**JOB NO.: TCS01216/21**

**WSD Contract No.: 3/WSD/20 -**

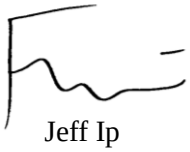
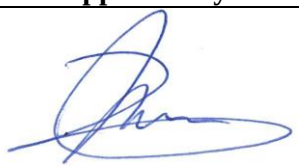
**Reclaimed Water Supply to Sheung Shui and Fanling**

# MONTHLY ENVIRONMENTAL MONITORING & AUDIT REPORT (NO.33) – AUGUST 2024

**PREPARED FOR**

**WATER SUPPLIES DEPARTMENT**

**Quality Index**

| Date | Reference No. | Prepared By | Approved By |
|---|---|---|---|
| 11 September 2024 | TCS01216/21/600/R0112v1 |  Jeff Ip Assistant Environmental Consultant |  TW Tam Environmental Team Leader |

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Date: 13th September 2024

Project Manager
Water Supplies Department
Immigration Tower, 7 Gloucester Road,
Wan Chai, Hong Kong
Attn: Mr. Tim Wong

Dear Sir,

**Agreement No. CE67/2017(WS)**
**Reclaimed Water Supply to Sheung Shi and Fanling – Investigation, Design and Construction**
**Independent Environmental Checker (IEC) Services for**
**Shek Wu Hui Water Reclamation Plant under Contract No. 3/WSD/20**

**Monthly EM&A Monitoring Report for August 2024**

We refer to the monthly EM&A Report for August 2024 for WSD Contract No.: 3/WSD/20 – Reclaimed Water Supply to Sheung Shui and Fanling certified by the Environmental Team Leader on 12th September 2024. Please note we have no adverse comments on the captioned submission. The captioned submission is hereby verified in accordance with the requirement stipulated in Condition 3.4 of Environmental Permit No. FEP-01/470/2013.

Should you have any query, please feel free to contact the undersigned at 8493 5543.

Yours Sincerely,

Vega Wong
Independent Environmental Checker

c.c.

- ET Leader – AUES (Attn: Mr. T.W. Tam) [by Email: twtam@fordbusiness.com]
- Resident Engineer – Binnies Hong Kong Limited (Attn: Mr. Chester Chan) [by Email: chancw@binnies.com]

## EXECUTIVE SUMMARY

ES.01 Water Supplies Department (WSD) is the Project Proponent and the Permit Holder of **Reclaimed Water Supply to Sheung Shui and Fanling** (hereinafter referred as "the Contract Works"), which is a Designated Project to be implemented under Further Environmental Permit number FEP-01/470/2013 (hereinafter referred as "the FEP-01/470/2013" or "the FEP").

ES.02 In according with the Updated EM&A Manual stipulation and the location of Contract Works, only construction noise monitoring and waterbird of ecological monitoring are required during the construction phase of the Contract Works.

ES.03 As part of the EM&A programme, Baseline Monitoring Report which determined Action and Limit Levels (A/L Levels) based on the baseline data, has been verified by Independent Environmental Checker (IEC) and submitted to EPD endorsement on ***24 November 2021***. Also, construction activities under the Contract Works were commenced on ***7 December 2021***.

ES.04 This is the **33rd** monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **1** to **31 August 2024** (hereinafter 'the Reporting Period').

### ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.06 Environmental monitoring activities under the EM&A programme in the Reporting Period are summarized in the following table.

**Table ES-1 Environmental monitoring activities in the Reporting Period**

| Environmental Aspect | Environmental Monitoring Parameters / Inspection | Total Occasions during Reporting Period |
|---|---|---|
| Construction Noise | $L_{eq(30min)}$ Daytime | **4** |
| Ecology | Waterbirds | **4** |
| Site Inspection / Audit | ET, the Contractor and RE joint site Environmental Inspection | **5** |

### BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.07 In the Reporting Period, no construction noise limit level exceedance construction noise was recorded and no noise complaint (i.e. Action Level) was received. No action and limit level exceedance for waterbirds survey was recorded in the Reporting Period. No Notifications of Exceedances (NOEs) was issued to the Resident Engineer (RE), IEC and the Main Contractor. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

**Table ES-2 Breach of Action and Limit (A/L) Levels in the Reporting Period**

| Environmental Aspect | Monitoring Parameters | Action Level | Limit Level | Event & Action | | |
|---|---|---|---|---|---|---|
| | | | | NOE Issued | Investigation | Corrective Actions |
| Construction Noise | $L_{eq(30min)}$ Daytime | 0 | 0 | 0 | 0 | 0 |
| Ecology | Waterbirds Abundance | 0 | 0 | 0 | 0 | 0 |

### ENVIRONMENTAL COMPLAINT

ES.08 No environmental complaint was recorded or received in this Reporting Month. The statistics of environmental complaint are summarized in the following table.

**Table ES-3 Environmental Complaint Summaries in the Reporting Month**

| Reporting Period | Environmental Complaint Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2024 | 0 | 0 | NA |

ES.09 In addition, no complaint received and emergency events relating to violation of environmental legislation for illegal dumping and landfilling were received.

### NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.10 No environmental summons or successful prosecution was recorded in this Reporting Month. The statistics of summons or successful prosecutions are summarized in the following tables.

**Table ES-4 Environmental Summons Summaries in the Reporting Month**

| Reporting Period | Environmental Summons Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2024 | 0 | 0 | NA |

**Table ES-5 Environmental Prosecution Summaries in the Reporting Month**

| Reporting Period | Environmental Prosecution Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2024 | 0 | 0 | NA |

### REPORTING CHANGE

ES.11 No report change in the reporting period.

### SITE INSPECTION

ES.12 Weekly site inspections to evaluate the site environmental performance have been carried out by the RE, ET and the Main Contractor on ***1, 6, 13, 20 and 29 August 2024***. No non-compliance was noted during the site inspection.

ES.13 IEC inspection was conducted on ***13 August 2024***.

### FUTURE KEY ISSUES

ES.14 Irrigation system installation at ReWPS & HCF and drainage pipe connect work at SWHWRP will be the major construction work in the coming month. The Contractor should pay attention to potential water quality impact from irrigation system installation and drainage pipe connect work, and implement mitigation measures according to the ISEMM.

ES.15 As the wet season has approached, the Contractor was general reminded to paid attention to water quality mitigation measures such as ensure sufficient wastewater treatment facilities capacity is provided on site and keep review on the temporary drainage system to avoid water quality impact arise from the Project.

ES.16 Details of the future issues in the coming month are described in Section 9.4.

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# 1. INTRODUCTION

## 1.1 BACKGROUND

1.1.1 Water Supplies Department (WSD) is the Project Proponent of Utilization of Treated Sewage Effluent (TSE) from Shek Wu Hui Sewage Treatment Works. On 30th July 2021, China Geo-Engineering Corporation (hereinafter named as "the Main-Contractor") was awarded WSD Contract Works 3/WSD/20 - Reclaimed Water Supply to Sheung Shui and Fanling (hereinafter referred as "the Contract Works").

1.1.2 The reclaimed water supply to Sheung Shui and Fanling (SSF) comprises a Shek Wu Hui Water Reclamation Plant (SWHWRP), part of pumping water mains to Table Hill Reclaimed Water Service Reservoir (TBHRWSR), and Kwu Tung North (KTN) New Development Area (NDA) and distribution water mains to SSF area.

1.1.3 The SWHWRP, which comprises Hypo-Chlorination Facilities (HCF) and Reclaimed Water Pumping Station (ReWPS), will be located at a long-stripped area between Ng Tung River and Sheung Shui Slaughter House at the northwest of the Shek Wu Hui Sewage Treatment Works (SWHSTW).

1.1.4 The HCF, which consists of a hypo-chlorination dosing plant, a chlorine contact tank, dye dosing system, water refilling station, other post-treatment facilitates and storage areas for chemicals, would produce reclaimed water by further treatment of the treated sewage effluent (TSE) pumped from the discharge outlet of the SWHSTW. The treatment capacity of the SWHWRP will be 73,000m3/day.

1.1.5 The Reclaimed Water P/S, which will be located at the northwest of the HCF, will receive reclaimed water by gravity from the HCF and deliver to the TBHRWSR serving SSF areas, Kwu Tung North Flushing Water Service Reservoir (KTN FLWSR) serving KTN NDA and Fanling North Flushing Water Service Reservoir (FLN FLWSR) serving Fanling North (FLN) NDA

1.1.6 This Work Contract mainly comprise construction of Shek Wu Hui Water Reclamation Plant and laying of the associated water main to produce reclaimed water for supply to the Northeast New Territories areas for non-potable used. It is estimated that about 22 million cubic metres of fresh water can be saved each year ultimately.

1.1.7 The construction of Shek Wu Hui Water Reclamation Plant under the Work Contract is a Designated Project to be implemented under Further Environmental Permit number FEP-01/470/2013 (hereinafter referred as "the FEP-01/470/2013" or "the FEP"). Location of Shek Wu Hui Water Reclamation Plant is shown in ***Appendix A***.

1.1.8 The major work of the Work Contract under FEP included:

- Civil engineering construction works, including structures, foundations and earthworks for the SWHWRP and ancillary buildings;
- Electrical and mechanical (E&M), building services, fire services installations, and treatment process system engineering work;
- Other associated systems and facilities for the SWHWRP.

1.1.9 Pursuant to the FEP stipulation, the Main Contractor has commissioned Action-United Environmental Services & Consulting (hereinafter referred as "AUES") as Environmental Team (hereinafter referred as "ET") perform relevant EM&A programme and as well as the associated duties.

1.1.10 As part of the EM&A programme, Baseline Monitoring Report which determined Action and Limit Levels (A/L Levels) based on the baseline data, has been verified by Independent Environmental Checker (IEC) and submitted to EPD endorsement on ***24 December 2021***. Also, construction activities of the Contract were commencement on ***7 December 2021***.

1.1.11 This is **33rd** monthly EM&A report to presenting the monitoring results and inspection findings from ***1*** to ***31 August 2024*** of the Reporting Period.

