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Contract No. 13/WSD/16

Mainlaying in Tseung Kwan O

Baseline Noise Monitoring Report

June 2018

(Rev. 2)

| | Prepared by: | Certified by: | |
|-----------|--------------------|---------------------------|--|
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| Position | Environmental Team | Environmental Team Leader | |
| Signature | Z | | |
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| Rev. | DESCRIPTION OF MODIFICATION | DATE |



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EXECUTIVE SUMMARY

The proposed Desalination Plant at Tseung Kwan O (DPTKO) will produce potable water with an initial capacity of 135 million liters per day (MLD), expandable to an ultimate capacity of 270 Mld in the future to provide a secure and alternative fresh water resource complying with the World Health Organization (WHO) standards. The plant will adopt the Seawater Reverse Osmosis (SWRO) technology, which dominates the market due to its reliability and progressive reduction in cost as the technology advances.

In accordance with the approved Environmental Monitoring and Audit Manual (EM&A Manual) for the Project, baseline environmental monitoring for noise impact should be conducted prior to the commencement of construction works. Pursuant to EP Condition 3.4, Baseline Monitoring Report shall be submitted to the Director of Environmental Protection at least 2 weeks before the commencement of construction of the Project. Baseline monitoring for noise impact was conducted according to the EM&A Manual before the commencement of construction works at selected locations at Tseung Kwan O (TKO).

Monitoring on 7/6/2018 & 8/6/2018 were cancelled due to typhoon (Strong Wind Signal, No. 3) and the adverse weather (i.e. strong wind and heavy rain) it brought along; monitoring on 12/6/2018 was cancelled due to amber rainstorm warning. Thus, additional monitoring on 12/6/2018, 13/6/2018 were scheduled, and the monitoring on 12/6/2018 was further postponed to 14/6/2018.

Daily baseline noise monitoring for A-weighted levels L_{eq} , L_{10} and L_{90} were conducted in a sample period of 30 minutes during daytime (0700 – 1900 hrs). Details of the methodology, locations and results are presented in the report.

The baseline monitoring noise measured levels $L_{Aeq(30min.)}$ on daytime (0700-1900 hrs) for the three Noise Sensitive Receivers (NSRs) range from 57.6 dB(A) – 72.6 dB(A). The baseline average levels, NSRs ID and Location are summarized as below. The baseline noise quality monitoring measurement and the result are recorded in Appendix D.

| Daytime (0700-1900 hrs) L _{Aeq} (30min.) | | | | | | |
|---|---|---|--|--|--|--|
| Location | L_{Aeq} (dB(A)) | $L_{10}(dB(A))$ | $L_{90} dB(A)$ | | | |
| Creative | | | | | | |
| Secondary | 70.0 | 72.8 | 63.3 | | | |
| School | | | | | | |
| PLK Laws | | 74.4 | 60.3 | | | |
| Foundation | 72.0 | | | | | |
| College | | | | | | |
| School of | | | | | | |
| Continuing and | 61.6 | 61.9 | 56.0 | | | |
| Professional | 01.0 | 04.8 | 50.0 | | | |
| Studies - CUHK | | | | | | |
| | Location Creative Secondary School PLK Laws Foundation College School of Continuing and Professional | LocationL_Aeq(dB(A))CreativeSecondary70.0SchoolPLK Laws72.0CollegeSchool ofContinuing and Professional61.6 | LocationLAeq(dB(A))L10(dB(A))Creative70.072.8Secondary70.072.8School72.074.4College72.074.4School of61.664.8 | | | |

The baseline average levels as follows:

Remarks: *Free field correction +3dB(A) has been made for NSR24



Action and Limit Level Determination for Noise

Results of the baseline noise monitoring data are processed to provide Action Levels ["AL"] and Limit Levels ["LL"] as per the table below:

| Time Period | Action | NSR ID | Location | Type of sensitive receiver(s) | Measurement Type | Limit (dB(A)) |
|-----------------------------|-----------------------|--------|---|-------------------------------------|---------------------|--------------------------|
| (0700- | When one | NSR4 | Creative Secondary School | Educational | Facade | |
| 1900 hrs) | documented | NSR24 | PLK Laws Foundation College | Educational | Free-field | 70 dB(A), 65 |
| on normal working day | complaint is received | NSR31 | School of Continuing and Professional Studies - CUHK | Educational | Facade | dB(A) during examination |



1. INTRODUCTION

1.1 Background

- 1.1.1 Penta-Ocean-Concentric Joint Venture ["POCJV"] is contracted to carry out the Mainlaying works for the development of Desalination Plant at Tseung Kwan O (DPTKO) under Contract No. 13/WSD/16 (hereinafter known as "the Project"). In line with the requirements stated in the Project EM&A Manual, POCJV is required to conduct the noise monitoring.
- 1.1.2 Acuity Sustainability Consulting Limited. ["ASCL"] is commissioned by POCJV to assist POCJV to carry out the Noise Monitoring in fulfillment of the EPD's EM&A Requirements.
- 1.1.3 Pursuant to the Environmental Impact Assessment Ordinance (EIAO), the Director of Environmental Protection granted the further Environmental Permit (No. EP-503/2015/A) to Water Supplies Department (WSD) for this project.
- 1.1.4 The overall view of alignment of the Project is shown in **Figure 1.1**



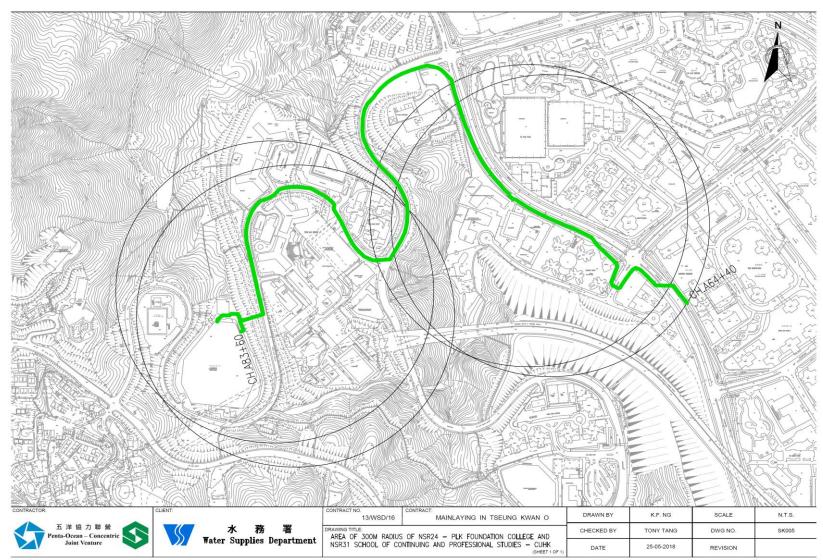


Figure 1.1 Overview of DPTKO



- 1.1.5 The updated construction programme is shown in Appendix A
 - 1.2 Purpose of the Baseline Monitoring Report
- 1.2.1 The purposes of this Baseline Monitoring Report are to:
 - Summarise the findings of baseline noise monitoring; and
 - Establish the AL and LL in accordance with the EM&A Manual for the subsequent impact monitoring during the construction stage.
- 1.2.2 In accordance with the EM&A Manual, environmental baseline noise monitoring was carried out at three monitoring stations along the proposed alignment of the mainlaying works. This Baseline Monitoring Report contains baseline findings of these three monitoring stations.
 - 1.3 Report Structure
- 1.3.1 This Baseline Monitoring Report comprises the following sections:
 - Section 1 introduces the background of the Project and purpose of this Report;
 - Section 2 presents the baseline monitoring methodologies, requirements, results, influencing factors, as well as determination of the AL and LL of noise; and
 - Section 3 concludes the findings of baseline monitoring.



2. NOISE MONITORING

- 2.1 Monitoring Requirements
- 2.1.1 To ensure no adverse noise impact, noise monitoring is recommended to be carried out at the nearby NSRs during the construction phase.
- 2.1.2 In accordance with the EM&A Manual, baseline noise monitoring should be conducted for at least two weeks to obtain background noise levels prior to the commissioning of major construction works.
 - 2.2 Noise Monitoring Parameters, Time, Frequency and Duration
- 2.2.1 The construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq},L_{10},L_{90}) . At each designated monitoring location, measurements of 5-minutes A-weighted equivalent sound pressure level [" $L_{eq 5min}$ "] between 0700-1900 hrs shall be carried out. These measured " $L_{eq 5min}$ " shall be then combined into equivalent sound pressure level for 30-minutes period [" $L_{eq 30min}$ "] for comparison with the Noise Control Ordinance (NCO) criteria. **Table 2.1** summarizes the monitoring parameters, frequency and duration of the baseline noise monitoring. The monitoring schedule is provided in **Appendix B**.

| Tabla | 21 | Noico | Monitoring | Paramatara | Time | Fragmones | and Duration |
|--------|-----------|--------|-------------|---------------|----------|-----------|--------------|
| I able | 4. | 110156 | wronntoring | I al ameters, | , 1 mie, | riequency | anu Durauon |

| Time | Frequency | Duration | Parameters |
|---------------------------|----------------------------|---|----------------------------|
| Daytime: 0700-1900 hrs | Daily for at least 14 days | $\begin{array}{c} \text{Continuously in} \\ L_{eq\;5min}/L_{eq\;30min} \\ (average\;of\;6 \\ \text{consecutive}\;L_{eq\;5min}) \end{array}$ | $L_{eq}, L_{10} \& L_{90}$ |

