

Drainage Services Department

Quotation No. **DEMP/2021/33**

Phase II Odour Impact Monitoring of Tuen Mun Area 54 Sewage Pumping Station for Operation Phase

Final Phase II Odour Impact Monitoring Report

Castco LIMS no.: 230105-2270

Report Issue Date: 10 February 2023

Prepared by:



Mr. Kung Man Chun
Inspector

Certified by:



Ms. Leong Mio Teng
Environmental Team Leader

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Attn.: Ms. Leong Mio Teng (Environmental Team Leader)

Dear Madam

Re: Quotation No. DEMP/2021/33
Phase II Odour Impact Monitoring of Tuen Mun Area 54 Sewage
Pumping Station for Operation Phase
- Final Phase II Odour Impact Monitoring Report

With reference to the Final Phase II Odour Impact Monitoring Report received on 17 February 2023 submitted by the Environmental Team. I hereby verify the Final Phase II Odour Impact Monitoring Report under the captioned Project pursuant to Section 2.53 of the EM&A Manual.

Yours faithfully
MEINHARDT INFRASTRUCTURE AND ENVIRONMENT LTD



Joyce Wong
Independent Environmental Checker

c.c. : DSD – Mr. Leung Ka Chun, Adrian (EME/P6/2) (By Post)

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Executive Summary

1. This is the Final Phase II Odour Impact Monitoring report which summaries the results of four Phase II Odour Impact Monitoring conducted in 2022 under the operation of Tuen Mun Area 54 Sewage Pumping Station ("TMA54SPS").
2. Hydrogen Sulphine ("H₂S") monitoring were conducted on 8 - 9 January, 9 - 10 April, 16 - 17 July and 24 - 25 October 2022 at A3 and A4. No Action / Limit Level exceedance was recorded.
3. No odour compliant was received during the monitoring period.
4. With the above odour impact monitoring result, the odour impact monitoring for A3 and A4 is recommended to ceased.

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1. Introduction

Introduction

- 1.1 The construction of Tuen Mun Area 54 Sewage Pump Station (“TMA54SPS”) including civil and electrical & mechanical works were implemented under Contract No. CV/2012/02 (by Civil Engineering and Development Department (“CEDD”) and Contract No. DE/2013/10 (by Drainage Services Department (“DSD”), respectively). The Project comprises the Environmental Monitoring and Audit Manual (“EM&A Manual”) EIA Register Nos. AEIAR-122/2008 and Environmental Permit (“EP”) Nos. FEP- 181/2018.
- 1.2 Pursuant to the Environmental Impact Assessment Ordinance (“EIAO”), TMA54SPS Project is a “Designated Project”. The EP stipulates that an EM&A programme is required to endure mitigation measures recommended in the Environmental Impact Assessment Report (“EIA Report”) and the EM&A Manual are implemented during the construction and operation of the Project.
- 1.3 In accordance with the approved EIA Report, Environmental Monitoring and Audit (“EM&A”) programme are recommended to ensure compliance with the EIA study recommendations. DSD is the Engineers’ Representative (“ER”) while Meinhardt Infrastructure and Environment Limited (“Meinhardt”) was commissioned as the Independent Environmental Checker (“IEC”).
- 1.4 Castco Testing Centre Limited (“CTCL”) was commissioned by DSD under Quotation No. DEMP/2021/33 to undertake the duties of Environmental Team (“ET”) as specified in the EM&A Manual and the EP for the odour impact monitoring at two selected ASRs for 12-month operation of the TMA54SPS.

Background

- 1.5 TMA54SPS was substantially completed in March 2018. Regarding the EM&A programme for the operation phase of TMA54SPS, an odour impact monitoring, H₂S monitoring, is required prior to and during the initial operation of TMA54SPS. Total five Air Sensitive Receivers (“ASRs”) (A1 to A5) was specified in the EM&A Manual and illustrated in Figure 1.
- 1.6 The odour baseline monitoring was carried out in April 2018 and established the Action Levels for operation phase odour impact monitoring.
- 1.7 For the odour impact monitoring, it is carried out in two phases as agreed with Environmental Protection Department (“EPD”) due to the private land resumption programme in Tuen Mun Area 54. The Phase I odour impact monitoring for A1, A2 and A5 has been completed and the associated final report is being finalized. The Phase II odour impact monitoring for A3 and A4 will be conducted accordingly.
- 1.8 ET conducted site visit on 9 November 2021 with DSD representative. A3 and A4 are located within the project site boundary of CEDD Site formation and infrastructure works near Tsz Tin Road and Hing Fu Street in Area 54, Tuen Mun Project (Contract No. CV/2019/04) with contract period from December 2020 to June 2024. The project mainly comprises the formation of land, construction of road, vertical noise barriers, footpaths, slopes, retaining walls, drainage works, waterworks, landscaping works and improvement to existing Lam Tei Interchange.