## 1.2 REPORT STRUCTURE

1.2.1 The report was structured into the following sections:-

| | |
|---|---|
| ***Section 1*** | *Introduction* |
| ***Section 2*** | *Project Organization and Construction Progress* |
| ***Section 3*** | *Summary of Impact Monitoring Requirements* |
| ***Section 4*** | *Construction Noise Monitoring* |
| ***Section 5*** | *Ecology Waterbirds Monitoring* |
| ***Section 6*** | *Waste Management* |
| ***Section 7*** | *Site Inspections* |
| ***Section 8*** | *Environmental Complaints and Non-Compliance* |
| ***Section 9*** | *Implementation Status of Mitigation Measures* |
| ***Section 10*** | *Conclusions and Recommendations* |

# 2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

## 2.1 PROJECT ORGANIZATION

2.1.1 The project organization is shown in ***Appendix B***. The roles and responsibilities of the various parties involved in the EM&A process and the organizational structure of the organizations responsible for implementing the EM&A programme are outlined below.

*Water Supplies Department (WSD)*

2.1.2 WSD is the Project Proponent and the Permit Holder of the EP of the development of the Project and will assume overall responsibility for the project. An Independent Environmental Checker (IEC) shall be employed by WSD to audit the results of the EM&A works carried out by the ET.

*Environmental Protection Department (EPD)*

2.1.3 EPD is the statutory enforcement body for environmental protection matters in Hong Kong.

*Engineer or Engineers Representative (ER)*

2.1.4 The ER is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the ER with respect to EM&A are:

- Supervise the Contractor's activities and ensure that the requirements in the Contract Works Specific EM&A Manual are fully complied with;
- Inform the Contractor when action is required to reduce impacts in accordance with the Even and Action Plans;
- Employ an IEC to audit the results of the EM&A works carried out by the ET; and
- Comply with the agreed Event Contingency Plan in the event of any exceedance.

*The Main Contractor*

2.1.5 The Main Contractor is responsible perform construction works and for ensuring that the works are undertaken compliance with the specification and contract requirements. The duties and responsibilities of the Main Contractor with respect to EM&A are:

- Employ an Environmental Team (ET) to undertake monitoring, laboratory analysis and reporting of environmental monitoring and audit;
- Provide assistance to ET in carrying out monitoring and auditing;
- Submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event and Action Plans;
- Implement measures to reduce impact where Action and Limit levels are exceeded; and
- Adhere to the agreed procedures for carrying out compliant investigation.

*Environmental Team (ET)*

2.1.6 The ET is responsible perform implementation EM&A programmes of the Contract Works as stipulated in the Updated EM&A Manual ensure the works are fully compliance with environmental regulations. The duties and responsibilities of the ET with respect to EM&A are:

- Set up all the required environmental monitoring stations;
- Monitor various environmental parameters as required in the EM&A Manual;
- Analyze the EM&A data and review the success of EM&A programme to cost effectively confirm the adequacy of mitigation measures implemented and the validity of the EIA predictions and to identify any adverse environmental impacts arising;
- Carry out site inspection to investigate and audit the Contractors' site practice, equipment and work methodologies with respect to pollution control and environmental mitigation, and take proactive actions to pre-empt problems;
- Audit and prepare audit reports on the environmental monitoring data and site environmental conditions;
- Report on the EM&A results to the IEC, Contractor, the ER and EPD or its delegated representative;
- Recommend suitable mitigation measures to the Contractor in the case of exceedance of

Action and Limit levels in accordance with the Event and Action Plans;
- Undertake regular and ad-hoc on-site audits / inspections and report to the Contractor and the ER of any potential non-compliance; and
- Follow up and close out non-compliance actions.

*Independent Environmental Checker (IEC)*

2.1.7 The duties and responsibilities of IEC with respect to EM&A are:
- Review the EM&A works performed by the ET (at not less than monthly intervals);
- Audit the monitoring activities and results (at not less than monthly intervals);
- Report the audit results to the ER and EPD in parallel;
- Review the EM&A reports (monthly summary reports) submitted by the ET;
- Review the proposal on mitigation measures submitted by the Contractor in accordance with the Event and Action Plans;
- Check the mitigation measures submitted by the Contractor in accordance with the Event and Action Plans;
- Check the mitigation measures that have been recommended in the EIA and this Manual, and ensure they are properly implemented in a timely manner, when necessary;
- Report the findings of site inspections and other environmental performance reviews to ER and EPD;
- Coordinate the monitoring and auditing works for all the on-going contracts in the area in order to identify possible sources / causes of exceedances and recommend suitable remedial actions where appropriate; and
- Coordinate the assessment and response to complaints / enquires from locals, green groups, district councils or the public at large.

## 2.2 CONSTRUCTION PROGRESS

2.2.1 In the Reporting Period, the major construction activities of the Contract Works under FEP are listed in below. Moreover, the master construction program and site overview photo in the reporting period are enclosed in ***Appendix C***.
- ReWPS – Installation of artificial granite tile, drainage and manhole covers, solar power system, aluminum fins and canopy, and painting of epoxy floor finish
- HCF – Soil filling for planting works, installation of drainage and manhole covers, irrigation water supply pipes and aluminum fins
- Fence Wall Construction
- External Works at Site-wide Area – Installation of Grasscrete, Vertical Green Mesh and precast segment of fence wall along Ng Tung River, laying of fine wash grano wall finish of fence wall along Ng Tung River

## 2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.3.1 To according with the FEP stipulation, the required documents has submitted to EPD for retention as listed below:
- Project Location Plans;
- Updated Environmental Monitoring and Audit Manual of Project Specific (*TCS01176/21/600/R0012v2*); and
- Baseline Monitoring Report (*TCS01216/21/600/R0017v3*) for the Project.

2.3.2 Summary of the relevant permits, licenses, and/or notifications on environmental protection for the Project is presented in ***Table 2-3-1***.

**Table 2-3-1 Status of Environmental Licenses and Permits**

| Item | Description | Licence/Permit Status | | |
|---|---|---|---|---|
| | | Ref. no. | Effective Date | Expiry Date |
| 1 | Air Pollution Control (Construction Dust) Regulation | Notification was made on 3 Aug 2021 | 3 Aug 2021 | Till the Contract ends |
| 2 | Waste Disposal Regulation – Billing Account for Disposal of Construction Waste | Account No.: 7041397 | 8 Aug 2021 | Till the Contract ends |

| Item | Description | Licence/Permit Status | | |
|---|---|---|---|---|
| | | Ref. no. | Effective Date | Expiry Date |
| 3 | Chemical Waste Producer Registration | Application was made on 3 Aug 2021 | 3 Aug 2021 | Till the Contract ends |
| 4 | Water Pollution Control Ordinance – Discharge Licence | Discharge Licence No.: WT00039707-2021 | 17 Nov 2021 | 30 Nov 2026 |
| 5 | Construction Noise Permit | CNP No. GW-RN0265-24 | 27 Mar 2024 | 26 Aug 2024 |

# 3. SUMMARY OF IMPACT MONITORING REQUIREMENTS

## 3.1 GENERAL

3.1.1 According to the Updated EM&A Manual and the location of the Contract Works, only construction noise monitoring and waterbirds ecological of environmental monitoring are related the Contract Works during the construction phase. Details requirement of noise and waterbirds ecological impact monitoring are presented sub-sections as below.

## 3.2 REQUIREMENT OF CONSTRUCTION NOISE MONITORING

3.2.1 One set of $L_{eq(30min)}$ as 6 consecutive $L_{eq(5min)}$ between 0700-1900 hours on normal weekdays and once every week during course of works. If construction work necessary to carry out at other time periods, i.e. restricted time period (19:00 to 07:00 the next morning and whole day on public holidays) (hereinafter referred as "the restricted hours"), $L_{eq(5min)}$ measurement will be carried out in accordance with the CNP requirements. Supplementary information for data auditing, statistical results such as $L_{10}$ and $L_{90}$ shall also be obtained for reference.

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

## 3.3 LOCATION OF CONSTRUCTION NOISE IMPACT MONITORING

3.3.1 According to the Updated EM&A Manual of CEDD Contract No. NDO 14/2018 - *Advance and First Stage Works of Kwu Tung North and Fanling North New Development Areas*, four noise sensitive receivers are designated on Fanling North New Development Areas for construction noise monitoring.

3.3.2 According to the geographic location of proposed Shek Wu Hui Water Reclamation Plant and all the recommended designated construction noise monitoring stations, only the designated noise monitoring station CP-KTN-NMS5 (prior named "CP-NMS7") shown in ***Appendix D***, is located near the proposed Shek Wu Hui Water Reclamation Plant within 300m (distance about 110m). Therefore, the designated noise monitoring station CP-KTN-NMS5 is recommended for the Contract Works to undertake construction noise monitoring. If the recommended noise monitoring location CP-KTN-NMS5 not available, the ET shall propose alternative monitoring locations/additional monitoring locations and seek approval from the Supervisor of the proposal. When alternative/new monitoring location is proposed, the monitoring location shall be chosen based on the following criteria:

(i) at locations close to the major site activities which are likely to have noise impacts;

(ii) close to the noise sensitive receivers; and

(iii) for monitoring locations located in the vicinity of the sensitive receivers, care shall be taken to cause minimal disturbance to the occupants during monitoring.

3.3.3 The construction noise monitoring station shall normally be at a point 1 m from the exterior of the sensitive receivers building façade and be a position 1.2m above the ground. If there is problem with access to the normal monitoring position, an alternative position may be chosen, and a correction to the measurements shall be made to the free field measurements. The ET shall agree with the Supervisor on the monitoring station that is chosen for impact monitoring.

## 3.4 ACTION AND LIMIT LEVEL FOR CONSTRUCTION NOISE

3.4.1 The Action and Limit levels for construction noise are defined in ***Table 3-4-1***. Should non-compliance of the criteria occur, action in accordance with the Action Plan which shown in Section 4 of this report**,** shall be carried out.

**Table 3-4-1 Action and Limit Levels for Construction Noise**

| Monitoring Location | Action Level | Limit Level in dB(A) |
|---|---|---|
| | Time Period: 0700-1900 hours on normal weekdays | |
| CP-KTN-NMS5 | When one or more documented complaints are received | 75 dB(A)[Note 1] |
| *Note 1: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.* | | |

## 3.5 NOISE MONITORING METHODOLOGY

*Monitoring Equipment*

3.5.1 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications was used for carrying out the noise monitoring. Noise equipment used for impact monitoring is listed in ***Table 3-5-1***.

