.0	6.0	70.8	70.6	6.8	6.7	0.06	0.06	7.5	7.5	4.3	4.6
			23.5		6.0		70.3		6.5		0.06		7.5		4.9	
19-Apr-23	14:40	0.21	23.5	23.5	5.5	5.5	64.5	64.4	6.5	6.5	0.05	0.05	6.9	6.9	4.0	4.1
			23.5		5.5		64.3		6.4		0.05		6.9		4.2	
21-Apr-23	14:40	0.28	22.6	22.6	6.7	6.6	76.9	76.8	19.1	19.2	0.04	0.04	7.1	7.1	9.4	9.2
			22.6		6.6		76.6		19.2		0.04		7.1		9.0	
24-Apr-23	14:50	0.27	22.5	22.5	5.8	5.8	66.5	66.4	17.7	17.7	0.04	0.04	6.6	6.6	6.5	6.6
			22.5		5.7		66.3		17.7		0.04		6.6		6.7	
26-Apr-23	15:00	0.20	23.0	23.0	6.9	6.9	79.2	79.2	13.4	13.8	0.06	0.06	7.4	7.4	26.6	30.1
			23.0		6.8		79.1		14.2		0.06		7.4		33.5	
28-Apr-23	14:50	0.21	22.4	22.4	6.3	6.3	72.6	72.5	4.9	4.8	0.05	0.05	6.8	6.8	4.4	4.2
			22.4		6.3		72.3		4.8		0.05		6.8		3.9	
2-May-23	15:00	0.22	22.7	22.7	5.6	5.6	65.1	65.1	4.5	4.2	0.07	0.07	7.4	7.4	4.6	4.6
			22.7		5.6		65.0		3.9		0.07		7.4		4.6	
4-May-23	15:20	0.20	24.0	24.0	6.3	6.2	74.2	73.5	11.9	11.7	0.05	0.05	7.4	7.4	20.7	21.0
			24.0		6.1		72.7		11.4		0.05		7.4		21.2	
6-May-23	13:50	0.20	26.4	26.4	5.4	5.4	67.1	66.9	3.7	3.6	0.06	0.06	7.3	7.3	7.1	7.5
			26.4		5.3		66.7		3.5		0.06		7.3		7.9	
			A/L Level		5.4	5%ile			18.9	95%ile					25.8	95%ile
					5.4	1%ile			19.2	99%ile					31.9	99%ile

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	6.1	Average	8.7	Average	8.4
Min	5.4	Min	3.6	Min	2.4
Max	6.9	Max	19.2	Max	30.1

Baseline Water Quality Monitoring at U2a

Baseline Water Quality Monitoring at U2a																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
11-Apr-23	15:00	0.20	25.9	25.9	6.6	6.6	81.7	81.6	6.1	6.2	0.11	0.11	7.1	7.1	3.8	3.6
			25.9		6.6		81.5		6.2		0.11		7.1		3.3	
13-Apr-23	15:00	0.21	25.5	25.5	7.3	7.3	89.4	89.3	4.9	4.9	0.10	0.10	7.7	7.7	4.9	5.0
			25.5		7.3		89.2		4.8		0.10		7.7		5.0	
15-Apr-23	15:00	0.20	25.9	25.9	7.3	7.3	90.8	90.8	3.9	3.9	0.11	0.11	7.3	7.3	5.4	5.2
			25.9		7.3		90.7		3.9		0.11		7.3		5.0	
17-Apr-23	15:00	0.19	25.0	25.0	7.1	7.1	86.0	86.0	6.8	6.9	0.10	0.10	7.2	7.2	4.8	4.7
			25.0		7.1		85.9		7.1		0.10		7.2		4.6	
19-Apr-23	15:00	0.20	24.1	24.1	5.4	5.4	64.7	64.7	3.6	3.7	0.12	0.12	6.8	6.8	6.4	5.7
			24.1		5.4		64.6		3.7		0.12		6.8		5.0	
21-Apr-23	15:00	0.24	22.8	22.8	6.2	6.2	71.8	71.6	23.6	23.5	0.10	0.10	6.6	6.6	15.2	15.6
			22.8		6.1		71.3		23.4		0.10		6.6		16.0	
24-Apr-23	15:10	0.21	25.0	25.0	6.6	6.6	80.2	80.2	4.0	4.0	0.11	0.11	7.3	7.3	3.5	3.7
			25.0		6.6		80.1		4.0		0.11		7.3		3.8	
26-Apr-23	15:20	0.19	24.4	24.4	7.4	7.4	88.0	88.0	3.6	3.8	0.10	0.10	7.2	7.2	3.4	3.5
			24.4		7.4		87.9		3.9		0.10		7.2		3.6	
28-Apr-23	15:10	0.18	25.6	25.6	6.9	6.8	83.8	83.7	4.3	4.4	0.11	0.11	7.2	7.2	4.4	4.3
			25.6		6.8		83.5		4.5		0.11		7.2		4.1	
2-May-23	15:00	0.20	23.4	23.4	6.7	6.6	78.2	78.0	6.3	6.0	0.11	0.11	7.3	7.3	3.6	3.7
			23.4		6.6		77.8		5.7		0.11		7.3		3.8	
4-May-23	15:40	0.19	27.6	27.6	6.8	6.8	72.4	72.8	5.4	5.2	0.10	0.10	7.2	7.2	4.0	4.0
			27.6		6.7		73.1		5.0		0.10		7.2		4.0	
6-May-23	14:10	0.19	28.5	28.5	6.8	6.8	87.1	87.1	6.7	6.6	0.12	0.12	7.4	7.4	5.4	5.1
			28.5		6.7		87.0		6.4		0.12		7.4		4.8	
			A/L	5.5	5%ile			20.9	95%ile					13.9	95%ile	
			Level	5.4	1%ile			23.6	99%ile					15.8	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)		Turbidity (NTU)		SS	
Average	6.7	Average	6.6	Average	5.3
Min	5.4	Min	3.7	Min	3.5
Max	7.4	Max	23.5	Max	15.6

Appendix F4 Detailed Baseline Water Quality Monitoring Data

Baseline Water Quality Monitoring at D2a

Baseline Water Quality Monitoring at D2a																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
8-Mar-23	16:00	0.20	19.7	19.7	6.8	6.7	73.0	72.7	9.2	9.3	1.10	1.1	8.90	8.9	<0.5	<0.5
			19.6		6.7		72.3		9.4		1.10		8.90		<0.5	
10-Mar-23	9:30	0.31	21.2	21.2	6.8	6.8	77.4	77.2	12.1	12.4	1.31	1.3	8.54	8.5	4.5	5.1
			21.2		6.8		76.9		12.6		1.31		8.54		5.7	
13-Mar-23	12:34	0.30	20.8	20.8	6.8	6.7	75.8	75.6	15.9	15.4	0.37	0.4	7.50	7.5	7.5	8.3
			20.8		6.7		75.4		14.8		0.37		7.50		9.0	
15-Mar-23	12:35	0.30	21.8	21.8	7.1	7.1	81.9	81.5	22.1	21.9	1.03	1.0	12.34	12.3	100.0	133.5
			21.8		7.1		81.1		21.7		1.03		12.34		167.0	
17-Mar-23	12:45	0.31	22.2	22.2	7.7	7.7	88.8	88.7	20.3	20.1	0.52	0.5	8.19	8.2	17.4	16.7
			22.2		7.7		88.6		19.8		0.52		8.19		16.0	
20-Mar-23	12:35	0.34	22.1	22.1	7.7	7.7	87.9	87.8	20.3	20.7	0.53	0.5	8.06	8.1	21.1	21.4
			22.1		7.7		87.6		21.0		0.53		8.06		21.7	
22-Mar-23	12:30	0.31	23.2	23.2	6.8	6.8	79.7	79.6	21.7	21.5	0.44	0.4	8.42	8.4	6.5	6.5
			23.2		6.8		79.4		21.2		0.44		8.42		6.4	
24-Mar-23	12:35	0.29	23.6	23.6	6.8	6.7	79.8	79.7	11.2	11.8	0.43	0.4	9.40	9.4	10.3	10.4
			23.6		6.7		79.6		12.3		0.43		9.40		10.4	
27-Mar-23	12:45	0.33	23.6	23.6	6.8	6.8	80.4	80.3	12.1	12.0	0.44	0.4	8.23	8.2	7.5	7.0
			23.6		6.8		80.1		11.9		0.44		8.23		6.4	
29-Mar-23	13:15	0.29	22.1	22.1	7.0	7.0	81.0	80.9	10.9	10.8	0.41	0.4	7.90	7.9	9.3	9.0
			22.1		7.0		80.7		10.7		0.41		7.90		8.6	
31-Mar-23	12:40	0.28	22.2	22.2	7.1	7.1	81.9	81.7	10.9	11.1	0.39	0.4	7.82	7.8	2.9	3.5
			22.2		7.1		81.4		11.2		0.39		7.82		4.1	
3-Apr-23	12:30	0.29	22.2	22.2	6.9	6.8	78.9	78.7	11.1	11.2	0.40	0.4	7.87	7.9	3.2	3.1
			22.2		6.8		78.5		11.3		0.40		7.87		2.9	
			A/L Level		6.7	5%ile			21.7	95%ile				96.1	95%ile	
					6.7	1%ile			22.0	99%ile				152.9	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)	
Average	7.0
Min	6.7
Max	7.7