2.3 Noise Monitoring Locations

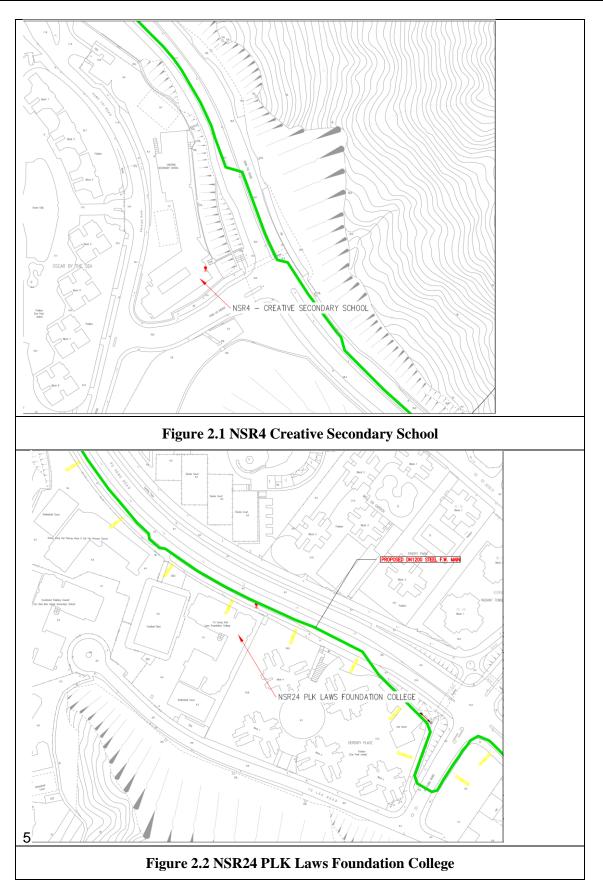
2.3.1 According to the environmental findings detailed in the EIA report, the designated locations for the construction noise monitoring are listed in **table 2.2**.

| Table 2.2 Noise Sensitive Receivers | |
|-------------------------------------|--|
|-------------------------------------|--|

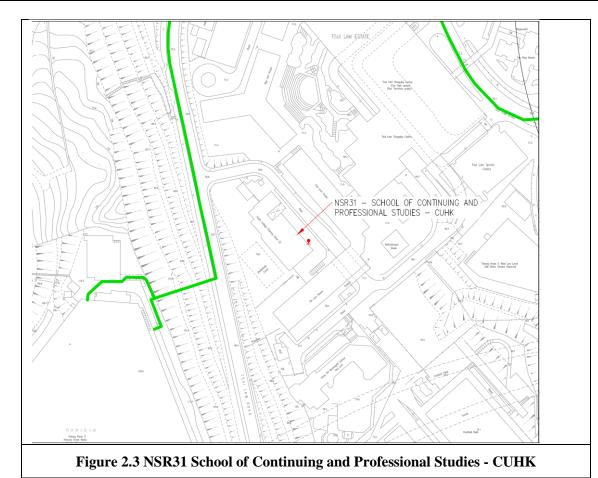
| NSR ID | Noise Sensitive Receivers Monitoring Location | | Position |
|--------|---|------------------------------------|-----------------|
| NSR 4 | Creative Secondary School | Roof Floor | 1 m from facade |
| NSR 24 | PLK Laws Foundation College | Pedestrian Road on Ground Floor | Free-field |
| NSR 31 | School of Continuing and Professional Studies - CUHK | Roof Floor | 1 m from facade |

- 2.3.2 The monitoring locations should normally be made at a point 1m from the exterior of the NSRs building façade and be at a position 1.2m above the ground. A correction of +3dB(A) should be made to the free-field measurements.
- 2.3.3 Three practicable noise monitoring locations for noise measurement are proposed at the sensitive receivers as shown as in **Figures 2.1 2.3** below:









- 2.4 Baseline Monitoring Methodology
- 2.4.1 Baseline noise monitoring will be conducted for 14 consecutive days (Monday to Sunday). At each designated monitoring location, measurement of 30 minutes A-weighted equivalent sound pressure level [" $L_{eq}(30min)$, L_{10} , L_{90} "] should be carried out between 0700 and 1900 hrs for daytime measurements. Six measured " $L_{eq}(5min)$ will then be condensed into equivalent sound pressure level for 30-minutes period [" $L_{eq}(30min)$ "] for comparison with the NCO criteria.
- 2.4.2 During the baseline monitoring, there shall not be any construction activities in the vicinity of the monitoring locations and in the project site. Any non-project related construction activities in the vicinity of the monitoring stations during the baseline monitoring shall be noted and the source and location of such activities should be recorded. In accordance to current good practice for drafting of the Environmental Management Plan (EMP), the LL for school should be 70 dB(A) and 65 dB(A) during examination period.
 - 2.5 Monitoring Equipment
- 2.5.1 Integrated sound level meter shall be used for the noise monitoring. The meter shall be in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a



known frequency. Measurements may be accepted as valid only if the calibration level before and after the noise measurements agree to within 1.0 dB(A). Calibration certificates of the instruments used are presented in **Appendix C**.

2.5.2 Noise measurements shall not be made in the presence of fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

| Equipment | Brand and Model | Detection Limit |
|------------------------------|-------------------------|-----------------|
| Sound Level Meter | Nti XL2 | 30-130 dB(A) |
| Sound Level Meter Calibrator | Rion NC-74 | Nil |
| Pocket Wind Meter Anemometer | Kestrel 1000 Wind Meter | Nil |

Table 2.3 Baseline Noise Monitoring Equipment

- 2.6 Results and Observations
- 2.6.1 Baseline monitoring for noise impact was conducted from 29/5/2018 to 14/6/2018. The baseline noise levels at Noise Monitoring Stations at TKO (i.e. NSR 4, 24 and 31) are summarized in Tables 2.4. Details of noise monitoring results are presented in Appendix D.

| Table 2.4 | Summary | of Baseline No | oise Monitoring | Results |
|-----------|---------|----------------|-----------------|----------|
| | Summary | or Dusenne 140 | noe meenieering | Itesuits |

| | | | Noise ii | n dB(A) | | |
|---------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| NSR ID | | Average | | | Range | |
| | L _{eq} 30min | L ₁₀ 30min | L ₉₀ 30min | L _{eq} 30min | L ₁₀ 30min | L ₉₀ 30min |
| NSR 4 | 70.0 | 72.8 | 63.3 | 68.8-72.6 | 71.3-75.6 | 59.9-68.7 |
| NSR 24* | 72.0 | 74.4 | 60.3 | 68.8-74.9 | 70.9-77.0 | 56.5-64.6 |
| NSR 31 | 61.6 | 64.8 | 56.0 | 57.6-69.1 | 60.0-72.2 | 51.4-60.5 |

Remarks: *Free field correction +3dB(A) has been made for NSR24

- 2.6.2 No construction activity was observed during the baseline monitoring. The major noise source at the monitoring station included the traffic noise and school activities. These noise sources are expected to exist in near future and throughout the construction period of the Project.
- 2.6.3 Monitoring on 7/6/2018 & 8/6/2018 were cancelled due to typhoon (Strong Wind Signal, No. 3) and the adverse weather (i.e. strong wind and heavy rain) it brought along; monitoring on 12/6/2018 was cancelled due to amber rainstorm warning. Thus, additional monitoring on 12/6/2018,13/6/2018 were scheduled, and the monitoring on 12/6/2018 was further postponed to 14/6/2018.
 - 2.7 Action and Limit Levels
- 2.7.1 The AL and LL in line with the criteria of Practice Note for Professional Persons (ProPECC PN 2/93) "Noise from Construction Activities Non-statutory Controls", Technical Memorandum on Environmental Impact Assessment Process issued by HKSAR Environmental Protection Department ["EPD"] under the



Environmental Impact Assessment Ordinance, Cap 499, S.16 and EM&A Manual are presented in **Table 2.4**.

| Time Period | Action | Limit (dB(A)) |
|---|--|---|
| 0700-1900 hrs on normal weekdays | When one documented complaint is received from any one of the noise sensitive receivers or 75 dB(A) recorded at the monitoring station | 70 dB(A) for school and 65 dB(A) during examination period |
| Notes: (a) Limits specified in the GV respectively. | V-TM and IND-TM for construct | tion and operation noise, |

| Table 2.4 Action and Limit Levels for Noise |
|---|
|---|



3. CONCLUSION

- 3.1 Baseline noise monitoring was carried out from 29/5/2018 to 14/6/2018 at three monitoring stations at TKO. All monitoring stations as specified in EM&A Manual were accessible and thus there is no revision for inclusion in the EM&A Manual.
- 3.2 At NSR31, the averaged baseline daytime noise monitoring results were below the criteria of 70dB(A) for educational premises. At NSR4 and NSR24, the averaged baseline daytime noise monitoring results were above criteria of 70dB (A) for educational premises. The measured level during impact monitoring will be adjusted by the below equation when exceeded the baseline level:

Adjusted Measure Level = 10^* Log ($10^{(Measured Level *0.1)}$ - $10^{(Baseline Level *0.1)}$)

- 3.3 Traffic noise and school activities were observed as the major noise sources affecting the noise background at the three monitoring stations.
- 3.4 The Action Level of construction noise is based on documented valid complaints received, while the Limit Level for each monitoring location is set at a specific limit according to EIAO-TM and the EM&A Manual. The high background noise level of NSR4 and NSR24 recorded from the baseline study will be taken into account for the future EM&A programme during impact monitoring at construction phase.