**Table 3-5-1 Equipment of Noise Impact Monitoring**

| Equipment | Model |
|---|---|
| Integrating Sound Level Meter | Rion NL – 52 |
| Calibrator | Rion NC – 75 |

Remark: Sound level meter IEC 60651:1979 (Type 1) was replaced by 60672 (Type 1) in 2002 (Ref: https://webstore.iec.ch/publication/17086

3.5.2 The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis. The valid calibration certificates of the monitoring equipment are shown in ***Appendix E***.

## 3.6 MONITORING PROCEDURE

3.6.1 All noise measurements were performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). $Leq_{(30min)}$ in six consecutive $Leq_{(5min)}$ measurements was used as the monitoring parameter for the time period between 07:00-19:00 hours during the baseline monitoring.

3.6.2 In general, the sound level meter would be mounted on a tripod at a height of 1.2 m and placed at the assessment point and oriented such that the microphone was pointed to the site with the microphone facing perpendicular to the line of sight. The windshield would be fitted for all measurement. Where a measurement was to be carried out at a building, the assessment point would normally be at a position 1 m from the exterior of the building façade. Where a measurement was to be made for noise being received at a place other than a building, the assessment point would be at a position 1.2 m above the ground in a free-field situation, i.e. at least 3.5 m away from reflective surfaces such as adjacent buildings or walls.

3.6.3 Immediately prior to and following each noise measurement the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements would be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0 dB.

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

## 3.7 DATA MANAGEMENT AND DATA QA/QC CONTROL

3.7.1 The monitoring data recorded in the equipment would be downloaded directly from the equipment at each monitoring day. The downloaded monitoring data would input into a computerized database properly maintained and handled by the ET's in-house data recording and management system.

## 3.8 REQUIREMENT OF WATERBIRDS ECOLOGICAL IMPACT MONITORING

3.8.1 Where development under the NDAs project is undertaken within 200m (the maximum distance at which it is predicted there may be some disturbance, and hence a reduction in numbers, of large waterbirds) of the Ng Tung, Sheung Yue and Shek Sheung Rivers and Long Valley the monitoring protocol detailed in the updated EM&A Manual Table 12.1 should be followed. A transect should be undertaken throughout the sections of the rivers where NDA construction activities are proposed; as the sensitive receivers (large waterbirds) are easily visible, the transect route needs only follow one bank of the rivers. The transect route should remain the same during the different phases in order to ensure that data are comparable. Monitoring of large waterbirds should be conducted in pre-construction, construction and operational phases of the concerned development.

3.8.2 The proposed Shek Wu Hui Water Reclamation Plant location is located less than 200m to Ng Tung River, Sheung Yue River and Shek Sheung River, waterbirds ecological monitoring included pre-construction (i.e. baseline), construction (i.e. impact) and post-construction (i.e. operating) should be requires. The detailed monitoring protocol is listed in ***Table 3-8-1***.

**Table 3-8-1 Monitoring of Measures to Minimize Disturbance to Waterbirds on the Ng Tung, Sheung Yue and Shek Sheung Rivers**

| Phase | Methodology |
|---|---|
| Pre-construction (baseline) | Weekly transect at both high and low tides to identify and enumerate all bird species utilising the river channels for 12 months prior to the commencement of construction. |
| Construction | Weekly transect at both high and low tides to identify and enumerate all bird species utilising the river channels and identify any sources of actual or potential disturbance to birds due to construction activities throughout the construction period. |
| Post-construction | Weekly transect at both high and low tides to identify and enumerate all bird species utilising the river channels and identify any sources of actual or potential disturbance to birds due to operational activities for 12 months following the completion of the construction period. |

3.8.3 Waterbirds ecological baseline monitoring at Ng Tung River, Sheung Yue River and Shek Sheung River was conducted by DSD between ***December 2017*** and ***June 2019*** (total 19 months baseline monitoring)**,** in compliance with the Updated EM&A Manual. Thus, the action and limit levels and responses to evidence of disturbance to waterbirds using in Ng Tung, Sheung Yue and Shek Sheung Rivers will be made reference during construction phase of the Project.

## 3.9 MONITORING METHODOLOGY FOR WATERBIRDS ECOLOGICAL IMPACT MONITORING

3.9.1 Three transects and seven point count locations were selected at the Ng Tung, Sheung Yue and Shek Sheung River. These locations are shown in Appendix L and summarized in ***Table 3-9-1***.

**Table 3-9-1 Ecological Monitoring Stations**

| Monitoring Stations | Descriptions | Influenced by Tidal Action |
|---|---|---|
| Transect T1 | Along Ng Tung River | No |
| Transect T2 | | |
| Point Count Location P1 | | |
| Point Count Location P2 | | |
| Point Count Location P3 | | |
| Point Count Location P4 | | |
| Point Count Location P5 | At Shek Sheung River (Low-flow Channel) | No |
| Transect T3 | Along Shek Sheung River & Sheung Yue River | Yes |
| Point Count Location P6 | At Shek Sheung River | Yes |
| Point Count Location P7 | At Intersection between Sheung Yue and Shek Sheung River | Yes |

3.9.2 Surveys will be conducted on a weekly basis at both high and low tides (it is considered high tide when tidal levels are above 1.5m and low tide when tidal level are below 1.5m at Tsim Bei Tsui Station).

3.9.3 All avifauna species that were seen or heard would be identified and quantified along transects and at point count locations. Survey data would be recorded continuously by the surveyor as they walk along the transects, while survey data of each point count location would be collected for 5-minutes after surveyor reaches the designated point count location.

3.9.4 Noticeable behaviours such as breeding, nesting, roosting, feeding and presences of recently fledged juveniles were recorded and reported. In the case which such behaviours were observed for species of conservation importance, the Resident Engineer (RE), the Contractor and the Independent Environmental Checker (IEC) would be immediately notified after the survey such that the Contractor could review the current construction programme and minimize disturbances due to construction activities.

## 3.10 EVENT ACTION PLAN

*Noise*

3.10.1 Should non-compliance of the construction noise criteria occur, action in accordance with the Action Plan in **Table 3-10-1** shall be carried out.

**Table 3-10-1 Event and Action Plan for Construction Noise**

| Event | Action | | | |
|---|---|---|---|---|
| | **ET** | **IEC** | **ER** | **Contractor** |
| **Action Level Exceedance** | 1. Notify the IEC, ER and Contractor;<br>2. Carry out investigation;<br>3. Report the results of investigation to the IEC, ER and Contractor;<br>4. Discuss with the Contractor and formulate remedial measures;<br>5. Increase monitoring frequency to check mitigation effectiveness. | 1. Review the monitoring data submitted by the ET;<br>2. Review the construction methods and proposed remedial measures by the Contractor, and advise the ET and ER if the proposed remedial measures would be sufficient;<br>3. Supervise the implementation of remedial measures. | 1. Confirm receipt of notification of failure in writing;<br>2. Notify the Contractor;<br>3. Require the Contractor to propose remedial measures for the analyzed noise problem;<br>4. Ensure remedial measures are properly implemented. | 1. Submit noise mitigation proposals to the ER and IEC and copy to the ET;<br>2. Implement noise mitigation proposals. |
| **Limit Level Exceedance** | 1. Identify sources.<br>2. Inform IEC, ER, EPD and Contractor;<br>3. Repeat measurements to confirm findings;<br>4. Increase the monitoring frequency;<br>5. Carry out analysis of the Contractor's working procedures with the ER and Contractor to determine possible mitigations to be implemented;<br>6. Inform IEC, ER, EPD and Contractor the causes and | 1. Discuss amongst the ER, ET and Contractor on the potential remedial actions;<br>2. Review the Contractor's remedial action whenever necessary to assure their effectiveness and advise the ER accordingly;<br>3. Supervise the implementation of remedial measures. | 1. Confirm receipt of notification of exceedance in writing;<br>2. Notify the Contractor.<br>3. Require the Contractor to propose remedial measures for the analyzed noise problems;<br>4. Ensure remedial measures are properly implemented;<br>5. If exceedance continues, | 1. Take immediate action to avoid further exceedance;<br>2. Submit proposals for remedial action to the ER and IEC and copy to the ET within 3 working days of notification;<br>3. Implement the agreed proposals;<br>4. Resubmit |

| Event | Action | | | |
|---|---|---|---|---|
| | ET | IEC | ER | Contractor |
| | actions taken for the exceedances;<br>7. Assess the effectiveness of the Contractor's remedial action with the ER and keep the IEC informed of the results;<br>8. If exceedance stops, cease additional monitoring. | | consider what portion of work is responsible and instruct the Contractor to stop that portion of works until the exceedance is abated. | proposals if problems still not under control; stop the relevant portion of works as determined by the ER until the exceedance is abated. |

*Waterbird of Ecological*

3.10.2 Should any exceedance encountered during construction phase, action in accordance with the Action Plan listed in ***Table 3-10-2*** shall be carried out.

**Table 3-10-2 Event and Action Plan of Waterbirds of Ecological**

| Action Level | Response | Limit Level | Response |
|---|---|---|---|
| **Construction Phase** | | | |
| Decline in numbers of all waterbird species relative to numbers during Baseline Monitoring such that the Action Level response is triggered. | Investigate cause and if cause identified as related to NDAs project instigate remedial action to remove or reduce source of disturbance. | Decline in numbers of all waterbird species relative to numbers during Baseline Monitoring such that the Limit Level response is triggered. | Investigate cause and if caused identified as related to NDAs project instigate remedial action. Review and adjust LVNP management measures to improve conditions for affected species. |
| Decline in numbers of any one waterbird species occurring in significant numbers* during Baseline Monitoring such that the Action Level response is triggered. | Investigate cause and if cause identified as related to NDAs project instigate remedial action to remove or reduce source of disturbance. | Decline in numbers of any one waterbird species occurring in significant numbers* during Baseline Monitoring such that the Limit Level response is triggered. | Investigate cause and if caused identified as related to NDAs project instigate remedial action. Review and adjust LVNP management measures to improve conditions for affected species. |

(*) W*aterbird numbers refer to combined numbers using the channels*

# 4. CONSTRUCTION NOISE MONITORING

## 4.1 GENERAL

4.1.1 The noise monitoring schedule is presented in ***Appendix F*** and the monitoring results are presented in the following sections.

