



13 February 2025

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

By email

**Attn: Ms Tiffany Cheung / Environmental Protection Officer (Territory South)23**

Dear Madam,

**Odour Monitoring Report (July 2024) for Harbour Area Treatment Scheme Stage 2A (Operational Phase)**

In compliance with sections 2.38 and 2.41 of the EM&A Manual, we are submitting the Odour Monitoring Report (July 2024) for the Harbour Area Treatment Scheme Stage 2A (Operational Phase) for your review.

If you have any questions or require further information, please feel free to contact me or Mr. Dickson WONG at Tel. 2195 3462, email: [leontppun@dsd.gov.hk](mailto:leontppun@dsd.gov.hk) or [dicksonstwong@dsd.gov.hk](mailto:dicksonstwong@dsd.gov.hk).

Yours faithfully,

**CMA Industrial Development Foundation Limited**

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By Email

**Odour Monitoring Report for Harbour Area  
Treatment Scheme Stage 2A  
(Operational Phase) July 2024**

**Report No.: OT\_2024003**

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# **1. Introduction**

## **1.1. Background**

- 1.1.1. Drainage Services Department appointed ALS Technichem (HK) Pty Limited (“ALS”) and CMA Industrial Development Foundation (“CMA”) to undertake the Odour Monitoring for the Operational Phase of the Harbour Area Treatment Scheme Stage 2A (hereafter referred to as “the Project”).
- 1.1.2. The Project is reference to Environmental Permit No. EP-322/2008/G issued on 9th May 2014 by the Environmental Protection Department (hereafter called EPD) to the Drainage Services Department (hereafter called the DSD) as the Permit Holder and the Environmental Monitoring and Audit (“EM&A”) Manual for the Harbour Area Treatment Scheme (“HATS”) Stage 2A.
- 1.1.3. The odour measurement and odour patrol shall be conducted in the first five years upon commissioning of the expanded SCISTW. For the 1st year, odour monitoring shall be conducted every three months. For the 2nd to 5th year, if the monitoring results from the 1st year comply with the requirements stated in Section 2.38 and Section 2.41 of EM&A Manual, the frequency of the monitoring could be reduced to once every 6 months subject to EPD’s approval.

## **1.2. Objectives of the Monitoring**

- 1.2.1. The objective of odour patrol and odour measurement is to compare the result obtained from the operational phase with the baseline data at the designated points in order to determine the impact from the operation.

## **1.3. Objectives of the Report**

- 1.3.1. The purpose of the odour monitoring report for the operational phase is to provide analysis and graphical presentation to determine if there are any changes of odour impacts with respect to the implementation of HATS Stage 2A.

## 2. Odour Patrol

### 2.1. Monitoring Requirement

- 2.1.1. An odour patrollist with at least 3 independent trained personnel / competent persons, will be provided to conduct the odour patrol work at 23 designated odour monitoring locations and at the site boundary of 8 Preliminary Treatment Works (PTW) and the Stonecutters Island Sewage Treatment Works (SCISTW). The patrollist will be “calibrated” with reference to European Standard Method: BS EN13725 to ensure the patrollist odour sensitivity within 20-80 ppb/V. The Odour Certificates are shown in **Appendix B**.
- 2.1.2. The monitoring shall not be conducted on rainy days. Meteorological conditions including ambient temperature, relative humidity, wind speed and wind direction will be recorded with photo showing the sampling locations during each monitoring.
- 2.1.3. The independent trained personnel / competent persons shall:
- have their individual odour threshold of n-butanol in nitrogen gas in the range of 20 to 80 ppb/v required by the European Standard Method (EN 13725).
  - be at least 16 years of age and willing and able to follow instructions.
  - be free from any respiratory illnesses.
  - be engaged for a sufficient period to build up and monitor/detect at several monitoring locations;
  - not be allowed to smoke, eat, drink (except water) or use chewing gum or sweets 30 min before and during odour intensity analysis;
  - take great care not to cause any interference with their own perception or that of others by lack of personal hygiene or the use of perfumes, deodourants, body lotions or cosmetics;
  - not communicate with each other about the results of their choices.

### 2.2. Monitoring Frequency

- 2.2.1. Odour Patrol shall be conducted every three months for the first year of operation for 8 PTWs and expended SCISTW. The first odour monitoring shall be conducted within one month, after the operation of the upgraded PTWs and expended SCISTW. Subsequent odour monitoring shall be conducted at the 4<sup>th</sup>, 7<sup>th</sup> and 10<sup>th</sup> month.

### 2.3. Monitoring Location

- 2.3.1. According to section 2.23 of the EM&A Manual, odour patrol monitoring will be conducted at (1) the odour monitoring locations listed in **Table 2.1** and at (2) the site boundary of 8 PTWs and SCISTW listed in **Table 2.2**.

2.3.2. The layout of odour patrol monitoring locations is shown in **Appendix A**.

**Table 2.1** Odour Patrol Monitoring Locations

| ASR ID in EIA Report* | Monitoring Station ID | Location   |
|-----------------------|-----------------------|--|
| NP3                   | OM_NP1                | King's Road Playground & Skating Area                  |
| NP4                   | OM_NP2                | Customs HQ Tower                                       |
| NP5                   | OM_NP3                | K. Wah Centre  |
| WC3                   | OM_WC1                | Society for the Prevention of Cruelty to Animals       |
| WC4                   | OM_WC2                | Rest Garden near Wan Chai Interchange                  |
| C1                    | OM_C1                 | Sheung Wan Fire Station                                |
| C2                    | OM_C2                 | Water Front Divisional Police Station                  |
| C3                    | OM_C3                 | Sheung Wan Gala Point                                  |
| FM2                   | OM_FM1                | Western Wholesale Food Market                          |
| SB1                   | OM_SB1                | University of Hong Kong Stanley Ho Sports Centre Pitch |
| SB2                   | OM_SB2                | Home for the Elderly                                   |
| SB3                   | OM_SB3                | Maclehose Medical Rehabilitation Centre                |
| SB4                   | OM_SB4                | The Duchess of Kent Children's Hospital                |
| CB1                   | OM_CB1                | Cyber Centre   |
| CB2                   | OM_CB2                | Le Meridien Cyberport                                  |
| WF2                   | OM_WF1                | Wah Ming House, Wah Fu Estate                          |
| AB4                   | OM_AB1                | Dairy Farm Ice and Cold Storage                        |
| ALC3                  | OM_ALC1               | Shell Ap Lei Chau Depot                                |
| SCI1                  | OM_SCI1               | Government Dockyard Offices                            |
| SCI3                  | OM_SCI2               | COSCO Hit Terminal                                     |
| SCI4                  | OM_SCI3               | KMB Depot Office                                       |
| SCI5                  | OM_SCI4               | Planned FSD Diving Rescue and Diving Training Centre   |
| SCI6                  | OM_SCI5               | Club House   |

**Remark:**

\* EIA Report reference from Agreement No. CE 43/2005 (EP) Harbour Area Treatment Scheme (HATS) Stage 2A EIA Study – Investigation, Final EIA Report, 3 Air Quality, Table 3.4.

**Table 2.2** Odour Patrol Monitoring of site boundary Locations

| Monitoring Location         |
|-----------------------------|
| North Point PTW Boundary    |
| Wan Chai East PTW Boundary  |
| Central PTW Boundary        |
| Sandy Bay PTW Boundary      |
| Cyberport PTW Boundary      |
| Wah Fu PTW Boundary         |
| Aberdeen PTW Boundary       |
| Ap Lei Chau PTW Boundary    |
| SCISTW Boundary Location A  |
| SCISTW Boundary Location A1 |
| SCISTW Boundary Location B  |
| SCISTW Boundary Location C  |
| SCISTW Boundary Location D  |

#### 2.4. Monitoring Parameters

2.4.1. During the patrolling, the meteorological and surrounding information are recorded:

- the prevailing weather condition;
- the wind direction;
- the wind speed;
- location where odour is spotted;
- source of odour;
- perceived intensity of the odour;
- duration of odour; and
- characteristics of the odour detected
- some relevant meteorological data such as daily average temperature, and daily average humidity, on the day of odour patrol should be obtained from the nearest Hong Kong Observatory station for reference.



2.4.2. The perceived intensity is to be divided into 5 levels which are ranked in a descending order as shown in **Table 2.3**.

**Table 2.3** Description of Odour Intensity Levels

| Odour Level | Odour Intensity | Classification Criteria  |
|-------------|-----------------|--|
| 0           | Not detected    | No odour perceives or an odour so weak that it cannot be easily characterised or described |
| 1           | Slight          | Slight identifiable odour, and slight chance to have odour nuisance                        |
| 2           | Moderate        | Moderate identifiable odour, and moderate chance to have odour nuisance                    |
| 3           | Strong          | Strong identifiable, likely to have odour nuisance   |
| 4           | Extreme         | Extreme severe odour, and unacceptable odour level   |

### 3. Odour Patrol Monitoring Result

#### 3.1. Odour Intensity

3.1.1. The odour patrol monitoring result on 11<sup>th</sup> July 2024 is summarized in **Table 3.1**. The field records and photo records at the ASRs during the patrols are attached in **Appendix C**.

**Table 3.1** Summary of the Odour Patrol Results

| Monitoring Location        | Odour Intensity (0 to 4) |                |                |                      |
|----------------------------|--------------------------|----------------|----------------|----------------------|
|                            | Odour Patrol Member      |                |                |                      |
|                            | O-1                      | O-2            | O-3            | O-Mean               |
| OM_NP1                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_NP2                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_NP3                     | 0                        | 0              | 0              | <u>0</u>             |
| North Point PTW Boundary   | 1 <sup>#</sup>           | 1 <sup>#</sup> | 1 <sup>#</sup> | <u>1<sup>#</sup></u> |
| OM_WC1                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_WC2                     | 0                        | 0              | 0              | <u>0</u>             |
| Wan Chai East PTW Boundary | 1 <sup>#</sup>           | 1 <sup>#</sup> | 1 <sup>#</sup> | <u>1<sup>#</sup></u> |
| OM_C1                      | 0                        | 0              | 0              | <u>0</u>             |
| OM_C2                      | 0                        | 0              | 0              | <u>0</u>             |
| OM_C3                      | 0                        | 0              | 0              | <u>0</u>             |
| Central PTW Boundary       | 1 <sup>#</sup>           | 1 <sup>#</sup> | 1 <sup>#</sup> | <u>1<sup>#</sup></u> |
| OM_FM1                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_SB1                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_SB2                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_SB3                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_SB4                     | 0                        | 0              | 0              | <u>0</u>             |
| Sandy Bay PTW Boundary     | 0                        | 0              | 0              | <u>0</u>             |

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| Monitoring Location         | Odour Intensity (0 to 4) |                |                |                      |
|-----------------------------|--------------------------|----------------|----------------|----------------------|
|                             | Odour Patrol Member      |                |                |                      |
|                             | O-1                      | O-2            | O-3            | O-Mean               |
| OM_CB1                      | 0                        | 0              | 0              | <u>0</u>             |
| OM_CB2                      | 0                        | 0              | 0              | <u>0</u>             |
| Cyberport PTW Boundary      | 1 <sup>#</sup>           | 1 <sup>#</sup> | 1 <sup>#</sup> | <u>1<sup>#</sup></u> |
| OM_WF1                      | 0                        | 0              | 0              | <u>0</u>             |
| Wah Fu PTW Boundary         | 0                        | 0              | 0              | <u>0</u>             |
| OM_AB1                      | 0                        | 0              | 0              | <u>0</u>             |
| Aberdeen PTW Boundary       | 1 <sup>#</sup>           | 1 <sup>#</sup> | 1 <sup>#</sup> | <u>1<sup>#</sup></u> |
| OM_ALC1                     | 0                        | 0              | 0              | <u>0</u>             |
| Ap Lei Chau PTW Boundary    | 0                        | 0              | 0              | <u>0</u>             |
| OM_SCI1                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_SCI2                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_SCI3                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_SCI4                     | 0                        | 0              | 0              | <u>0</u>             |
| OM_SCI5                     | 0                        | 0              | 0              | <u>0</u>             |
| SCISTW Boundary Location A  | 1 <sup>@</sup>           | 1 <sup>@</sup> | 1 <sup>@</sup> | <u>1<sup>@</sup></u> |
| SCISTW Boundary Location A1 | 0                        | 0              | 0              | <u>0</u>             |
| SCISTW Boundary Location B  | 0                        | 1 <sup>@</sup> | 1 <sup>@</sup> | <u>1<sup>@</sup></u> |
| SCISTW Boundary Location C  | 2 <sup>@</sup>           | 2 <sup>@</sup> | 2 <sup>@</sup> | <u>2<sup>@</sup></u> |
| SCISTW Boundary Location D  | 1 <sup>#</sup>           | 1 <sup>#</sup> | 1 <sup>#</sup> | <u>1<sup>#</sup></u> |

Remark:

1. # The odour was detected with sewage or urine characteristics.
2. @The odour was detected with garbage characteristics.

### 3.2. Meteorological Conditions

3.2.1. The meteorological conditions (including temperature, wind speed, wind direction, relative humidity) from the nearest Hong Kong Observatory's Weather Stations for each of the odour patrols were provided for reference in **Appendix D**.

### 3.3. Odour Patrol Result Discussion

3.3.1. Generally, the odour intensities detected around the SCISTW and PTWs ranged from level 0 to level 2. A level 2 intensity was recorded at one monitoring locations, Location C of the SCISTW site boundary. With reference to the Action/Limit Level shown in **Table 3.2**, the location met the action level. However, a distinct garbage odour was detected at Location C of the SCISTW site boundary, and the nearby West Kowloon Refuse Transfer Station was identified as the potential source of odour. Therefore, it was concluded that the exceedance is unrelated to the project.

**Table 3.2** Action / Limit Levels of the Odour Patrol

| Parameter      | Action   | Limit   |
|----------------|--|---|
| Odour Nuisance | Odour Intensity of 2 is measured from odour patrol | Odour Intensity of 3 or above is measured from odour patrol |

3.3.2. By comparing our impact monitoring data with the baseline monitoring data, generally, there were no significant difference between two sets of data. A summary table was shown in **Table 3.3**.