Appendix A: Construction Programme

Contract No. 13/WSD/16 Mainlaying for Desalination Plant at Tseung Kwan O Baseline Monitoring Report



13/WSD/16 - Mainlaying in Tseung Kwan O

Outline Construction Programme

| MXRH PJ-ID ROAD | | 1 | 2021 | | | | | | | | |)20 | 20 | | | | | | | | | | 2019 | | | | | | | | 8 | 201 | | | | | mo | | | LOCATION | | | YEAR |
|---|---------|-----|------|-----------|---|-----|---|----|------|------|---|-----|----|-----|---|-----|-----|----|----|------|---|---|------|---|-----|---|-----|------|----|-----|-----|-----|---|-----|---|---|------|-----|-----|------------------------|--------|---------|---|
| Section Al Open-trench) - Wan Po Road 0 362 Image: Constraint of the | 9 10 11 | 7 8 | 6 7 | 5 | 4 | 2 3 | 1 | 12 | 0 11 | 9 10 | 8 | 7 | 6 | 1 5 | 4 | 2 3 | 1 2 | 12 | 11 | 10 1 | 9 | 8 | 6 7 | 5 | 3 4 | 2 | 2 1 | 11 1 | 10 | 8 9 | 7 8 | 6 | 5 | 3 4 | 2 | 1 | TO | OM | 7 F | ROAD | J - ID | PJ - II | MONTH |
| Section Al (Open-trench) - Wan Po Road 362 - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A Wan Po Road 362 530 Image: State of the st | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Section A (TKO137 to Wan Po Road) |
| Section A3 (Open-trench) - Wan Po Road 530 1379 2 0 <td></td> <td>362</td> <td>0</td> <td></td> <td>Wan Po Road</td> <td>-</td> <td>-</td> <td>Section Al (Open-trench)</td> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 362 | 0 | | Wan Po Road | - | - | Section Al (Open-trench) |
| Section Af (Pipe-Jacking) B Wan Po Road 1379 2268 4113 C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 530 | 62 | 1 | Wan Po Road | A | A | Section A2 (Pipe-Jacking) |
| Section A5 (Open-trench) - Van Po Road 2268 4113 - <td></td> <td>1379</td> <td>30</td> <td></td> <td>Wan Po Road</td> <td>-</td> <td>-</td> <td>Section A3 (Open-trench)</td> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1379 | 30 | | Wan Po Road | - | - | Section A3 (Open-trench) |
| Section B (Po Yap Road to Po Hong Road) - <td></td> <td>2268</td> <td>379</td> <td>1</td> <td>Wan Po Road</td> <td>В</td> <td>В</td> <td>Section A4 (Pipe-Jacking)</td> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2268 | 379 | 1 | Wan Po Road | В | В | Section A4 (Pipe-Jacking) |
| Section BI (Pipe-Jacking) C Po Yap Road 4113 4200 Section BI (Pipe-Jacking) C Po Yap Road 4113 4200 Section BI (Pipe-Jacking) C Po Yap Road 4200 SS00 C C C Po Yap Road 4200 SS00 C C C C C C Po Yap Road 4200 SS00 C <thc< th=""> C <thc< th=""></thc<></thc<> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4113 | 268 | 2 | Wan Po Road | - | | Section A5 (Open-trench) |
| Section BI (Pipe-Jacking) C Po Yap Road 4113 4200 Section BI (Pipe-Jacking) C Po Yap Road 4113 4200 Section BI (Pipe-Jacking) C Po Yap Road 4200 SS00 C C C Po Yap Road 4200 SS00 C C C C C C Po Yap Road 4200 SS00 C <thc< th=""> C <thc< th=""></thc<></thc<> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Section B2 (Open-trench) - Po Yap & Po Hong Rd 4200 5500 500 - | | | | \square | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Section B (Po Yap Road to Po Hong Road) |
| Section B1 (Pipe-Jacking) D1 & D2 P0 Hong & Ling Hong Rd 5500 5600 C </td <td></td> <td>4200</td> <td>13</td> <td>4</td> <td>Po Yap Road</td> <td>С</td> <td>C</td> <td>Section B1 (Pipe-Jacking)</td> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4200 | 13 | 4 | Po Yap Road | С | C | Section B1 (Pipe-Jacking) |
| Section B4 (Open-trench) - Ling Hong Road 5600 5799 Section B3 (Pipe-Jacking) E Po Hong Road 5799 S838 Image: Section B3 (Pipe-Jacking) E Po Hong Road 5838 Image: Section B3 (Pipe-Jacking) E Po Hong Road 5838 Image: Section B3 (Pipe-Jacking) E Po Hong Road 5838 Image: Section B3 (Pipe-Jacking) E Image: Section B3 (Pipe-Jacking) E Po Hong Road 6254 6368 Image: Section B3 (Pipe-Jacking) Image: Section B3 (Pipe-J | | | _ | \square | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5500 | 200 | 4 | Po Yap & Po Hong Rd | | - | Section B2 (Open-trench) |
| Section B5 (Pipe-Jacking) E Po Hong Road 5799 5838 C< | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5600 | 500 | 5 | Po Hong & Ling Hong Rd | & D2 | D1 & 1 | Section B3 (Pipe-Jacking) |
| Section B6 (Open-trench) - Po Hong Road 5838 6254 - </td <td></td> <td></td> <td></td> <td>\square</td> <td></td> <td>5799</td> <td>500</td> <td>5</td> <td>Ling Hong Road</td> <td>-</td> <td>-</td> <td>Section B4 (Open-trench)</td> | | | | \square | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5799 | 500 | 5 | Ling Hong Road | - | - | Section B4 (Open-trench) |
| Section B7 (Pipe-Jacking) F Po Hong Road 6254 6368 C <thc< th=""> C <thc< th=""> C C <thc< td="" th<=""><td></td><td></td><td></td><td>\square</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>5838</td><td>799</td><td>5</td><td>Po Hong Road</td><td>E</td><td>E</td><td>Section B5 (Pipe-Jacking)</td></thc<></thc<></thc<> | | | | \square | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5838 | 799 | 5 | Po Hong Road | E | E | Section B5 (Pipe-Jacking) |
| Section B8 (Open-trench) Po Hong Road 6368 7250 Image: Control of the control of | | | | \square | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6254 | 338 | 5 | Po Hong Road | - | - | Section B6 (Open-trench) |
| Section C (Po Lam Road to Tsui Lam to TKOFWPSR*) | | | | \square | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6368 | 254 | 6 | Po Hong Road | F | F | Section B7 (Pipe-Jacking) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7250 | 368 | 6 | Po Hong Road | - | - | Section B8 (Open-trench) |
| | | | | \square | | | | П | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | \square | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |) | Section C (Po Lam Road to Tsui Lam to TKOFWPSR*) |
| Section Cl (Open-trench) - Po Lam Road 7250 7740 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7740 | 250 | 7 | Po Lam Road | - | r | Section Cl (Open-trench) |
| Section C2 (Pipe-Jacking) G Tsui Lam Road 7740 7770 I I I I I I I I I I I I I I I I I | | | _ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7770 | 740 | 7 | Tsui Lam Road | G | G | |
| Section C3 (Open-trench) - Tsui Lam Road 7770 8300 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8300 | 770 | 7 | Tsui Lam Road | - | - | |
| Section C4 (Slope) - TKOFWPSR 8300 8376 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8376 | 300 | 8 | TKOFWPSR | - | - | |
| | | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

*TKOFWPSR - Tseung Kwan O Fresh Water Primiary Service Reservoir **Remaining 1581m within TKO137 with site possession from Nov 2019



Appendix B: Monitoring Scheulde



Baseline Noise Monitoring Schedule

| | | | Noise Monitoring |
|-----|---------------|---------------|--|
| | Date and | | Minimum 30-minutes |
| | Monitoring Pe | eriod | monitoring period during |
| | | | (0700 – 1900 hrs) |
| | | 09:00 - 12:00 | |
| Tue | 29/5/2018 | (14:30 for | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| | | NSR4) | |
| Wed | 30/5/2018 | 09:00 - 12:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Thu | 31/5/2018 | 09:00 - 12:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Fri | 1/6/2018 | 09:00 - 12:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Sat | 2/6/2018 | 12:00 - 15:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Sun | 3/6/2018 | 12:00 - 15:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Mon | 4/6/2018 | 12:00 - 17:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Tue | 5/6/2018 | 12:00 - 17:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Wed | 6/6/2018 | 15:00 - 18:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Thu | 7/6/2018 | 15:00 - 18:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Fri | 8/6/2018 | 15:00 - 18:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Sat | 9/6/2018 | 15:00 - 18:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Sun | 10/6/2018 | 09:00 - 12:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Mon | 11/6/2018 | 13:30 - 16:30 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Tue | 12/6/2018 | 15:00 – 18:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Wed | 13/6/2018 | 15:00 - 18:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |
| Thu | 14/6/2018 | 15:00 - 18:00 | L _{eq(30min)} , L ₁₀ , L ₉₀ |

Remark:

1. Monitoring on 7/6/2018 & 8/6/2018 were cancelled due to typhoon (Strong Wind Signal, No. 3) and the adverse weather (i.e. strong wind and heavy rain) it brought along; monitoring on 12/6/2018 was cancelled due to amber rainstorm warning. Thus, additional monitoring on 12/6/2018,13/6/2018 were scheduled, and the monitoring on 12/6/2018 was further postponed to 14/6/2018.