## 4.2 RESULTS OF NOISE MONITORING

4.2.1 In the Reporting Period, a total of **4** occasions noise monitoring were carried out at the designated location CP-KTN-NMS5. The sound level meter was set in free-field situation, and therefore, façade correction (+3dB) is added according to acoustical principles and EPD guidelines. The noise monitoring results at the designated locations are summarized in ***Tables 4-2-1.*** The detailed noise monitoring data is presented in ***Appendix G*** and the relevant graphical plot shown in ***Appendix H***.

**Table 4-2-1 Summaries of Noise Monitoring Results of CP-KTN-NMS5**

| Date | Start Time | $L_{Aeq30min}$ (dB(A)) |
|---|---|---|
| 5-Aug-24 | 13:05 | 63 |
| 16-Aug-24 | 9:15 | 61 |
| 22-Aug-24 | 14:30 | 62 |
| 28-Aug-24 | 14:45 | 60 |
| **Limit Level** | | **75 dB(A)** |

*Note: façade correction +3dB has added according to acoustical principles and EPD guidelines*

4.2.2 During construction noise monitoring, no rain was encountered and wind speed is below 5m/s and gusts not exceeding 10m/s.

4.2.3 As shown in ***Table 4-2-1***, the noise level measured at the designated monitoring location was below 75dB(A). Furthermore, there were no noise complaints (Action Level exceedance) received by the RE, Contractor, WSD or EPD in the Reporting Period. Therefore, no Action or Limit Level exceedance was triggered and no corrective action was therefore required.

4.2.4 During the reporting period, no construction work was carried out during restricted hours.

# 5. ECOLOGY WATERBIRD MONITORING

## 5.1 GENERAL

5.1.1 Ecological monitoring for waterbirds shall be performed as transects and point count surveys along Ng Tung River, Sheung Yue River and Shek Sheung River in accordance with general surveying practices.

5.1.2 The surveying shall be undertaken by a qualified ecologist and he/she shall be a member of the ET. Throughout the construction period, weekly transect shall be conducted at both high and low tides to identify and enumerate all bird species utilising the river channels and identify any sources of actual or potential disturbance to birds due to construction activities.

5.1.3 Since occurrence of waterbirds has distinctive seasonal pattern, the construction phase data for all waterbirds and representative waterbirds shall be compared with the baseline data for the respective month and season. Total number of Waterbirds and six representative Waterbird species are used as an indicator of the level disturbance to water birds at each of the survey location. The representatives of waterbirds are listed in ***Table 5-1-1***.

**Table 5-1-1 Representative Waterbirds**

| Species Name | Common Name | Chinese Name |
|---|---|---|
| Egretta garzetta | Little Egret | 小白鷺 |
| Ardea alba | Great Egret | 大白鷺 |
| Ardea cinerea | Grey Heron | 蒼鷺 |
| Ardeola bacchus | Chinese Pond Heron | 池鷺 |
| Bubulcus coromandus | Eastern Cattle Egret | 牛背鷺 |
| Phalacrocorax carbo | Great Cormorant | 普通鸕鷀 |

## 5.2 RESULTS OF WATERBIRDS SURVEY

5.2.1 ***Four (4)*** occasion of waterbirds survey were conducted in the Reporting Month.

5.2.2 Abundance and diversity of total bird species and key waterbirds species in the Reporting Month are summarized in **Table 5-2-1** and **Table 5-2-2**.

**Table 5-2-1 Total Bird Species and Abundance at Point Count Locations in the Reporting Month**

| Category | Number of Species | Abundance |
|---|---|---|
| All Avifauna | 20 | 235 |
| Waterbirds | 10 | 159 |

**Table 5-2-2 Abundance of Representative Waterbirds at Point Count Locations in the Reporting Month**

| Common Name | Species Name | Chinese Name | Abundance |
|---|---|---|---|
| Chinese Pond Heron | Ardeola bacchus | 池鷺 | 28 |
| Eastern Cattle Egret | Bubulcus coromandus | 牛背鷺 | 12 |
| Grey Heron | Ardea cinerea | 蒼鷺 | 10 |
| Great Egret | Ardea alba | 大白鷺 | 25 |
| Little Egret | Egretta garzetta | 小白鷺 | 51 |
| Great Cormorant | Phalacrocorax carbo | 普通鸕鷀 | 0 |

5.2.3 The result was compared with the monthly and seasonal data, and decline in abundance of waterbirds were recorded. A table showing the waterbirds abundance comparison with baseline data was provided in **Appendix L**. (Appendix C of the waterbirds survey report).

5.2.4 As discussed in previous reporting period, the decline of individual waterbird species should not be the result of increased disturbances from the Project or its surrounding on-going projects, as increased disturbance would discourage multiple waterbird species from foraging near the transect and point count locations instead. Thus it is concluded that the decline of individual waterbird species are not related to the construction works of the Project.

5.2.5 It was noted from the visits that exterior construction of the Project mostly ceased, and that interior construction was underway. Other construction and anthropogenic activities around the survey transects are still active during the reporting month.

5.2.6 A playback device for bird calls has been found near the mitigation wetland in T1 next to P2 managed by AFCD since the survey in April 2023. Egret dummies have been observed being tied on the trees of the same pond since the survey in October 2023, which are assumed to attract roosting ardeids.

5.2.7 Road enhancement and sewerage system upgrade works by other Project along T2 near P3 was observed active throughout the surveying month and has extended to P4 during the survey in April 2024. The use of excavators and crane trucks were also observed on 23rd May 2024 at P4 and P3 respectively, resulting in the increased disturbance level at these count locations.

5.2.8 An extension of this sewerage system upgrade was observed to be in operation at the Eastern bank of Shek Sheung River near P5 since the survey in late August 2023. Machinery and stockpiles were observed within its construction area, which may be a potential source of disturbance that discourages birds from foraging near P5.

5.2.9 The construction work by other Project near P7 was also observed active throughout the entire reporting month. Piling works of the same construction was also observed at T3, roughly midway between P6 and P7, and since the survey on 11th September 2023, excavators were observed on the opposite bank to the survey transect. Additionally, concrete blocks attached by metal bars were placed in the river next to the piling site were observed during the survey on 29th November 2023.

5.2.10 The construction works by other Project, which located in a cleared area between Sheung Yue River and the Sheung Shui Slaughterhouse, was observed to have started since the early January 2024, and involved excavation and drilling works. The excavated pit was seen to be filled halfway during the survey on 32nd May 2024.

5.2.11 The details of the waterbirds survey for the Reporting Month can be referred to the full waterbirds survey report provided in **Appendix L**.

# 6. WASTE MANAGEMENT

## 6.1 GENERAL WASTE MANAGEMENT

6.1.1 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

## 6.2 RECORDS OF WASTE QUANTITIES

6.2.1 All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

6.2.2 The quantities of waste for disposal in this Reporting Period are summarized in ***Tables 6-2-1*** and ***6-2-2*** and the Monthly Summary Waste Flow Table is shown in ***Appendix I***. Whenever possible, materials were reused on-site as far as practicable.

**Table 6-2-1 Summary of Quantities of Inert C&D Materials**

| Type of Waste | Quantity | Disposal Location |
|---|---|---|
| C&D Materials (Inert) (in '000$m^3$) | 0.362 | - |
| Reused in this Contract (Inert) (in '000 $m^3$) | 0 | - |
| Reused in other Contracts/ Projects (Inert) (in '000 $m^3$) | 0 | - |
| Disposal as Public Fill (Inert) (in '000 $m^3$) | 0.362 | TM38 |

**Table 6-2-2 Summary of Quantities of C&D Wastes**

| Type of Waste | Quantity | Disposal Location |
|---|---|---|
| Recycled Metal (‘000kg) | 0 | - |
| Recycled Paper / Cardboard Packing (‘000kg) | 0 | - |
| Recycled Plastic (‘000kg) | 0 | - |
| Chemical Wastes (‘000kg) | 0 | - |
| General Refuses (‘000$m^3$) | 0.003 | SENT |

# 7. SITE INSPECTION

## 7.1 REQUIREMENTS

7.1.1 According to the approved Updated EM&A Manual, the environmental site inspection shall be formulation by ET Leader. Weekly environmental site inspections should carry out to confirm the environmental performance.

## 7.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

7.2.1 In the Reporting Month, weekly regular site inspection by the RE, the Main Contractor and ET was carried out on ***1, 6, 13, 20 and 29 August 2024*** to evaluate site environmental performance of the Contract Works. During the site inspections, no non-compliance was noted.

7.2.2 The findings/deficiencies of the Contract Works observed that during the weekly site inspection are listed in ***Table 7-2-1***.

**Table 7-2-1 Site Observations**

| Date | Findings / Deficiencies | Follow-Up Status |
|---|---|---|
| 1 August 2024 | • General refuse should be disposed regularly. | General refuse was disposed regularly. |
| 6 August 2024 | • No environmental issue was observed during site inspection. | NA |
| 13 August 2024 | • No environmental issue was observed during site inspection. | NA |
| 20 August 2024 | • No environmental issue was observed during site inspection. | NA |
| 29 August 2024 | • Chemical waste containers need to be labelled properly. | Chemical waste containers were labelled properly. |

# 8. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

## 8.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

8.1.1 For the Contract Works, no environmental complaint, summons and prosecution was received in the Reporting Period. The statistical summary table of environmental complaint is presented in ***Tables 8-1-1, 8-1-2*** and ***8-1-3***.

**Table 8-1-1 Statistical Summary of Environmental Complaints**

| Reporting Period | Environmental Complaint Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2024 | 0 | 0 | NA |

**Table 8-1-2 Statistical Summary of Environmental Summons**

| Reporting Period | Environmental Summons Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2024 | 0 | 0 | NA |

**Table 8-1-3 Statistical Summary of Environmental Prosecution**

| Reporting Period | Environmental Prosecution Statistics | | |
|---|---|---|---|
| | Frequency | Cumulative | Complaint Nature |
| 1 – 31 August 2024 | 0 | 0 | NA |

# 9. IMPLEMENTATION STATUS OF MITIGATION MEASURES

## 9.1 GENERAL REQUIREMENTS

9.1.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the approved Updated EM&A Manual covered the issues of dust, noise, water and waste and they are summarized presented in ***Appendix J.***

## 9.2 IMPLEMENTATION STATUS OF THE MITIGATION MEASURES IN THE REPORTING PERIOD

9.2.1 The Contract Works shall be implementing the required environmental mitigation measures according to the approved Updated EM&A Manual as subject to the site condition. Environmental mitigation measures implemented by the Main Contractor in this Reporting Month are summarized in ***Table 9-1-1***. An as-built drawing of site temporary drainage is shown in ***Appendix K***.