Turbidity (NTU)	
Average	14.8
Min	9.3
Max	21.9

SS	
Average	20.4
Min	3.1
Max	133.5

Baseline Water Quality Monitoring at M5a

Baseline Water Quality Monitoring at M5a																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
8-Mar-23	9:37	0.13	19.6	19.6	6.3	6.3	68.5	68.0	12.7	12.9	0.1	0.1	8.1	8.1	37.9	37.7
			19.6		6.2		67.5		13.0		0.1		8.1		37.4	
10-Mar-23	9:54	0.09	20.9	20.9	6.2	6.1	69.2	68.9	13.2	13.5	0.2	0.2	8.6	8.6	20.8	21.6
			20.9		6.1		68.6		13.7		0.2		8.6		22.3	
13-Mar-23	9:33	0.15	20.0	20.0	6.3	6.2	69.1	68.6	12.5	12.6	0.1	0.1	8.5	8.5	28.4	27.5
			20.0		6.2		68.0		12.7		0.1		8.5		26.5	
15-Mar-23	9:30	0.14	20.1	20.1	6.5	6.5	72.0	71.7	13.1	13.1	0.1	0.1	7.6	7.6	50.8	50.6
			20.1		6.5		71.3		13.0		0.1		7.6		50.4	
17-Mar-23	9:35	0.14	21.2	21.2	5.4	5.4	61.1	61.2	12.8	13.0	0.1	0.1	7.9	7.9	9.4	8.9
			21.2		5.4		61.2		13.1		0.1		7.9		8.3	
20-Mar-23	10:00	0.13	21.7	21.7	5.6	5.5	63.3	62.6	14.2	14.1	0.1	0.1	7.9	7.9	28.3	24.7
			21.7		5.4		61.8		13.9		0.1		7.9		21.0	
22-Mar-23	9:50	0.13	22.7	22.7	5.7	5.6	66.0	65.3	24.3	24.3	0.1	0.1	8.4	8.4	118.0	125.5
			22.7		5.6		64.5		24.3		0.1		8.4		133.0	
24-Mar-23	9:45	0.10	23.7	23.7	5.3	5.3	61.8	61.6	13.2	13.4	0.1	0.1	8.5	8.5	58.7	59.5
			23.7		5.2		61.4		13.6		0.1		8.5		60.2	
27-Mar-23	9:30	0.15	20.5	20.5	6.1	6.1	67.8	67.7	7.7	7.6	0.1	0.1	8.1	8.1	2.8	3.0
			20.5		6.1		67.5		7.5		0.2		8.1		3.2	
29-Mar-23	11:20	0.15	20.8	20.8	5.5	5.5	62.0	61.8	11.7	12.0	0.2	0.2	7.2	7.2	2.4	2.5
			20.8		5.5		61.6		12.3		0.2		7.2		2.5	
31-Mar-23	9:30	0.13	21.3	21.3	5.1	5.1	57.9	57.7	12.1	12.4	0.2	0.2	7.8	7.8	7.8	8.0
			21.3		5.1		57.5		12.7		0.2		7.8		8.1	
3-Apr-23	9:25	0.13	21.6	21.6	5.7	5.7	64.9	64.3	12.1	12.5	0.2	0.2	7.7	7.7	16.5	17.0
			21.6		5.6		63.7		12.9		0.2		7.7		17.8	
			A/L Level		5.1	5%ile			22.8	95%ile				109.3	95%ile	
					5.1	1%ile			24.3	99%ile				129.6	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)	
Average	5.8
Min	5.1
Max	6.5

Turbidity (NTU)	
Average	13.4
Min	7.6
Max	24.3

SS	
Average	32.2
Min	2.5
Max	125.5

Baseline Water Quality Monitoring at M6a

Baseline Water Quality Monitoring at M6a																	
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS		
8-Mar-23	10:34	0.09	18.9	18.9	8.2	8.2	88.3	87.9	9.2	9.3	0.1	0.1	9.9	9.9	1.9	1.8	
			18.9		8.2		87.5		9.4		0.1		9.9		1.6		
10-Mar-23	10:19	0.11	20.6	20.6	8.1	8.1	89.6	89.5	11.6	11.7	0.1	0.1	9.8	9.8	2.3	2.4	
			20.6		8.0		89.4		11.8		0.1		9.8		2.5		
13-Mar-23	9:59	0.15	19.2	19.2	7.2	7.1	77.2	76.9	10.1	10.1	0.1	0.1	8.4	8.4	1.8	1.7	
			19.2		7.1		76.6		10.1		0.1		8.4		1.6		
15-Mar-23	10:00	0.10	19.0	19.0	7.5	7.5	81.3	81.2	11.2	11.3	0.1	0.1	8.2	8.2	2.6	2.9	
			19.0		7.5		81.0		11.4		0.1		8.2		3.1		
17-Mar-23	10:10	0.13	20.3	20.3	7.2	7.2	79.8	79.7	12.3	12.1	0.1	0.1	8.5	8.5	2.9	2.6	
			20.3		7.2		79.5		11.9		0.1		8.5		2.3		
20-Mar-23	9:30	0.13	21.3	21.3	6.6	6.6	74.6	74.6	11.0	11.3	0.1	0.1	8.2	8.2	0.6	0.7	
			21.2		6.6		74.5		11.5		0.1		8.2		0.8		
22-Mar-23	9:30	0.11	22.6	22.6	7.0	6.9	80.4	80.4	11.1	11.1	0.1	0.1	8.8	8.8	2.7	2.4	
			22.6		6.9		80.3		11.0		0.1		8.8		2.1		
24-Mar-23	9:30	0.11	23.1	23.1	6.3	6.3	73.1	73.1	10.2	10.4	0.1	0.1	8.5	8.5	2.0	2.1	
			23.1		6.3		73.0		10.5		0.1		8.5		2.2		
27-Mar-23	10:20	0.14	20.0	20.0	7.5	7.5	82.7	82.6	14.3	14.3	0.1	0.1	8.0	8.0	8.5	8.6	
			20.0		7.5		82.4		14.3		0.1		8.0		8.7		
29-Mar-23	10:30	0.14	20.2	20.2	7.1	7.1	78.3	78.3	12.5	12.8	0.1	0.1	7.2	7.2	4.6	4.3	
			20.2		7.1		78.2		13.1		0.1		7.2		4.0		
31-Mar-23	10:40	0.12	20.8	20.8	7.1	7.1	79.0	78.9	10.8	11.0	0.1	0.1	7.9	7.9	5.7	5.3	
			20.8		7.0		78.7		11.1		0.1		7.9		4.9		
3-Apr-23	10:35	0.11	21.3	21.3	7.3	7.3	82.4	81.3	10.1	10.1	0.1	0.1	8.0	8.0	3.6	3.8	
			21.3		7.2		80.1		10.1		0.1		8.0		3.9		
			A/L Level		6.3	5%ile			14.1	95%ile					8.1	95%ile	
					6.3	1%ile			14.3	99%ile					8.7	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)	
Average	7.2
Min	6.3
Max	8.2

Turbidity (NTU)	
Average	11.3
Min	9.3
Max	14.3

SS	
Average	3.2
Min	0.7
Max	8.6

Baseline Water Quality Monitoring at U7a

Baseline Water Quality Monitoring at U7a																	
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS		
8-Mar-23	10:11	0.00															
10-Mar-23	10:37	0.00															
13-Mar-23	10:37	0.00															
15-Mar-23	10:30	0.00															
17-Mar-23	10:35	0.00															
20-Mar-23	10:30	0.00															
22-Mar-23	10:25	0.00															
24-Mar-23	10:30	0.00															
27-Mar-23	9:50	0.02															
29-Mar-23	10:45	0.00															
31-Mar-23	9:55	0.00															
3-Apr-23	9:50	0.00															
			A/L Level			5%ile				95%ile					95%ile		
						1%ile				99%ile					99%ile		

DO (mg/L)	
Average	
Min	
Max	

Turbidity (NTU)	
Average	
Min	
Max	

SS	
Average	
Min	
Max	

Baseline Water Quality Monitoring at U6a

Baseline Water Quality Monitoring at U6a												
Date	Time	Depth (m)	Temp (oC)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Salinity	pH	SS			
8-Mar-23	10:17	0.00										
10-Mar-23	10:49	0.00										
13-Mar-23	10:46	0.00										
15-Mar-23	10:45	0.00										
17-Mar-23	10:55	0.00										
20-Mar-23	10:45	0.00										
22-Mar-23	10:40	0.00										
24-Mar-23	10:45	0.00										
27-Mar-23	10:05	0.00										
29-Mar-23	11:00	0.00										
31-Mar-23	10:10	0.00										
3-Apr-23	10:10	0.00										
			A/L Level	5%ile		95%ile				95%ile		
				1%ile		99%ile				99%ile		

DO (mg/L)	
Average	
Min	
Max	

Turbidity (NTU)	
Average	
Min	
Max	

SS	
Average	
Min	
Max	

Baseline Water Quality Monitoring at U5a

Baseline Water Quality Monitoring at U5a												
Date	Time	Depth (m)	Temp (oC)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Salinity	pH	SS			
8-Mar-23	11:07	0.00										
10-Mar-23	11:01	0.00										
13-Mar-23	11:01	0.00										
15-Mar-23	11:01	0.00										
17-Mar-23	11:06	0.00										
20-Mar-23	11:10	0.00										
22-Mar-23	11:10	0.00										
24-Mar-23	11:15	0.00										
27-Mar-23	11:20	0.00										
29-Mar-23	12:00	0.00										
31-Mar-23	11:00	0.00										
3-Apr-23	10:55	0.00										
			A/L Level	5%ile		95%ile				95%ile		
				1%ile		99%ile				99%ile		

DO (mg/L)	
Average	
Min	
Max	

Turbidity (NTU)	
Average	
Min	
Max	

SS	
Average	
Min	
Max	

Baseline Water Quality Monitoring at U10a

Baseline Water Quality Monitoring at U10												
Date	Time	Depth (m)	Temp (oC)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Salinity	pH	SS			
8-Mar-23	11:20	0.00										
10-Mar-23	11:17	0.00										
13-Mar-23	11:20	0.00										
15-Mar-23	11:16	0.00										
17-Mar-23	11:26	0.00										
20-Mar-23	11:30	0.00										
22-Mar-23	11:25	0.00										
24-Mar-23	11:30	0.00										
27-Mar-23	11:35	0.00										
29-Mar-23	12:15	0.00										
31-Mar-23	11:20	0.00										
3-Apr-23	11:15	0.00										
			A/L Level		5%ile						95%ile	
					1%ile						99%ile	

DO (mg/L)	
Average	
Min	
Max	

Turbidity (NTU)	
Average	
Min	
Max	

SS	
Average	
Min	
Max	

Baseline Water Quality Monitoring at M7a

Baseline Water Quality Monitoring at M7a														
Date	Time	Depth (m)	Temp (oC)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Salinity	pH	SS					
8-Mar-23	11:45	0.08	20.9	20.9	7.1	7.1	79.5	79.4	9.9	0.1	9.2	9.2	2.1	2.3
			20.9		7.1		79.3		9.6	0.1	9.2		2.4	
10-Mar-23	11:35	0.09	21.7	21.7	7.3	7.3	83.1	82.9	10.1	0.2	9.1	9.1	13.1	13.0
			21.7		7.3		82.6		9.8	0.2	9.1		12.9	
13-Mar-23	11:31	0.09	20.6	20.6	6.7	6.7	74.8	74.8	11.6	0.1	7.5	7.5	4.2	4.8
			20.6		6.7		74.7		10.9	0.1	7.5		5.4	
15-Mar-23	11:35	0.08	21.3	21.3	7.0	7.0	79.4	79.4	11.1	0.1	8.0	8.0	3.3	3.0
			21.3		7.0		79.3		10.2	0.1	8.0		2.6	
17-Mar-23	11:45	0.09	22.0	22.0	6.4	6.4	73.5	73.5	11.7	0.1	8.1	8.1	2.7	3.5
			22.0		6.4		73.4		10.9	0.1	8.1		4.2	
20-Mar-23	11:50	0.09	22.5	22.5	6.6	6.5	75.8	75.6	10.9	0.1	8.2	8.2	3.3	3.8
			22.5		6.5		75.4		10.4	0.1	8.2		4.3	
22-Mar-23	11:40	0.09	23.2	23.2	6.2	6.1	72.0	71.8	12.3	0.1	8.3	8.3	7.0	6.6
			23.2		6.1		71.5		11.9	0.1	8.3		6.2	
24-Mar-23	11:50	0.09	23.6	23.6	6.1	6.1	71.3	71.2	10.5	0.1	9.2	9.2	5.2	5.4
			23.6		6.1		71.1		10.6	0.1	9.2		5.5	
27-Mar-23	11:55	0.10	21.7	21.7	7.4	7.4	84.4	84.3	8.9	0.1	7.6	7.6	2.8	2.6
			21.7		7.4		84.1		9.2	0.1	7.6		2.4	
29-Mar-23	12:35	0.09	22.1	22.1	7.6	7.6	87.2	87.1	11.4	0.2	7.7	7.7	2.6	2.4
			22.1		7.6		87.0		11.6	0.2	7.7		2.1	
31-Mar-23	11:45	0.08	22.1	22.1	7.1	7.0	80.9	80.7	12.7	0.1	7.8	7.8	3.0	3.0
			22.1		7.0		80.4		11.4	0.1	7.8		3.0	
3-Apr-23	11:40	0.10	22.1	22.1	6.6	6.6	75.5	75.3	12.3	0.1	7.8	7.8	3.2	3.0
			22.1		6.6		75.0		12.6	0.1	7.8		2.8	
			A/L Level		6.1	5%ile			12.6	95%ile			12.0	95%ile
					6.1	1%ile			12.7	99%ile			13.1	99%ile