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Land formation works will be kept in process during the 12-month odour impact monitoring at A3 and A4.

- 1.9 The odour impact monitoring shall be conducted at a height of 10m above ground level on a truck mounted aerial working platform to simulate the worst level of predicted results of the receivers in the EIA report. As the construction site was undergone formation with depositing fill materials to rise the ground level, the elevated level of the aerial working platform was adjusted accordingly to keep 10m above original level before backfilling.

Project Organization

- 1.10 The project organization chart and with respect to the EM&A programme is shown in Appendix A Project Organization. Information of key personnel contact names and telephone numbers are summarized in Table 1.1.

Table 1.1 Contact Information of Key Personnel

Company / Department	Position	Contact Person	Telephone No.
Drainage Services Department	Engineers' Representative (ER)	Mr. Adrian Leung	2594 7306
Meinhardt Infrastructure and Environment Limited	Independent Environmental Checker (IEC)	Ms. Joyce Wong	2859 0138
Castco Testing Centre Limited	Environmental Team Leader (ETL)	Ms. Leong Mio Teng	2597 8162

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2. Odour Impact Monitoring

Monitoring Requirements

- 2.1 H₂S is one of the main components of odour emissions. Since ambient H₂S concentration can be readily monitor at the ASRs, it can serve as a surrogate indicator for sewage odours.
- 2.2 In accordance with the EM&A Manual, the odour impact monitoring shall be conducted by ET at the same monitoring stations as in the baseline period, using portable H₂S analyser. In case the odour impact monitoring cannot be carried out at the proposed monitoring locations, ET will carry out the monitoring at alternative locations which can represent the baseline conditions at the impact monitoring locations. The alternative odour impact monitoring locations shall be approved by ER and agreed with IEC.

Monitoring Parameters, Frequency and Duration

- 2.3 A 15-minute integrated sample were collected every 3 hours for duration of 24 hours at the monitoring stations. Hourly meteorological conditions (temperature, wind speed & direction) were obtained from the nearest Hong Kong Observatory's Tuen Mun Weather Station through the monitoring period. No odour monitoring was conducted on rainy day.
- 2.4 The Phase I odour impact monitoring for A1, A2 and A5 has been completed and the associated final report was finalized. Odour impact monitoring for A3 and A4 was undergoing in the current phase, i.e. Phase II odour impact monitoring. It was conducted in past 12-month.
- 2.5 If all monitoring results are below the Limit Levels, the impact monitoring would be ceased. If the monitoring results of detected odour monitoring concentration at any ASR is higher than the limit levels due to the operation of the TMA54SPS, the odour monitoring shall be extended until the odour concentration at the ASR in consecutive 2 times are below the Limit Levels (once for 3 months). The Phase II H₂S monitoring programme is summarized in Table 2.1.

Table 2.1 Phase II Odour Impact Monitoring Programme

Sampling Duration	Frequency	Phase II Odour Impact Monitoring Schedule	
		Monitoring Event	Monitoring Date
24 hours	- Once every three months for first year after operation of TMA54SPS. - Due to the private land resumption programme, odour impact monitoring is carried in two phases (Phase I and Phase II) as agreed with EPD. - If the results of any detected odour concentration at any ASR is higher than the Limit Level due to operation of TMA54SPS, the odour monitoring programme shall be extended until the odour concentration at the ASR in consecutive 2 times are below the Limit Levels (once for 3 months).	1 st	8 – 9 January 2022
		2 nd	9 – 10 April 2022
		3 rd	16 – 17 July 2022
		4 th	24 – 25 October 2022

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Monitoring Locations

2.6 H₂S monitoring was conducted at A3 and A4 for the Phase II odour impact monitoring as shown in Table 2.2.

Table 2.2 Odour Monitoring Station of Phase II Odour Impact Monitoring

Monitoring Station	Location	Description
A3	Planned Secondary School	ASR
A4	Planned Primary School	ASR

Monitoring Equipment

2.7 H₂S concentrations was measured by portable H₂S analyzer, type Jerome 631-X H₂S Aanlyzer. The detection range of the H₂S analyzer is 0.001 ppm to 50 ppm in four graduated ranges with resolution of 0.001 ppm. The analyzer operates within a temperature range of 0 to 40°C, at an air flowrate of 0.15 L/min. Grab air sampler is drawn by built-in suction pump of the analyzer and passed through a gold film sensor. The electrical resistance of the fold film changes according to the change in mass of H₂S in the gas sample. Table 2.3 summarizes the equipment to be used in the odour monitoring.