**Table 9-1-1 Environmental Mitigation Measures Implemented in the Reporting Period**

| Issues | Environmental Mitigation Measures |
|---|---|
| Air Quality | • All vehicles must be washed before leaving the site;<br>• Sprayed water during excavation works;<br>• Stockpile of dusty material was covered entirely with impervious sheeting or sprayed with water so as to maintain the entire surface wet;<br>• Water spraying on haul road and dry site area was provided regularly; and<br>• Where a vehicle leaving the works site is carrying a load of dusty materials, the load has covered entirely with clean impervious sheeting; |
| Constriction Noise | • Keep all vehicles/plants in good condition to minimize noise impact;<br>• Shut down the plants when not in used;<br>• Provided quiet powered mechanical equipment to use onsite;<br>• Avoided using multiple vehicles at the same time as far as practicable |
| Water Quality | • All the surface runoff are collected to sedimentation pit and tanks for sedimentation prior discharged<br>• Sand bag bund was provided along the boundary of the site area near Ng Tung River to divert the surface runoff to sedimentation pit and avoid direct discharge of surface runoff.<br>• Standby water pumps were provided on site to pump the runoff water collected at pit to the sedimentation tank for sedimentation.<br>• Standby sedimentation tanks were provided on site to ensure sufficient sedimentation capacity.<br>• Complied with the requirement under the discharge license.<br>• Avoid spilt concrete during concreting works<br>• Haul road was hard paved to reduce muddy runoff during rainy days. |
| Waste and Chemical Management | • Disposal of C&D wastes to any designated public filling facility and/or landfill followed a trip ticket system;<br>• Debris and refuse generated on-site collected regularly;<br>• Oils and fuels were stored in designated areas;<br>• Kept the site tidy and clean. |

## 9.3 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

9.3.1 The tentative construction works schedule of the Contract Works under FEP in the coming month are listed below:

- ReWPS (Pump Hall & Pump sump) – Installation of irrigation system for RWPS
- Installation of GMS precast segment of fence wall along river side promenade
- External Works at Site-wide Area
- HCF – Installation of paver blocks on the HCF roof and irrigation system for HCF, planting works on the HCF roof

## 9.4 KEY ISSUES FOR THE COMING MONTH

9.4.1 Key issues to be considered in the coming month for the Contract Works under FEP include:

Irrigation system installation at ReWPS & HCF and drainage pipe connect work at SWHWRP

- Cover the excavated material from irrigation system installation and drainage pipe connect work with impervious sheet to avoid water quality impact during rainy days.
- Restrict operation time of PME from 07:00 to 19:00 on any working day;

General

- Ensure the sand bag bund at site boundary near the Ng Tung River is properly maintained to avoid muddy discharge during heavy rain;
- Ensure sufficient capacity of sedimentation pit and tanks for wastewater sedimentation;
- Ensure all surface runoff are diverted to sedimentation pit and tanks properly;
- Sufficient stock of standby pump should be available on site for pumping the runoff water/wastewater to the sedimentation tank.
- Cover the dusty stockpile on site to reduce potential fugitive dust quality impact;
- Spraying water at dry haul road more frequently to reduce dust generation;
- All the vehicles should be properly washed prior leaving the site;
- Use Quiet powered mechanical equipment (QPME) whenever applicable;
- Minimize the number of plants used at the same time to reduce cumulative noise impact;
- Proper management of general refuse and chemical waste generated on site.
- Keep review the temporary drainage system on site during rainy reason
- Chemical label for chemical container should be regularly checked and provided.
- Sufficient secondary containment for chemical containers should be provided at work area.

# 10. CONCLUSIONS AND RECOMMENDATIONS

## 10.1 CONCLUSIONS

10.1.1 This is **33rd** monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from **1** to **31 August 2024**.

10.1.2 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in the Reporting Period. No NOEs or the associated corrective actions were therefore issued.

10.1.3 Four (4) occasions of the weekly waterbirds survey has been taken in the Reporting Period. Although decline in waterbirds were recorded in the Reporting Period, the cause of decline was considered unlikely due to the Project. No action and limit level exceedance was considered triggered in the Reporting Month.

10.1.4 No documented complaint, notification of summons or successful prosecution was received by either the RE or WSD or the Main Contractor.

10.1.5 Weekly site inspection by the RE, ET and the Main Contractor had carried out on ***1, 6, 13, 20 and 29 August 2024.*** The mitigation measures implemented was considered satisfactory. No non-compliance observed during the site inspection.

## 10.2 RECOMMENDATIONS

10.2.1 Irrigation system installation at ReWPS & HCF and drainage pipe connect work at SWHWRP will be the major construction work in the coming month. The Contractor should pay attention to potential water quality impact from irrigation system installation and drainage pipe connect work, and implement mitigation measures according to the ISEMM.

10.2.2 As the coming month will be wet season, the Contractor was general reminded to paid attention to water quality mitigation measures such as ensure sufficient wastewater treatment facilities capacity is provided on site and keep review on the temporary drainage system to avoid water quality impact arise from the Project.

10.2.3 The Contractor was reminded to pay attention to the key issues for the coming month mentioned in Section 9.4.

# Appendix A

# Location of Shek Wu Hui Water Reclamation Plant

N

830100 E

841700 N

841600 N

SURGE VESSEL

UNDERGROUND FLOWMETER CHAMBER

ANCILLARY ROOMS

MOTOR HALL

RECLAIMED WATER REFILLING STATION WITH UNDERGEOUND WATER TANK

ANCILLARY ROOMS

BUFFER TANK

HYPO-CHLORINATION CONTACT TANK

INLET CHAMBER

SHEUNG SHUI SLAUGHTER HOUSE

TO BE CONNECTED WITH PROPOSED PEOMENADE TO BE CONSTRUCTED BY OTHERS

NG TUNG RIVER (RIVER INDUS)

Ramp

Platform

Outfall

CUL

FP

TS

Road

Sheung Shui Slaughter House

## PLAN
SCALE 1 : 400

N

830300 E

FU TEI AU ROAD

導管

SHEUNG YUE RIVER

石上河

SHEK SHEUNG

CHUK WAN STREET

污水處理廠
Sewage Treatment Works

## SITE PLAN
SCALE 1 : 5000

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFED.
2. THE BASE PLAN IS EXTRACTED FROM SURVEY SHEET NOS. 2-SE ADN 3-SW.
3. TOP SLABS OF STRUCTURES ARE NOT SHOWN FOR CLARITY.

LEGEND:

- SITE BOUNDARY OF SWHWRP
- FENCING
- EVA
- PLANTER GREENING AREA
- GRASSCRETE
- RIVERSIDE PROMENADE
- GROUND LEVEL
- TREE (INDICATIVE)
- F/P — FOOTPATH
- MANHOLE/CABLE PIT
- ACCESS GATE

| Revision | Date | Description | | Initial |
|---|---|---|---|---|
| | Designed | Checked | Drawn | Checked |
| Initial | CWC | GC | SZ | GC |
| Date | 02/21 | 02/21 | 02/21 | 02/21 |