**Table 3.3** Comparison between Baseline Data and Impact Data of Odour Patrol

| Monitoring Location        | Operational Phase Baseline* | Operational Phase Impact^ |
|----------------------------|-----------------------------|---------------------------|
|                            | Odour Intensity (0 to 4)    |                           |
| OM_NP1                     | 0                           | 0                         |
| OM_NP2                     | 0                           | 0                         |
| OM_NP3                     | 0                           | 0                         |
| North Point PTW Boundary   | 0                           | 1 <sup>#</sup>            |
| OM_WC1                     | 0                           | 0                         |
| OM_WC2                     | 0                           | 0                         |
| Wan Chai East PTW Boundary | 0                           | 1 <sup>#</sup>            |
| OM_C1                      | 0                           | 0                         |
| OM_C2                      | 0                           | 0                         |
| OM_C3                      | 0                           | 0                         |
| Central PTW Boundary       | 0                           | 1 <sup>#</sup>            |
| OM_FM1                     | 0                           | 0                         |
| OM_SB1                     | 0                           | 0                         |
| OM_SB2                     | 0                           | 0                         |
| OM_SB3                     | 0                           | 0                         |
| OM_SB4                     | 0                           | 0                         |
| Sandy Bay PTW Boundary     | 0                           | 0                         |
| OM_CB1                     | 0                           | 0                         |
| OM_CB2                     | 0                           | 0                         |
| Cyberport PTW Boundary     | 0                           | 1 <sup>#</sup>            |

**Odour Monitoring Report for Harbour Area Treatment Scheme Stage 2A (Operational Phase) July 2024**

| Monitoring Location         | Operational Phase Baseline* | Operational Phase Impact^ |
|-----------------------------|-----------------------------|---------------------------|
|                             | Odour Intensity (0 to 4)    |                           |
| OM_WF1                      | 0                           | 0                         |
| Wah Fu PTW Boundary         | 0                           | 0                         |
| OM_AB1                      | 0                           | 0                         |
| Aberdeen PTW Boundary       | 0                           | 1 <sup>#</sup>            |
| OM_ALC1                     | 0                           | 0                         |
| Ap Lei Chau PTW Boundary    | 0                           | 0                         |
| OM_SCI1                     | 0                           | 0                         |
| OM_SCI2                     | 0                           | 0                         |
| OM_SCI3                     | 1                           | 1 <sup>@</sup>            |
| OM_SCI4                     | 0                           | 0                         |
| OM_SCI5                     | 0                           | 0                         |
| SCISTW Boundary Location A  | 1                           | 1 <sup>@</sup>            |
| SCISTW Boundary Location A1 | 1                           | 0                         |
| SCISTW Boundary Location B  | 2                           | 1 <sup>@</sup>            |
| SCISTW Boundary Location C  | 3                           | 2 <sup>@</sup>            |
| SCISTW Boundary Location D  | 1                           | 1 <sup>#</sup>            |

**Remarks:**

1. \*The Largest Data throughout the baseline period are extracted.
2. ^ The Largest Data among the three Odour Patrol Member are extracted.
3. # The odour was detected with sewage or urine characteristics.
4. @ The odour was detected with garbage characteristics.

## 4. Summary of Odour Patrol Result

### 4.1. Conclusion

- 4.1.1. In general, the odour patrol results were similar to the baseline data. No exceedance of the action level was recorded at the 23 designated odour monitoring locations and the site boundary of 8 PTWs and SCISTW, except for SCISTW Boundary Location C. The exceedance was found to be associated with the garbage characteristics in the vicinity of nearby West Kowloon Refuse Transfer Station.

### 4.2. Recommendations

- 4.2.1. Based on the odour patrol results, it is recommended to take more attention on 8 PTWs and SCISTW, except for Ap Lei Chau PTW, Sandy Bay and Wah Fu PTW. These sites have indicated the detection of Level 1 odour intensity with sewage characteristics in their respective regions, which suggesting the potential occurrence of odour nuisance events. The attention aimed to ensure the odour nuisance would not be deteriorated.

### 4.3. Exceedance

- 4.3.1. There was one action level exceedance recorded at SCISTW Boundary Location C.
- 4.3.2. The Investigation Reports from January, April, July, and October 2022 confirmed that the odour exceedances at Locations C of the SCISTW site boundary were caused by the West Kowloon Refuse Transfer Station. Therefore, no action is required for these locations as the exceedances were caused by the West Kowloon Refuse Transfer Station, which is not related to the project.
- 4.3.3. **Table 4.1** showed the Event/Action Plan for Operation Air Quality Monitoring.

**Table 4.1** Event/Action Plan for Operation Air Quality Monitoring

| Event                      | Action   |  |
|----------------------------|--|--|
|                            | Person-in-charge of Odour Monitoring   | DSD  |
| Action Level               |  |  |
| Exceedance of action level | <ol style="list-style-type: none"> <li>1. Identify source/reason of exceedance;</li> <li>2. Repeat odour patrol to confirm finding;</li> <li>3. Repeat odour measurement at exhaust stacks of deodourization system of SCISTW (if exceedance at SCISTW) to confirm finding.</li> </ol>   | <ol style="list-style-type: none"> <li>1. Carry out investigation to identify the source/reason of exceedance.</li> <li>2. Investigation shall be completed within 2 weeks;</li> <li>3. Implement more mitigation measures if necessary.</li> </ol>  |
| Limit Level                |  |  |
| Exceedance of Limit level  | <ol style="list-style-type: none"> <li>1. Identify source / reason of exceedance;</li> <li>2. Repeat odour patrol to confirm finding;</li> <li>3. Repeat odour measurement at exhaust stacks of deodourization system of SCISTW (if exceedance at SCISTW) to confirm finding;</li> <li>4. Increase monitoring frequency to monthly;</li> <li>5. If exceedance stops, cease additional monitoring.</li> </ol> | <ol style="list-style-type: none"> <li>1. Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 2 weeks;</li> <li>2. Rectify any unacceptable practice;</li> <li>3. Formulate remedial actions;</li> <li>4. Ensure amended working methods and remedial actions properly implemented;</li> <li>5. If exceedance continues, consider what mitigation measures shall be implemented.</li> </ol> |



## 5. Odour Measurement

### 5.1. Monitoring Requirement

- 5.1.1. Air samples will be collected by passive sampling technique at the odour monitoring station. A Nalophan<sup>TM</sup> sampling bag will be placed inside an airtight sampler and then drawn to vacuum for sampling. Approximately 60 litres of the gas sample is collected into the sampling bag for testing. A diagram of the passive sampling equipment that will be used for the sampling is shown below:



Figure 1: Passive Sampler

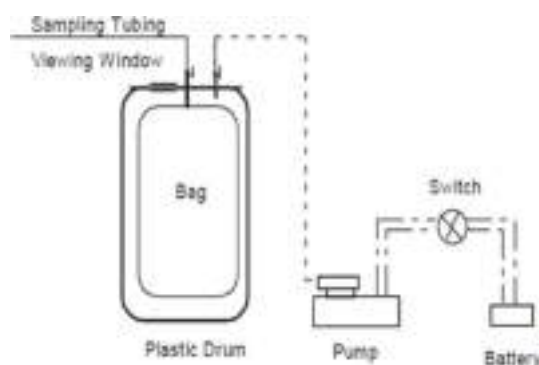


Figure 2: A Schematic Diagram of Sampling Device

- 5.1.2. Air samples in Nalophane bags shall be kept in cool condition not under direct sunlight exposure during the collection. If any condensate is observed on the inner surface of the sampled bag, the sample shall be discarded.
- 5.1.3. All samples collected during the sampling day shall be returned to laboratory at the same day. All olfactometry testing shall be conducted and finished within 24 hours after sampling.
- 5.1.4. The selected laboratory is the local laboratory for the measurement of odour concentration following the European Standard Method BS EN13725:2003 (by dynamic olfactometry). The Reporting Limit for the Olfactometry Analysis is 11 OUE/m<sup>3</sup>.

- Odour concentration of the sample is determined by Forced-choice Dynamic Olfactometer in accordance to European Standard Method: BS EN13725:2003.
- Testing should be performed by five qualified panellists who have been trained and complied with the requirement of the European Standard Method: BS EN13725:2003 in the range of 20 to 80 ppb/v and a standard deviation of  $R < 2.3$ .
- Testing shall be started immediately after sample receipt and all testing to be completed with 24 hours after sampling.

5.1.5. The odour concentration is measured by determining the dilution factor required to reach the detection threshold. The odour concentration at the detection threshold is by definition 1 OUE/m<sup>3</sup>. The odour concentration is then expressed in terms of multiples of the detection threshold.



**Figure 3:** Olfactory Laboratory with Scentroid™ SS600 Olfactometer

- 5.1.6. During each odour sampling day, one blank sample should be collected for quality control. The sample will be taken by purging pure nitrogen gas into the odour bag directly on site as a blank sample.
- 5.1.7. All equipment for odour measurement and analysis are maintained and calibrated in according to the requirement of the European Standard Method EN13725.

## 5.2. Monitoring Frequency

- 5.2.1. Odour measurement shall be conducted every three months for the first year of operation for the expanded SCISTW. The first odour measurement shall be conducted within one month after operation of the expanded SCISTW. Subsequent odour measurement shall be conducted at the 4<sup>th</sup>, 7<sup>th</sup> and 10<sup>th</sup> month.

## 5.3. Monitoring Location

- 5.3.1. According to section 2.36 of the EM&A Manual, odour measurement will be conducted at 15 exhaust stacks of the deodourization system at SCISTW. The odour measurement locations are listed in **Table 5.1**. As suggested by the contractor, the location ID is renamed to better identify the deodourization unit which is different from that on the detailed reporting requirement of odour monitoring report.
- 5.3.2. The layout of odour monitoring locations for odour measurement is shown in **Appendix E**.

**Table 5.1** Odour Monitoring Locations for Odour Measurement

| Location Point             |
|----------------------------|
| DOU 1B-1                   |
| DOU 1B-2                   |
| DOU 1-PS <sup>(3)</sup>    |
| DOU 1-R <sup>(2)</sup>     |
| DOU 2-PS <sup>(4)</sup>    |
| DOU 2PS-ACF <sup>(7)</sup> |
| DOU 4-PS <sup>(5)</sup>    |
| DOU 5-PS <sup>(6)</sup>    |
| DOU 6                      |
| DOU 6A                     |
| DOU 6B                     |
| DOU 8-1                    |
| DOU 8-2                    |
| DOU 9-1                    |
| DOU 9-2                    |

Notes:

- (1) DOU means Deodourization Unit.

- (2) Replace DOU 4-2 stated in Detailed Reporting Requirement of Odour Monitoring Report  
(Renaming to distinguish the source of odour is different from that of DOU4)
- (3) Replace DOU 1 stated in Detailed Reporting Requirement of Odour Monitoring Report  
(A polishing stage (PS) is added after the treatment of DOU 1 to enhance odour treatment performance)
- (4) Replace DOU 2 stated in Detailed Reporting Requirement of Odour Monitoring Report  
(A polishing stage (PS) is added after the treatment of DOU 2 to enhance odour treatment performance)
- (5) Replace DOU 4 stated in Detailed Reporting Requirement  
(A polishing stage (PS) is added after the treatment of DOU 4 to enhance odour treatment performance)
- (6) Replace DOU 5 stated in Detailed Reporting Requirement  
(A polishing stage (PS) is added after the treatment of DOU 5 to enhance odour treatment performance)
- (7) Replace DOU 3 stated in Detailed Reporting Requirement  
(A polishing stage (PS) DOU 2PS-ACF is added after the treatment of DOU 3 to enhance odour treatment performance.)

#### **5.4. Monitoring Parameter**

##### **5.4.1. During sampling, following items will be recorded:**

- ambient temperature;
- relative humidity;
- wind speed;
- wind direction; and
- photo showing the sampling locations relative to existing land features.

## 6. Odour Measurement Result

### 6.1. Odour Concentration and Odour Emission Rate

6.1.1. The odour measurement was conducted on 11<sup>th</sup> July 2024. The detail of location photo is shown in **Appendix E**.

6.1.2. The odour emission rate is listed in **Table 6.1**. The total odour emission rate is calculated to be 1,174 ou/s. The detail monitoring results for each monitoring location is shown in **Appendix F**.

**Table 6.1** Summary of Odour Emission Rate

| Location ID | Odour Emission Rate (ou/s) |
|-------------|----------------------------|
| DOU 1B-1    | 17                         |
| DOU 1B-2    | 17                         |
| DOU 1-PS    | 129                        |
| DOU 1-R     | 10                         |
| DOU 2-PS    | 91                         |
| DOU 2PS-ACF | 335                        |
| DOU 4-PS    | 129                        |
| DOU 5-PS    | 36                         |
| DOU 6       | 86                         |
| DOU 6A      | 130                        |
| DOU 6B      | 85                         |
| DOU 8-1     | 13                         |
| DOU 8-2     | 13                         |
| DOU 9-1     | 16                         |
| DOU 9-2     | 67                         |

## 6.2. Odour Measurement Result Discussion

6.2.1. The total odour emission rate presented in EIA Report Table 3.14 are given in **Appendix G**, the design total mitigated odour emission rate is 11,506.21 ou/s for Option 2 – Decentralized Design.

6.2.2. Comparison between impact monitoring data and data obtained from EIA is shown in **Table 6.2**.

**Table 6.2** Comparison between Impact Monitoring Data and Data Obtained from EIA

| Total Odour Emission Rate (ou/s) |           |
|----------------------------------|-----------|
| Operation Phase Impact           | EIA       |
| 1,174                            | 11,506.21 |

6.2.3. According to Table 2.3 of EM&A Manual, the Action / Limit Level is shown in **Table 6.3**. There was no complaint received in July 2024.

**Table 6.3** Action / Limit Levels of the Odour Measurement

| Parameter      | Action  | Limit   |
|----------------|---|---|
| Odour Nuisance | <ul style="list-style-type: none"> <li>- When two documented complaints are received; or</li> <li>- Measured total odour mission rate from exhaust tacks of deodourization system at SCSITW <math>\geq 0.9 \times</math> total mitigated odour emission rate presented in EIA Report</li> </ul> | <ul style="list-style-type: none"> <li>- Five or more consecutive genuine documented complaints within a week; or</li> <li>- Measured total odour emission rate from exhaust stacks of deodourization system at SCISTW <math>\geq</math> Total mitigated</li> </ul> |

## 7. Summary of Odour Measurement

### 7.1. Conclusion

- 7.1.1. The impact total odour emission rate is smaller than the 90% of total mitigated odour emission rate presented in the EIA report (10,355.59 ou/s). The odour measurement is acceptable and no exceedance of total odour emission rate is recorded.

### 7.2. Recommendation

- 7.2.1. The operator is reminded to maintain the plants and deodourization units are in good condition and to keep a close monitoring on the in-house H<sub>2</sub>S sensors to ensure that no odour nuisance is induced by SCISTW.

### 7.3. Correlation between Odour and H<sub>2</sub>S Concentration

- 7.3.1. To further understand the gas composition, the overall correlation between H<sub>2</sub>S concentrations and odour units of available DOUs was plotted in **Graph 1**. In-house H<sub>2</sub>S concentration from sensors and odour concentration from odour measurement for July 2024 was listed in **Table 7.1**.