Appendix C: Noise Monitoring Equipment Calibration Certificates



| | on and Testi | neering Limite ng Laboratory | d | | | | |
|--|--|---|---|---|---|---|---|
| | of Ca | alibratio | on | | | | C17614 |
| ription / 儀器名和 facturer / 製造商 el No. / 型號 l No. / 編號 | 時 : Audi j : NTi : XL2 : A2A : Acur | o Analyzer -09696-E0 nen Environment | al Engineerin | g and Technolog | | | October 201 |
| perature / 溫度 | $(23 \pm 2)^{\circ}$ | Ċ | | Relative H | umidity / 柞 | 目對濕度 : | (55 ± 20) |
| oration check | | | | | | | |
| F RESULTS / 漢 results apply to th results do not exc results are detaile test equipment us e Government of jlent Technologi hde & Schwarz I | 1試結果 ne particular u ceed manufact d in the subso ed for calibra The Hong K ess / Keysight Laboratory, G | init-under-test on urer's specificatio quent page(s). tion are traceable ong Special Adm Technologies ermany | ly. on. e to National S | | Calibratio | n Laboratory | |
| | : | K C/Lee Engineer | | | | | |
| | : <u>Chen</u> | H C Chan Engineer | £ | Date of Issue 簽發日期 | | 7 Novembe | r 2017 |
| | 二言登 書 M TESTED / 送林 ription / 儀器名満 facturer / 製造商 el No. / 型號 lied By / 委託者 T CONDITION: perature / 温度 Voltage / 電歴 T SPECIFICAT partion check T OF TEST / 決 results apply to th results do not exc results are detaile test equipment us te Government of gilent Technologio bide & Schwarz I | 三記書書 MTESTED / 送檢項目 (Job ription / 儀器名稱 : Audi ifacturer / 製造商 : NTi el No. / 型號 : XL2 l No. / 細號 : A2A lied By / 委託者 : Acur Lot I T CONDITIONS / 測試條件 perature / 溫度 : (23 ± 2)° Voltage / 電壓 : T SPECIFICATIONS / 測試 oration check TE OF TEST / 測試日期 : T RESULTS / 測試結果 results apply to the particular u results do not exceed manufact results apply to the particular u results are detailed in the subset test equipment used for calibra test equipment test equipment used f | E 記書 M TESTED / 送檢項目 (Job No. / 序引編號 ription / 儀器名稱 : Audio Analyzer ifacturer / 製造商 : NTi el No. / 型號 : XL2 l No. / 編號 : A2A-09696-E0 lied By / 委託者 : Acumen Environment Lot 11, Tam Kon Sha T CONDITIONS / 測試條件 perature / 溫度 : (23 ± 2)°C Voltage / 電壓 : T SPECIFICATIONS / 測試規範 oration check T RESULTS / 測試結果 results apply to the particular unit-under-test on results do not exceed manufacturer's specification results are detailed in the subsequent page(s). test equipment used for calibration are traceable the Government of The Hong Kong Special Adm gilent Technologies / Keysight Technologies while & Schwarz Laboratory, Germany ake Everett Service Center, USA ed By : K C/Lee Engineer ified By : Mathematical Adm gilent By H C Chan | M TESTED / 送檢項目 (Job No. / 序引編號: IC17-1542) ription / 儀器名稱 : Audio Analyzer facturer / 製造商 : NTi el No. / 型號 : XL2 l No. / 經號 : A2A-09696-E0 lied By / 委託者 : Acumen Environmental Engineering Lot 11, Tam Kon Shan Road, North T CONDITIONS / 測試條件 perature / 溫度 : (23 ± 2)°C Voltage / 電壓 : T SPECIFICATIONS / 測試規範 oration check TE OF TEST / 測試日期 : 3 November 2017 T RESULTS / 測試結果 results apply to the particular unit-under-test only. results are detailed in the subsequent page(s). test equipment used for calibration are traceable to National S is Government of The Hong Kong Special Administrative Reg illent Technologies / Keysight Technologies shide & Schwarz Laboratory, Germany ake Everett Service Center, USA ed By : Keylet iffied By : Mathing iffied By : | 王 設 書 M TESTED / 送檢項目 (Job No. / 序引編號: IC17-1542) Date of R ription / 儀器名稱 : Audio Analyzer ifacturer / 製造商 : NTi el No. / 塑號 : XL2 I No. / 繩號 : A2A-09696-E0 lied By / 委託者 : Acumen Environmental Engineering and Technolog Lot 11, Tam Kon Shan Road, North Tsing Yi, N.T. T CONDITIONS / 測試條件 perature / 溫度 : (23 ± 2)°C Relative He Voltage / 電壓 : T SPECIFICATIONS / 測試規範 pration check T OF TEST / 測試日期 : 3 November 2017 T RESULTS / 測試結果 results apply to the particular unit-under-test only. results and the subsequent page(s). test equipment used for calibration are traceable to National Standards via : te Government of The Hong Kong Special Administrative Region Standard & gilent Technologies / Keysight Technologies whee Schwarz Laboratory, Germany uke Everett Service Center, USA ed By K K C/Lee Engineer iffied By K H Chan Date of Issue ※發日期 | E 證書 M TESTED / 送檢項目 (Job No. / 序引編號: IC17-1542) Date of Receipt / 收 ription / 儀器名稱 : Audio Analyzer ufacturer / 製造商 : NTi el No. / 編號 : XL2 I No. / 編號 : A2A-09696-E0 lied By / 委託者 : Acumen Environmental Engineering and Technologies Co., Lt Lot 11, Tam Kon Shan Road, North Tsing Yi, N.T. T CONDITIONS / 測試條件 perature / 溫度 : (23 ± 2)°C Relative Humidity / 세 Voltage / 電壓 : T SPECIFICATIONS / 測試規範 pration check TE OF TEST / 測試日期 : 3 November 2017 T RESULTS / 測試結果 results apply to the particular unit-under-test only. results do not exceed manufacturer's specification. results apply to the particular unit-under-test only. results do not exceed manufacturer's specification. results are detailed in the subsequent page(s). test equipment used for calibration are traceable to National Standards via : ee Government of The Hong Kong Special Administrative Region Standard & Calibratio jilent Technologies / Keysight Technologies bide & Schwarz Laboratory, Germany uke Everett Service Center, USA ed By | E證書 嚴曹編號 M TESTED /送檢項目 (Job No. / 序引編號: IC17-1542) Date of Receipt / 收件日期: 26 C ription / 儀器名稱 : Audio Analyzer findcturer /製造商 : NTi el No. / 塑號 : XL2 INo. / 編號 : A 2A-09696-E0 lied By / 委託者 : Acumen Environmental Engineering and Technologies Co., Ltd. Lot 11, Tam Kon Shan Road, North Tsing Yi, N.T. T CONDITIONS / 測試條件 perature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 :: Voltage / 電歷 : T SPECIFICATIONS / 測試規範 rration check T OF TEST / 測試日期 : 3 November 2017 T RESULTS / 測試結果 results apply to the particular unit-under-test only. results and chailed in the subsequent page(s). test equipment used for calibration are traceable to National Standards via : e Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory jilent Technologies / Keysight Technologies bide & Schwarz Laboratory, Germany ake Everett Service Center, USA ed By : KCLee Engineer ified By : Mark Mark Date of Issue : 7 November at the Chan |

e'o 香港海界屯門與安里一號青山海俄挪門懷 Telr絕溢: 2927 2606 Fax/傳真: 2744 8986 E-mail/遭難; callab@suncreation.com Website/翦扯: www.suncreation.com



輝創工程有限公司 程 Sun Creation Engineering Limited **Calibration and Testing Laboratory** Certificate of Calibration Certificate No. : C176148 校正證書 證書編號 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test. 2. Self-calibration using the laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.3.2. The results presented are the mean of 3 measurements at each calibration point. 3. 4 Test equipment : Certificate No. Equipment ID Description CL280 40 MHz Arbitrary Waveform Generator C170048 CL281 Multifunction Acoustic Calibrator PA160023 5. Test procedure : MA101N. 6 Results : 6.1 Sound Pressure Level **Reference Sound Pressure Level** 6.1.1 6.1.1.1 Before Self-calibration Applied Value UUT Setting UUT Time Reading Freq. Range Frequency Weighting Weighting (dB) (dB) (dB) (kHz) 30 - 130 94.00 93.9 FAST A 6.1.1.2 After Self-calibration

| | UUT Setting | | Applie | d Value | UUT | IEC 61672 |
|---------------|------------------------|-------------------|---------------|----------------|-----------------|-----------------|
| Range (dB) | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | Reading (dB) | Class 1 (dB) |
| 30 - 130 | A | FAST | 94.00 | 1 | 94.0 | ± 1,1 |

6.1.2 Linearity

| | UUT Setting | | Applied | I Value | UUT |
|---------------|------------------------|-------------------|---------------|----------------|-----------------|
| Range (dB) | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | Reading (dB) |
| 30 - 130 | A | FAST | 94.00 | 1 | 94.0 (Ref.) |
| | 10.00 | | 104.00 | | 104.0 |
| | | F | 114.00 | | 114.0 |

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory e/o 4/E, Esing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 河南门 20 百萬公司— 依定又後海道領部行 e/o 香港派书是山門線安坦——梁貴山區最优限理機 Tel/電話: 2927 2006 Fax/樹真: 2744 8986 E-mail/電郵: callab@sunceation.com Website/ E-mail/范寧: callab@suncreation.com Website/钢址: www.suncreation.com

Page 2 of 4

The test equipment used for calibration are naceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior eal of this labe 本證書所載校正用之測試器材均可測源至國際標準。局部被印本證書需先幾本實驗所書面批准。





輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C176148 證書編號

Time Weighting 6.2

| THIC WOIGH | ing | | | | | |
|------------|-------------|-----------|---------|---------|---------|---------------|
| | UUT Setting | , | Applied | d Value | UUT | IEC 61672 |
| Range | Frequency | Time | Level | Freq. | Reading | Class 1 Spec. |
| (dB) | Weighting | Weighting | (dB) | (kHz) | (dB) | (dB) |
| 30 - 130 | A | FAST | 94.00 | 1 | 94.0 | Ref. |
| | | SLOW | | | 94.0 | ± 0.3 |