Approved

Contract No.
3 / WSD / 20

Contract Title
RECLAIMED WATER SUPPLY TO SHEUNG SHUI AND FANLING

Drawing Title
GENERAL ARRANGEMENT OF SWHWRP - GENERAL PLAN

Drawing No.
401582/B&V/WRP/GA/101

Revision
-

Scale
AS SHOWN

水務署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

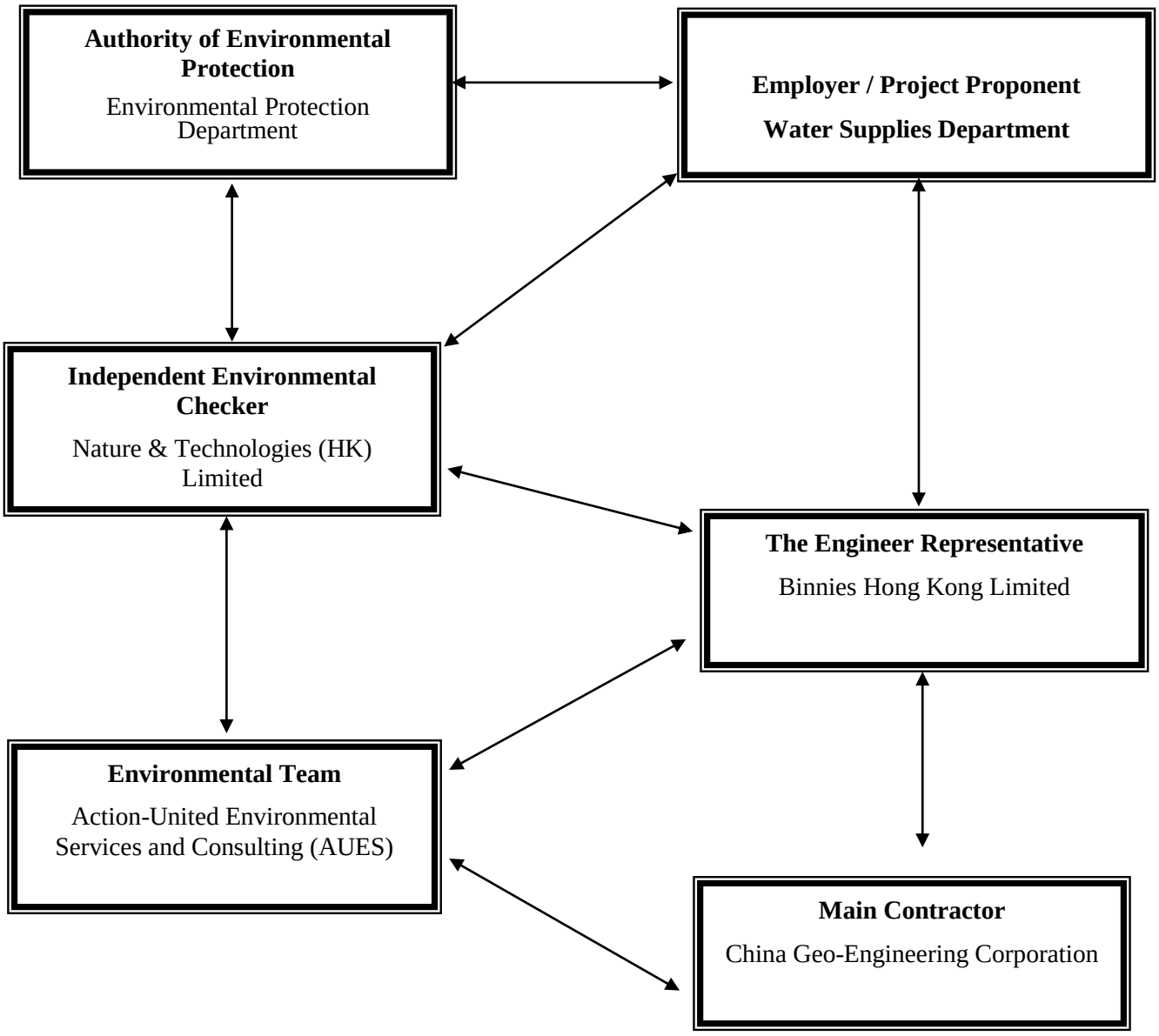
Plot Date: 3/15/2021 11:20:19 AM

File Name: BIM 360://401582 - Sheung Shui & Fanling Reclaimed Water IDC/BV-401582-WRP-SI-N.rvt

# Appendix B

# Project Organization

## Project Organization Chart



## Contact Details of Key Personnel for the Project

| Organization | Project Role | Name of Key Staff | Tel No. | Email |
|---|---|---|---|---|
| WSD | Project Proponent | Tim Wong | 2830 5638 | tim_cw_wong@wsd.gov.hk |
| Binnies | Senior Resident Engineer | Anny Yuen | 2608 7380 | sre.3wsd20@gmail.com |
| Binnies | Resident Engineer | Chester Chan | 2608 7380 | chancw@binnies.com |
| N&T | Independent Environmental Checker | Vega Wong | 2877 3122 | vegawong@nt.com.hk |
| CGC | Site Agent | Wong Fai | 9785 2545 | 3wsd20@gmail.com |
| CGC | Environmental Officer | Edward Tse | 9612 5536 | 3wsd20@gmail.com |
| AUES | Environmental Team Leader | T. W. Tam | 3059 6059 | twtam@fordbusiness.com |
| AUES | Environmental Consultant | Martin Li | 3059 6059 | martinli@fordbusiness.com |

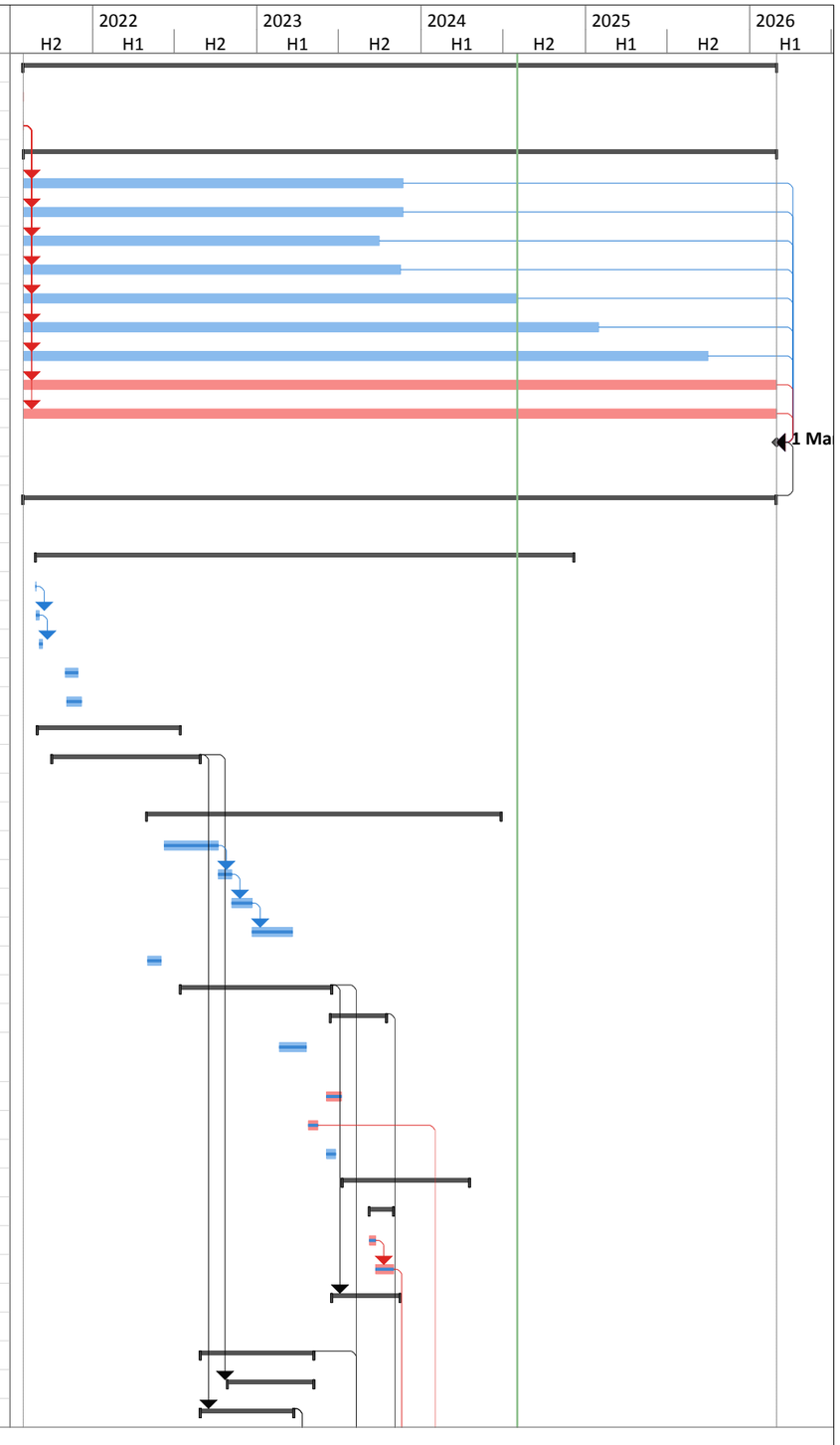
Legend:

*WSD (Employer) – Water Supplies Department*
*Binnies (Engineer Representative) – Binnies Hong Kong Limited*
*CGC (Main Contractor) –China Geo-Engineering Corporation*
*N&T (IEC) –Nature & Technologies (HK) Limited*
*AUES (ET) – Action-United Environmental Services and Consulting (AUES)*