**Table 7.1** In-house H<sub>2</sub>S Concentration from Sensors and Odour Concentration from Odour Measurement for July 2024

| Location ID | Portable H <sub>2</sub> S Equipment Concentration (ppm) * | Odour Concentration (OU/m <sup>3</sup> ) |
|-------------|---|--|
| DOU 1B-1    | <0.001  | < 11                                     |
| DOU 1B-2    | <0.001  | < 11                                     |
| DOU 1-PS    | <0.001  | < 11                                     |
| DOU 1-R     | <0.001  | < 11                                     |
| DOU 2-PS    | <0.001  | < 11                                     |
| DOU 2PS-ACF | <0.001  | 23                                       |
| DOU 4-PS    | <0.001  | < 11                                     |
| DOU 5-PS    | <0.001  | < 11                                     |
| DOU 6       | <0.001  | < 11                                     |
| DOU 6A      | <0.001  | 19                                       |
| DOU 6B      | <0.001  | < 11                                     |

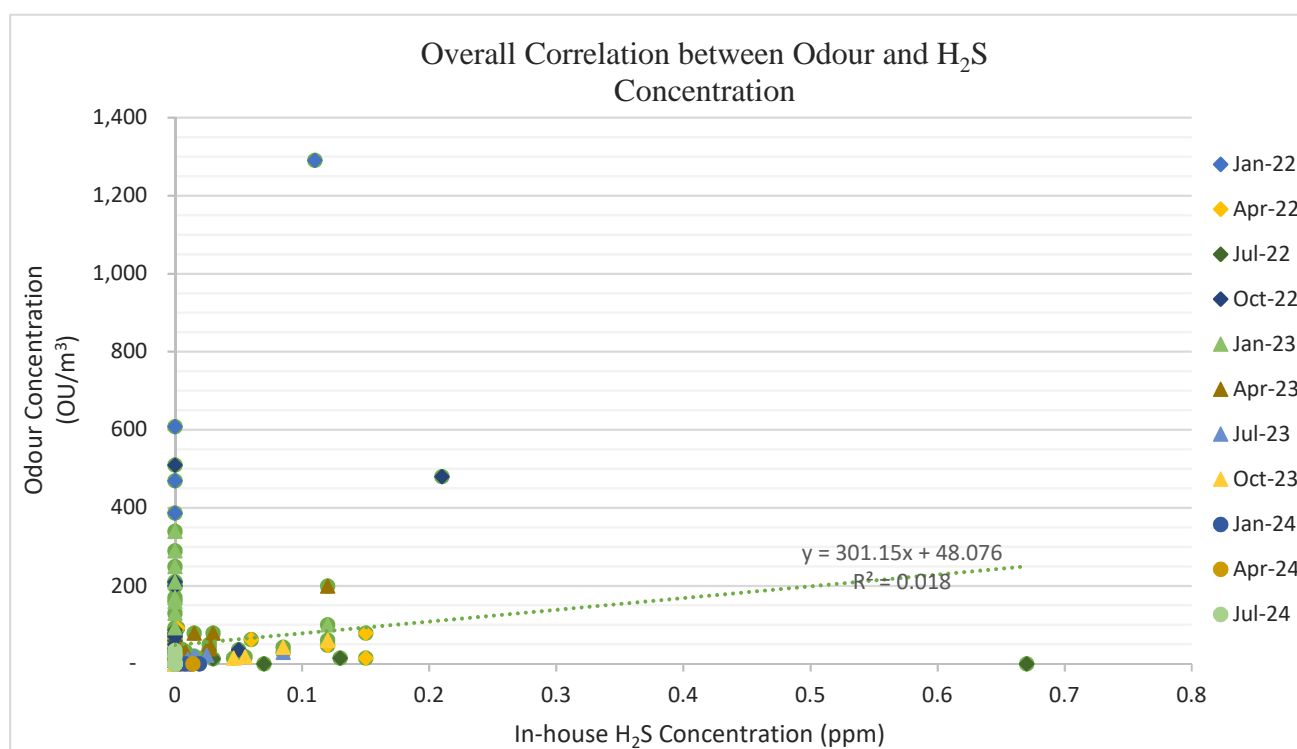
# Odour Monitoring Report for Harbour Area Treatment Scheme Stage 2A (Operational Phase) July 2024

| Location ID | Portable H <sub>2</sub> S Equipment Concentration (ppm) * | Odour Concentration (OU/m <sup>3</sup> ) |
|-------------|---|--|
| DOU 8-1     | <0.001  | < 11                                     |
| DOU 8-2     | <0.001  | < 11                                     |
| DOU 9-1     | <0.001  | < 11                                     |
| DOU 9-2     | <0.001  | 35                                       |

Remark:

- \*The reported unit for H<sub>2</sub>S concentration were converted from ppb to ppm by calculation.

**Graph 1** Overall Correlation between Odour and H<sub>2</sub>S Concentration



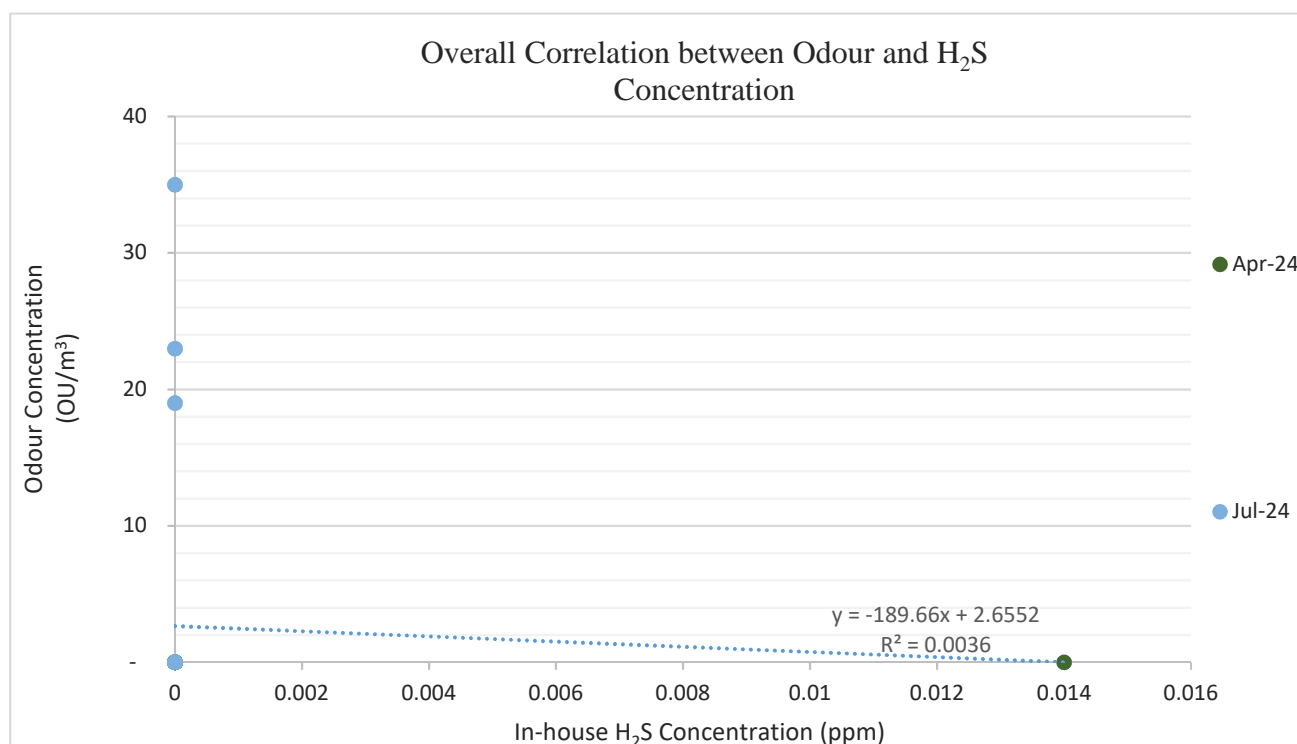
Remark:

- Data smaller than detection limit would be plotted as zero for graph presentation

7.3.2. According to **Graph 1**, no correlation can be established generally. With the above-mentioned observation, the monitoring results in Apr 2024 and Jul 2024 was similar. It is believed that the fine-tuned operating mode including change of quantities of chemical used at the wet chemical scrubbers and replacement of activated carbon at the activated carbon filters after odour measurement exceedance in Jan 2022 can effectively minimize the odour nuisance. To confirm the correlation between H<sub>2</sub>S concentrations and odour units, a graph without exceedance data (data from Jan 2022) should be established. **Graph 2** shows the correlation between Odour and H<sub>2</sub>S Concentration for Apr 2024 and Jul 2024.



**Graph 2** Correlation between Odour and H<sub>2</sub>S Concentration for Apr 2024 and Jul 2024



Remark:

1. Data smaller than detection limit would be plotted as zero for graph presentation

7.3.3. When comparing the data in **Graph 1** with the data for Apr 2024 and Jul 2024 in **Graph 2**, a significant contrast becomes apparent. In **Graph 1**, the majority of the data exhibits high levels of odour concentration with lower H<sub>2</sub>S concentration. However, in **Graph 2**, constant variables of odour concentration are observed across different H<sub>2</sub>S concentrations, with the odour concentration being consistently below the detection limit or at low concentration levels. Therefore, there is no clear and obvious evidence to suggest H<sub>2</sub>S is the major component contributing to the emitted odour from SCISTW. The contrasting patterns between the two graphs suggest the involvement of other factors may influence the odour concentration.

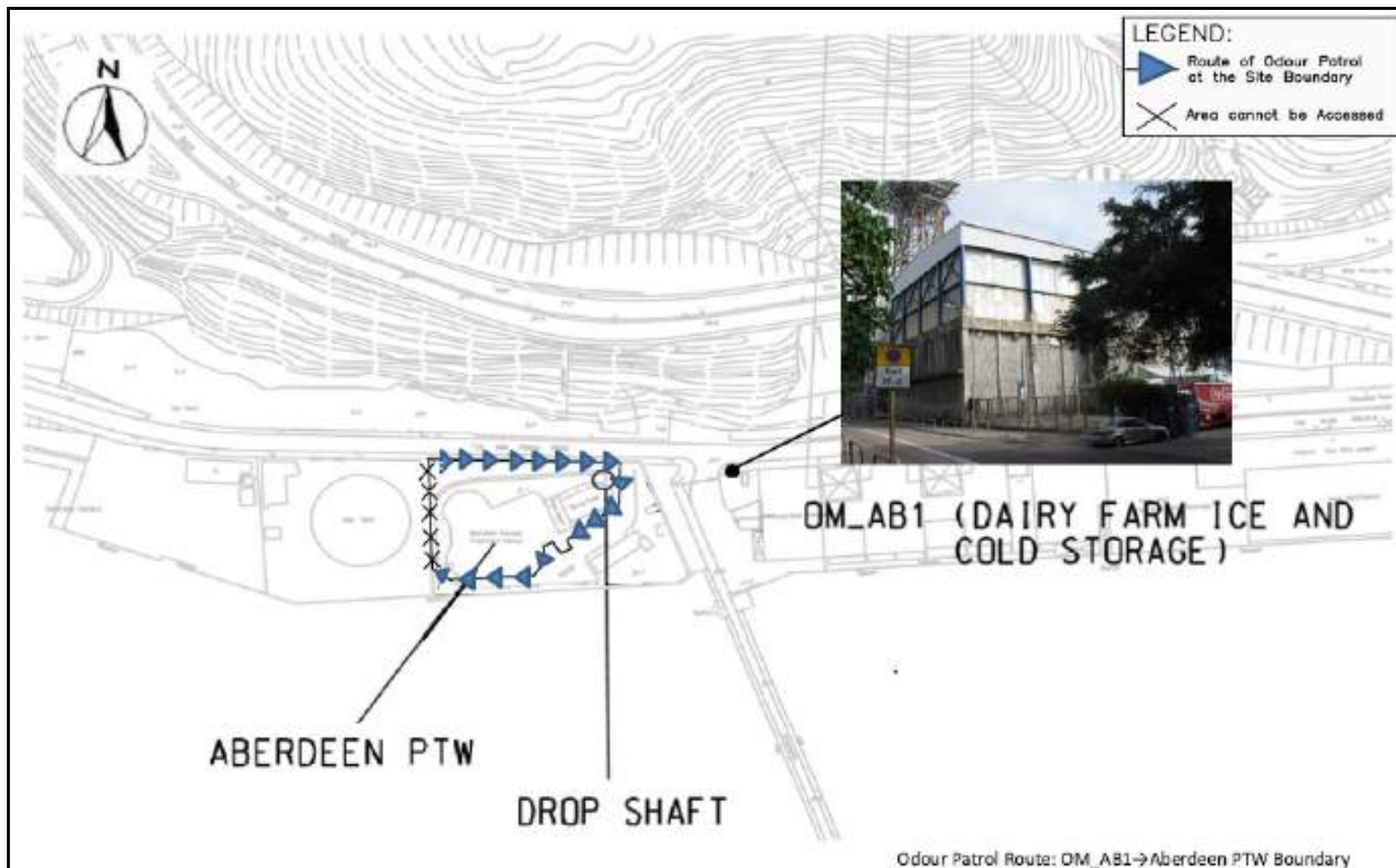
7.3.4. Furthermore, the relatively low concentrations of both H<sub>2</sub>S and odour observed in July 2024, along with the significant differences in the scales used in the graphs, suggest that the deodorization units are in good condition, effectively mitigating the emission rate of odour in SCISTW.

- 7.3.5. To conclude, the data from July 2024 indicates that the deodorization units have effectively mitigated the emission rate of odour, resulting in low levels of odour concentration. This highlights the importance of continuous monitoring and maintenance of equipment by operators to ensure the deodorization units maintain good performance. Additionally, it is important to note that the correlation between H<sub>2</sub>S and odour concentration may not be significant after the mitigation provided by the deodorization units. The performance of the deodorization units plays a crucial role in reducing odour concentrations, potentially weakening the correlation between H<sub>2</sub>S and odour. Therefore, measuring H<sub>2</sub>S concentration using sensors could be a more appropriate method for quickly screening the performance of the deodorization units in SCISTW.