DO (mg/L)	
Average	6.8
Min	6.1
Max	7.6

Turbidity (NTU)	
Average	10.9
Min	9.1
Max	12.5

SS	
Average	4.4
Min	2.3
Max	13.0

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

Baseline Water Quality Monitoring at D5a

Baseline Water Quality Monitoring at D5a																
Date	Time	Depth (m)	Temp (oC)		DO (mg/L)		DOS (%)		Turbidity (NTU)		Salinity		pH		SS	
8-Mar-23	12:09	0.16	22.4	22.4	6.9	6.9	82.3	81.7	12.6	13.2	0.4	0.4	8.9	8.9	6.3	6.7
			22.4		6.8		81.0		13.7		0.4		8.9		7.1	
10-Mar-23	12:07	0.15	24.9	25.0	6.6	6.6	80.3	80.1	14.4	14.5	0.3	0.3	9.1	9.1	39.6	39.2
			25.0		6.6		79.9		14.5		0.3		9.1		38.8	
13-Mar-23	11:53	0.09	20.1	20.1	5.6	5.6	61.8	61.6	17.7	18.2	0.4	0.4	7.5	7.5	40.5	41.0
			20.1		5.6		61.4		18.6		0.4		7.5		41.5	
15-Mar-23	11:55	0.12	22.2	22.2	6.5	6.5	75.2	75.0	15.1	15.3	0.4	0.4	7.9	7.9	10.4	10.4
			22.2		6.5		74.7		15.4		0.4		7.9		10.3	
17-Mar-23	12:05	0.13	22.6	22.6	6.3	6.2	72.6	72.3	19.7	19.5	0.4	0.4	8.1	8.1	17.3	17.6
			22.6		6.2		71.9		19.2		0.4		8.1		17.8	
20-Mar-23	12:15	0.14	23.1	23.1	5.9	5.9	69.2	68.6	15.8	15.4	0.4	0.4	8.3	8.3	45.7	57.9
			23.1		5.8		68.0		14.9		0.4		8.3		70.1	
22-Mar-23	12:05	0.13	23.1	23.1	5.6	5.6	65.7	65.6	14.7	14.9	0.3	0.3	8.2	8.2	59.0	50.1
			23.1		5.6		65.4		15.1		0.3		8.2		41.1	
24-Mar-23	12:10	0.14	24.9	24.9	5.8	5.8	70.1	70.0	14.6	14.9	0.4	0.4	8.9	8.9	28.5	29.1
			24.9		5.8		69.8		15.1		0.4		8.9		29.6	
27-Mar-23	12:20	0.20	21.2	21.2	6.5	6.5	73.3	72.9	13.1	13.0	0.3	0.3	7.7	7.7	6.4	6.7
			21.2		6.4		72.5		12.8		0.3		7.7		7.0	
29-Mar-23	12:55	0.18	21.7	21.7	5.0	4.9	56.5	56.2	13.1	13.6	0.4	0.4	7.8	7.8	18.0	17.5
			21.7		4.9		55.9		14.0		0.4		7.8		17.0	
31-Mar-23	12:15	0.19	21.2	21.2	6.3	6.3	7.1	7.1	12.8	12.6	0.3	0.3	7.7	7.7	4.1	4.7
			21.2		6.3		7.0		12.3		0.3		7.7		5.3	
3-Apr-23	12:10	0.25	22.2	22.2	5.6	5.6	64.7	64.4	14.7	15.0	0.3	0.3	7.9	7.9	5.1	5.6
			22.2		5.6		64.0		15.2		0.3		7.9		6.0	
			A/L Level	5.1	5%ile			19.1	95%ile					57.0	95%ile	
				4.9	1%ile			19.6	99%ile					67.5	99%ile	

Note: the water depths were less than 3m, and water samples were collected from 0.1m below water surface

DO (mg/L)	
Average	6.0
Min	4.9
Max	6.9

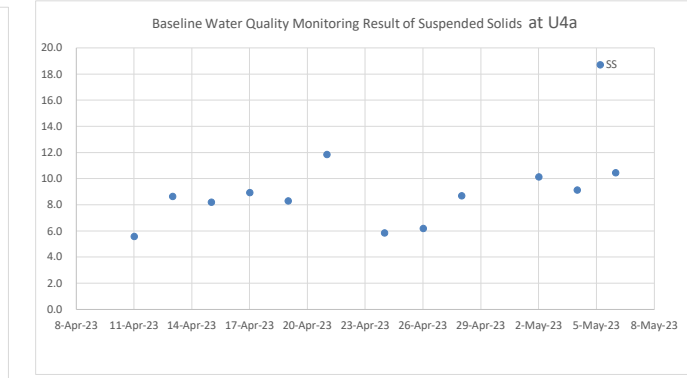
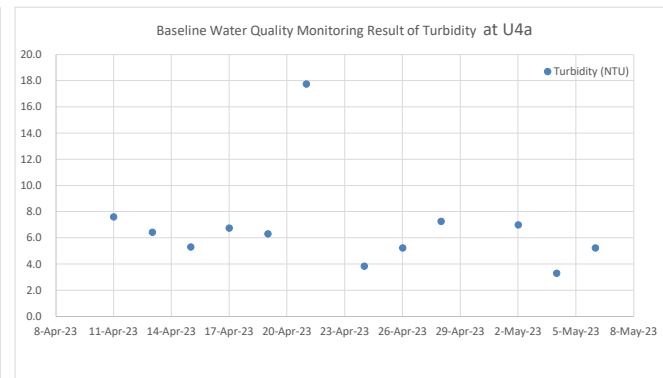
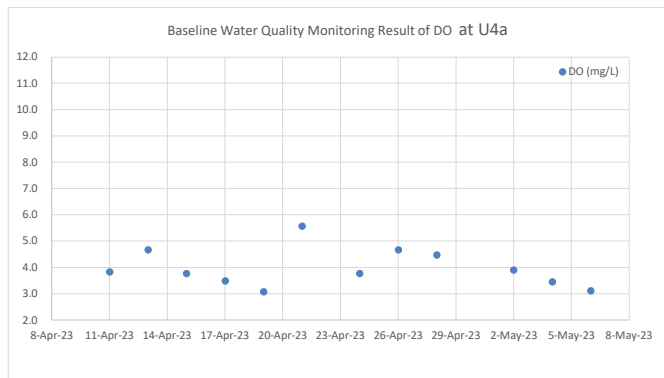
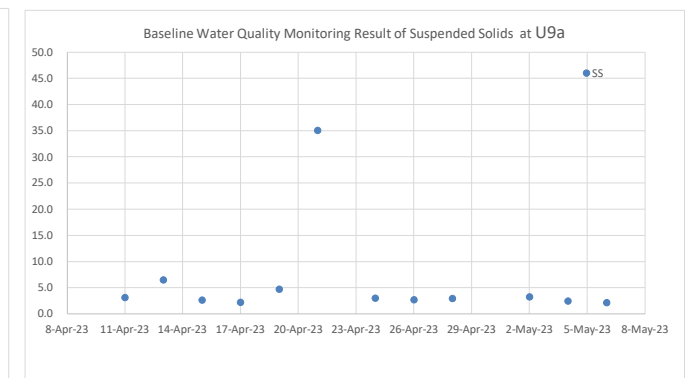
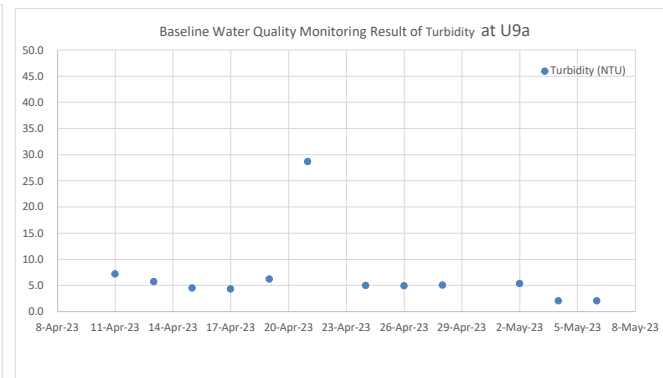
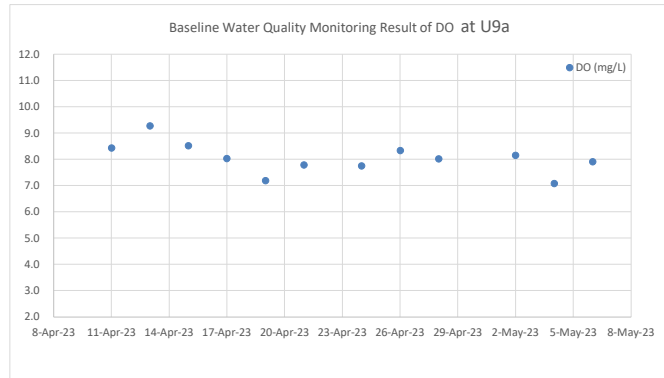
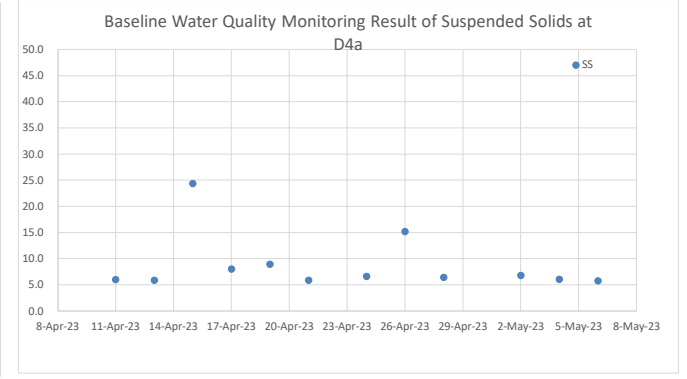
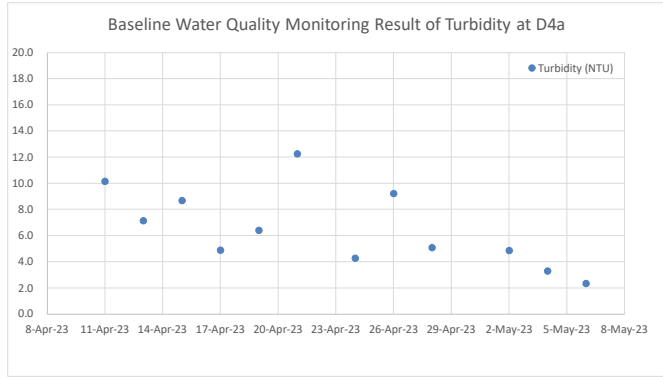
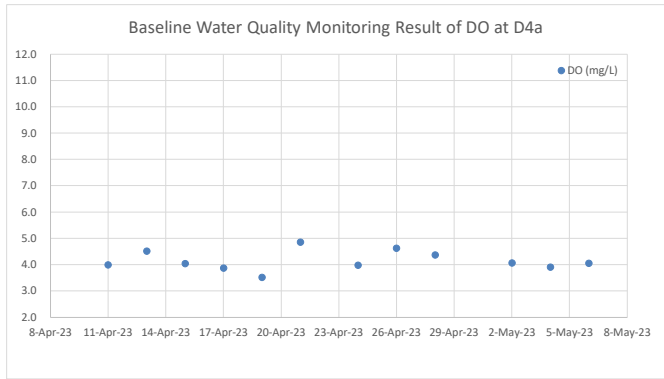
Turbidity (NTU)	
Average	15.0
Min	12.6
Max	19.5