6.3 Frequency Weighting

A.Weighti 6.3.1

| | UUT Setting | | Appli | ed Value | UUT | IEC 61672 |
|---------------|------------------------|-------------------|---------------|----------|-----------------|-----------------------|
| Range (dB) | Frequency Weighting | Time Weighting | Level (dB) | Freq. | Reading (dB) | Class 1 Spec. (dB) |
| 30 - 130 | A | FAST | 94.00 | 63 Hz | 67.7 | -26.2 ± 1.5 |
| | | | | 125 Hz | 77.8 | -16.1 ± 1.5 |
| | | | | 250 Hz | 85.3 | -8.6 ± 1.4 |
| | | | | 500 Hz | 90.7 | -3.2 ± 1.4 |
| | | | | 1 kHz | 94.0 | Ref. |
| | | | | 2 kHz | 95.2 | $+1.2 \pm 1.6$ |
| | | | | 4 kHz | 95.0 | $+1.0 \pm 1.6$ |
| | | | | 8 kHz | 92.9 | -1.1 (+2.1; -3.1) |
| | | | | 12.5 kHz | 89.7 | -4.3 (+3.0; -6.0) |

6.3.2 C-Weighting

| | UUT Setting | | Appli | ed Value | UUT | IEC 61672 |
|---------------|------------------------|-------------------|---------------|----------|-----------------|-----------------------|
| Range (dB) | Frequency Weighting | Time Weighting | Level (dB) | Freq. | Reading (dB) | Class 1 Spec. (dB) |
| 30 - 130 | С | FAST | 94.00 | 63 Hz | 93.1 | -0.8 ± 1.5 |
| | | 1 1 | | 125 Hz | 93.8 | -0.2 ± 1.5 |
| | | | | 250 Hz | 94.0 | 0.0 ± 1.4 |
| | | | | 500 Hz | 94.0 | 0.0 ± 1.4 |
| | | 1 | | 1 kHz | 94.0 | Ref. |
| | | | | 2 kHz | 93.8 | -0.2 ± 1.6 |
| | 1 | | | 4 kHz | 93.2 | -0.8 ± 1.6 |
| | | | | 8 kHz | 91.0 | -3.0 (+2.1; -3.1) |
| | | | | 12.5 kHz | 87.7 | -6.2 (+3.0; -6.0) |

The test equipment used for ealibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior ritten approval of this laboratory

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E-mail/電郵: eallab@suncreation.com Website/彻此: www.suncreation.com

Page 3 of 4





Certificate of Calibration 校正證書

Certificate No. : C176148 證書編號

Remarks : - Mfr's Spec. : IEC 61672 Class 2

| TT | 01 10 | (0.11 10.6.11 | |
|------------------------------------|--------|-----------------|--------------------------|
| - Uncertainties of Applied Value : | 94 dB | | : ± 0.35 dB |
| | | 250 Hz - 500 Hz | : ± 0.30 dB |
| | | 1 kHz | : ± 0.20 dB |
| | | 2 kHz - 4 kHz | : ± 0.35 dB |
| | | 8 kHz | : ± 0.45 dB |
| | | 12.5 kHz | : ± 0.70 dB |
| | 104 dB | : 1 kHz | : ± 0,10 dB (Ref. 94 dB) |
| | 114 dB | : 1 kHz | : ± 0.10 dB (Ref. 94 dB) |

- UUT Microphone Model No. : MA220 (ACO7052) & S/N : 62324

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

Note :

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

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

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior val of this laborate 本證書所載技正用之測試器材均可溯源至國際標準。局部復印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited Calibration & Testing Laboratory e/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Man, New Territories, Hong Kong 峰創工器有限公司 --按正及後調理繁新 e/o 清港新算是可谓g文型, 樂習口指常後裏四股 Tel/電話: 2927 2606 Fax(傳貨: 2744 8986 E-mail/電郵: callab@suncreation.com Website/御比: www.suncreation.com



| Sun Creation Engineering 程 | 輝創工程有限公司 Sun Creation Engineering Limited Calibration and Testing Laboratory | | |
|---|--|---------------------------|--|
| Certific 校正證 | cate of Calibration 書 | 1 | Certificate No. : C17483 證書編號 |
| ITEM TESTE Description / 億 Manufacturer / Model No. / 型 Serial No. / 編 Supplied By / 續 | 製造商 : Rion 號 : NC-74 號 : 34615222 | gineering and Technologie | ecceipt / 收件日期: 10 August 201 s Co., Ltd. |
| TEST CONDI Temperature / Line Voltage / | | Relative Hur | nidity / 相對濕度 : (55 ± 20) |
| Calibration che | eck | | |
| DATE OF TE TEST RESUL The results app The results do | ST / 測試日期 : 26 August 2017 .TS / 測試結果 oly to the particular unit-under-test only. not exceed manufacturer's specification. | | |
| DATE OF TE TEST RESUL The results app The results do The results are The test equipu - The Governu - Agilent Tecl - Rohde & Scl | ST / 測試日期 : 26 August 2017 LTS / 測試結果 ply to the particular unit-under-test only. | | alibration Laboratory |
| DATE OF TE TEST RESUL The results app The results do The results are The test equipu - The Governu - Agilent Tecl - Rohde & Scl | ST / 測試日期 : 26 August 2017 JTS / 測試結果 bly to the particular unit-under-test only. not exceed manufacturer's specification. detailed in the subsequent page(s). ment used for calibration are traceable to N ment of The Hong Kong Special Administr nologies / Keysight Technologies hwarz Laboratory, Germany | | alibration Laboratory |





Certificate of Calibration 校正證書

Certificate No. : C174832 證書編號

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

Equipment ID CL130 CL281 **TST150A**

Description Universal Counter Multifunction Acoustic Calibrator Measuring Amplifier

Certificate No. C173864 PA160023 C161175

- 4. Test procedure : MA100N.
- 5. Results :
- 5.1 Sound Level Accuracy

| Γ | UUT | Measured Value | Mfr's Spec. | Uncertainty of Measured Value |
|---|---------------|----------------|-------------|-------------------------------|
| | Nominal Value | (dB) | (dB) | (dB) |
| | 94 dB, 1 kHz | 94.0 | ± 0.3 | ± 0.2 |

5.2 Frequency Accuracy

| UUT Nominal Value | Measured Value | Mfr's | Uncertainty of Measured Value |
|-------------------|----------------|-------------|-------------------------------|
| (kHz) | (kHz) | Spec. | (Hz) |
| 1 | 1.002 | 1 kHz ± 1 % | ± 1 |

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

Note :

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

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

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory. 本證書所載按正用之測試器材均可測源至國際標準。局部復印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory e'o 4/F, Tsing Shani Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 歸創上已程有規公司 - 校正及後謝實驗解 e'o 書證證解理和世界與是一級將計出讀機像四機 Tel/電話: 2927 2606 Fax/伊真: 2744 8986 E-mail/電解: callab@suncreation.com Website/

E-mail/電郵: callab/@suncreation.com Website/網址:: www.suncreation.com







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

Methods Used in Calibration and Testing

Wind Speed:

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

Temperature:

Temperature response is verified in comparison with a Eutechnics 4600 Precision Thermometer or a standard Kestrel 4000 Weather & Environmental Meter calibrated weekly against the Eutechnics 4600. The Eutechnics 4600 is calibrated annually and is traceable to NIST with a system accuracy of +/- 0.05 °C.

Direction / Heading

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

Relative Humidity:

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

Barometric Pressure:

Pressure response is verified against a Vaisala PTB210A Digital Barometer or a standard Kestrel 4000 Weather & Environmental Meter calibrated weekly against the Vaisala Barometer. The Vaisala Barometer is calibrated annually and is traceable to NIST with an accuracy of +/-0.15 hPa at +20°C defined as the root sum of the squares (RSS) of end point non-linearity, hysteresis error, repeatability error and calibration uncertainty at room temperature.

Approved By:

The enclosed Kestrel Weather & Environmental Meter was manufactured by Nielsen-Kellerman Co. at its facilities located at 21 Creek Circle, Boothwyn, PA 19061 USA.