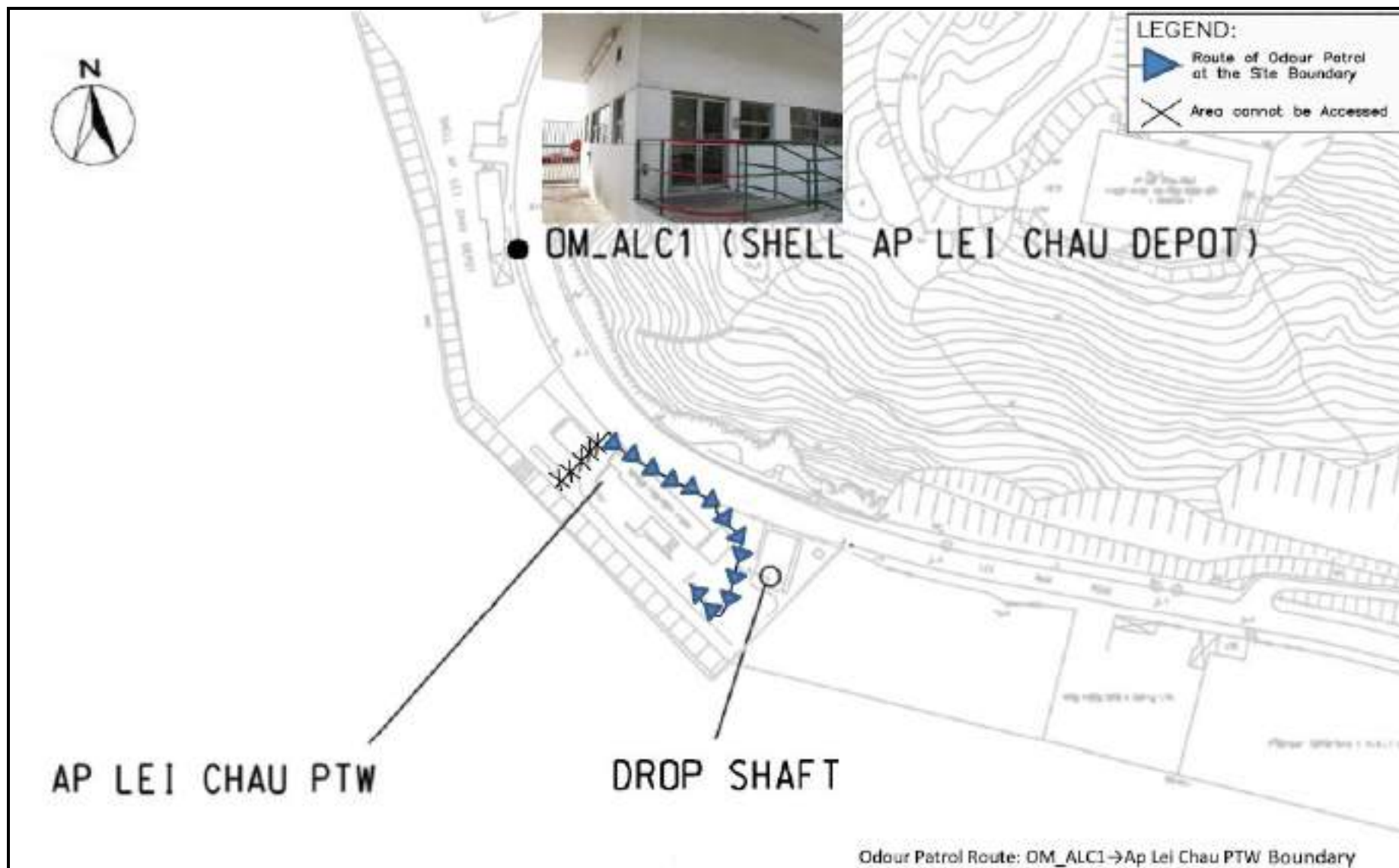
-End of Report-

## **Appendix A**

### **Layout of Odour Patrol Monitoring Locations**



Aberdeen PTW



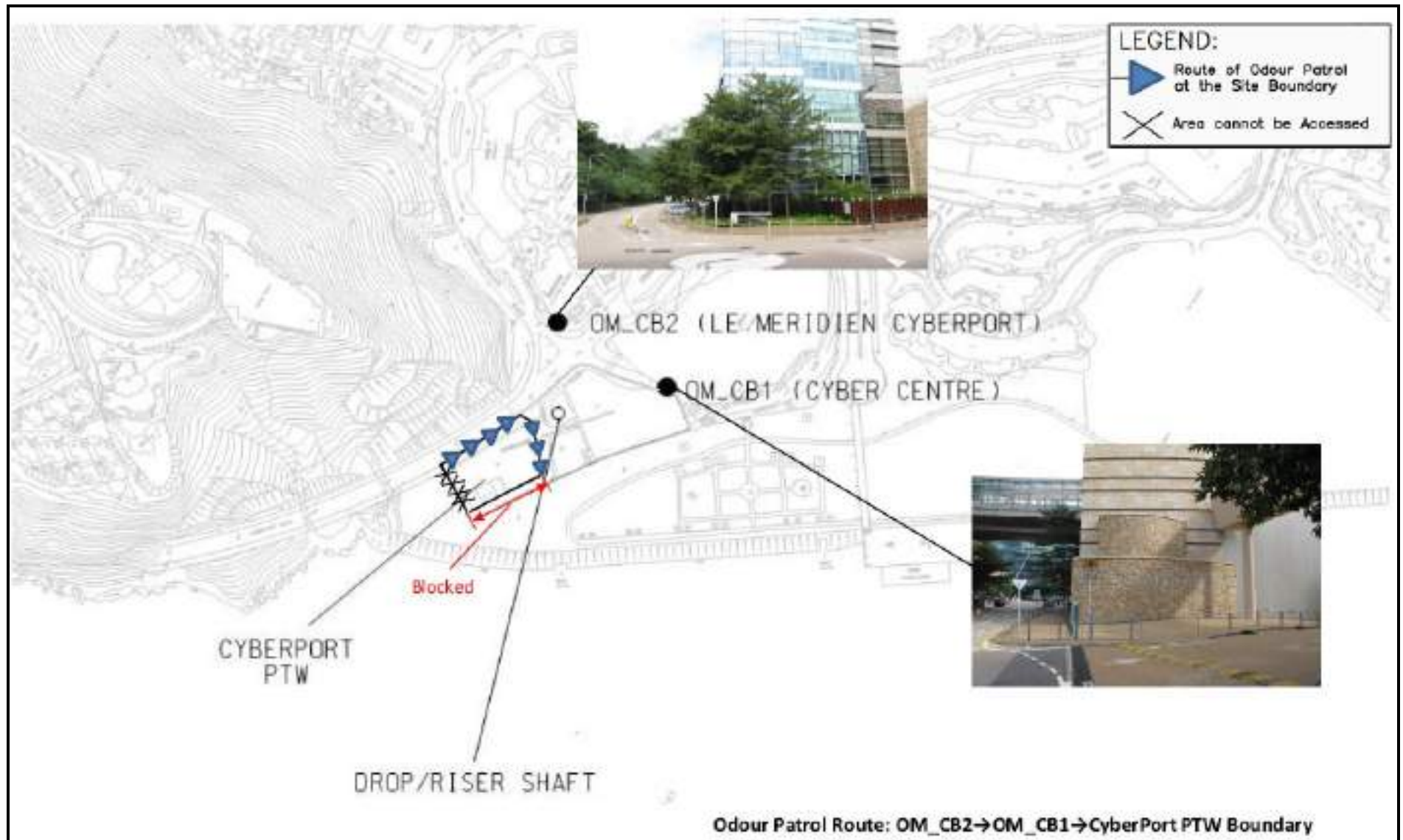
Ap Lei Chau PTW

Odour Monitoring Report for Harbour Area Treatment Scheme Stage 2A (Operational Phase) July 2024