SS	
Average	23.9
Min	4.7
Max	57.9

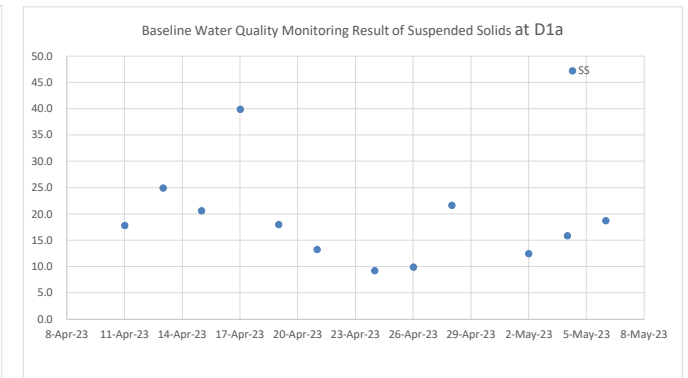
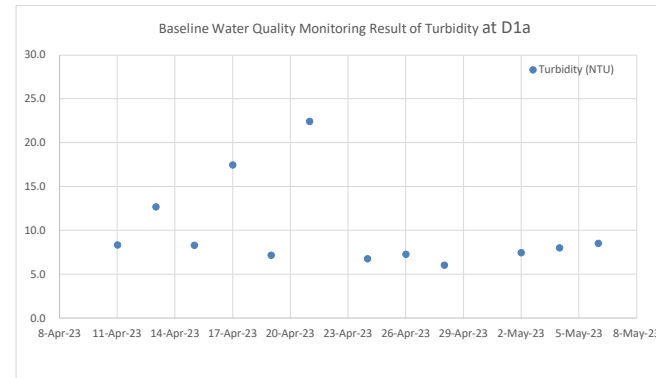
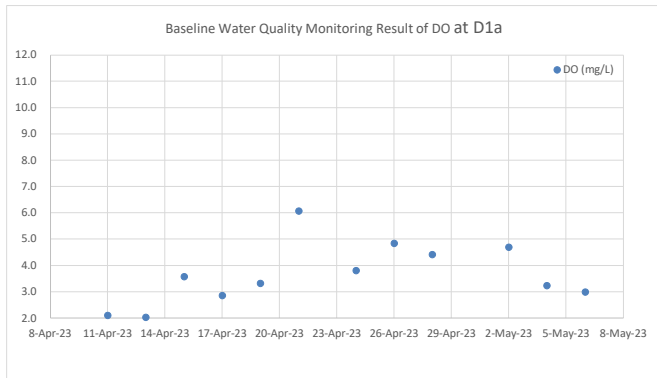
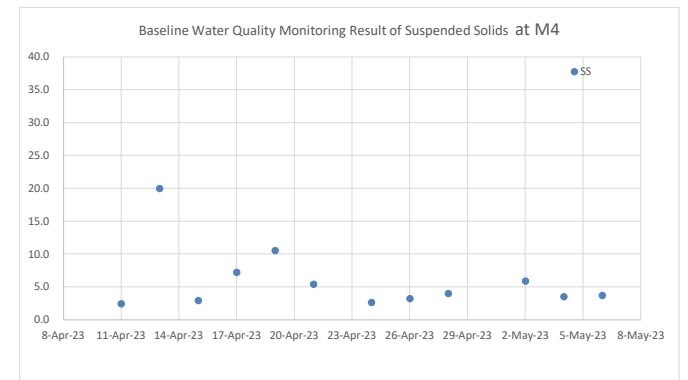
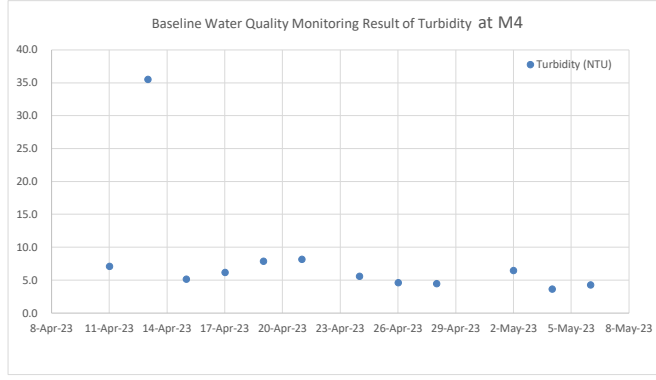
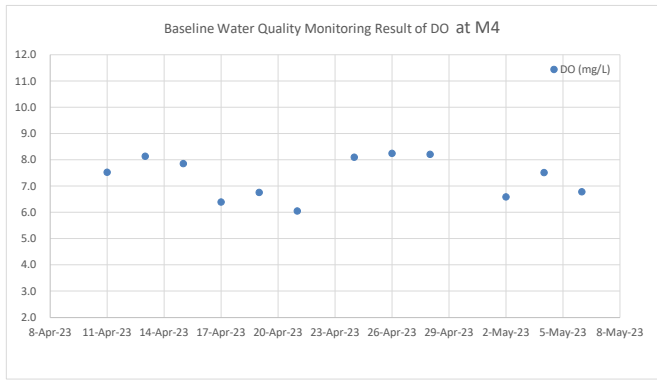
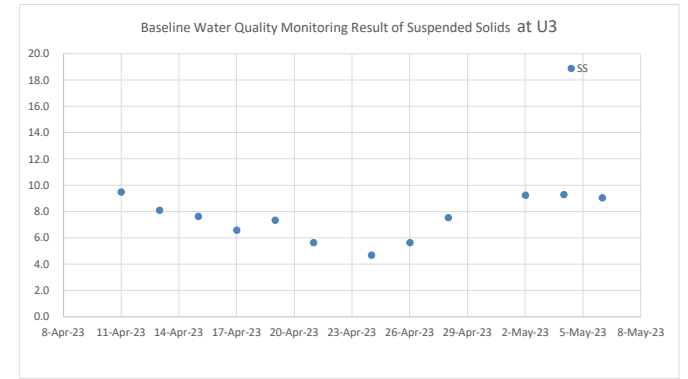
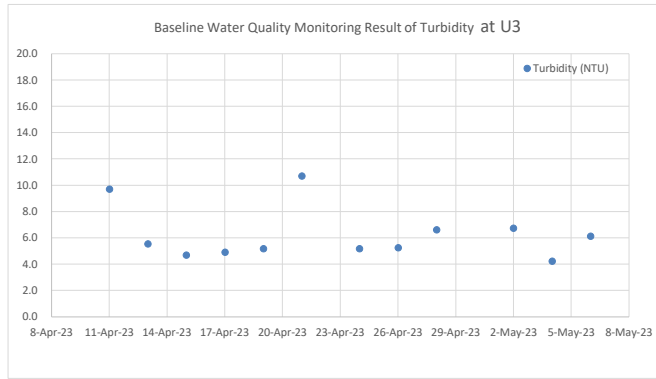
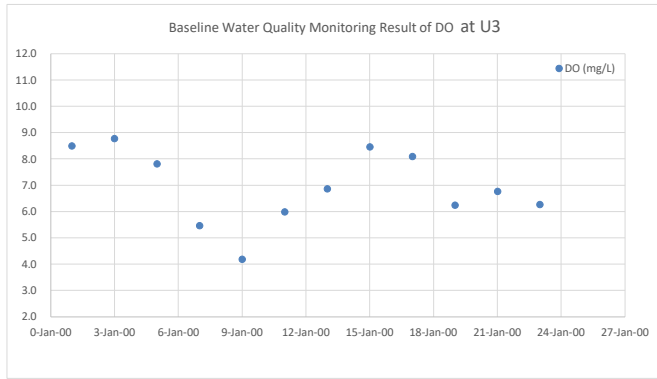
Appendix F5