Table 2.3 H₂S Monitoring Equipment

Equipment	Model	Quantity
Portable H ₂ S analyzer	Jerome 631-X H ₂ S Aanlyzer	1

Monitoring Methodology

2.8 A 15-minute integrated sample were collected every 3 hours for duration of 24 hours at the monitoring stations at a height of 10m above the same ground level as TMA54SPS on a truck mounted aerial working platform by portable H₂S analyzer.

2.9 Hourly meteorological conditions (temperature, wind speed and direction) were obtained from the nearest Hong Kong Observatory's Tuen Mun Weather Station through the monitoring period.

QA/QC Procedure

2.10 Regeneration and zero adjustment (if necessary) were conducted before odour sampling.

Action and Limit Levels

2.11 The Action and Limit Levels for odour impact monitoring are defined in Table 2.4.

Table 2.4 Action and Limit Levels for Air Quality in Operation Phase

Parameter	ASR	Location	Action Level (ppb)	Limit Level (ppb)
H ₂ S	A3	Planned Secondary School	2.5	2.5
	A4	Planned Primary School	2.5	2.5
Incidents of odour complaints			Any incidence of odour complaint received through the Odour Complaint Register.	Two or more complaints through the Odour Complaint Register within three months.

- 2.12 The Action and Limit Level of Phase I Odour Impact monitoring, i.e. 24-hour average H₂S concentration to compare against the Action and Limit Level, are adapted in Phase II Odour Impact monitoring.
- 2.13 If non-compliance of the Action and Limit Levels occur, action in accordance with Event and Action Plan for Air Quality Monitoring (Operational Phase) in EM&A Manual shall be carried out. The Event and Action Plan is provided in Appendix B Event and Action Plan.

Online Monitoring

- 2.14 IP camera with network for continuous online monitoring on odour monitoring exercise was setup to enhance the safety of on-site operation. The ET utilized online monitoring to ensure safety measures are in place during operation on working platform.

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3. Odour Impact Monitoring Results

Odour Impact Monitoring

3.1 Four odour impact monitoring events were conducted with monitoring results are summarized in Table 3.1.

Table 3.1 Summary of H₂S Monitoring Results

Monitoring Station	Location	Monitoring Period	24-hour average H ₂ S concentration (ppb)
A3	Planned Secondary School	8 – 9 January 2022	1.89
		9 – 10 April 2022	0.93
		16 – 17 July 2022	0.93
		24 – 25 October 2022	0.84
A4	Planned Primary School	8 – 9 January 2022	1.67
		9 – 10 April 2022	0.90
		16 – 17 July 2022	0.98
		24 – 25 October 2022	0.91

3.2 There was no Action and Limit Level exceedance of 24-hour average H₂S concentration recorded.

3.3 Detailed monitoring results are shown in Appendix C 24-hour H₂S Monitoring Results.

Meteorological Data and Other Factors

3.4 The weather conditions during the monitoring periods were generally fine.

3.5 Hourly meteorological conditions (temperature, wind speed and direction) were obtained from the nearest Hong Kong Observatory's Tuen Mun Weather Station through the monitoring period.

3.6 Details of weather information during the monitoring periods are shown in Appendix D Meteorological Conditions.

3.7 No significant odour sources from the TMA54SPS were observed during the odour impact monitoring.

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4. Summary of Non-compliance Status

Summary of Complaint

4.1 No odour complaint was received in the reporting period. Summary of complaints in the reporting period is tabulated in Table 4.1.

Table 4.1 Summary of complaints in the reporting period

Monitoring Event	Date of receiving complaint	Date of compliant	Description of complaint	Recommendations / Action taken	Close-out date / Status
1 st	No complaint was received in the reporting period.	NA	NA	NA	NA
2 nd	No complaint was received in the reporting period.	NA	NA	NA	NA
3 rd	No complaint was received in the reporting period.	NA	NA	NA	NA
4 th	No complaint was received in the reporting period.	NA	NA	NA	NA

Summary of Non-compliance Status

4.2 There was no Action and Limit Level exceedance of 24-hour average H₂S concentration recorded.

4.3 Summary of the non-compliance in the reporting period for the Project is tabulated in Table 4.2.

Table 4.2 Non-compliance record in the reporting period

Monitoring Event	No. of Exceedance		Possible reasons for non-compliance	Action Taken
	Action Level	Limit Level		
1 st	0	0	N/A	N/A
2 nd	0	0	N/A	N/A
3 rd	0	0	N/A	N/A
4 th	0	0	N/A	N/A