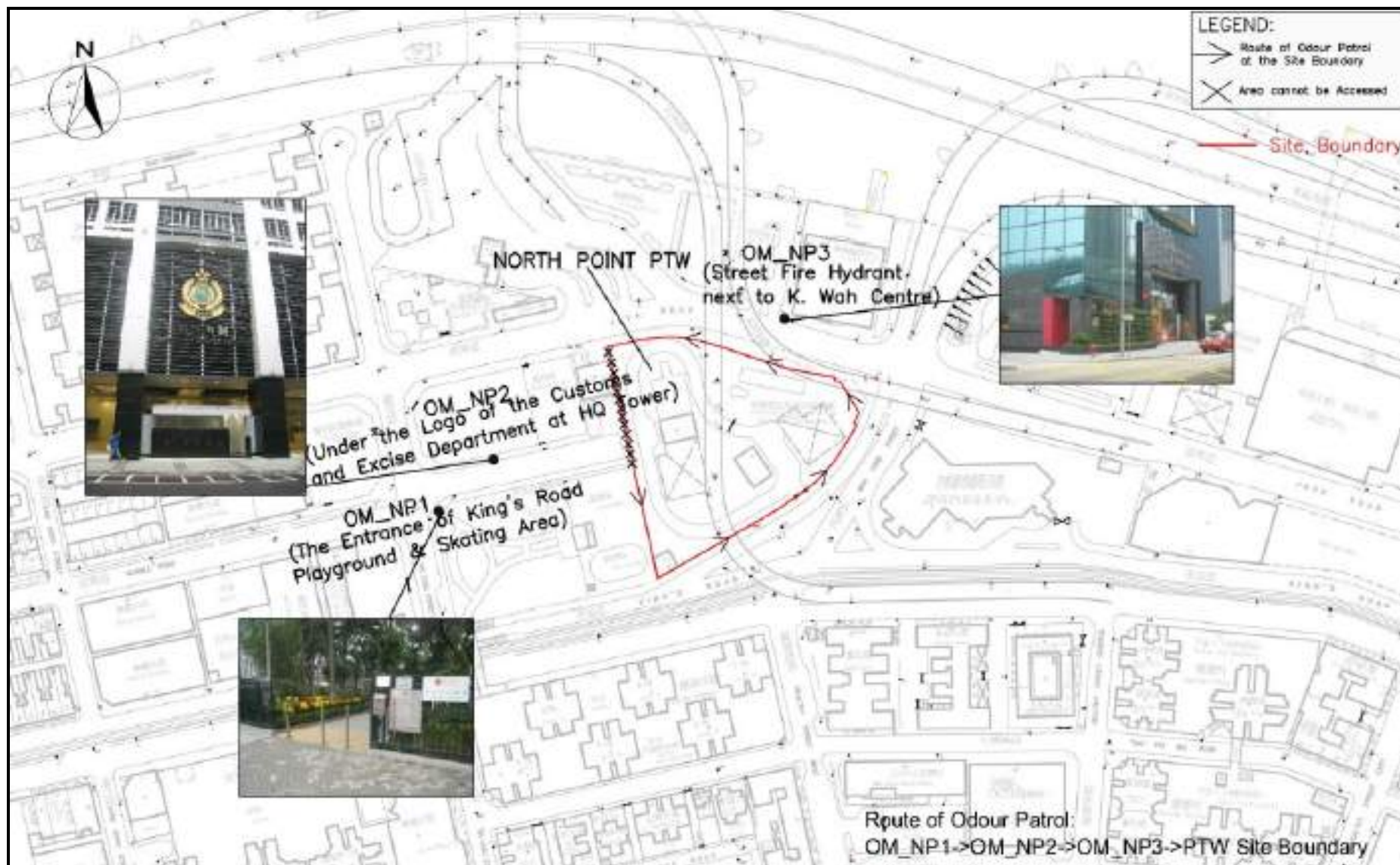


Central PTW





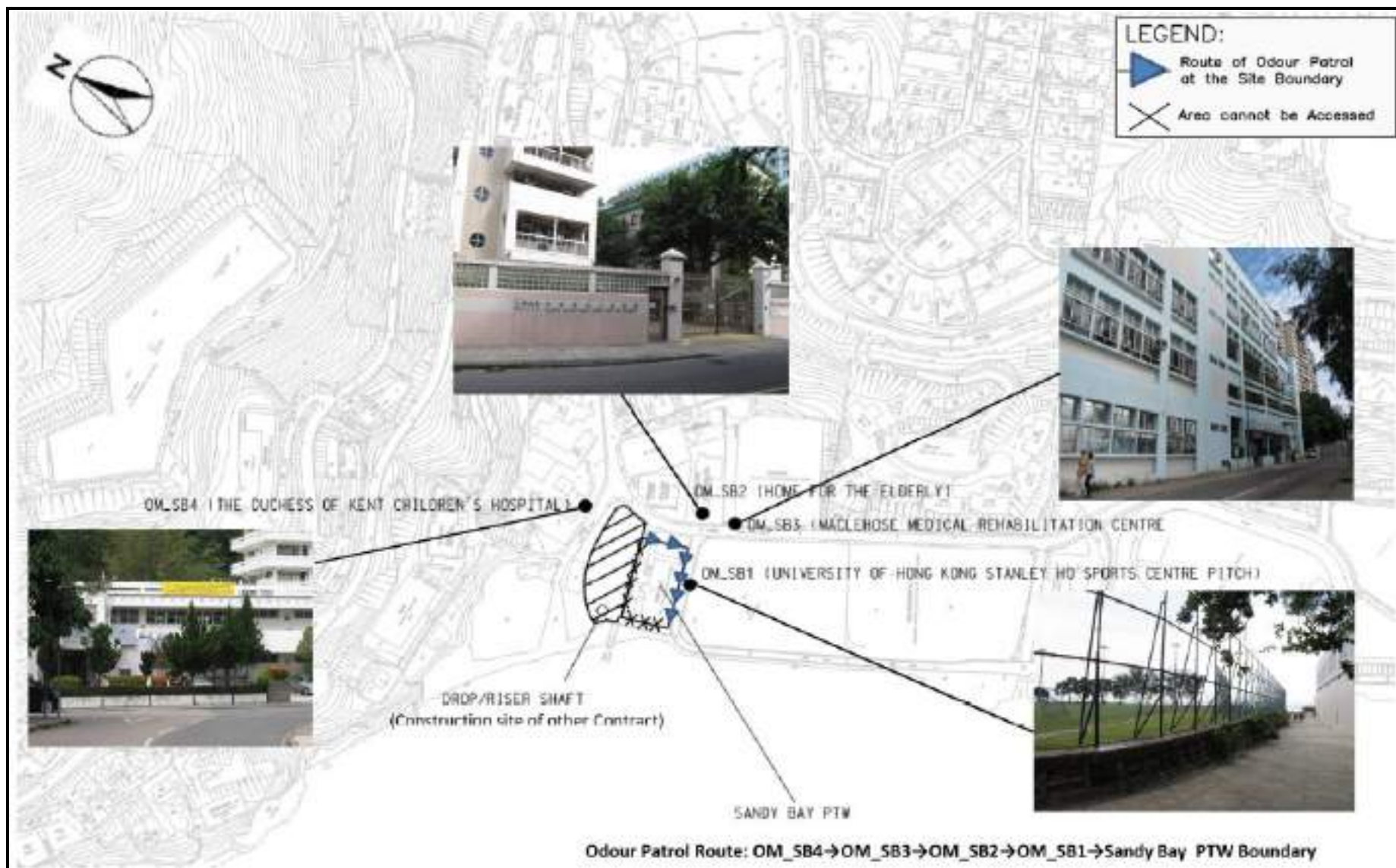
Cybersport PTW



North Point PTW

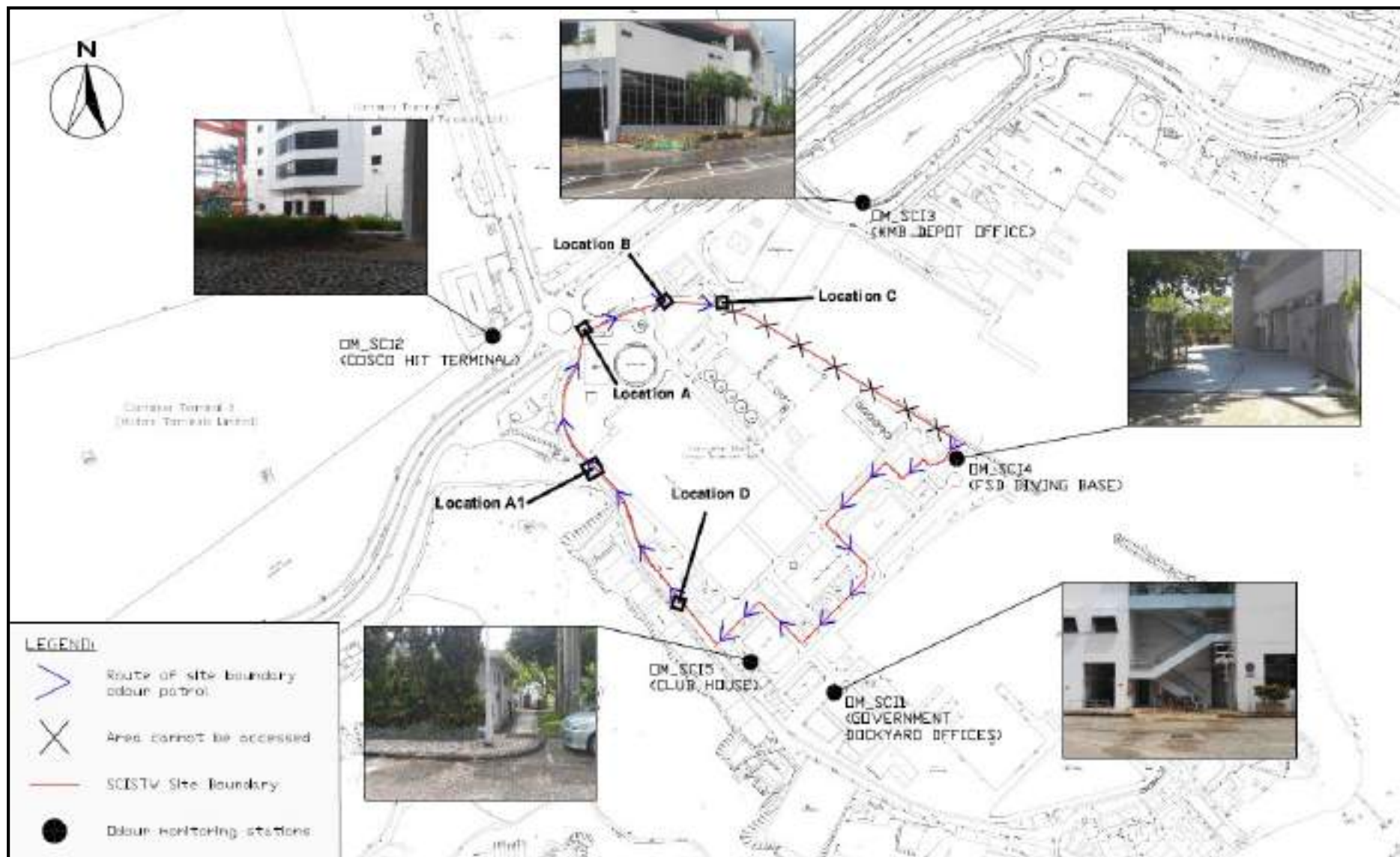


Odour Monitoring Report for Harbour Area Treatment Scheme Stage 2A (Operational Phase) July 2024

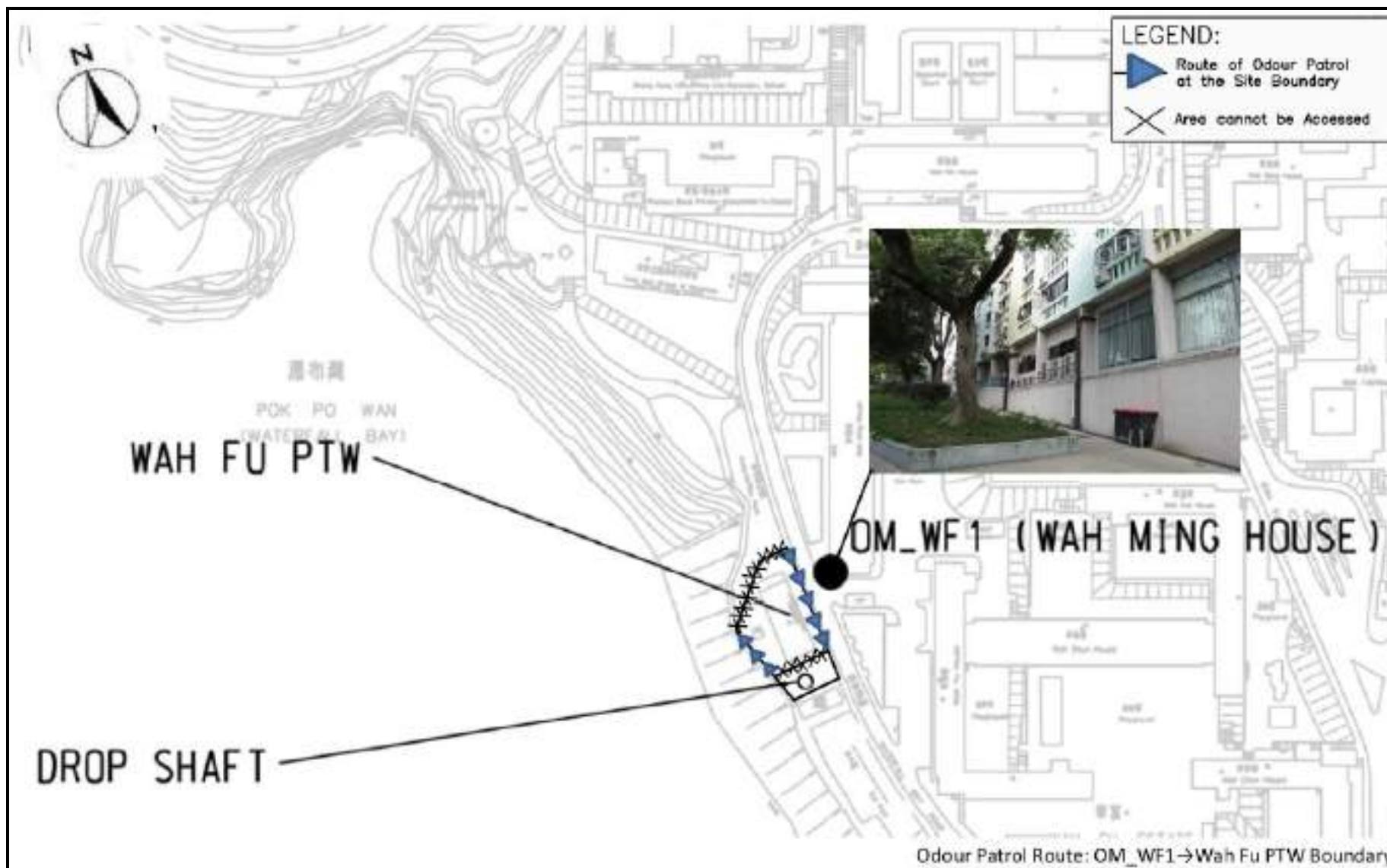


Sandy Bay PTW

# Odour Monitoring Report for Harbour Area Treatment Scheme Stage 2A (Operational Phase) July 2024

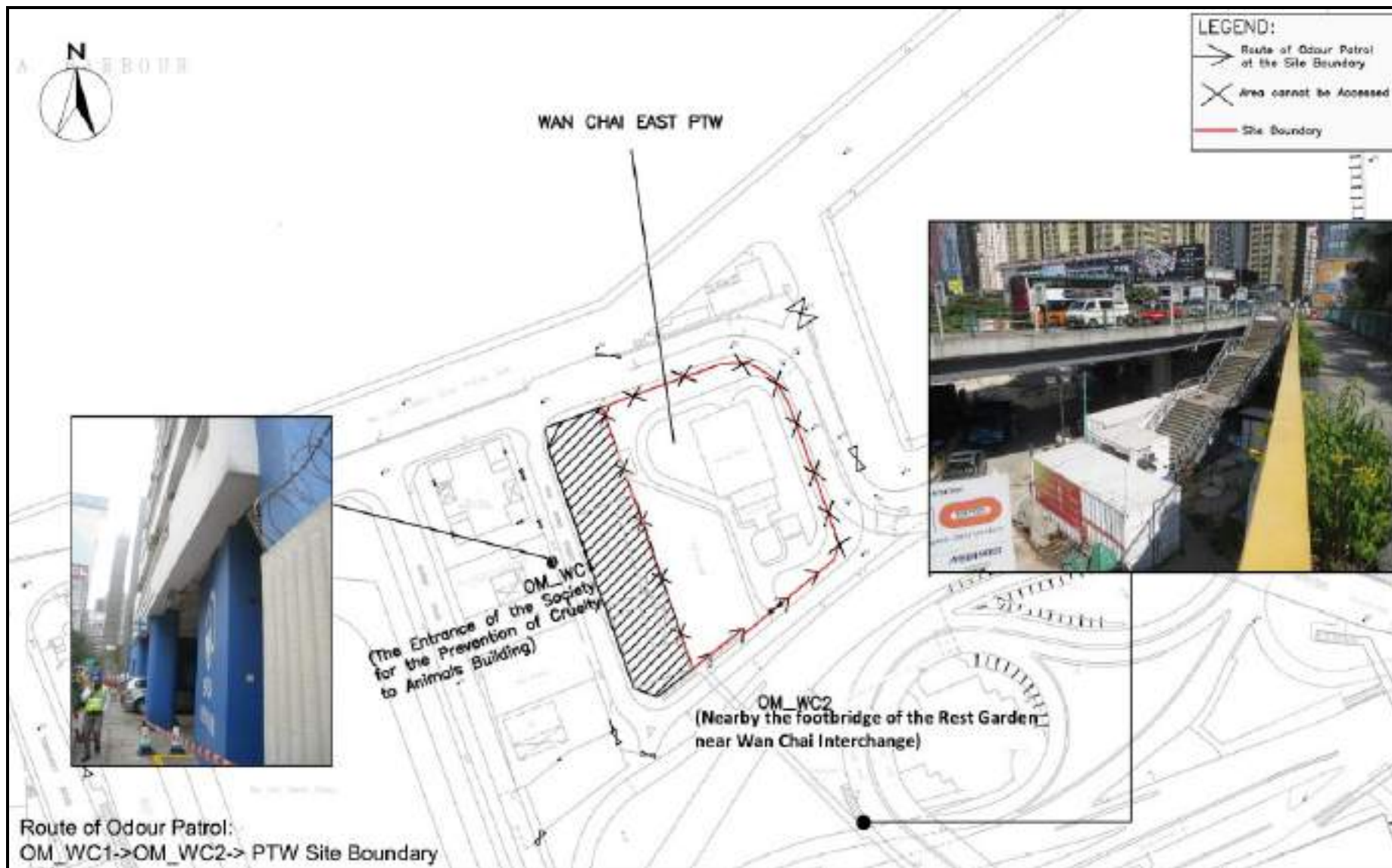


SCISTW

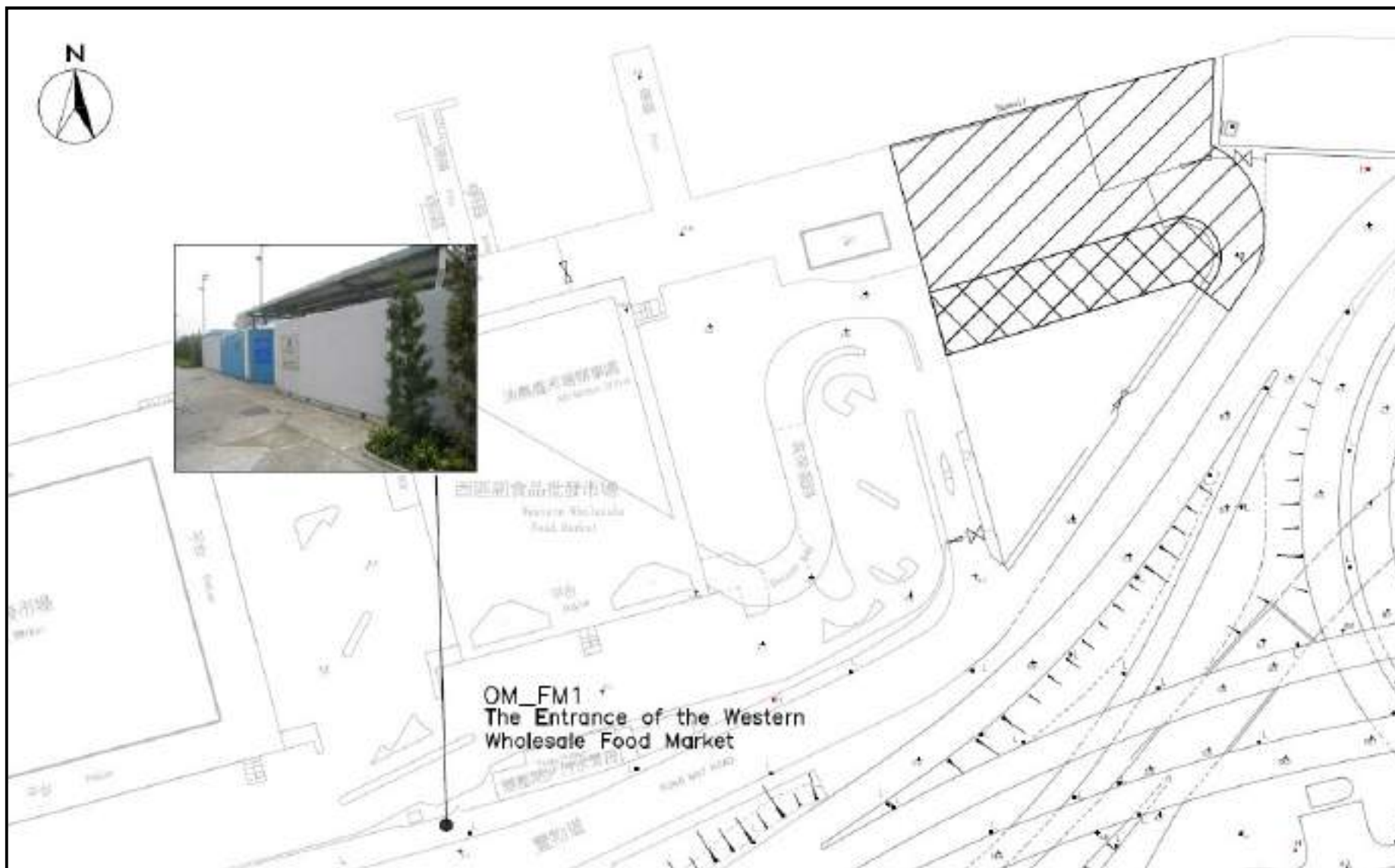


Wah Fu PTW





Wan Chai East PTW



**Western Wholesale Food Market**

## **Appendix B**

### **Odour Certificates**



ALS Life Sciences | Environmental

Certificate No.: C0800-01

## Certificate for a Qualified Odour Panellist

This is to certify that

Chen Ci He, Wayne

has participated at least twelve (12) sets of individual N-Butanol screening test  
during 14-Nov-2023 to 26-Feb-2024

with Individual Threshold : 42 ppb  
Standard Deviation : 1.53 ppb

and

fulfil the Requirement of the European Standard Method of Air Quality -  
Determination of Odour Concentration by Dynamic Olfactometry (BS EN 13725:2022) -