Graphical Presentation of Baseline Water Quality Monitoring Data

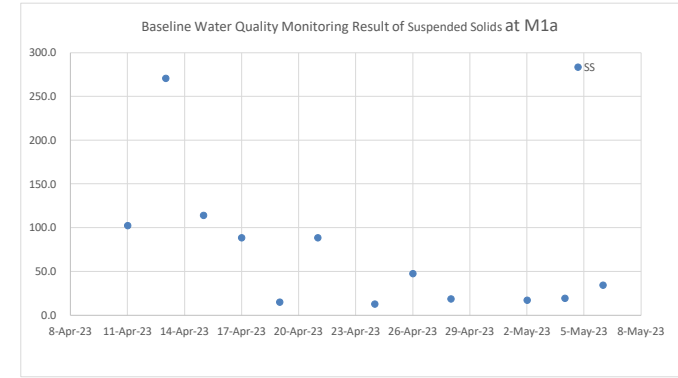
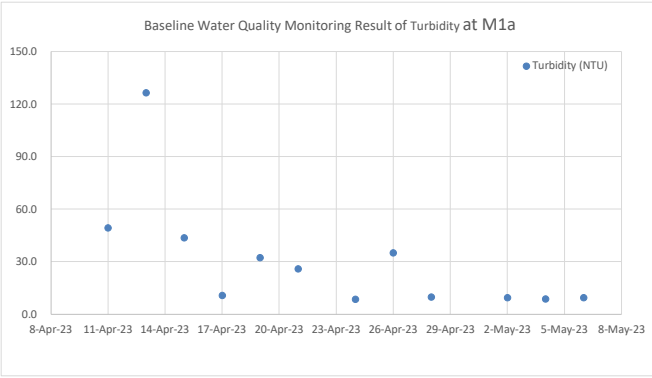
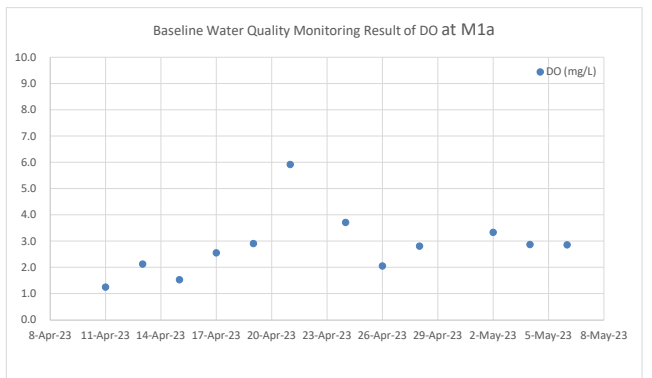
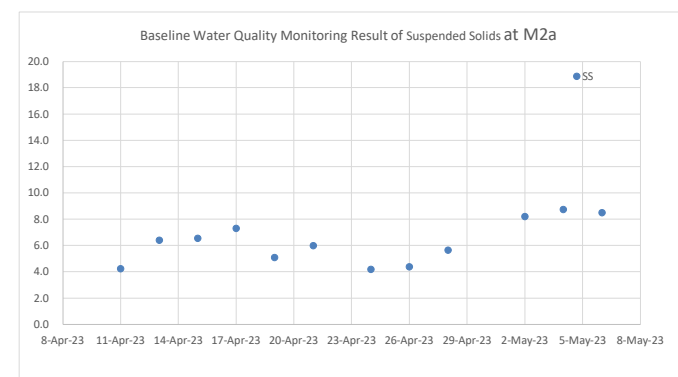
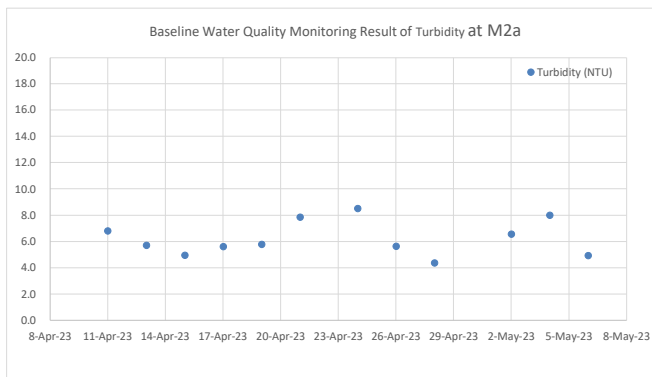
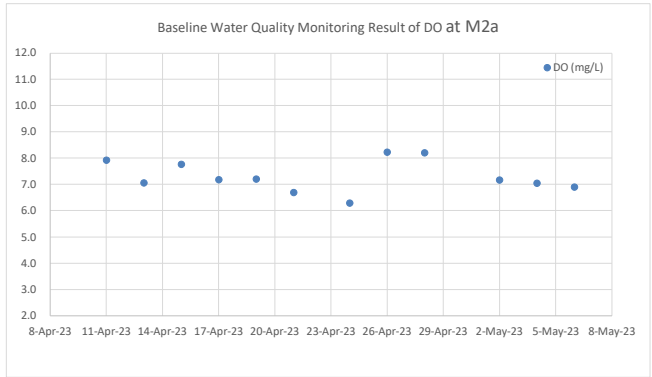
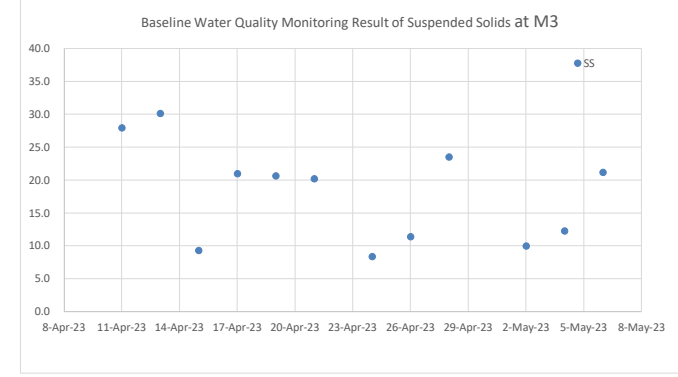
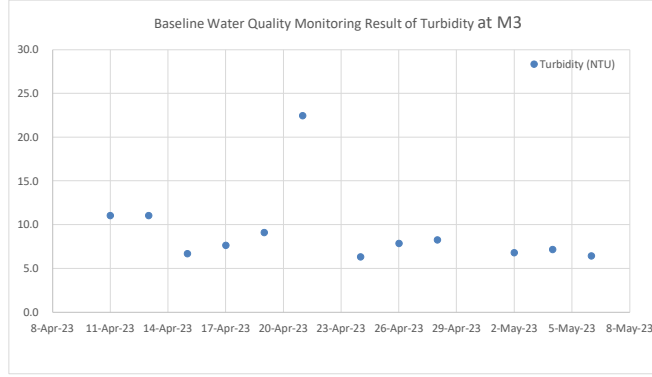
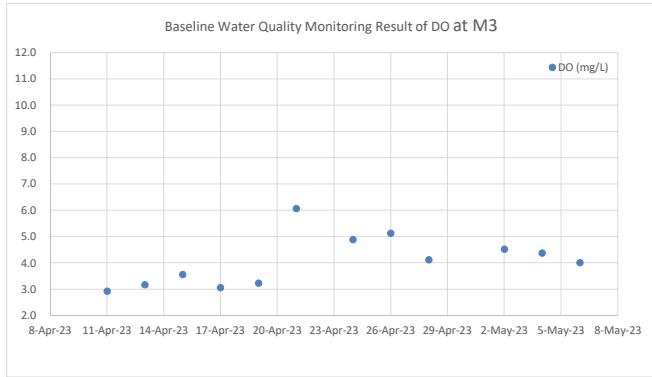
APPENDIX F5 GRAPHICAL PRESENTATION OF BASELINE WATER QUALITY MONITORING DATA



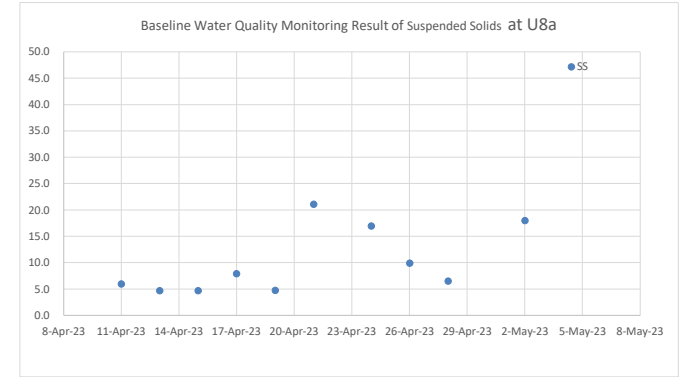
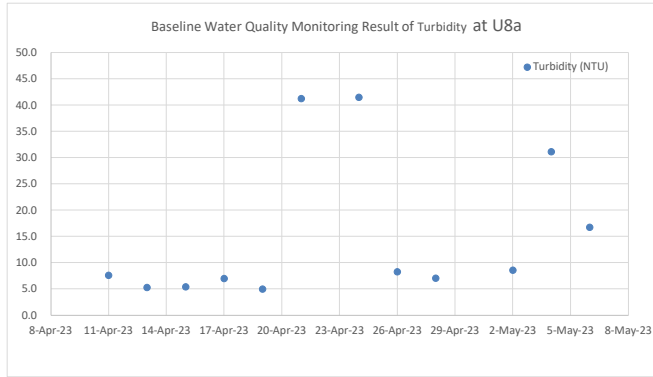
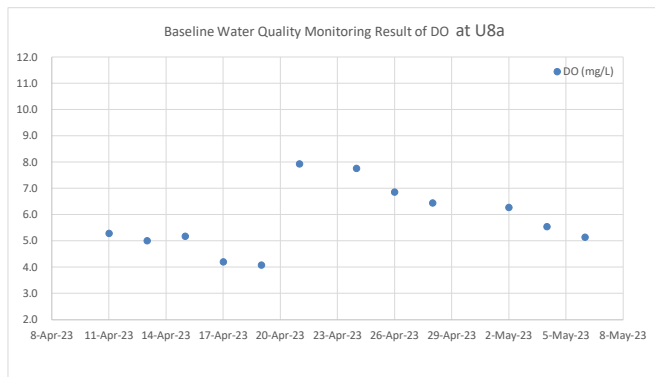
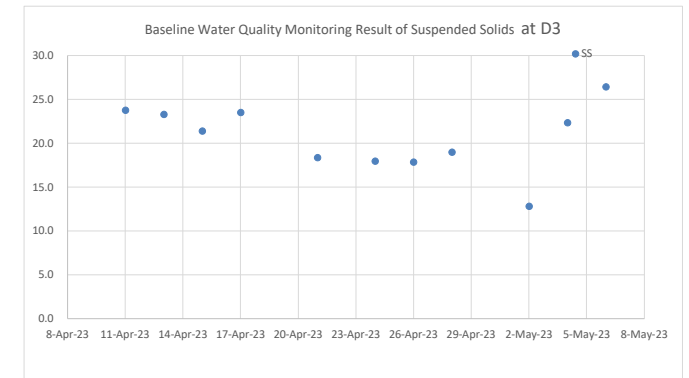
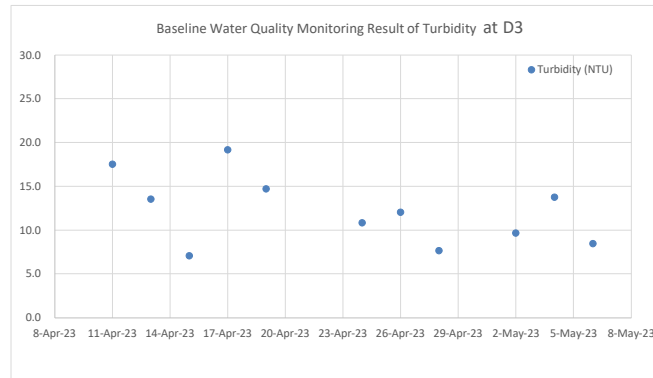
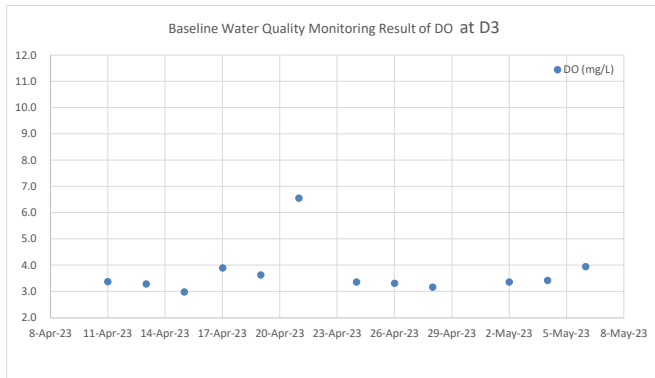
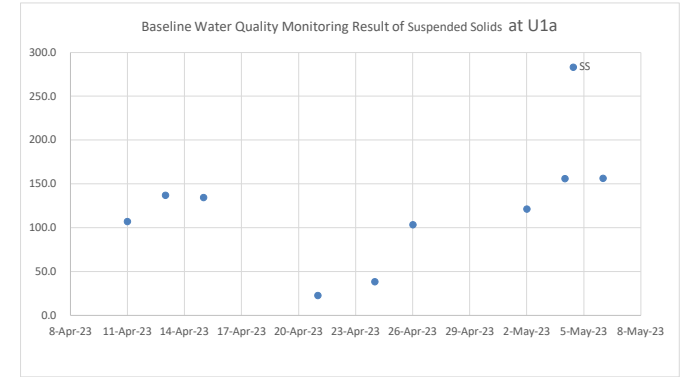
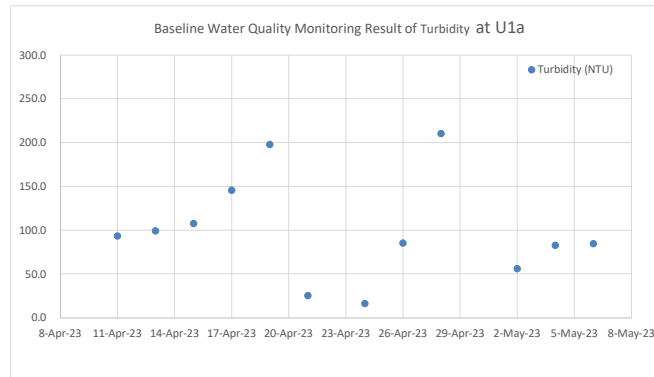
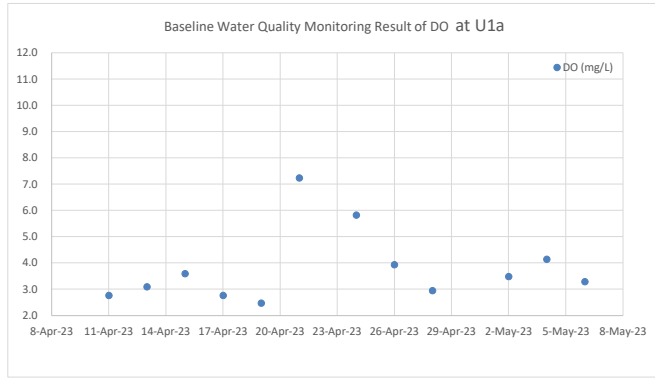
APPENDIX F5 GRAPHICAL PRESENTATION OF BASELINE WATER QUALITY MONITORING DATA