Summary of Summons and Successful Prosecutions

4.4 No notification of summons and successful prosecutions was received in the reporting period.

4.5 Summary of summons and successful prosecutions in the reporting period is tabulated in Table 4.3.

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Table 4.3 Summary of summons and successful prosecutions in the reporting period

Monitoring Event	Date of receiving notification of summons or prosecutions	Date of event	Description of event	Action taken	Close-out date / Status
1 st	No notification of summons and successful prosecutions were received in the reporting period.	NA	NA	NA	NA
2 nd	No notification of summons and successful prosecutions were received in the reporting period.	NA	NA	NA	NA
3 rd	No notification of summons and successful prosecutions were received in the reporting period.	NA	NA	NA	NA
4 th	No notification of summons and successful prosecutions were received in the reporting period.	NA	NA	NA	NA

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5. Recommendations and Conclusions

- 5.1 The Phase II odour impact monitoring with 4 monitoring events were conducted.
- 5.2 24-hour average H₂S concentrations were recorded. No Action / Limit Level exceedance was recorded.
- 5.3 The weather conditions during the monitoring periods were generally fine.
- 5.4 No odour complaint was received during the monitoring period.
- 5.5 With the above odour impact monitoring result, the odour impact monitoring for A3 and A4 is recommended to ceased.
- 5.6 According to the EIA Report, no adverse odour impact would be expected at nearby ASRs and satisfy with the odour criteria during operation of TMA54SPS. This prediction is valid for ASR A3 and A4 with the results of the Phase II odour impact monitoring events.
- 5.7 The current odour mitigation measure which is applying to the operation of TMA54SPS is recommended to continuous.

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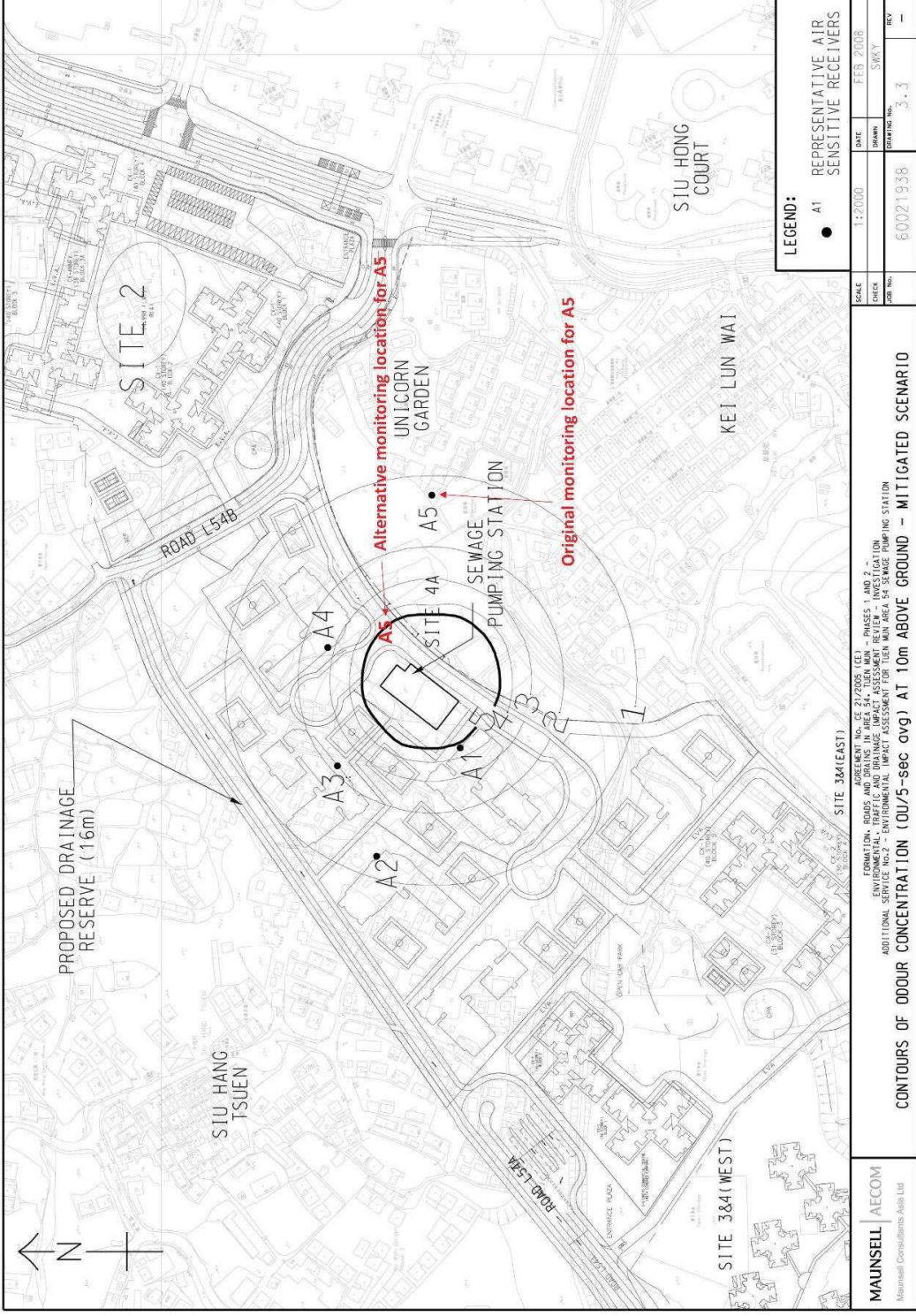