The Requirement of the Odour Threshold of n-Butanol in Nitrogen Gas in the Range of 20 - 80 ppb/v with at  
least 12 sets of individual threshold estimates and standard deviation less than 2.3

26-February-2024  
**Issue Date**

25-February-2025  
**Valid Until**

  
**Fung Lim Chee, Richard**

ALS Technochem (HK) Pty Ltd

11/F Chung Shun Building Centre, 1-3 Wing Yip Street, Kwai Chung, NT, Hong Kong

Tel: 852-2616 1044

**RIGHT SOLUTIONS | RIGHT PARTNER**



ALS Life Sciences | Environmental

Certificate No.: C0087-02

## Certificate for a Qualified Odour Panellist

This is to certify that

HO Tsz Kin

has participated in twelve (12) sets of individual N-Butanol screening test  
during 25-Jul-2023 to 22-May-2024

with Individual Threshold : 37.4 ppb  
Standard Deviation : 1.68 ppb

and

fulfil the Requirement of the European Standard Method of Air Quality -  
Determination of Odour Concentration by Dynamic Olfactometry (BS EN 13725:2022) -

The Requirement of the Odour Threshold of n-Butanol in Nitrogen Gas in the Range of 20 - 80 ppb/v with at  
least 12 sets of individual threshold estimates and standard deviation less than 2.3

22 May 2024  
Issue Date

22 May 2025  
Valid Until

  
Fung Lim Chee, Richard

ALS Technoschem (HK) Pty Ltd

11/F Chung Shan Kitting Centre, 1-3 Wing Yip Street, Kwai Chung, NT, Hong Kong

Tel: 852-2610 1044

RIGHT SOLUTIONS | RIGHT PARTNER





ALS Life Sciences | Environmental

Certificate No.: C0698-01

## Certificate for a Qualified Odour Panellist

This is to certify that

**Wong Yiu Chun**

has participated in twelve (12) sets of individual N-Butanol screening test  
during 14-July-2023 to 04-July-2024

with Individual Threshold : 38 ppb

Standard Deviation : 1.51 ppb

and

fulfil the Requirement of the European Standard Method of Air Quality -  
Determination of Odour Concentration by Dynamic Olfactometry (BS EN 13725:2022) -

The Requirement of the Odour Threshold of n-Butanol in Nitrogen Gas in the Range of 20 - 80 ppb/v with at  
least 12 sets of individual threshold estimates and standard deviation less than 2.3

04 July 2024

**Issue Date**

04 July 2025

**Valid Until**

A handwritten signature in black ink, appearing to read 'Richard Fung'.

**Fung Lim Chee, Richard**

ALS Technichem (HK) Pty Ltd

11/F Chung Shan Knitting Centre, T-3 Wing Yip Street, Kwai Chung, NT, Hong Kong

Tel: 852-2610 1044

**RIGHT SOLUTIONS | RIGHT PARTNER**



## Certificate for a Qualified Odour Panel Member

**Serial No.** : P-047

**Odour Panel Member** : Andrew Yuen Chun Wa

**Date of Screening Test** : 16 Feb 2024  
19 Feb 2024  
21 Feb 2024

**Valid Until** : 20 Aug 2024

This is to certify that Mr. Andrew Yuen participated in a set of n-butanol screening tests in our laboratory between 16 Feb 2024 and 21 Feb 2024.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited

A handwritten signature in blue ink, appearing to read 'Winnie', is written over a horizontal line.

Tam Wing Kwun, Winnie  
Assistant Manager – Environmental Division

Date: 21 Feb 2024



## Certificate for a Qualified Odour Panel Member

Serial No. : P-061

Odour Panel Member : Chan Kai Fat

Date of Screening Test : 16 Feb 2024  
19 Feb 2024  
21 Feb 2024

Valid Until : 20 Aug 2024

This is to certify that Mr. Chan Kai Fat participated in a set of n-butanol screening tests in our laboratory between 16 Feb 2024 and 21 Feb 2024.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited

A handwritten signature in blue ink that reads 'Winnie'.

Tam Wing Kwun, Winnie  
Assistant Manager – Environmental Division

Date: 21 Feb 2024



## Certificate for a Qualified Odour Panel Member

**Serial No.** : P-057

**Odour Panel Member** : Arnold Keung Chi Young

**Date of Screening Test** : 16 Feb 2024  
19 Feb 2024  
21 Feb 2024

**Valid Until** : 20 Aug 2024

This is to certify that Mr. Arnold Keung Chi Young participated in a set of n-butanol screening tests in our laboratory between 16 Feb 2024 and 21 Feb 2024.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited

A handwritten signature in cursive script that reads 'Winnie'.

Tam Wing Kwun, Winnie  
Assistant Manager – Environmental Division

Date: 21 Feb 2024

## **Appendix C**

### **Field Record and Photo Record**

| Monitoring Result of Odour Patrol |           |         |       |                  |                       |                  |                |                 |                   |                       |                       |                        |
|-----------------------------------|-----------|---------|-------|------------------|-----------------------|------------------|----------------|-----------------|-------------------|-----------------------|-----------------------|------------------------|
| Location ID                       | Panellist | Weather | Time  | Temperature (°C) | Relative Humidity (%) | Wind Speed (m/s) | Wind Direction | Odour Intensity | Duration of Odour | Direction from Source | On-Site Observation   |                        |
|                                   |           |         |       |                  |                       |                  |                |                 |                   |                       | Odour Characteristics | Potential Odour Source |
| OM_NP1                            | 1         | Sunny   | 15:08 | 33.6             | 70                    | 0.2              | SE             | 0               | NA                | NA                    | NA                    | NA                     |
|                                   | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                                   | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_NP2                            | 1         | Sunny   | 15:02 | 31.2             | 70                    | 0.2              | E              | 0               | NA                | NA                    | NA                    | NA                     |
|                                   | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                                   | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_NP3                            | 1         | Sunny   | 15:05 | 33               | 70                    | 1.3              | E              | 0               | NA                | NA                    | NA                    | NA                     |
|                                   | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                                   | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| North Point PTW Boundary          | 1         | Sunny   | 15:41 | 31.7             | 82.0                  | 0.4              | E              | 1               | Continuous        | Side wind             | Sewage                | PTW                    |
|                                   | 2         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |
|                                   | 3         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |
| OM_WC1                            | 1         | Sunny   | 14:54 | 35.6             | 71                    | 0.2              | S              | 0               | NA                | NA                    | NA                    | NA                     |
|                                   | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                                   | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_WC2                            | 1         | Sunny   | 14:51 | 33.7             | 71                    | 0.3              | S              | 0               | NA                | NA                    | NA                    | NA                     |
|                                   | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                                   | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |

### Monitoring Result of Odour Patrol

| Location ID                   | Panellist | Weather | Time  | Temperature (°C) | Relative Humidity (%) | Wind Speed (m/s) | Wind Direction | Odour Intensity | Duration of Odour | Direction from Source | On-Site Observation   |                        |
|-------------------------------|-----------|---------|-------|------------------|-----------------------|------------------|----------------|-----------------|-------------------|-----------------------|-----------------------|------------------------|
|                               |           |         |       |                  |                       |                  |                |                 |                   |                       | Odour Characteristics | Potential Odour Source |
| Wan Chai East<br>PTW Boundary | 1         | Sunny   | 16:02 | 30.4             | 78.7                  | 0.0              | -              | 1               | Continuous        | NA                    | Sewage                | PTW                    |
|                               | 2         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |
|                               | 3         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |
| OM_C1                         | 1         | Sunny   | 14:35 | 32.8             | 70                    | 0.7              | SE             | 0               | NA                | NA                    | NA                    | NA                     |
|                               | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                               | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_C2                         | 1         | Sunny   | 14:38 | 33.3             | 70                    | 2.6              | E              | 0               | NA                | NA                    | NA                    | NA                     |
|                               | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                               | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_C3                         | 1         | Sunny   | 14:39 | 34               | 70                    | 0.2              | SE             | 0               | NA                | NA                    | NA                    | NA                     |
|                               | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                               | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| Central PTW<br>Boundary       | 1         | Sunny   | 14:06 | 33.6             | 70.2                  | 0.7              | NE             | 1               | Continuous        | Side wind             | Sewage                | PTW                    |
|                               | 2         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |
|                               | 3         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |
| OM_FM1                        | 1         | Sunny   | 14:25 | 32.1             | 70                    | 1.3              | E              | 0               | NA                | NA                    | NA                    | NA                     |
|                               | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                               | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |

### Monitoring Result of Odour Patrol

| Location ID            | Panellist | Weather | Time  | Temperature (°C) | Relative Humidity (%) | Wind Speed (m/s) | Wind Direction | Odour Intensity | Duration of Odour | Direction from Source | On-Site Observation   |                        |
|------------------------|-----------|---------|-------|------------------|-----------------------|------------------|----------------|-----------------|-------------------|-----------------------|-----------------------|------------------------|
|                        |           |         |       |                  |                       |                  |                |                 |                   |                       | Odour Characteristics | Potential Odour Source |
| OM_SB1                 | 1         | Sunny   | 14:11 | 33.4             | 72                    | 0.6              | SE             | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_SB2                 | 1         | Sunny   | 14:10 | 33.4             | 72                    | 0.4              | SE             | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_SB3                 | 1         | Sunny   | 14:09 | 33.5             | 72                    | 0.6              | SE             | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_SB4                 | 1         | Sunny   | 14:07 | 32.7             | 72                    | 0.7              | S              | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| Sandy Bay PTW Boundary | 1         | Sunny   | 14:30 | 31.8             | 77.9                  | 1.0              | W              | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_CB1                 | 1         | Sunny   | 14:00 | 31.4             | 71                    | 1.5              | S              | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |



### Monitoring Result of Odour Patrol

| Location ID            | Panellist | Weather | Time  | Temperature (°C) | Relative Humidity (%) | Wind Speed (m/s) | Wind Direction | Odour Intensity | Duration of Odour | Direction from Source | On-Site Observation   |                        |
|------------------------|-----------|---------|-------|------------------|-----------------------|------------------|----------------|-----------------|-------------------|-----------------------|-----------------------|------------------------|
|                        |           |         |       |                  |                       |                  |                |                 |                   |                       | Odour Characteristics | Potential Odour Source |
| OM_CB2                 | 1         | Sunny   | 14:01 | 31               | 71                    | 1.9              | S              | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| Cyberport PTW Boundary | 1         | Sunny   | 14:39 | 33.2             | 72.3                  | 1.9              | SW             | 1               | Continuous        | Side wind             | Sewage                | PTW                    |
|                        | 2         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |
| OM_WF1                 | 1         | Sunny   | 13:51 | 30.6             | 73                    | 2.4              | S              | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| Wah Fu PTW Boundary    | 1         | Sunny   | 15:00 | 31.5             | 80.0                  | 0.8              | N              | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| OM_AB1                 | 1         | Sunny   | 13:34 | 32.7             | 72                    | 0.5              | SE             | 0               | NA                | NA                    | NA                    | NA                     |
|                        | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |                        |
| Aberdeen PTW Boundary  | 1         | Sunny   | 14:53 | 32.0             | 84.9                  | 0.7              | E              | 1               | Continuous        | Side wind             | Sewage                | PTW                    |
|                        | 2         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |
|                        | 3         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                        |