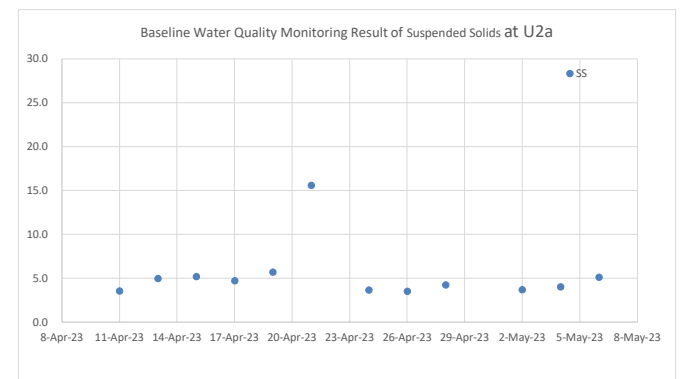
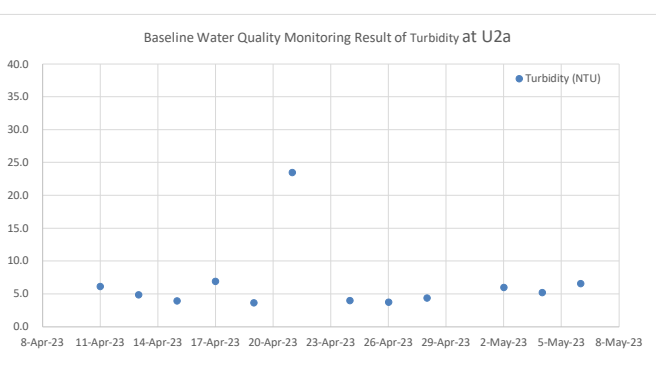
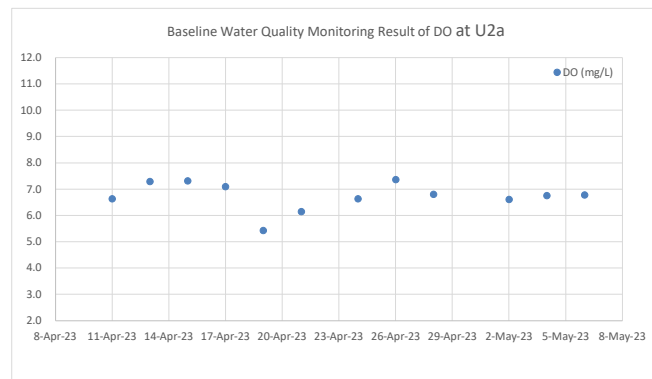
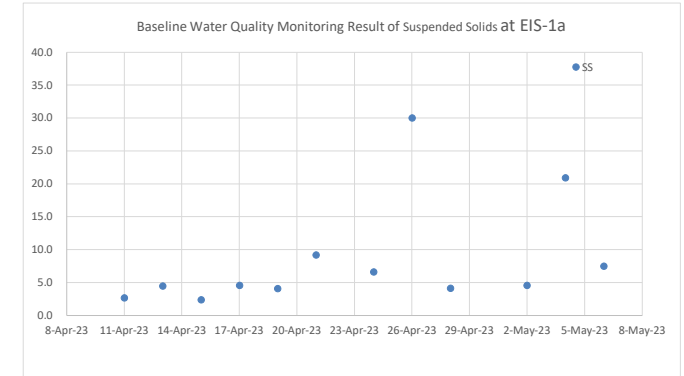
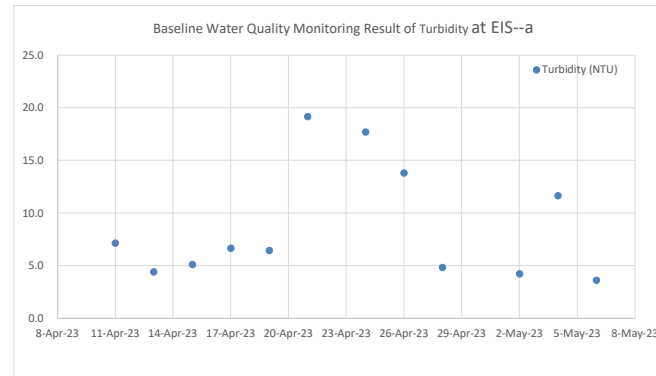
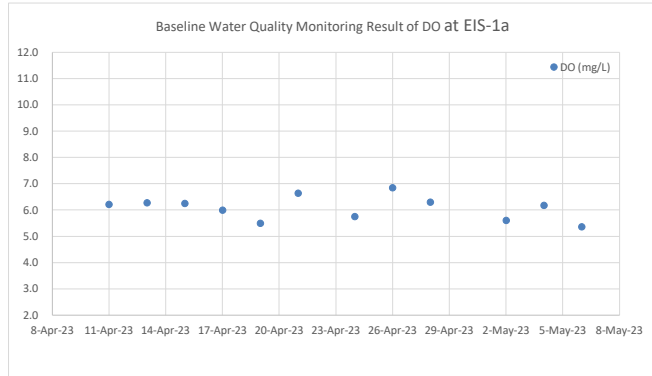
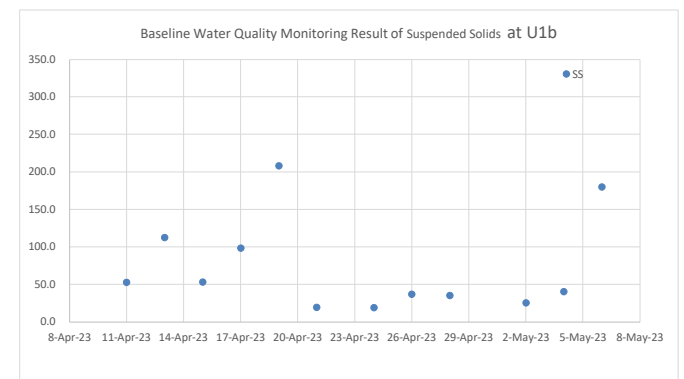
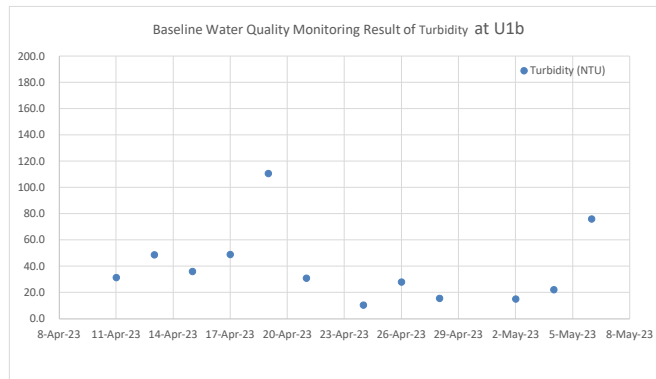
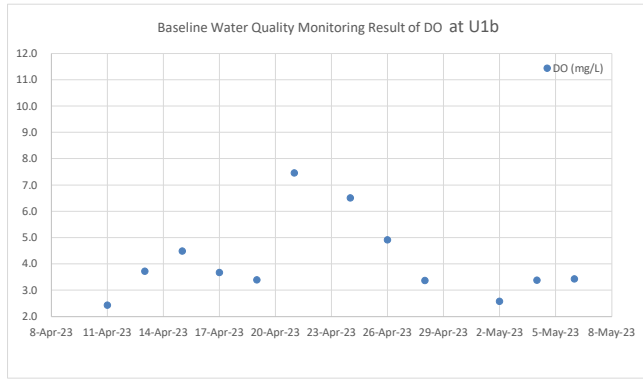
APPENDIX F5 GRAPHICAL PRESENTATION OF BASELINE WATER QUALITY MONITORING DATA