# Appendix C

# Master Construction Program and Site Overview Photo in the Reporting Period

| ID | Task Name | Duration | Start | Finish | Predecessors | Successors | % Complete |
|---|---|---|---|---|---|---|---|
| 1 | **Key Dates** | **1676 days** | **30/7/21** | **1/3/26** | | | **0%** |
| 2 | Contract Date | 1 day | 30/7/21 | 30/7/21 | | | 0% |
| 3 | Starting Date | 1 day | 30/7/21 | 30/7/21 | | 5,6,7,8,9,10,11 | 0% |
| 4 | **Contract Period** | **1675 days** | **31/7/21** | **1/3/26** | | | **0%** |
| 5 | Section 1 - Shek Wu Hui Water Reclamation Plant (SWHWRP) | 844 days | 31/7/21 | 21/11/23 | 3 | 14FF | 0% |
| 6 | Section 2 - Landscaping works of SWHWRP | 844 days | 31/7/21 | 21/11/23 | 3 | 14FF | 0% |
| 7 | Section 3 - Modification of Table Hill Reclaimed Water Service Reservoir | 791 days | 31/7/21 | 29/9/23 | 3 | 14FF | 0% |
| 8 | Section 4 - Mainlaying works in part 3 of the Site | 838 days | 31/7/21 | 15/11/23 | 3 | 14FF | 0% |
| 9 | Section 5 - Mainlaying works in part 4 of the Site | 1099 days | 31/7/21 | 2/8/24 | 3 | 14FF | 0% |
| 10 | Section 6 - Mainlaying works in part 5 of the Site | 1279 days | 31/7/21 | 29/1/25 | 3 | 14FF | 0% |
| 11 | Section 7 - Mainlaying works in part 6 of the Site | 1522 days | 31/7/21 | 29/9/25 | 3 | 14FF | 0% |
| 12 | Section 8 - Mainlaying works in part 7 of the Site & remaining WM works | 1675 days | 31/7/21 | 1/3/26 | 3 | 14FF | 0% |
| 13 | Section 9 - Conversion works of reclaimed water | 1675 days | 31/7/21 | 1/3/26 | 3 | 14FF | 0% |
| 14 | **Contract Completion date** | **0 days** | **1/3/26** | **1/3/26** | **5FF,6FF,7FF,8F** | | **0%** |
| 15 | | | | | | | |
| 16 | **Preliminary & General** | **1675 days** | **30/7/21** | **28/2/26** | | **14FF** | **100%** |
| 104 | | | | | | | |
| 105 | **Section 1 & 2 - Construction of SWHWRP and Landscaping Works** | **1197 days** | **27/8/21** | **5/12/24** | | | **98%** |
| 106 | Access Date (part 1 of the Site) | 1 day | 27/8/21 | 27/8/21 | | 107 | 100% |
| 107 | Site clearance | 7 days | 28/8/21 | 3/9/21 | 106 | 108 | 100% |
| 108 | Initial survey | 7 days | 4/9/21 | 10/9/21 | 107 | | 100% |
| 109 | Installation of monitoring instruments and take initial readings | 28 days | 1/11/21 | 28/11/21 | | | 100% |
| 110 | Environmental baseline montioring by ET | 33 days | 4/11/21 | 6/12/21 | | 118 | 100% |
| 111 | **Foundation Works - ReWPS** | **318 days** | **31/8/21** | **14/7/22** | | **182** | **100%** |
| 146 | **Foundation Works - HCF** | **330.5 days** | **2/10/21** | **28/8/22** | | **322FS+60 days** | **100%** |
| 174 | | | | | | | |
| 175 | **Construction of SWHWRP** | **788.5 days** | **1/5/22** | **27/6/24** | | | **100%** |
| 176 | Submission and acceptance of DfMA proposal | 120 days | 9/6/22 | 6/10/22 | | 177 | 100% |
| 177 | Selection of Designer & Supplier for DfMA | 30 days | 7/10/22 | 5/11/22 | 176 | 178 | 100% |
| 178 | Manufacture of DfMA Precast Segments | 45 days | 6/11/22 | 20/12/22 | 177 | 179 | 100% |
| 179 | Installation of DfMA segments | 90 days | 21/12/22 | 20/3/23 | 178 | | 100% |
| 180 | Submission and acceptance of method statement for construction of ReWPS and HCF | 30 days | 3/5/22 | 1/6/22 | | 182 | 100% |
| 181 | **Construction of RC structure of ReWPS** | **336.5 days** | **15/7/22** | **16/6/23** | | **481,313** | **100%** |
| 285 | **Roof Works** | **125 days** | **13/6/23** | **16/10/23** | | **594** | **100%** |
| 290 | Detailed Design for Internal Façade Treatment for Access Road and Interior Fitting for Internal Rooms | 60 days | 20/2/23 | 20/4/23 | | | 100% |
| 291 | Fitting out Works for Motor Hall & Maintenance Room | 33 days | 5/6/23 | 7/7/23 | 284 | | 100% |
| 292 | Waterproofing & Fitting out Works for Pump Hall | 21 days | 25/4/23 | 16/5/23 | 284 | 579 | 100% |
| 293 | Fitting out Works for Other Rooms | 20 days | 5/6/23 | 24/6/23 | 284 | | 100% |
| 294 | **Steelworks and Staircases** | **283 days** | **10/7/23** | **17/4/24** | | | **100%** |
| 310 | **Flooding Event on 8 September 2023** | **54 days** | **8/9/23** | **31/10/23** | | | **100%** |
| 311 | Water Pumping and Cleaning of Flooded Pump Hall | 14 days | 8/9/23 | 21/9/23 | | 312 | 100% |
| 312 | Remedial Works for Damaged Fitting out at Pump Hall due to Flooding | 40 days | 22/9/23 | 31/10/23 | 311 | 623 | 100% |
| 313 | **Civil Works in Pump Sump** | **152 days** | **16/6/23** | **15/11/23** | **181** | | **100%** |
| 320 | | | | | | | |
| 321 | **Construction of RC structure of HCF** | **252.5 days** | **28/8/22** | **7/5/23** | | **481** | **100%** |
| 322 | **Construction of Superstructure (above ground) - Grid Line 1-3** | **192.5 days** | **27/10/22** | **7/5/23** | **146FS+60 days** | | **100%** |
| 351 | **Construction of Superstructure (above ground) - Grid Line 3-7** | **208 days** | **28/8/22** | **24/3/23** | **146** | **394,413,409** | **100%** |

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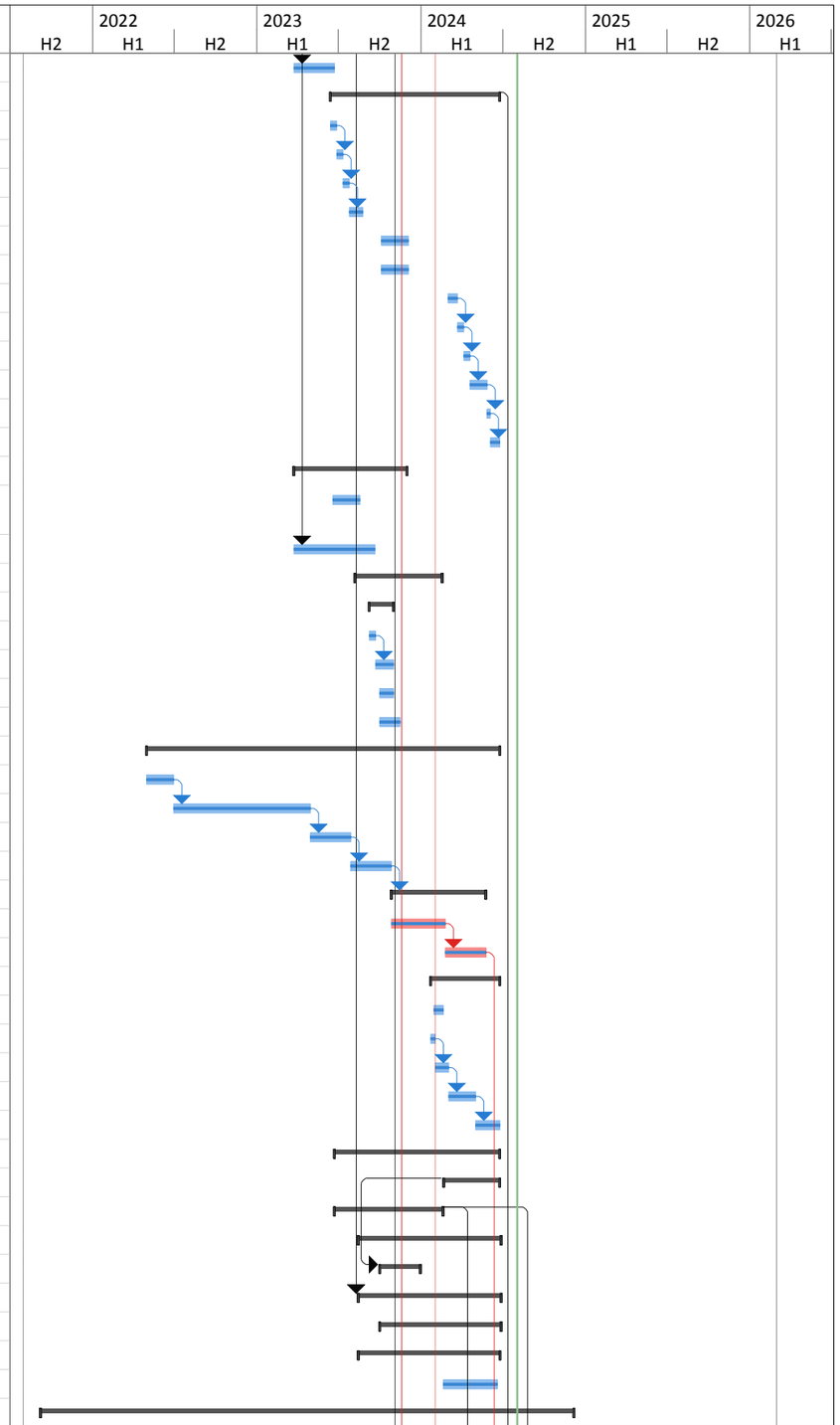
| | | | | | |
|---|---|---|---|---|---|
| Task | Inactive Task | Manual Summary Rollup | External Milestone | Manual Progress | |
| Split | Inactive Milestone | Manual Summary | Deadline | | |
| Milestone | Inactive Summary | Start-only | Critical | | |
| Summary | Manual Task | Finish-only | Critical Split | | |
| Project Summary | Duration-only | External Tasks | Progress | | |