Michael Naughton, Engineering Manager



| | | | | | | | | | | SENSO | 70/12 - Markey Strategy | SPECIFICATION | COLOR STREET | |
|---|-------------|-------------|-------------|--------|---------------|-----------|---------|--|-------------|---|--|--|--|---|
| 000 2500 3 | 3600 | 3609 | 3500 OT | 4005 | 4200 | 4268 | 4300 | 4500 | Boll latter | ACCURACY (+/-)* | RESOLUTION | RANGE | RANGE | NOTES |
| | | | | | | | | | | | C.1 m/s \$15/min | 0,6 % 40,0 m/s 118 to 7,874 ft/min | 0.6 to 60-0 m/s 116 to 11,61 i f/m in | 1 insh 25 mm diameter impoler with precision axia and low(fitzion Zytel® beerings, Sta spaced sisted as lower limit, reactings may be taken down to 0.4 mis 79 f/min 1.5 km/r |
| • • | | | | | | | | ø | | Larger of 3% of reading, least | 0.1 krath 0.1 mah | 2.2 to 144.0 km/h 1.3 to 80.5 moh | 2.2 lb 216.0 km/b 1.3 ke 134.2 mph | mph .5 kt after impelier statup. Of axis accuracy -1% & 5" off-axis: -2% & 10"; -3% & Calibration chit - 1% effect 100 hours use at 16 MPH 7 m/s, Reptacement impelier (NK |
| - | - | - | - | - | - | | - | , | - | sign®icarit digit or 20 Rimin | 0.1 knots 1 B* | 1.2 to 77.8 knots 9 to 12 B* | 1.2 to 116,6 knots 0 to 12 8* | 0601) field inetals without tools (US Patent 5,753,753). Who speed calibration and test should be done with blangle on Impeter located at the top front face of the Kestrel, |
| | | | | | | | | | | | 9.1 17/8* | 2-131.2* | 2-196.9 F/S' | *F/S only in Ballistics units. Besulari not available in Ballistics units. |
| | | | | | : | | | : | | | | | | Hermotically scaled, precision thermistor mounted externally and Brounally isolated (US |
| | | | | | | | | | | 0.9.* | 0.1 *F | -20.0 as 156.0 ° F | 14.9.9 to 131.0 °F | Patent 5,939,945) for rapid response. Aliflow of 2.2 mph/1 m/s or greater provides faste response and reduction of insolation affect. Calibration drift negligible. The mission may a |
| • • | | • | • | · * | • | | • | ٠ | | 0.6 0 | 0.5 °C | -29.0 to 70.0 *C | -10,0 to 55,0 °C | be used to moscure temperature of water or snow by submerging thermistor portion international control of the statement of |
| | | | | | | | | | | | | | | sensor membrane is free of liquid water prior to taking humidity-based measurements a submension. |
| | | | | | | | • | | | + | | | | Polymer tapaciliyo humidity consor mounted in this-welled chamber actestral to case for |
| | | | | | | | | | | 3.0 %RH | 0.1 %RH | 5 10 95% | 6 to 100% | replit accurate response (US Patent 6,207,074). To achieve stated eccuracy, unit must permitted to equilibrate to external temperature when exposed to large, replit temperatu |
| | | | 0 | | | v | | | | 2.4 200 | 4.1 ANA | non-condensing | and rub is | changes and be kept out of direct cunlight. Calibration drift 4- 2% over 2d months. Hum sansor may be recalibrated at factory or in Beld using Kestrel Humidity Catibration Kit (h |
| | | | | | | | | | | | | | 0.30 to 48.87 mHa | (2080 |
| | | | | | | | | | | 03 inHg | 0.91 InHg | 6.56 to 32.49 In Hig 300.0 to 1100.0 h Poimba | 10.0 to 1664 7 | Pressure centror may be recalizated at factory or in Reid. Adjustable reference a bluck display of station prossure or benchmarks pressure connected to MSL. Kestrel 4200 displa |
| • | | • | a | ъ | 3 | | • | a | • | 1.0 hPalmbar | 0.1 hPolmbar | 4.35 to 15.95 PS1 and | 0,54 to 24.00 PSt | station preasure on a dedicated solvers. Kestrol 2500 and 3500 display continuously up |
| | | | | | | | | | | 0.01 PSI | 0.01 PS | 32.0 to 185.0 °F 0.0 to 85.0 °C | add 14.9 to 131.0 ° F | Bimacheur barenteirle pressure trend indicator: rising rapidly, rising, steady, falli septity. Kestrel 4060 series displays pressure trend through graphing function. PSI clap |
| | | | | | | | | : | | | | | -10.0 to 55.0 °C | Kestrel 4900 sories only. Z-avis solid-state magnetoresistive sonsor mounted perpendicular to unit plane. Accura |
| | | | | | | | | | | . 5* | 1* 1/16th Cordinal | 0 10 360* | C to 360 | seman dependent upper units vertical position. Self-calibration routine eliminates magne error from battaries or unit and must be turn offer every ful power-down (cottery remaine |
| | | | | | | | | | | | Scale | 4.0.360 | 0 18 360. | change). Readout indicates direction to which the back of the unk is pointed when held |
| 06899200 | 815788 | | 899W | | an san san sa | Note | 2000 | seise | | LATED MEA | CONTRACT | - | | vertical orientation. Deel nalion/variation adjustable for True North readoul. |
| | 906) | | 3500 | 686 | 9999 | 8.02 | | sectored and | | nai o tradicio de activitation | an a | SPECIFICATION | SENSORS | |
| 2590 | 3000 | 3500 | ът | 4000 | 4200 | 4260 | 4300 | 4500 | Ball istics | ACCURACY (++-)* | RESOLUTION | RANGE | EMPLOYED Temperature | ADTES . |
| | | | | | | | | | | 0.0002 RAT ³ 0.0033 kg/m ² | 0.001 (bs/ff* 0.904 kg/m ² | Refer to Ranges for Gensors Employed | Relative Humidity Pressure | Mass of sit per unit volume |
| | | | | | | | | | | - | 1 dm | | | |
| | | | | | | | | | | 0,0671 | artčen F eničen t | Refer to Ranges for Sensors Employed | Air Flow User Input (Duet | Volume of all flowing through an opening, Automatically calculated from Air Volucity representation of user-specified duct shape (circle or rectangle) and dimensions (units |
| | | | | | | | | | | | 0.1m²/s 14/s | omavia tripicyet | Shape & Size) | ft; cm or m). Maximum duct dimension input: 258.0 In (21.5.6) 655.2 cm 6.55 m |
| | | | | | | | | | | typical: 23.6 R 7.2 m | 310 | typical: 750 ki (100 mBar | Prossure | Height above Mean Soa Lovel ('NSL'). Temperature compensated pressure (serometri allimeter requires accurate reference barometic pressure (o produco maximum obselu |
| • | | ۰ | a | | • | • | ٠ | 8 | 2 | max:46.2 € 14.7 m | 1 m | max: 300 to 750 mBar | User leput (Reference Pressure) | accuracy. Both accuracy spece corresponds to a reference pressure anywhere from 85 1100 mBar. |
| | | | | | | | | | | 0.07 loHg | 0.01 kHg | Roley to Rangos for | Pressure | Air pressure that would be present in identival canditions at MSL. Station pressure |
| ۰ | | ۰ | a | 8 | •. | P | ٠ | ۰ | | 2.4 hPolmbor 0.03 PSI | 0,1 hPalmbar 0.01 PSh | Sensors Employed | User Input (Reference Attitude) | compensated for /coal elevation provided by reference attitude. Requires accurate refer a titude to produce maximum absolute accuracy. |
| | | | | | | | | | | · · | t mph 1 Bhrnig | | | - |
| | | | | | | | | 8 | • | 0.071 | D.1 km/h | Relea to Ranges for Sensors Employed | Wind Speed Compase | Effective wind relative to a larget or based direction. Avto-switching headwind/foliwind indisation. |
| | | | | | | | | | | | 0,1 m/s 0.1 knots | | | |
| | | | | | | | | | | 3.2 °F 1.9 °C | 0.1 °F | Refer to Ranges for Sensors Employed | Temperaturo Reistro Humidity | Difference between dry bulb temperature and wet bulb temperature. When spraying, in exaposition rate and empirit Batma. Sate range for posticide spraying is 4 to 16 \pm 1 $_{\odot}$ |
| | | | | | | | | | | | | | Prossure Temperature | 10. |
| | | | | ۰ | ٠ | 8 | ٠ | ۰ | • | 225 m 89 m | 1 /2 1 m | Refer to Ranges for Senaora Émpleyad | Relative Hurridity Pressure | Local air density converted to equivalent alevation above sea lavel in a uniform fayer consisting of the international Standard Atmosphere. |
| | | | | | - | | - | - | | 5.4 *F | D.1 "F | 15 to 95 % FH Refer to Range for | Temporaturo | Temperature that a volume of air must be cooled to at constant pressure for the water a present to constance lists data and form on a colid surface. Can also be considered to b |
| | ۰. | ° . | a | 8 | | | • | | • | 1.9 °C | 0.1 °C | Temperature Sensor | Relative Humidity | veter-to-air acturation temperatura. |
| | | | | | | | | | | | | | Wind Spaed Temperature | The rate at which moisture is test from the surface of curing concrete. Requires user measurement and only of concrete temperature obtained with an assurate IR or probe |
| | | | | | | | ٠ | | | 0.01 tistebhr 0.05 kg/m2/hr | 0.01 int ¹ 89 0.01 kg/m ³ /hr | Refer is Ranges for Genaura Employed | Relative Humidity Pressure | theorements: ("Fior "C, not included). Readings should be taken 20 inches shows pour method with the theorem included and assessed for #10 represent when half is present. |
| | | | | | | | | | | | | | User Input (Convert Temperature) | function. |
| | 8 | • | | 9 | | | 3 | ø | | 7.("F 4.0"D | 0.1 TF | Refer to Ranges for Sensors Employed | Temporalulé Relative Humidity | Perceived temperature resulting from the combined effect of temperature and relative turnicity, Calculated based on NWS Heat Index (HS tables. Massurement varge limited |
| | | | | | | | | | | | | | Temperature | estions of published tables. |
| | | | | | ٠ | ۰ | | | | .3 gpp .04 g/kg | 0.1 gpp 0.01 g/kg | Refer to Ranges for Sensors Employed | Relative Humidity Pressure | Mass of water vaper in a mass of sir. |
| 1.1 | | | | | | | | | | | | Refer to Ranges for | Temporaturo | The ratio, expressed as a percentage, of measured air density to the stridensity of a ste |
| | | | | | | • | | | | 0.0026 | 0.004 | Sensors Employed | Relative Humidity Pressure | atmosphere as defined by the ICAO. |
| | | | | | | | | | | | | | Temperature | Temparature indicated by a sling psychromotor. Due to nature of the psychrometric rate |
| | | ٠ | ٠ | ٠ | | • | ٠ | ٩ | • | 1.8 'C | 0.1 10 | Refer to Ranges for Bersons Employed | Relative Humidity Pressure | water-sir system, this approximates the the modynamic wel-cub temperature. The the modynamic web built temperature is the temperature a parcel of air would have if or |
| | | | | | | | | | | | | | | adis baticolly to saturation temperature via water evaporating into \boldsymbol{x} . |
| | | | | | | | | | | 1.6 °F | 0.1 76 | Refer to Ranges for | Wind Speed | Parcained temperature resulting from combined effect of wind speed and temperature. Debuilated tassed on the WWS Wind Chill Temperature (WDT) index, revised 2001, with |
| . • | 8 | • | | ۰ | 9 | • | * | ٠ | • | 0.9*0 | 0.1 °C | Sensors Employed | Temperature | apped adjusted by a factor of 1.5 to yield equivalent results to wind speed measured at |
| | | | | | an that the | | | and the second | | | | and a second | | sbeye ground, Measurement range limited by extent of published tables. |
| | | | 5015 | | | | | | ADDIT | ONAL SPE | | | Statistics of | |
| · | 8 | | | | | | | | | | | | | cklight, Menual octivation with auto-off. V modele only/ electratuminescent backlight, Manual activation with auto-off. |
| ·· • | ** | | | | ÷. | | | ••• | | | | - | | red (NV models only) electroluminescent becklight. Automatic or manual activation. |
| | | | | | • | | | • | | MURRENERGON, MURRAN | n vilotiocitectae acc | ensera aspay. Cenada er a | viaben grean er visitte | realitive inspects any discussion intersume decligit. Actometry of marcally and the |
| | • ' | | | | | | | a | | | | | | end. Relative hum/dity and all enseavements which include RH is their estoulation may re Display updates every 1 second. |
| | | - | | | | | | | | | | Gust and Average Wind m | | |
| | • | | | | | | | | | | | | | ng af other values, along with all other wind-related functions; air valoaity, crosswind, |
| | | | | • | • | • | • | • | • | headwind/tallwind, win | d chill, WBGT, TWI | L, ovaperation reta, | | |
| | | | | 4000 | a 3700 | 8 3200 | 9-385-0 | 2900 | 2500 | Min/Max/Avg History m | ray be reset indepo | ndontly, Auto-store interval | d for every measured ' settable from 2 second | value. Large capacity data logger with grophical display. Manuel and auto data storage. Is to 12 hours, overwrite en or off. Loga even when display off except for 2 and 5 second |
| | | | | prents | points | points | points | points | points | intervala (cade version | 4.18 and leter). De | sto copecity shown. (S-232) or Bluetoeth data tr | | |
| | | | | • | a | | ٠ | · • · | | Bluetoeth Date Trans | for Option: Adjue: | table power consumption ar | nd radio range from up | to 38 ft Simetons, Individual Unit ID and 4 digit Pitil code preprogrammed for easy identi- |
| | | • | | | | | | | | Real time hours:minute | s dock. | nitting. Employs Divolooih (| | Gota Garbirod(34). |
| | | | | ٠ | | ٠ | ٠ | · • | | | es:saconde elació, e | colondor, automatic teap-yea | ar adjustment. | |
| | .* | • | - | • | ۰. | à. | | 6.63 | | Usar-selectable 15 d | r 60 minutes with r | to key presses or disabled. | | |
| | o | • | • | 8 | | 9 | | | | | WEEE compliant | ind indually tested to NIST- | | witten certificate of tests available at additional charge), |
| | a | • | ٠ | • | ۰ | | • | | • | Designed and manufact Oritorion 8. | tured in the USA fi | rom US and Imported comp | enorita. Cemplies with | Regional Value Contant and Terlif Code Transformation requirements for NAFTA Profess |
| | 8 | .• | ٠ | | | | | | | | . Average life, 300 | hours. Bettary life reduced | by backlight use in 200 | 20 to 3500 models. |
| •. | | | | | | a | ٥ | 9 | 9 | 1000 Berles Models: / | AA Lithium, two, ir | ojuded, Average life, 400 h | ours of use, raduced b | y backlight or filicetooth radio transmission use. |
| • | a | • | ۰ | | | | • | a | | | | 6.5 Procedure IV: unit only: | knipactimoy domage i | repla cashle impeller. |
| • | | | • | • | • | | | | • | Waterproof dP07 and 14" F to 131" F -10 " | | amants may be taken bovo | ed the firsts of the one | rational temperature range of the display and batteries by maintaining, the unit within the |
| • | | | | | | | 8 | | | | in the second se | TOTA OF BOARD DELADORON / | of the minimum time of | ocessary to take reading. |
| * | 9 9 | a | | | č | č | - | | - | | | | | |
| 1 0 11 11 11 11 11 11 11 11 11 11 11 11 11 | 8 9 9 | a a | 9 9 0 | | 4 | • | • | ٩ | • | 22.0 °F to 140.0 °F (4.9 × 1.9 × 1.1 in / 12.1 | 30.0 °C to 60.6 °C x 4,8 x 2.8 cm, 3,6 | 6 oz / 102 g (including silp-s | | |
| | 9 9 9 | 8 0 3 | 9 9 0 | | 9 8 | • | • | e a | 9 5 | 22.0 °F le 140.0 °F | 30.0 °C to 60.6 °C y 4,8 x 2.8 cm, 3,6 y 4.6 x 2.8 cm, 3,6 | 6 cz / 102 g (including silp-s 6 cz / 102 g. | | |