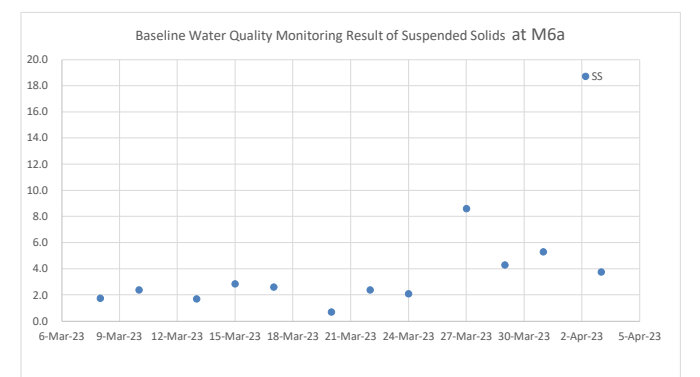
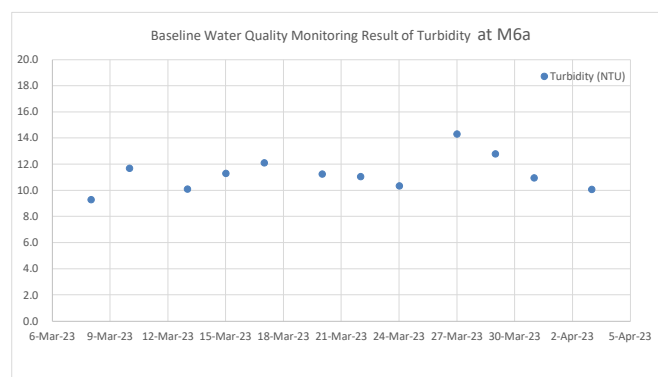
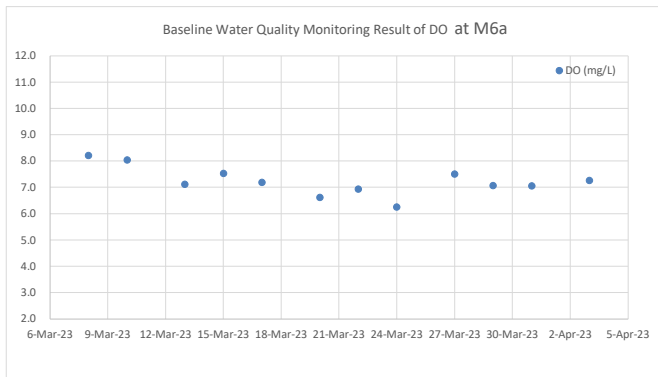
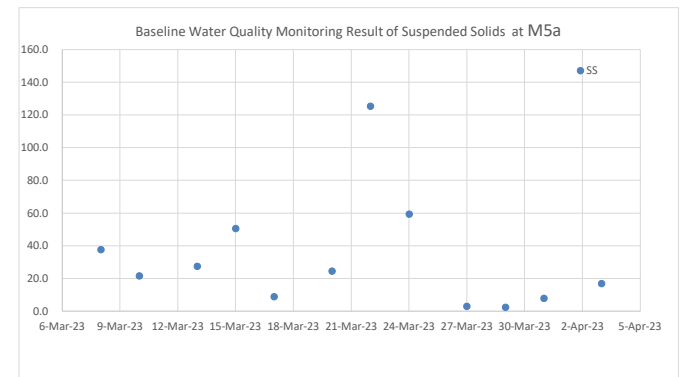
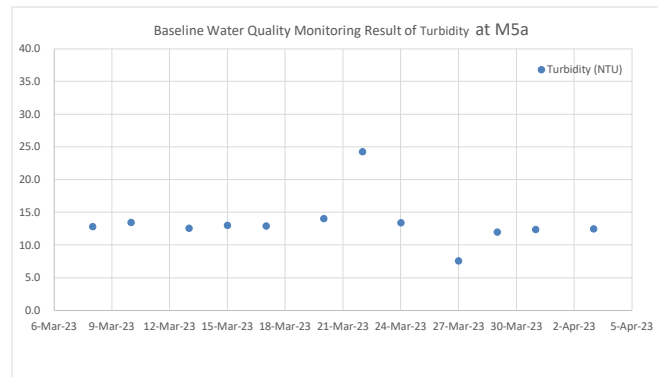
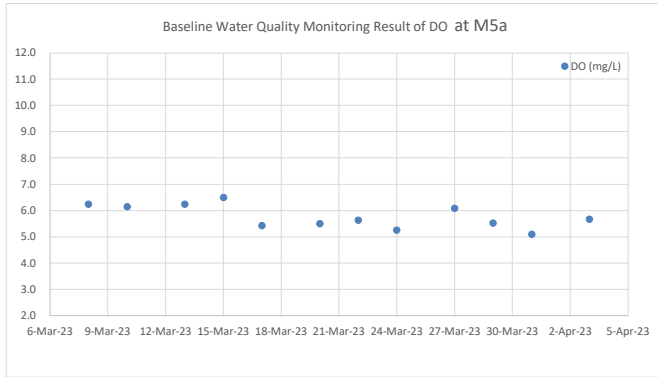
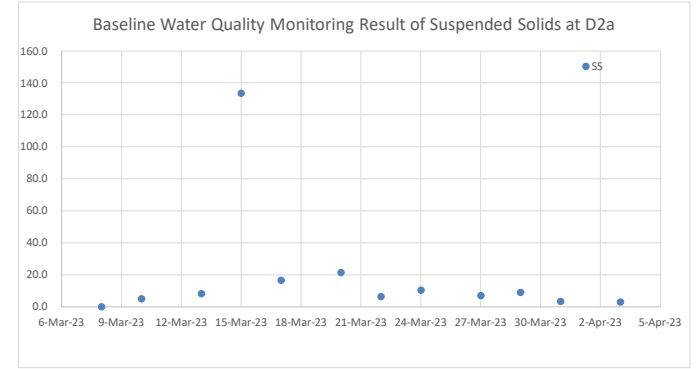
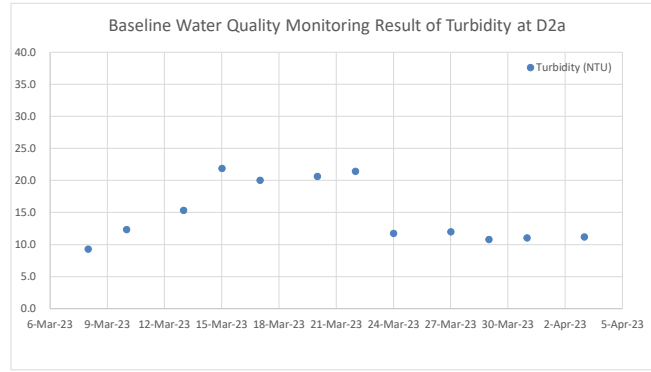
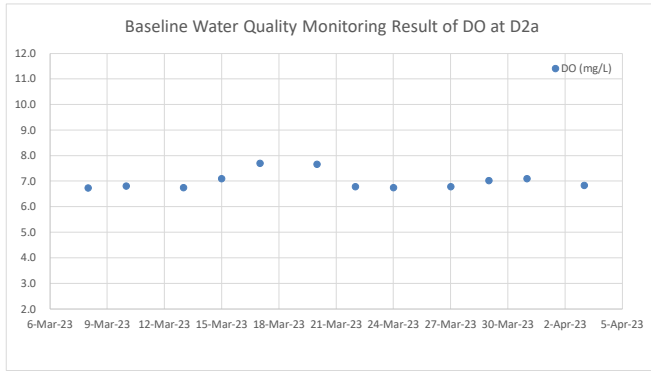
APPENDIX F5 GRAPHICAL PRESENTATION OF BASELINE WATER QUALITY MONITORING DATA



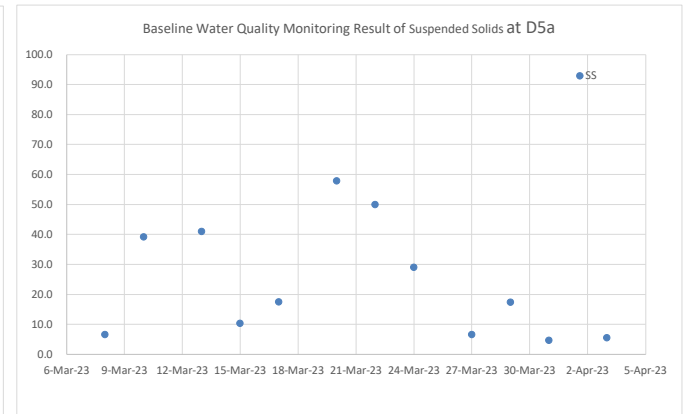
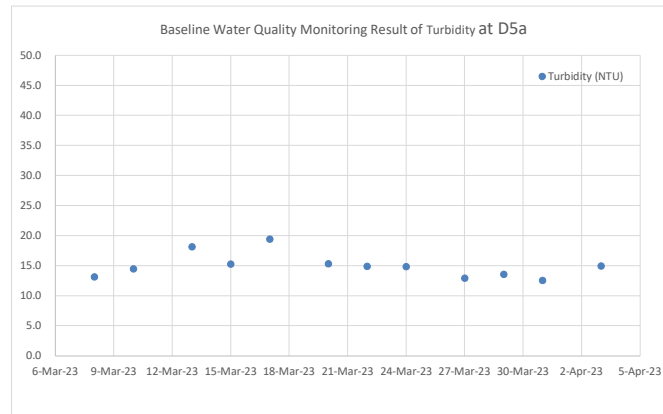
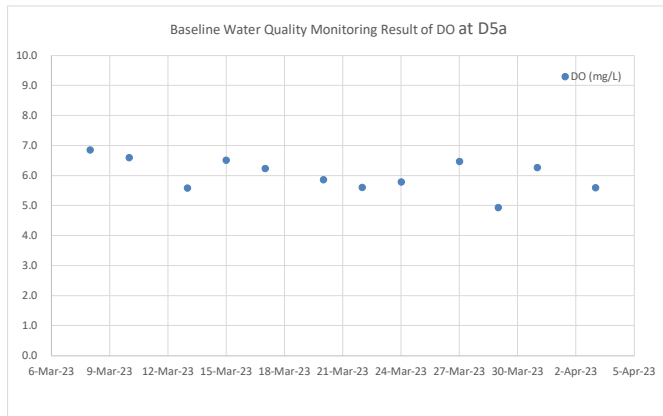
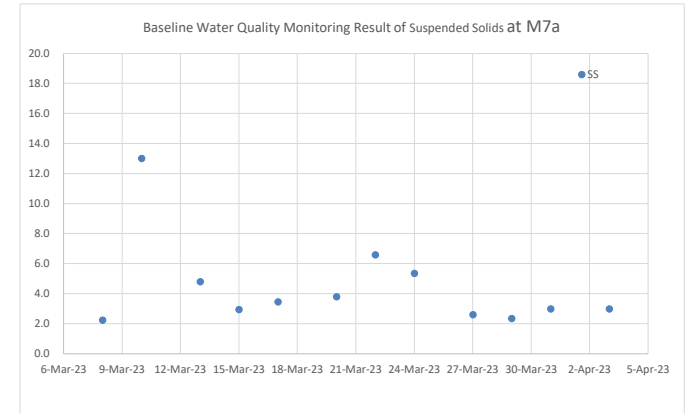
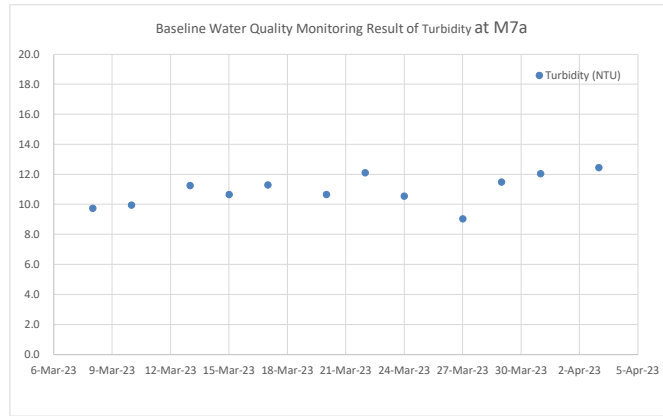
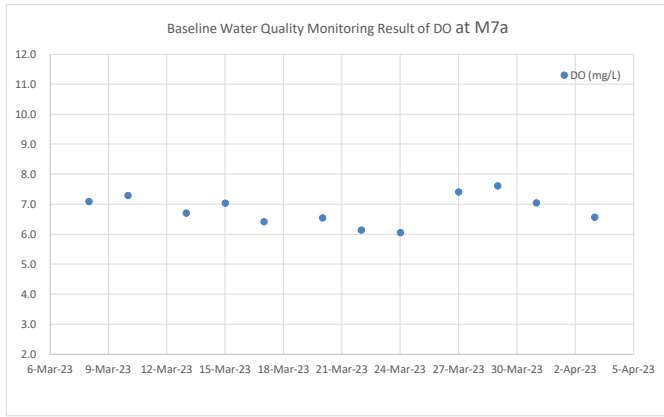
APPENDIX F5 GRAPHICAL PRESENTATION OF BASELINE WATER QUALITY MONITORING DATA