**Monitoring Result of Odour Patrol**

| Location ID                 | Panellist | Weather | Time  | Temperature (°C) | Relative Humidity (%) | Wind Speed (m/s) | Wind Direction | Odour Intensity | Duration of Odour | Direction from Source | On-Site Observation   |  |
|-----------------------------|-----------|---------|-------|------------------|-----------------------|------------------|----------------|-----------------|-------------------|-----------------------|-----------------------|--|
|                             |           |         |       |                  |                       |                  |                |                 |                   |                       | Odour Characteristics | Potential Odour Source                     |
| OM_ALC1                     | 1         | Sunny   | 13:18 | 33.1             | 72                    | 0.3              | S              | 0               | NA                | NA                    | NA                    | NA   |
|                             | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |
|                             | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |
| Ap Lei Chau<br>PTW Boundary | 1         | Cloudy  | 15:16 | 31.6             | 81.3                  | 1.4              | W              | 0               | NA                | NA                    | NA                    | NA   |
|                             | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |
|                             | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |
| OM_SCI1                     | 1         | Sunny   | 15:25 | 24.6             | 62                    | 1.5              | W              | 0               | NA                | NA                    | NA                    | NA   |
|                             | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |
|                             | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |
| OM_SCI2                     | 1         | Sunny   | 15:03 | 35.4             | 57                    | 1.3              | S              | 0               | NA                | NA                    | NA                    | NA   |
|                             | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |
|                             | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |
| OM_SCI3                     | 1         | Sunny   | 14:50 | 35.9             | 59                    | 1.2              | W              | 1               | NA                | NA                    | Garbage               | West Kowloon<br>Refuse Transfer<br>Station |
|                             | 2         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |  |
|                             | 3         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |  |
| OM_SCI4                     | 1         | Sunny   | 15:32 | 37.3             | 54                    | 0.8              | SW             | 0               | NA                | NA                    | NA                    | NA   |
|                             | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |
|                             | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |  |

| Monitoring Result of Odour Patrol |           |         |       |                  |                       |                  |                |                 |                   |                       |                       |   |
|-----------------------------------|-----------|---------|-------|------------------|-----------------------|------------------|----------------|-----------------|-------------------|-----------------------|-----------------------|---|
| Location ID                       | Panellist | Weather | Time  | Temperature (°C) | Relative Humidity (%) | Wind Speed (m/s) | Wind Direction | Odour Intensity | Duration of Odour | Direction from Source | On-Site Observation   |   |
|                                   |           |         |       |                  |                       |                  |                |                 |                   |                       | Odour Characteristics | Potential Odour Source  |
| OM_SCI5                           | 1         | Sunny   | 15:37 | 38.9             | 52                    | 1.4              | E              | 0               | NA                | NA                    | NA                    | NA  |
|                                   | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |   |
|                                   | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |   |
| SCISTW-Location A                 | 1         | Sunny   | 13:44 | 32.8             | 70.0                  | 1.1              | W              | 1               | Intermittent      | Upwind                | Rubbish               | Refuse Collection Vehicles for the West Kowloon Refuse Transfer Station |
|                                   | 2         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |   |
|                                   | 3         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |   |
| SCISTW-Location A1                | 1         | Sunny   | 13:48 | 34.2             | 69.1                  | 1.8              | SE             | 0               | NA                | NA                    | NA                    | NA  |
|                                   | 2         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |   |
|                                   | 3         |         |       |                  |                       |                  |                | 0               |                   |                       |                       |   |
| SCISTW-Location B                 | 1         | Sunny   | 13:42 | 32.4             | 67.9                  | 0.4              | SW             | 0               | NA                | NA                    | NA                    | NA  |
|                                   | 2         |         |       |                  |                       |                  |                | 1               | Continuous        | Continuous            | Rubbish               | Refuse Collection Vehicles for the West Kowloon Refuse Transfer Station |
|                                   | 3         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |   |

| Monitoring Result of Odour Patrol |           |         |       |                  |                       |                  |                |                 |                   |                       |                       |                                      |
|-----------------------------------|-----------|---------|-------|------------------|-----------------------|------------------|----------------|-----------------|-------------------|-----------------------|-----------------------|--------------------------------------|
| Location ID                       | Panellist | Weather | Time  | Temperature (°C) | Relative Humidity (%) | Wind Speed (m/s) | Wind Direction | Odour Intensity | Duration of Odour | Direction from Source | On-Site Observation   |                                      |
|                                   |           |         |       |                  |                       |                  |                |                 |                   |                       | Odour Characteristics | Potential Odour Source               |
| SCISTW-Location C                 | 1         | Sunny   | 13:40 | 31.9             | 70.2                  | 0.4              | SE             | 2               | Continuous        | Side wind             | Rubbish               | West Kowloon Refuse Transfer Station |
|                                   | 2         |         |       |                  |                       |                  |                | 2               |                   |                       |                       |                                      |
|                                   | 3         |         |       |                  |                       |                  |                | 2               |                   |                       |                       |                                      |
| SCISTW-Location D                 | 1         | Sunny   | 13:50 | 32.4             | 78.2                  | 0.9              | SE             | 1               | Continuous        | Side wind             | Sewage                | SCISTW                               |
|                                   | 2         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                                      |
|                                   | 3         |         |       |                  |                       |                  |                | 1               |                   |                       |                       |                                      |

Photo Record of Odour Patrol

|   |  |
|---|--|
|  <p>The Entrance of the King's Road Playground &amp; Skating Area<br/>11 July 2024 15:08</p> |  <p>The Customs and Excise Department at HQ Tower<br/>11 July 2024 15:02</p> |
| <p>OM_NP1</p>   | <p>OM_NP2</p>  |
|  <p>Street Fire Hydrant next to K. Wah Centre<br/>11 July 2024 15:05</p>                    |  <p>North Point Preliminary Treatment Works<br/>11 July 2024 15:41</p>      |
| <p>OM_NP3</p>   | <p>North Point PTW Boundary</p>  |
|  <p>The Entrance of the SPCA Building<br/>11 July 2024 14:51</p>                           |  <p>Near by the footbridge of the Rest Garden<br/>11 July 2024 14:51</p>   |
| <p>OM_WC1</p>   | <p>OM_WC2</p>  |

Photo Record of Odour Patrol







|   |  |
|---|--|
|  <p>Wan Chai East Preliminary Treatment Works - 11 July 2024 16:02</p> |  <p>Sheng Wan Fire Station<br/>11 July 2024 14:35</p>                              |
| <p>Wan Chai East PTW Boundary</p>   | <p>OM_C1</p>   |
|  <p>The Entrance of Central Police Station<br/>11 July 2024 14:38</p> |  <p>The Entrance of the Sheng Wan Gala Point<br/>11 July 2024 14:39</p>           |
| <p>OM_C2</p>  | <p>OM_C3</p>   |
|  <p>Central Preliminary Treatment Works<br/>11 July 2024 14:06</p>   |  <p>The Entrance of the Western Wholesale Food Market<br/>11 July 2024 14:25</p> |
| <p>Central PTW Boundary</p>   | <p>OM_FM1</p>  |



Photo Record of Odour Patrol




|  |   |
|--|---|
|  <p>The University of Hong Kong Stanley Ho Sports Centre Pitch<br/>11 July 2024 14:11</p> |  <p>Home for The Elderly<br/>11 July 2024 14:19</p>                     |
| <p>OM_SB1</p>  | <p>OM_SB2</p>   |
|  <p>MacLehose Medical Rehabilitation Centre<br/>11 July 2024 14:09</p>                   |  <p>The Duchess of Kent Children's Hospital<br/>11 July 2024 14:07</p> |
| <p>OM_SB3</p>  | <p>OM_SB4</p>   |
|  <p>Sandy Bay Preliminary Treatment Works<br/>11 July 2024 14:30</p>                    |  <p>Cyber Centre<br/>11 July 2024 14:00</p>                           |
| <p>Sandy Bay PTW Boundary</p>  | <p>OM_CB1</p>   |

Photo Record of Odour Patrol










|   |   |
|---|---|
|  <p>OM_CB2</p>   |  <p>Cyberport PTW Boundary</p>  |
|  <p>OM_WF1</p>  |  <p>Wah Fu PTW Boundary</p>    |
|  <p>OM_AB1</p> |  <p>Aberdeen PTW Boundary</p> |



Photo Record of Odour Patrol

|  |  |
|--|--|
|  <p>Shell Ap Lei Chau Depot<br/>11 July 2024 13:18</p>      |  <p>Ap Lei Chau Preliminary Treatment Works<br/>11 July 2024 15:06</p> |
| <p>OM_ALC1</p>   | <p>Ap Lei Chau PTW Boundary</p>  |
|  <p>Government Dockyard Offices<br/>11 July 2024 15:28</p> |  <p>Cosco Hit Terminal<br/>11 July 2024 15:03</p>                     |
| <p>OM_SCI1</p>   | <p>OM_SCI2</p>   |
|  <p>KMB Depot Office<br/>11 July 2024 14:50</p>           |  <p>Fire Services Department Diving Base<br/>11 July 2024 15:32</p>  |
| <p>OM_SCI3</p>   | <p>OM_SCI4</p>   |

Photo Record of Odour Patrol

|  |   |
|--|---|
|  <p>Club House<br/>11 July 2024 13:37</p>   |  <p>Stonecutters Island Sewage Treatment Works Main Entrance (SCI A)<br/>11 July 2024 13:44</p> |
| <p>OM_SCI5</p>   | <p>Location A</p>   |
|  <p>Stonecutters Island Sewage Treatment Works Boundary (SCI A1)<br/>11 July 2024 13:48</p>  |  <p>Stonecutters Island Sewage Treatment Works Main Entrance (SCI B) - 11 July 2024 13:42</p>  |
| <p>Location A1</p>   | <p>Location B</p>   |
|  <p>Stonecutters Island Sewage Treatment Works Boundary (SCI C Near the Entrance of West Kowloon Transfer Station)<br/>11 July 2024 13:40</p> |  <p>Stonecutters Island Sewage Treatment Works Boundary (SCI D)<br/>11 July 2024 13:50</p>    |
| <p>Location C</p>  | <p>Location D</p>   |

## **Appendix D**

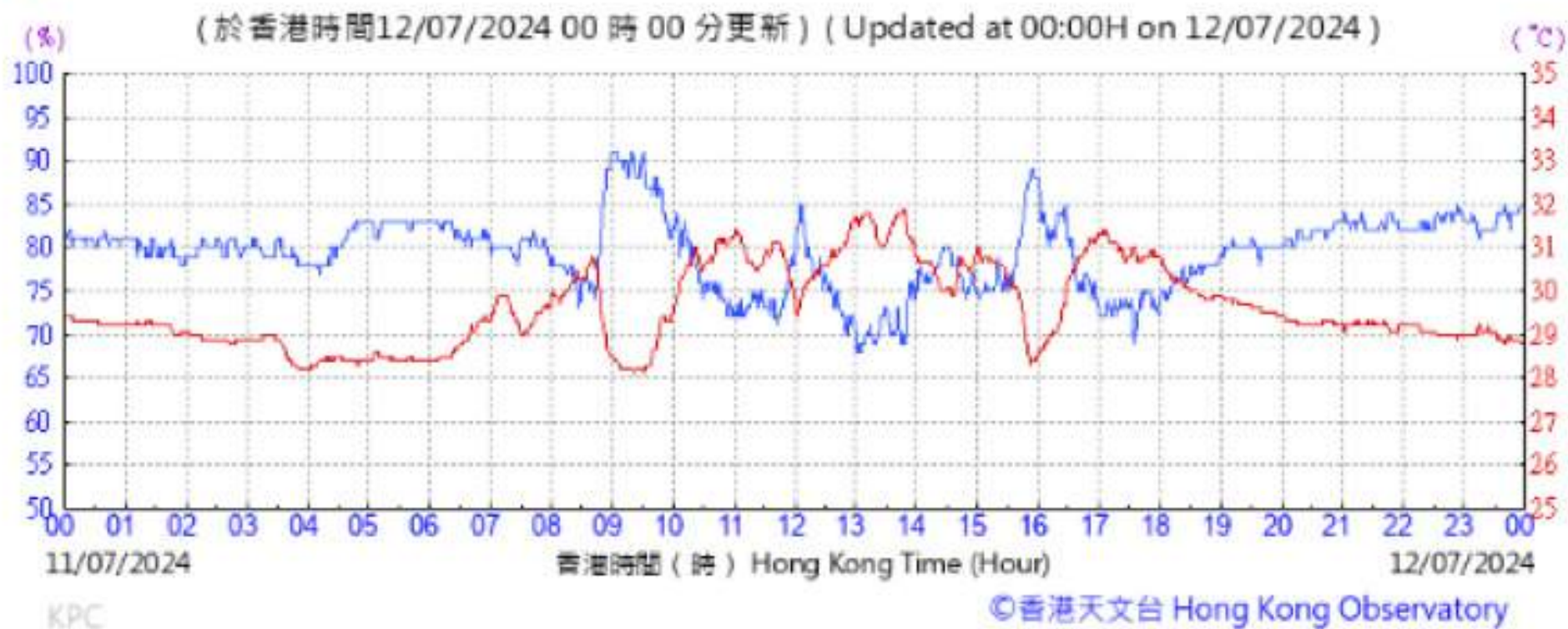
### **Meteorological Information from the Hong Kong Observatory Station**



### Meteorological Information from the Hong Kong Observatory Station

- Temperature and Humidity

Temperature Humidity:



Reference from:

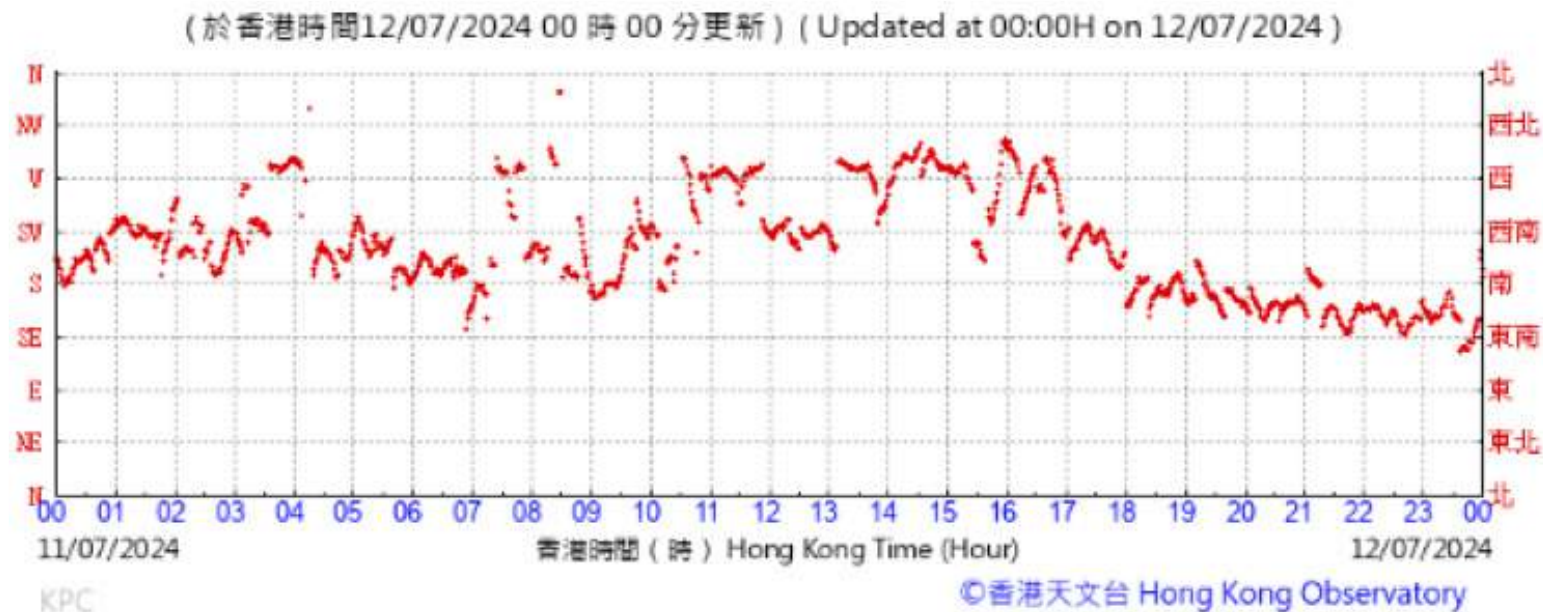
[https://www.hko.gov.hk/en/wxinfo/ts/display\\_graph.htm?hko&](https://www.hko.gov.hk/en/wxinfo/ts/display_graph.htm?hko&)