Figure 1 Locations for Odour Impact Monitoring

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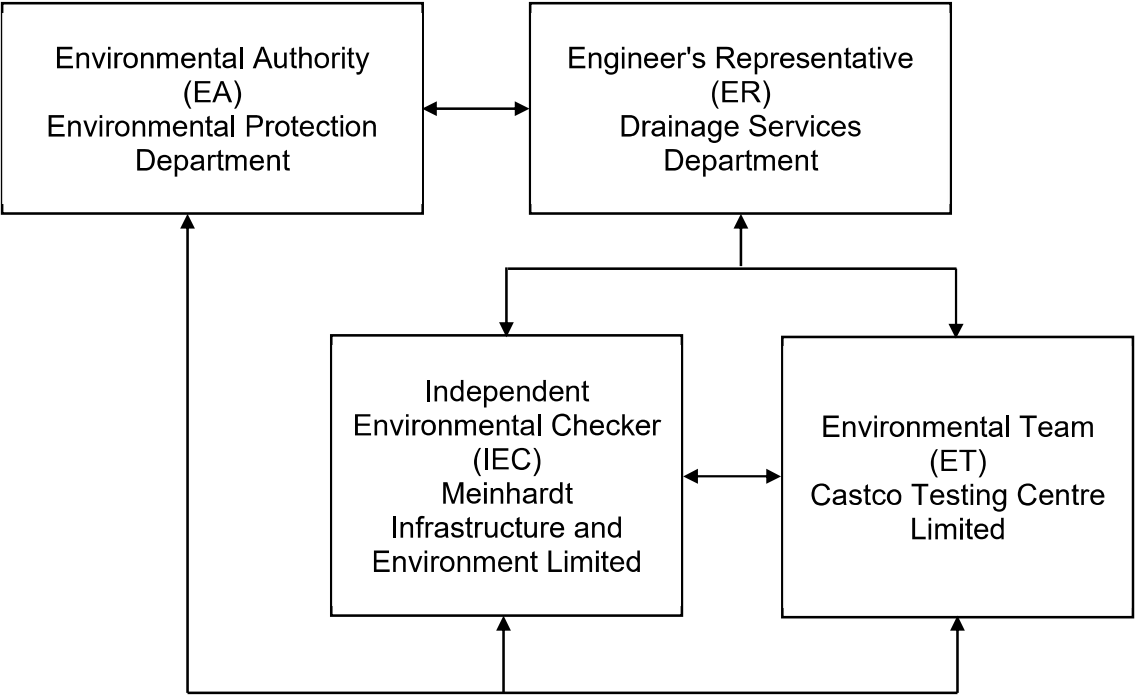
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Appendix A - Project Organization