APPENDIX F5 GRAPHICAL PRESENTATION OF BASELINE WATER QUALITY MONITORING DATA



APPENDIX F5 GRAPHICAL PRESENTATION OF BASELINE WATER QUALITY MONITORING DATA




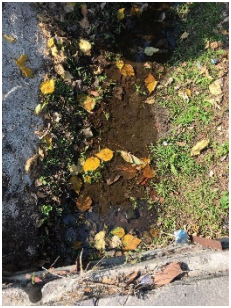

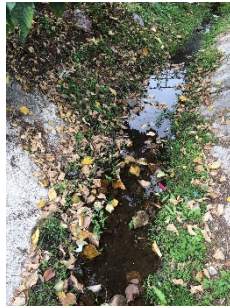








Appendix F6

Photographic Records for Water Quality Monitoring Stations

Appendix F6

Photographic Records for Water Quality Monitoring Stations (8 March to 3 April 2023)




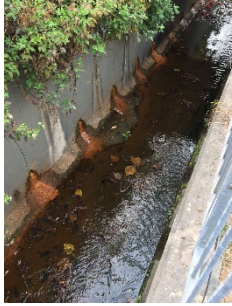
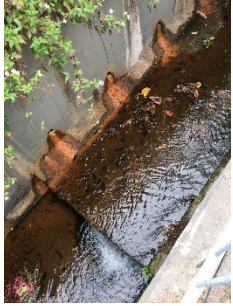
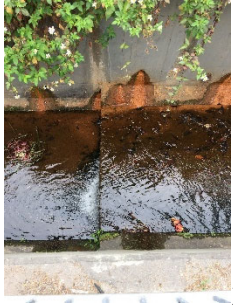

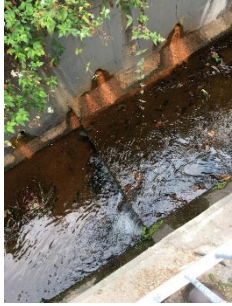



M5a

 <p>8.3.2023</p>	 <p>10.3.2023</p>	 <p>13.3.2023</p>	 <p>15.3.2023</p>
 <p>17.3.2023</p>	 <p>20.3.2023</p>	 <p>22.3.2023</p>	 <p>24.3.2023</p>
 <p>27.3.2023</p>	 <p>29.3.2023</p>	 <p>31.3.2023</p>	 <p>3.4.2023</p>

M6a

 <p>8.3.2023</p>	 <p>10.3.2023</p>	 <p>13.3.2023</p>	 <p>15.3.2023</p>
 <p>17.3.2023</p>	 <p>20.3.2023</p>	 <p>22.3.2023</p>	 <p>24.3.2023</p>
 <p>27.3.2023</p>	 <p>29.3.2023</p>	 <p>31.3.2023</p>	 <p>3.4.2023</p>






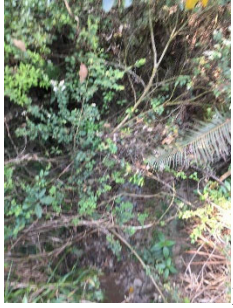

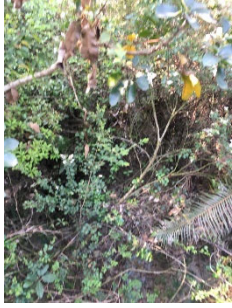




M7a

 <p>8.3.2023</p>	 <p>10.3.2023</p>	 <p>13.3.2023</p>	 <p>15.3.2023</p>
 <p>17.3.2023</p>	 <p>20.3.2023</p>	 <p>22.3.2023</p>	 <p>24.3.2023</p>
 <p>27.3.2023</p>	 <p>29.3.2023</p>	 <p>31.3.2023</p>	 <p>3.4.2023</p>


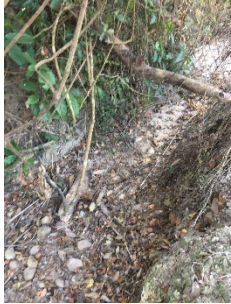









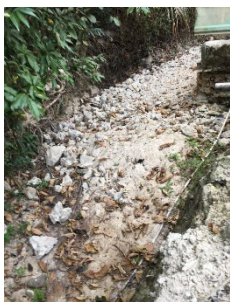
U5a

 <p>8.3.2023</p>	 <p>10.3.2023</p>	 <p>13.3.2023</p>	 <p>15.3.2023</p>
 <p>17.3.2023</p>	 <p>20.3.2023</p>	 <p>22.3.2023</p>	 <p>24.3.2023</p>
 <p>27.3.2023</p>	 <p>29.3.2023</p>	 <p>31.3.2023</p>	 <p>3.4.2023</p>



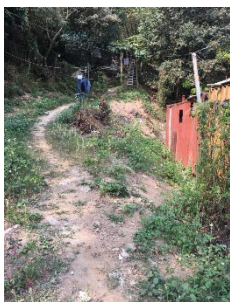
U6a

 <p>8.3.2023</p>	 <p>10.3.2023</p>	 <p>13.3.2023</p>	 <p>15.3.2023</p>
 <p>17.3.2023</p>	 <p>20.3.2023</p>	 <p>22.3.2023</p>	 <p>24.3.2023</p>
 <p>27.3.2023</p>	 <p>29.3.2023</p>	 <p>31.3.2023</p>	 <p>3.4.2023</p>








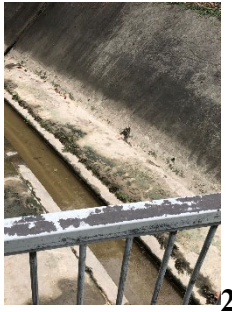



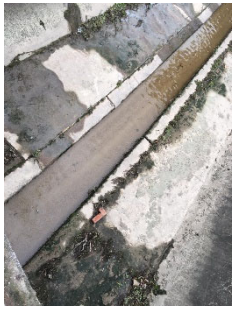
U7a

 <p>8.3.2023</p>	 <p>10.3.2023</p>	 <p>13.3.2023</p>	 <p>15.3.2023</p>
 <p>17.3.2023</p>	 <p>20.3.2023</p>	 <p>22.3.2023</p>	 <p>24.3.2023</p>
 <p>27.3.2023</p>	 <p>29.3.2023</p>	 <p>31.3.2023</p>	 <p>3.4.2023</p>




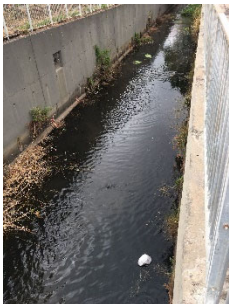



U10a

 <p>8.3.2023</p>	 <p>10.3.2023</p>	 <p>13.3.2023</p>	 <p>15.3.2023</p>
 <p>17.3.2023</p>	 <p>20.3.2023</p>	 <p>22.3.2023</p>	 <p>24.3.2023</p>
 <p>27.3.2023</p>	 <p>29.3.2023</p>	 <p>31.3.2023</p>	 <p>3.4.2023</p>

D2a

 <p>8.3.2023</p>	 <p>10.3.2023</p>	 <p>13.3.2023</p>	 <p>15.3.2023</p>
 <p>17.3.2023</p>	 <p>20.3.2023</p>	 <p>22.3.2023</p>	 <p>24.3.2023</p>
 <p>27.3.2023</p>	 <p>29.3.2023</p>	 <p>31.3.2023</p>	 <p>3.4.2023</p>













D5a

 <p>8.3.2023</p>	 <p>10.3.2023</p>	 <p>13.3.2023</p>	 <p>15.3.2023</p>
 <p>17.3.2023</p>	 <p>20.3.2023</p>	 <p>22.3.2023</p>	 <p>24.3.2023</p>
 <p>27.3.2023</p>	 <p>29.3.2023</p>	 <p>31.3.2023</p>	 <p>3.4.2023</p>













Appendix F6

Photographic Records for Water Quality Monitoring Stations (11 April to 6 May 2023)


D4a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>











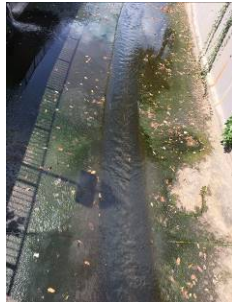

U9a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>













U4a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>







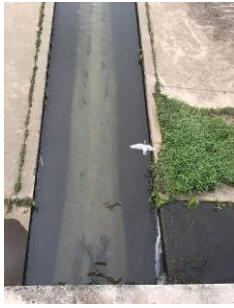





U3

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>













M4

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>












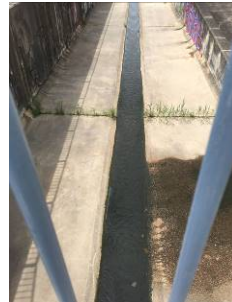
D1a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>








M3

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>





M2a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>













M1a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>











U1a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>













D3

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>













U8a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>













U1b

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>

EIS-1a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>

U2a

 <p>11.4.2023</p>	 <p>13.4.2023</p>	 <p>15.4.2023</p>	 <p>17.4.2023</p>
 <p>19.4.2023</p>	 <p>21.4.2023</p>	 <p>24.4.2023</p>	 <p>26.4.2023</p>
 <p>28.4.2023</p>	 <p>2.5.2023</p>	 <p>4.5.2023</p>	 <p>6.5.2023</p>