Appendix D: Baseline Monitoring Data (Noise)



| NSR ID: | NSR4 |
|-----------------------------|---|
| Baseline monitoring period: | 29/5/2018 to 14/6/2018 |
| Parameter : | L _{eq} 30min, L ₁₀ 30min ,L ₉₀ 30min |
| Major Site Activities | No construction works were conducted in the vicinity during the |
| | monitoring period. |
| Major dust source | Nearby traffic and school activities |
| Other Factors | NA |

| Date | Time | Weather | | | L-30min, | L ₁₀ -30min, | L _{90-30min} , | | | | |
|-----------|--|---------|-------------|-------------|-----------------|-------------------------|-------------------------|-------------|-------|-------|-------|
| Date | | weather | Reading (1) | Reading (2) | Reading (3) | Reading (4) | Reading (5) | Reading (6) | dB(A) | dB(A) | dB(A) |
| 29/5/2018 | 14:37-15:07 | sunny | 72.1 | 72.3 | 72.9 | 73.3 | 72.4 | 72.7 | 72.6 | 75.6 | 68.7 |
| 30/5/2018 | 9:53-10:23 | sunny | 68.7 | 69.0 | 68.6 | 69.6 | 68.8 | 69.4 | 69.0 | 72.3 | 61.0 |
| 31/5/2018 | 9:18-9:48 | sunny | 68.9 | 68.2 | 68.7 | 68.8 | 68.4 | 70.9 | 69.1 | 72.0 | 59.9 |
| 1/6/2018 | 15:20-15:50 | sunny | 69.4 | 72.7 | 68.7 | 69.5 | 70.1 | 69.1 | 70.1 | 73.0 | 62.3 |
| 2/6/2018 | 13:59-14:29 | Fine | 69.5 | 70.8 | 68.2 | 70.6 | 71.4 | 70.7 | 70.3 | 72.5 | 61.8 |
| 3/6/2018 | 13:53-14:23 | Fine | 69.1 | 69.4 | 68.0 | 68.8 | 70.1 | 69.5 | 69.2 | 72.4 | 62.0 |
| 4/6/2018 | 15:42-14:12 | cloudy | 70.1 | 71.6 | 71.8 | 70.3 | 70.5 | 71.4 | 71.0 | 72.9 | 63.0 |
| 5/6/2018 | 12:28-12:58 | cloudy | 69.4 | 68.7 | 69.9 | 70.2 | 71.5 | 70.6 | 70.1 | 72.1 | 62.8 |
| 6/6/2018 | 16:54-17:24 | Cloudy | 70.3 | 71.1 | 71.8 | 72.1 | 71.4 | 70.9 | 71.3 | 73.2 | 62.1 |
| 7/6/2018 | | | | cancelle | d due to typhoc | n and the adve | rse weather | | | | |
| 8/6/2018 | | | | cancelle | d due to typhoc | n and the adve | rse weather | | | | |
| 9/6/2018 | 14:26-14:56 | fine | 68.1 | 67.4 | 69.5 | 69.8 | 70.4 | 70.1 | 69.3 | 71.5 | 62.2 |
| 10/6/2018 | 14:16-14:46 | Fine | 68.3 | 69.0 | 68.6 | 69.4 | 68.7 | 69.0 | 68.8 | 71.3 | 61.9 |
| 11/6/2018 | 13:40-14:10 | fine | 69.8 | 68.3 | 69.2 | 69.0 | 69.2 | 67.9 | 68.9 | 72.3 | 61.6 |
| 12/6/2018 | cancelled due to typhoon and the adverse weather | | | | | | | | | | |
| 13/6/2018 | 15:14-15:44 | Fine | 68.4 | 69.3 | 68.7 | 69.1 | 69.6 | 70.3 | 69.3 | 73.5 | 63.6 |
| 14/6/2018 | 15:02-15:35 | Fine | 68.7 | 69.3 | 69.2 | 68.3 | 69.4 | 69.5 | 69.1 | 72.4 | 64.8 |



| NSR ID: | NSR24 |
|-----------------------------|--|
| Baseline monitoring period: | 29/5/2018 to 14/6/2018 |
| Parameter : | L _{eq} 30min, L ₁₀ 30min ,L ₉₀ 30min |
| Major Site Activities | No construction works were conducted in the vicinity during the monitoring period. |
| Major dust source | Nearby traffic and school activities |
| Other Factors | NA |