Appendix D - Event and Action Plan

Event	Action		
	ET	IEC	ER (DSD)
Exceedance of Action Level	1. Identify source / reason of exceedance; 2. Inform IEC and ER (DSD); 3. Carry out investigation to identify the source / reason of exceedance or complaints. Investigation shall be completed within 1 week and advise the findings to IEC and ER (DSD); 4. Repeat measurement to confirm finding after rectification work.	1. Check with ET and ER (DSD) on the operating activities and implementation of odour mitigation measures; 2. Discuss with ER (DSD) on the possible remedial actions; 3. Advise the ER (DSD) on the effectiveness of the proposed remedial measures; 4. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Rectify any unacceptable practice; 3. Amend working methods as required; 4. Implement amended working methods.
Exceedance of Limit Level	1. Notify IEC, ER (DSD) and EPD; 2. Identify source of odour; 3. Increase monitoring frequency; 4. Carry out investigation to identify the source / reason of exceedance. Investigation shall be completed with 1 week and advise the findings to IEC and ER (DSD); 5. Arrange meeting with IEC and ER (DSD) to discuss the remedial actions to be taken; 6. Assess effectiveness of the remedial actions and keep IEC, EPD and ER (DSD) informed to the results.	1. Check with ET and ER (DS) on the operating activities and implementation of odour mitigation measures; 2. Review the proposed remedial actions whenever necessary to assure their effectiveness and advise the ER (DSD) accordingly; 3. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Rectify any unacceptable practice and amend working methods as required; 3. Formulate remedial actions and inform ET and IEC; 4. Ensure amended working methods and remedial actions properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and stop that portion of work until the exceedance is abated.

Appendix E - 24-hour H₂S Monitoring Results

The 1st Odour Monitoring Event: 8 – 9 January 2022

Monitoring Station: A3		
Measurement Period	15-minute H ₂ S Concentration (ppb)	24-hour average H ₂ S Concentration (ppb)
8 Jan 2022, 11:15-11:30	0.5	1.89
8 Jan 2022, 15:17-15:32	2.5	
8 Jan 2022, 17:38-17:53	1.3	
8 Jan 2022, 20:49-21:04	3.8	
8 Jan 2022, 23:53-24:08	3.0	
9 Jan 2022, 03:11-03:26	1.3	
9 Jan 2022, 06:44-06:59	2.1	
9 Jan 2022, 08:16-08:31	0.6	
Maximum	3.8	
Minimum	0.5	
Action Level	2.5	
Limit Level	2.5	

Monitoring Station: A4		
Measurement Period	15-minute H ₂ S Concentration (ppb)	24-hour average H ₂ S Concentration (ppb)
8 Jan 2022, 11:49-12:04	0.5	1.67
8 Jan 2022, 14:43-14:58	2.5	
8 Jan 2022, 18:09-18:24	0.9	
8 Jan 2022, 21:15-21:30	3.2	
8 Jan 2022, 23:17-23:32	2.8	
9 Jan 2022, 03:40-03:55	0.5	
9 Jan 2022, 06:15-06:30	0.7	
9 Jan 2022, 07:41-07:56	2.3	
Maximum	3.2	
Minimum	0.5	
Action Level	2.5	
Limit Level	2.5	

Factors might affect the monitoring results	Monitoring Station	
	A3	A4
No significant odour sources from the TMA54SPS were observed during the odour impact monitoring.	✓	✓

The 2nd Odour Monitoring Event: 9 – 10 April 2022

Monitoring Station: A3		
Measurement Period	15-minute H ₂ S Concentration (ppb)	24-hour average H ₂ S Concentration (ppb)
9 Apr 2022, 10:51-11:05	0.7	0.93
9 Apr 2022, 15:43-15:57	0.5	
9 Apr 2022, 16:22-16:36	0.5	
9 Apr 2022, 21:45-21:59	0.5	
9 Apr 2022, 22:33-22:47	0.7	
10 Apr 2022, 03:44-03:58	1.5	
10 Apr 2022, 04:27-04:41	1.5	
10 Apr 2022, 07:36-07:50	1.5	
Maximum	1.5	
Minimum	0.5	
Action Level	2.5	
Limit Level	2.5	

Monitoring Station: A4		
Measurement Period	15-minute H ₂ S Concentration (ppb)	24-hour average H ₂ S Concentration (ppb)
9 Apr 2022, 11:30-11:44	0.6	0.90
9 Apr 2022, 15:06-15:20	0.5	
9 Apr 2022, 16:56-17:10	0.5	
9 Apr 2022, 21:18-21:32	1.2	
9 Apr 2022, 23:01-23:15	1.6	
10 Apr 2022, 03:15-03:29	0.6	
10 Apr 2022, 05:04-05:18	0.7	
10 Apr 2022, 07:03-07:17	1.5	
Maximum	1.6	
Minimum	0.5	
Action Level	2.5	
Limit Level	2.5	

Factors might affect the monitoring results	Monitoring Station	
	A3	A4
No significant odour sources from the TMA54SPS were observed during the odour impact monitoring.	✓	✓