&

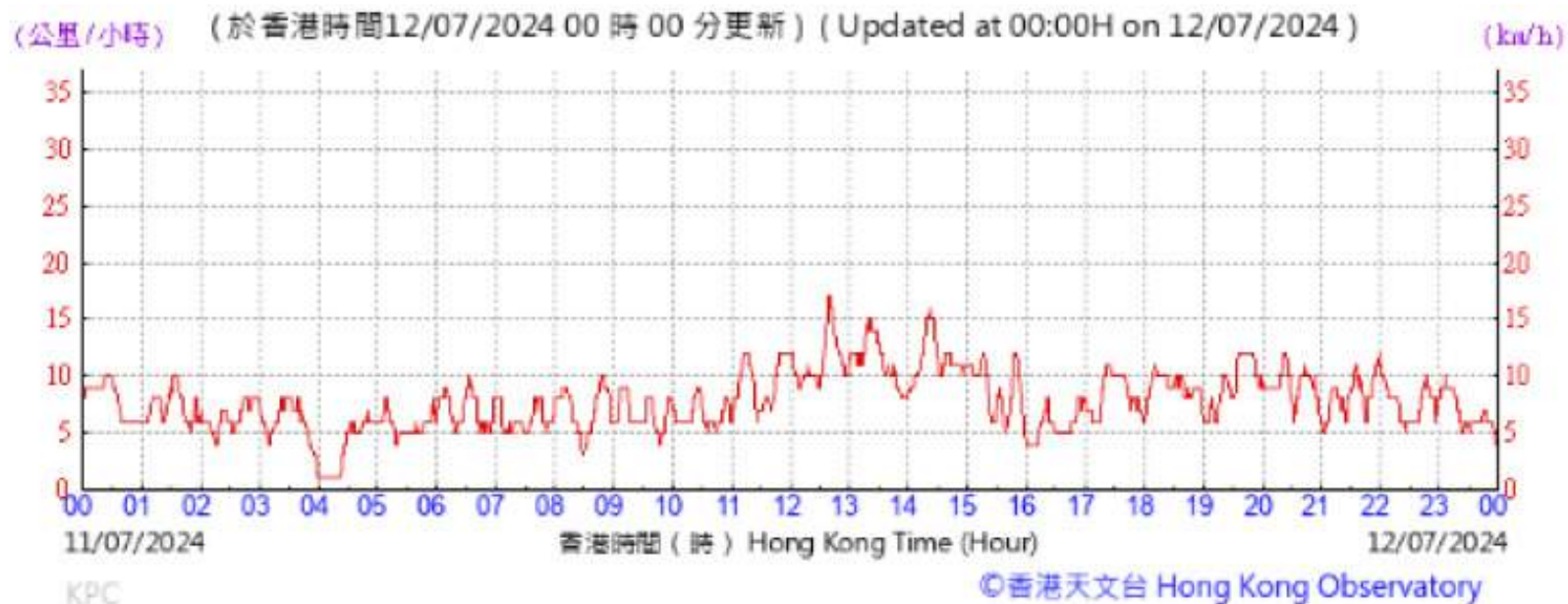
[https://i-lens.hk/hkweather/daily\\_extract.php?date=2024-07-11](https://i-lens.hk/hkweather/daily_extract.php?date=2024-07-11)

# Odour Monitoring Report for Harbour Area Treatment Scheme Stage 2A (Operational Phase) July 2024

## - Wind Direction



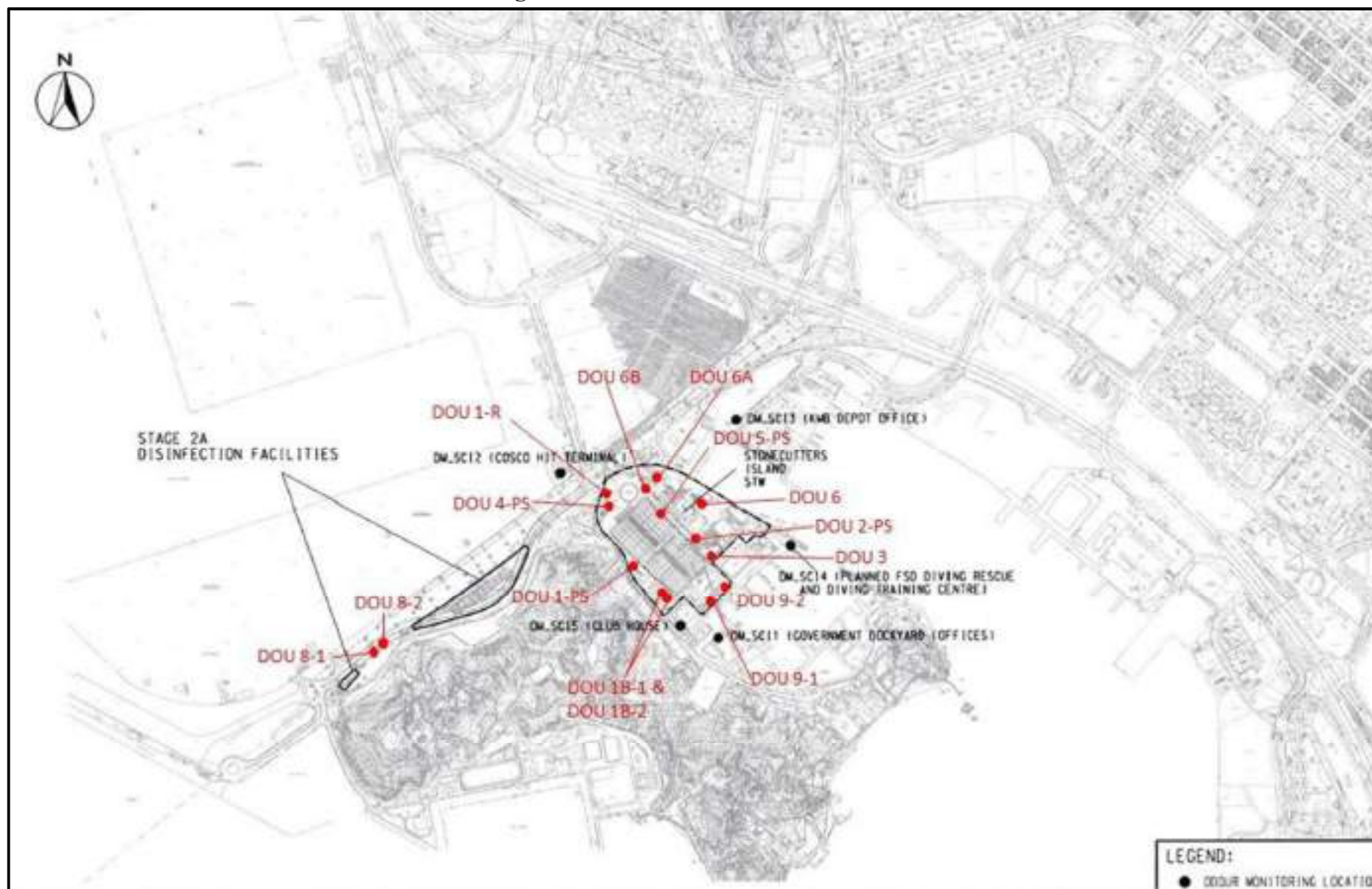
## - Wind Speed



## **Appendix E**

### **Layout of Odour Monitoring Locations for Odour Measurement**

### Monitoring Location of Deodourization Unit in SCISTW



Remark:

1. DOU 3 stated on map was replaced by DOU 2PS-ACF.










## Sampling Location Photos

|  |   |  |  |
|--|---|--|--|
|   |   |   |   |
| DOU 1B-1   | DOU 1B-2  | DOU 1-PS   | DOU 1-R  |
|  |  |  |  |
| DOU 2-PS   | DOU 2PS-ACF   | DOU 4-PS   | DOU 5-PS   |



Sampling Location Photos

|  |   |  |   |
|--|---|--|---|
|  <p>11 July 2024 11:15</p>  |  <p>11 July 2024 10:00</p>  |  <p>11 July 2024 10:30</p>  |  <p>11 July 2024 14:15</p> |
| DOU 6  | DOU 6A  | DOU 6B   | DOU 8-1   |
|  <p>11 July 2024 14:05</p> |  <p>11 July 2024 12:15</p> |  <p>11 July 2024 12:25</p> |   |
| DOU 8-2  | DOU 9-1   | DOU 9-2  |   |

## **Appendix F**

### **Odour Measurement Result**

Sampling Record - SCI STW

| Sampling Location                | Date        | Time  | Odour Concentration (OU <sub>E</sub> /m <sup>3</sup> ) | H <sub>2</sub> S Concentration (ppb) | Temperature (°C) | Humidity (%) | Wind Speed (m/s) | Wind Direction | Duct Volumetric Flow Rate (m <sup>3</sup> /hr) | Odour Emission Rate (OU/s) |
|----------------------------------|-------------|-------|--|--------------------------------------|------------------|--------------|------------------|----------------|--|----------------------------|
| DOU 1B-1                         | 11-Jul-2024 | 12:45 | <11  | <1                                   | 34.0             | 70           | 0.7              | W              | 5,493  | 17                         |
| DOU 1B-2                         |             | 12:55 | <11  | <1                                   | 34.0             | 70           | 0.7              | W              | 5,461  | 17                         |
| DOU 1-PS                         |             | 13:15 | <11  | <1                                   | 33.6             | 71           | 0.4              | SW             | 42,080   | 129                        |
| DOU 1-R                          |             | 13:35 | <11  | <1                                   | 33.6             | 77           | 0.3              | SW             | 3,248  | 10                         |
| DOU 2-PS                         |             | 11:50 | <11  | <1                                   | 32.8             | 71           | 0.1              | NW             | 29,803   | 91                         |
| DOU 2PS-ACF                      |             | 11:40 | 23   | <1                                   | 32.3             | 72           | 0.3              | NW             | 52,469   | 335                        |
| DOU 4-PS                         |             | 14:35 | <11  | <1                                   | 36.3             | 66           | 0.7              | S              | 42,376   | 129                        |
| DOU 5-PS                         |             | 10:50 | <11  | <1                                   | 31.5             | 99           | <0.1             | -              | 11,764   | 36                         |
| DOU 6                            |             | 11:15 | <11  | <1                                   | 31.6             | 99           | <0.1             | -              | 28,194   | 86                         |
| DOU 6A                           |             | 10:00 | 19   | <1                                   | 28.8             | 95           | 0.1              | N              | 24,600   | 130                        |
| DOU 6B                           |             | 10:30 | <11  | <1                                   | 30.8             | 99           | 0.1              | E              | 27,777   | 85                         |
| DOU 8-1                          |             | 14:15 | <11  | <1                                   | 32.8             | 85           | 0.7              | S              | 4,182  | 13                         |
| DOU 8-2                          |             | 14:05 | <11  | <1                                   | 32.8             | 85           | 0.7              | S              | 4,182  | 13                         |
| DOU 9-1                          |             | 12:15 | <11  | <1                                   | 35.2             | 70           | 0.9              | SW             | 5,229  | 16                         |
| DOU 9-2                          |             | 12:25 | 35   | <1                                   | 35.2             | 67           | 0.5              | SW             | 6,912  | 67                         |
| Total Odour emission rate (OU/s) |             |       |  |                                      |                  |              |                  |                |  | 1,174                      |

## **Appendix G**

### **Total Odour Emission Rate Extracted from EIA Report**

# **Odour Monitoring Report for Harbour Area Treatment Scheme Stage 2A (Operational Phase) July 2024**

| Facility  | Unmitigated odour<br>Emission Rate, ou/s | Deodourizer Requirement     |                        |  |                            |                                 | Mitigated Odour<br>Emission Rate, ou/s |
|---|--|-----------------------------|------------------------|--|----------------------------|---------------------------------|--|
|   |  | Deodourizer<br>Discharge ID | Discharge<br>Height, m | Total Discharge<br>Cross-sectional<br>Area, m² | Discharge<br>velocity, m/s | Total no. of<br>discharge point |  |
| Option 2 - Decentralized Design   |  |                             |                        |  |                            |                                 |  |
| CEPT Facilities (Odd No. Units) & Flow Distribution Channel)  | 146162.21                                | S-O2-DO1                    | 12                     | 1.86   | 20                         | 1                               | 4384.87                                |
| CEPT Facilities (Even No. Units) & NWKPS + NWKPS O/F chamber  | 136086.21                                | S-O2-DO2                    | 12                     | 1.86   | 20                         | 1                               | 4082.59                                |
| Sludge TreatmentFacilities (include Sludge Storage Tanks, Sludge Dewatering Building 1 & 2, Existing and New Sludge Cake Silos) | 19057.82                                 | S-O2-DO3                    | 6                      | 2.40   | 12.58                      | 3                               | 571.73                                 |
| Stage 1 MPS & Riser Shaft   | 6518.89                                  | S-O2-DO4                    | 18                     | 1.13   | 12.28                      | 4                               | 195.57                                 |
| Stage 2A MPS & Riser Shaft  | 6518.89                                  | S-O2-DO5                    | 18                     | 1.13   | 12.28                      | 4                               | 195.57                                 |
| NWKPTW  | 19963.88                                 | S-O2-DO6                    | 13                     | 2.26   | 12.28                      | 8                               | 598.92                                 |
| Flow DistributionChambers   | 2688.01                                  | S-O2-DO7                    | 4.5                    | 0.32   | 10.48                      | 2                               | 80.64                                  |
| New Flow Distribution Chamber   |  |                             |                        |  |                            |                                 |  |
| Chlorination Contact Tank   | 37776.64                                 | S-C-DO1                     | 11                     | 1.13   | 7.2                        | 4                               | 1133.30                                |
| Drop Shaft and Chamber 15A  | 2630.22                                  | S-C-DO2                     | 4                      | 0.57   | 8.84                       | 2                               | 263.02                                 |

Note: (1) CEPT facilities include Influent upflow structure, distribution channel, flocculation tanks, sedimentation tanks and effluent weirs, drop shafts, scum pit and rapid mixing tank of sedimentation tanks

(2) MPS is Main Pumping Station

(3) NWKPTW, NWKPS and NWKO/F chambers are North West Kowloon PTW, NWKPTW Pumping Station and NWKPTW Overflow Chamber, respectively

(4) The emission rate included a 1.31 ambient temperature correction factor.

Total Mitigated Odour Emission Rate, ou/s: 11,506.21

Reference:

[https://www.epd.gov.hk/eia/register/report/eiareport/eia\\_1482008/EIA/pdf/Text/S3%20Air.pdf](https://www.epd.gov.hk/eia/register/report/eiareport/eia_1482008/EIA/pdf/Text/S3%20Air.pdf)