| | Time | Weather | L _{eq} -5min, dB(A) | | | | | | | | | Free-field Correction | Free-field Correction | Free-field Correction |
|-----------|-------------|---------|------------------------------|----------------|----------------|----------------|----------------|----------------|--------------------------------|-----------------------------------|-----------------------------------|--------------------------------|--------------------------|----------------------------------|
| Date | | | Reading (1) | Reading (2) | Reading (3) | Reading (4) | Reading (5) | Reading (6) | L _{-30min} , dB(A) | L _{10 -30min} , dB(A) | L _{90 -30min} , dB(A) | L _{-30min} , dB(A) | | L ₉₀ -30min, dB(A) |
| 29/5/2018 | 10:18-10:48 | sunny | 67.9 | 71.1 | 66.2 | 68.3 | 68.7 | 67.8 | 68.6 | 70.5 | 55.4 | 71.6 | 73.5 | 58.4 |
| 30/5/2018 | 11:10-11:40 | sunny | 68.6 | 67.5 | 69.1 | 68.4 | 68.8 | 67.3 | 68.3 | 70.4 | 56.5 | 71.3 | 73.4 | 59.5 |
| 31/5/2018 | 10:35-11:05 | sunny | 69.2 | 68.6 | 67.1 | 68.9 | 68.6 | 68.6 | 68.5 | 72.0 | 55.9 | 71.5 | 75.0 | 58.9 |
| 1/6/2018 | 13:50-14:20 | sunny | 66.3 | 65.4 | 69.6 | 65.1 | 69.2 | 69.1 | 67.8 | 69.9 | 54.9 | 70.8 | 72.9 | 57.9 |
| 2/6/2018 | 12:57-13:27 | Fine | 68.6 | 67.8 | 69.0 | 68.3 | 68.5 | 69.3 | 68.6 | 70.8 | 56.3 | 71.6 | 73.8 | 59.3 |
| 3/6/2018 | 16:28-16:58 | Fine | 69.5 | 68.2 | 68.3 | 69.7 | 68.8 | 69.4 | 69.0 | 71.2 | 55.8 | 72.0 | 74.2 | 58.8 |
| 4/6/2018 | 16:55-17:25 | cloudy | 72.6 | 71.8 | 70.5 | 71.3 | 72.2 | 72.8 | 71.9 | 74.0 | 58.4 | 74.9 | 77.0 | 61.4 |
| 5/6/2018 | 13:34-14:04 | cloudy | 69.4 | 71.1 | 71.5 | 72.3 | 70.4 | 70.6 | 71.0 | 73.0 | 61.6 | 74.0 | 76.0 | 64.6 |
| 6/6/2018 | 14:06-14:36 | Cloudy | 71.5 | 69.3 | 68.8 | 70.4 | 71.0 | 69.6 | 70.2 | 72.4 | 59.4 | 73.2 | 75.4 | 62.4 |
| 7/6/2018 | | | | | canc | elled due to | typhoon an | d the advers | e weather | | | | | |
| 8/6/2018 | | | | | canc | elled due to | typhoon an | d the advers | e weather | | | | | |
| 9/6/2018 | 15:24-15:54 | fine | 64.3 | 65.2 | 65.8 | 67.1 | 66.4 | 65.3 | 65.8 | 67.9 | 59.7 | 68.8 | 70.9 | 62.7 |
| 10/6/2018 | 15:25-15:55 | Fine | 68.3 | 67.9 | 69.1 | 68.6 | 67.8 | 68.0 | 68.3 | 70.3 | 55.8 | 71.3 | 73.3 | 58.8 |
| 11/6/2018 | 14:49-15:19 | fine | 67.7 | 65.2 | 69.2 | 66.5 | 67.5 | 67.3 | 67.4 | 70.0 | 54.1 | 70.4 | 73.0 | 57.1 |
| 12/6/2018 | | | | | canc | elled due to | typhoon an | d the advers | e weather | | | | | |
| 13/6/2018 | 15:50-16:20 | Fine | 68.3 | 68.1 | 68.9 | 67.5 | 67.8 | 67.1 | 68.0 | 71.6 | 55.7 | 71.0 | 74.6 | 58.7 |
| 14/6/2018 | 17:06-17:31 | Fine | 70.4 | 66.2 | 70.6 | 69.6 | 68.4 | 61.0 | 68.6 | 72.6 | 53.5 | 71.6 | 75.6 | 56.5 |

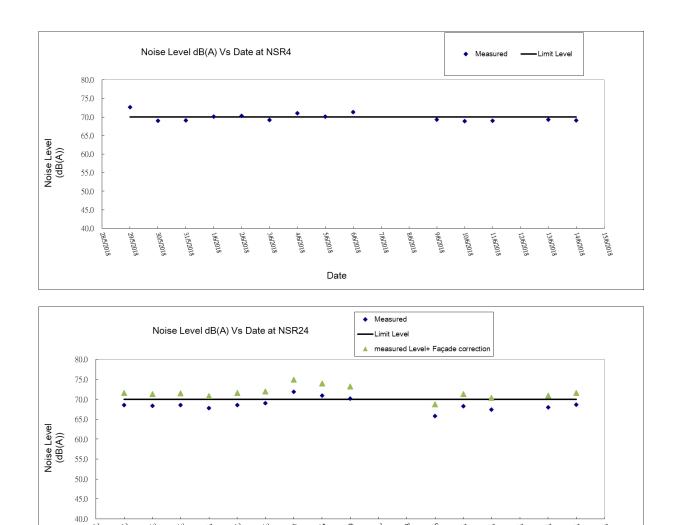
Remarks: Free-field correction +3dB(A) has been made for NSR24

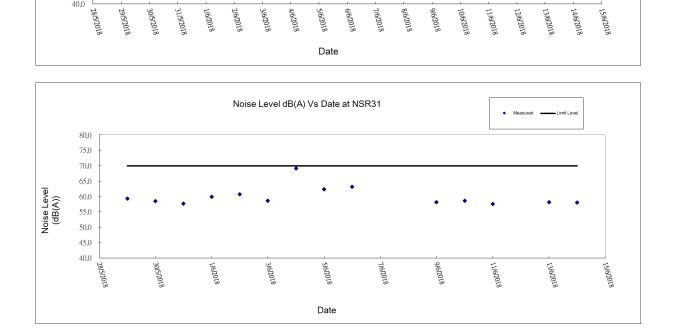


| NSR ID: | NSR31 |
|------------------------------------|--|
| Baseline monitoring period: | 29/5/2018 to 14/6/2018 |
| Parameter : | L _{eq} 30min, L ₁₀ 30min ,L ₉₀ 30min |
| Major Site Activities | No construction works were conducted in the vicinity during the monitoring period. |
| Major dust source Other Factors | Nearby traffic and school activities NA |

| Dete | Time | We ath an | | | L _{-30min} , | L ₁₀ -30min, | L _{90 -30min} , | | | | |
|-----------|-------------|-----------|-------------|-------------|-----------------------|-------------------------|--------------------------|-------------|-------|-------|-------|
| Date | | Weather | Reading (1) | Reading (2) | Reading (3) | Reading (4) | Reading (5) | Reading (6) | dB(A) | dB(A) | dB(A) |
| 29/5/2018 | 11:26-11:56 | sunny | 58.4 | 58.8 | 59.9 | 60.0 | 60.3 | 58.2 | 59.3 | 63.3 | 52.5 |
| 30/5/2018 | 12:16-13:46 | sunny | 58.8 | 54.7 | 57.3 | 60.9 | 58.7 | 58.1 | 58.5 | 60.7 | 53.7 |
| 31/5/2018 | 12:13-12:43 | sunny | 56.7 | 58.2 | 56.5 | 57.2 | 57.4 | 59.5 | 57.7 | 61.1 | 52.1 |
| 1/6/2018 | 12:06-12:36 | sunny | 59.9 | 61.6 | 59.3 | 60.1 | 58.2 | 59.3 | 59.9 | 62.8 | 55.8 |
| 2/6/2018 | 11:44-12:34 | Fine | 63.2 | 60.8 | 59.7 | 59.4 | 60.3 | 59.8 | 60.7 | 62.4 | 55.5 |
| 3/6/2018 | 15:19-15:49 | Fine | 59.7 | 58.5 | 57.9 | 57.3 | 59.0 | 58.8 | 58.6 | 60.4 | 52.8 |
| 4/6/2018 | 14:29-14:59 | cloudy | 67.9 | 68.3 | 69.9 | 69.1 | 69.4 | 69.6 | 69.1 | 72.2 | 60.5 |
| 5/6/2018 | 14:27-14:57 | cloudy | 60.4 | 61.3 | 61.5 | 62.2 | 64.1 | 63.2 | 62.3 | 64.4 | 58.3 |
| 6/6/2018 | 15:14-15:44 | Cloudy | 62.4 | 64.0 | 64.8 | 63.6 | 61.5 | 62.1 | 63.2 | 65.2 | 59.3 |
| 7/6/2018 | | | | cancelle | d due to typhoc | on and the adver | rse weather | | | | |
| 8/6/2018 | | | | cancelle | d due to typhoc | on and the adver | rse weather | | | | |
| 9/6/2018 | 16:22-16:52 | fine | 58.8 | 57.5 | 57.9 | 58.4 | 58.6 | 57.6 | 58.2 | 60.0 | 53.6 |
| 10/6/2018 | 16:10-16:40 | Fine | 59.1 | 57.9 | 58.3 | 58.7 | 57.8 | 59.3 | 58.6 | 60.1 | 52.7 |
| 11/6/2018 | 15:34-16:04 | fine | 58.0 | 59.3 | 57.2 | 56.6 | 56.6 | 57.0 | 57.6 | 60.8 | 51.9 |
| 12/6/2018 | | | | cancell | ed due to typho | on and the adv | erse weather | | | | |
| 13/6/2018 | 16:27-16:57 | Fine | 57.6 | 57.9 | 58.1 | 57.6 | 58.3 | 58.9 | 58.1 | 61.0 | 51.4 |
| 14/6/2018 | 16:04-16:34 | Fine | 57.4 | 58.7 | 57.8 | 59.2 | 57.0 | 57.7 | 58.0 | 67.5 | 58.8 |

Contract No. 13/WSD/16 Mainlaying for Desalination Plant at Tseung Kwan O **Baseline Monitoring Report**





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