The 3rd Odour Monitoring Event: 16 – 17 July 2022

Monitoring Station: A3		
Measurement Period	15-minute H ₂ S Concentration (ppb)	24-hour average H ₂ S Concentration (ppb)
16 Jul 2022, 10:45-10:59	1.7	0.93
16 Jul 2022, 15:08-15:22	1.9	
16 Jul 2022, 16:59-17:13	0.5	
16 Jul 2022, 19:41-19:55	0.5	
16 Jul 2022, 22:59-23:13	0.5	
17 Jul 2022, 03:15-03:29	0.5	
17 Jul 2022, 04:54-05:08	0.5	
17 Jul 2022, 07:41-07:55	1.3	
Maximum	1.9	
Minimum	0.5	
Action Level	2.5	
Limit Level	2.5	

Monitoring Station: A4		
Measurement Period	15-minute H ₂ S Concentration (ppb)	24-hour average H ₂ S Concentration (ppb)
16 Jul 2022, 11:42-11:56	1.8	0.98
16 Jul 2022, 15:43-15:57	1.5	
16 Jul 2022, 16:18-16:32	0.8	
16 Jul 2022, 20:18-20:32	0.6	
16 Jul 2022, 22:16-22:30	0.6	
17 Jul 2022, 03:43-03:57	0.5	
17 Jul 2022, 04:17-04:31	0.5	
17 Jul 2022, 08:16-08:30	1.5	
Maximum	1.8	
Minimum	0.5	
Action Level	2.5	
Limit Level	2.5	

Factors might affect the monitoring results	Monitoring Station	
	A3	A4
No significant odour sources from the TMA54SPS were observed during the odour impact monitoring.	✓	✓

The 4th Odour Monitoring Event: 24 – 25 October 2022

Monitoring Station: A3		
Measurement Period	15-minute H ₂ S Concentration (ppb)	24-hour average H ₂ S Concentration (ppb)
24 Oct 2022, 10:34-10:48	1.5	0.84
24 Oct 2022, 15:32-15:46	1.9	
24 Oct 2022, 16:04-16:18	0.8	
24 Oct 2022, 21:32-21:46	0.5	
24 Oct 2022, 22:01-23:15	0.5	
25 Oct 2022, 03:30-03:44	0.5	
25 Oct 2022, 04:02-04:16	0.5	
25 Oct 2022, 07:40-07:54	0.5	
Maximum	1.9	
Minimum	0.5	
Action Level	2.5	
Limit Level	2.5	

Monitoring Station: A4		
Measurement Period	15-minute H ₂ S Concentration (ppb)	24-hour average H ₂ S Concentration (ppb)
24 Oct 2022, 11:35-11:49	2.0	0.91
24 Oct 2022, 14:55-15:09	2.0	
24 Oct 2022, 16:41-16:55	0.8	
24 Oct 2022, 20:50-21:04	0.5	
24 Oct 2022, 22:43-22:57	0.5	
25 Oct 2022, 02:52-03:06	0.5	
25 Oct 2022, 06:33-06:47	0.5	
25 Oct 2022, 07:05-07:19	0.5	
Maximum	2.0	
Minimum	0.5	
Action Level	2.5	
Limit Level	2.5	

Factors might affect the monitoring results	Monitoring Station	
	A3	A4
No significant odour sources from the TMA54SPS were observed during the odour impact monitoring.	✓	✓

Appendix D - Meteorological Conditions

Hong Kong Observatory's Tuen Mun Weather Station Hourly Meteorological Conditions

Date	Time	Temperature (°C)	Wind Speed (km/hour)	Wind Direction
8 Jan 2022	10:00	18.3	5.00	North
	11:00	19.9	4.83	North
	12:00	20.2	7.67	Northwest
	13:00	19.4	5.17	Northwest
	14:00	19.5	7.50	South
	15:00	19.1	6.17	South
	16:00	19.0	6.83	Southeast
	17:00	18.2	8.17	South
	18:00	17.4	7.50	Southeast
	19:00	16.6	5.00	Southeast
	20:00	16.6	2.67	East
	21:00	16.3	1.83	North
	22:00	16.0	3.00	North
	23:00	15.5	1.50	Calm
9 Jan 2022	0:00	15.3	0.60	Calm
	1:00	15.3	2.67	East
	2:00	16.1	4.33	Variable
	3:00	15.8	2.00	North
	4:00	15.1	2.00	Calm
	5:00	14.8	1.67	Northwest
	6:00	15.1	1.00	Variable
	7:00	15.6	2.67	North
	8:00	16.2	2.50	North
	9:00	17.6	1.67	Variable
	10:00	19.1	4.17	North

Source:

<https://data.gov.hk/en-data/dataset/hk-hko-rss-latest-one-minute-mean-air-temp><https://data.gov.hk/en-data/dataset/hk-hko-rss-latest-ten-minute-wind-info>

Hong Kong Observatory's Tuen Mun Weather Station Hourly Meteorological Conditions

Date	Time	Temperature (°C)	Wind Speed (km/hour)	Wind Direction
9 April 2022	10:00	25.5	11.17	South
	11:00	26.3	8.83	Southwest
	12:00	26.9	8.00	South
	13:00	26.8	15.67	Southeast
	14:00	26.5	14.67	South
	15:00	26.6	11.67	South
	16:00	26.3	14.83	South
	17:00	24.2	14.50	South
	18:00	22.9	12.00	South
	19:00	21.8	11.17	South
	20:00	21.4	7.50	South
	21:00	21.3	9.00	South
	22:00	21.0	5.67	South
	23:00	21.1	2.83	Variable
10 April 2022	0:00	20.9	0.83	Variable
	1:00	20.2	2.17	North
	2:00	19.6	1.33	Northeast
	3:00	19.5	2.67	North
	4:00	18.8	2.00	North
	5:00	18.4	2.00	North
	6:00	18.2	2.17	North
	7:00	19.7	0.67	Calm
	8:00	22.5	1.33	Variable
	9:00	24.4	3.17	West
	10:00	26.4	7.33	Southeast

Source:

<https://data.gov.hk/en-data/dataset/hk-hko-rss-latest-one-minute-mean-air-temp><https://data.gov.hk/en-data/dataset/hk-hko-rss-latest-ten-minute-wind-info>

Hong Kong Observatory's Tuen Mun Weather Station Hourly Meteorological Conditions

Date	Time	Temperature (°C)	Wind Speed (km/hour)	Wind Direction
16 July 2022	10:00	30.3	9.00	Southwest
	11:00	31.2	10.33	Southwest
	12:00	31.7	12.00	Southwest
	13:00	32.0	11.67	Southwest
	14:00	32.6	10.67	Southwest
	15:00	32.8	13.00	South
	16:00	32.4	10.67	South
	17:00	31.5	10.83	South
	18:00	30.8	11.17	South
	19:00	30.3	8.50	South
	20:00	29.9	7.50	South
	21:00	29.5	10.17	Southeast
	22:00	29.5	10.50	Southeast
	23:00	29.2	9.00	Southeast
17 July 2022	0:00	29.4	9.33	South
	1:00	29.4	7.50	South
	2:00	29.1	7.67	Southwest
	3:00	29.2	6.17	Variable
	4:00	29.1	7.50	South
	5:00	29.1	8.50	South
	6:00	29.1	6.33	South
	7:00	29.5	9.83	South
	8:00	30.0	8.17	Variable
	9:00	30.6	10.00	Southwest
	10:00	31.2	12.83	Southwest

Source:

<https://data.gov.hk/en-data/dataset/hk-hko-rss-latest-one-minute-mean-air-temp><https://data.gov.hk/en-data/dataset/hk-hko-rss-latest-ten-minute-wind-info>

Hong Kong Observatory's Tuen Mun Weather Station Hourly Meteorological Conditions

Date	Time	Temperature (°C)	Wind Speed (km/hour)	Wind Direction
24 October 2022	10:00	27.1	5.83	Variable
	11:00	28.1	8.00	East
	12:00	28.2	14.40	Southeast
	13:00	27.5	16.33	Southeast
	14:00	27	18.50	Southeast
	15:00	26.1	19.17	Southeast
	16:00	25.4	20.83	Southeast
	17:00	25.0	15.33	Southeast
	18:00	24.6	19.33	East
	19:00	24.2	18.83	Southeast
	20:00	24.0	21.17	Southeast
	21:00	24.0	22.67	Southeast
	22:00	23.7	12.17	Southeast
	23:00	23.6	11.83	Southeast
25 October 2022	0:00	23.5	8.33	Variable
	1:00	23.0	11.67	East
	2:00	22.6	9.20	East
	3:00	22.4	6.67	South
	4:00	22.2	5.33	Variable
	5:00	22.0	6.50	East
	6:00	21.7	9.17	East
	7:00	22.4	6.33	Variable
	8:00	23.3	6.67	East
	9:00	24.5	6.00	North
	10:00	26.3	5.83	Variable

Source:

<https://data.gov.hk/en-data/dataset/hk-hko-rss-latest-one-minute-mean-air-temp><https://data.gov.hk/en-data/dataset/hk-hko-rss-latest-ten-minute-wind-info>