| ID | Task Name | Duration | Start | Finish | Predecessors | Successors | % Complete |
|---|---|---|---|---|---|---|---|
| 394 | Backfilling of general fill material up to +7.2mPD, and removal of ELS | 90 days | 24/3/23 | 22/6/23 | 351 | 454,452 | 100% |
| 395 | **Roof Works** | **376.5 days** | **13/6/23** | **23/6/24** | | **692** | **100%** |
| 396 | Water tightness test for roof slab of HCF | 14 days | 13/6/23 | 27/6/23 | 274,279 | 397 | 100% |
| 397 | Construction of water proofing system at roof slab of HCF | 14 days | 27/6/23 | 11/7/23 | 396 | 398 | 100% |
| 398 | Construction of Screeding | 14 days | 11/7/23 | 25/7/23 | 397 | 399 | 100% |
| 399 | Construction of Drainage System | 30 days | 25/7/23 | 24/8/23 | 398 | | 100% |
| 400 | Forming Additional Roof Opening at Outlet Channel | 60 days | 5/10/23 | 3/12/23 | | | 100% |
| 401 | Forming Additional Roof Opening at Inlet Channel | 60 days | 5/10/23 | 3/12/23 | | | 100% |
| 402 | Construction of Main Footpath | 21 days | 1/3/24 | 21/3/24 | | 403 | 100% |
| 403 | Laying of Root Barrier | 14 days | 22/3/24 | 4/4/24 | 402 | 404 | 100% |
| 404 | Deposition of Aggregates | 14 days | 5/4/24 | 18/4/24 | 403 | 405 | 100% |
| 405 | Construction of Other Footpaths | 38 days | 19/4/24 | 26/5/24 | 404 | 406 | 100% |
| 406 | Laying of Geotextile and Drainage Layer | 7 days | 27/5/24 | 2/6/24 | 405 | 407 | 100% |
| 407 | Deposition of Planting Soil | 21 days | 3/6/24 | 23/6/24 | 406 | | 100% |
| 408 | **Civil Works in Contact Tank** | **251.5 days** | **24/3/23** | **30/11/23** | | | **100%** |
| 412 | Detailed Design for Internal Façade Treatment for Assess Road and Interior Fitting for Internal Rooms | 60 days | 19/6/23 | 17/8/23 | | | 100% |
| 413 | Fitting out Works for Rooms | 180 days | 24/3/23 | 20/9/23 | 351 | | 100% |
| 414 | **Steelworks** | **194 days** | **7/8/23** | **16/2/24** | | | **100%** |
| 427 | **Flooding Event on 8 September 2023** | **54 days** | **8/9/23** | **31/10/23** | | | **100%** |
| 428 | Water Pumping and Cleaning of Flooded Pipe Gallery | 14 days | 8/9/23 | 21/9/23 | | 429 | 100% |
| 429 | Remedial Works for Damaged Fitting out at Pipe Gallery due to Flooding | 40 days | 22/9/23 | 31/10/23 | 428 | | 100% |
| 430 | Re-Ordering of Flooded Waterproofing Materials for Contact Tank | 31 days | 1/10/23 | 31/10/23 | | 411 | 100% |
| 431 | Additional Corridor at Chemical Room | 45 days | 1/10/23 | 15/11/23 | 453 | | 100% |
| 432 | **Provisional of Fire Service, Flushing and Fresh Water Supply by WSD** | **785.5 days** | **1/5/22** | **24/6/24** | | | **100%** |
| 433 | WWO542 design submission for Fire Service, Flushing and Fresh Water Supply | 60 days | 1/5/22 | 29/6/22 | | 434 | 100% |
| 434 | Withhold Acceptance of WWO542 submission by WSD due to DSD EVA Issue | 304 days | 30/6/22 | 29/4/23 | 433 | 435 | 100% |
| 435 | Re-Submission of WWO542 | 90 days | 30/4/23 | 28/7/23 | 434 | 436 | 100% |
| 436 | Acceptance of WWO542 by WSD | 90 days | 29/7/23 | 26/10/23 | 435 | 437 | 100% |
| 437 | **Submission of WWO46** | **210 days** | **27/10/23** | **23/5/24** | **436** | | **100%** |
| 438 | Submission of WWO46 Part I, II & III | 120 days | 27/10/23 | 23/2/24 | | 439 | 100% |
| 439 | WWO46 Part IV and WSD Inspection | 90 days | 24/2/24 | 23/5/24 | 438 | 707 | 100% |
| 440 | **FS Water Supply Pipework & Water Meter Room** | **154 days** | **22/1/24** | **24/6/24** | | | **100%** |
| 441 | Excavation & Installation of Watermains into Water Meter Room | 21 days | 29/1/24 | 19/2/24 | 466 | | 100% |
| 442 | Falsework Dismantling inside Water Meter Room | 10 days | 22/1/24 | 1/2/24 | 465 | 443 | 100% |
| 443 | FS Pipe Installation inside Water Meter Room | 30 days | 1/2/24 | 2/3/24 | 442 | 444 | 100% |
| 444 | Plumbing and BS Installation inside Water Meter Room | 60 days | 2/3/24 | 1/5/24 | 443 | 445 | 100% |
| 445 | Fitting out Works for Water Meter Room | 54 days | 1/5/24 | 24/6/24 | 444 | | 100% |
| 446 | **Construction of roadworks** | **367.5 days** | **22/6/23** | **23/6/24** | | | **100%** |
| 447 | **Construction of fence wall** | **124.5 days** | **20/2/24** | **23/6/24** | | **475SS** | **100%** |
| 451 | **Construction of underground utilities** | **242 days** | **22/6/23** | **19/2/24** | | **592FS-60 days,** | **100%** |
| 474 | **External Finishing Works** | **317.5 days** | **15/8/23** | **27/6/24** | | | **100%** |
| 475 | **Design submission and fabrication of steelwork system for the aluminum fin** | **90 days** | **1/10/23** | **30/12/23** | **447SS** | | **100%** |
| 481 | **Installation of architectural works** | **317.5 days** | **15/8/23** | **27/6/24** | **181,321** | | **100%** |
| 482 | **Installation of architectural works for RWPS** | **270 days** | **1/10/23** | **27/6/24** | | | **100%** |
| 487 | **Installation of architectural works for HCF** | **315 days** | **15/8/23** | **24/6/24** | | | **100%** |
| 492 | **Pavement Works of Footpaths** | **120 days** | **19/2/24** | **18/6/24** | 467 | | **100%** |
| 493 | **E&M Works of SWHWRP** | **1186 days** | **7/9/21** | **5/12/24** | | | **98%** |

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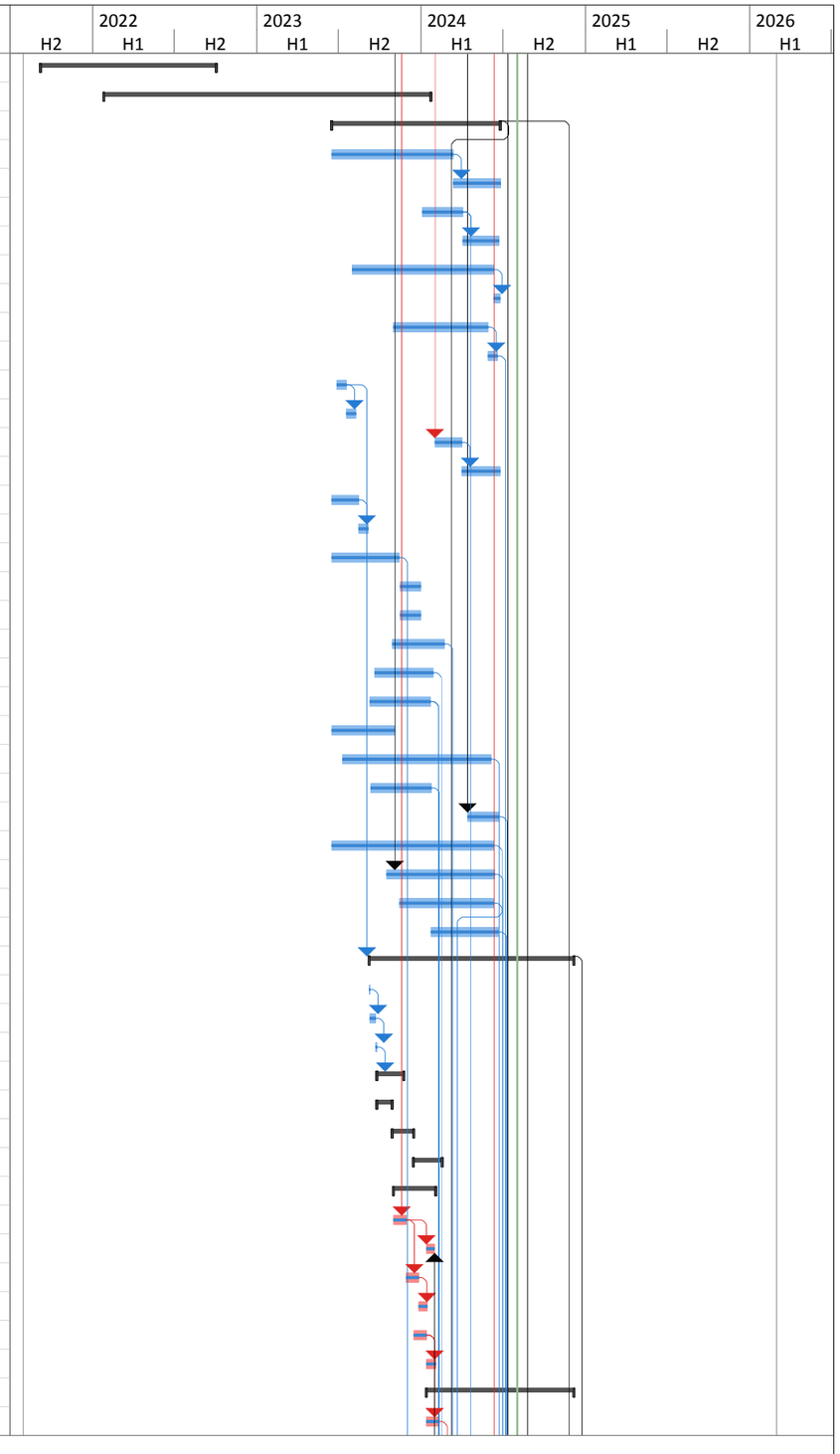
Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Critical
Critical Split
Progress
Manual Progress

| ID | Task Name | Duration | Start | Finish | Predecessors | Successors | % Complete |
|---|---|---|---|---|---|---|---|
| 494 | **Design and Submission Stage** | **391 days** | **7/9/21** | **2/10/22** | | | **100%** |
| 531 | **Procurement and Delivery of Equipment** | **727 days** | **26/1/22** | **22/1/24** | | | **100%** |
| 568 | **Installation Works except Main Pumps** | **375 days** | **16/6/23** | **25/6/24** | **245,284** | **656FS-90 days,** | **100%** |
| 569 | Installation of FS Equipment | 270 days | 16/6/23 | 12/3/24 | 559 | 570 | 100% |
| 570 | SAT of FS Equipment | 105 days | 12/3/24 | 25/6/24 | 569 | | 100% |
| 571 | Installation of MVAC Equipment | 90 days | 4/1/24 | 2/4/24 | 561,296,416 | 648,572 | 100% |
| 572 | SAT of MVAC Equipment | 80 days | 3/4/24 | 21/6/24 | 571 | | 100% |
| 573 | Installation of Internal BS/lighting Equipment | 315 days | 1/8/23 | 10/6/24 | 557 | 574 | 100% |
| 574 | SAT of Internal BS/lighting Equipment | 14 days | 11/6/24 | 24/6/24 | 573 | | 100% |
| 575 | Installation of External Lighting for EVA | 210 days | 1/11/23 | 28/5/24 | 483FS-42 days, | 576 | 100% |
| 576 | SAT of External Lighting for EVA | 21 days | 29/5/24 | 18/6/24 | 575 | 649 | 100% |
| 577 | Installation of Lifting Appliance at Motor Hall of RWPS | 21 days | 28/6/23 | 18/7/23 | 545,245 | 597,578 | 100% |
| 578 | SAT of Lifting Appliance at Motor Hall of RWPS | 21 days | 19/7/23 | 8/8/23 | 577 | | 100% |
| 579 | Installation of Lifting Appliance at Pump Hall of RWPS | 60 days | 1/2/24 | 31/3/24 | 292 | 580 | 100% |
| 580 | SAT of Lifting Appliance at Pump Hall of RWPS | 85 days | 1/4/24 | 24/6/24 | 579 | | 100% |
| 581 | Installation of Lifting Appliance at Pipe Gallery of HCF | 60 days | 16/6/23 | 15/8/23 | | 582 | 100% |
| 582 | SAT of Lifting Appliance at Pipe Gallery of HCF | 21 days | 15/8/23 | 5/9/23 | 581 | | 100% |
| 583 | Installation of Penstocks at HCF | 150 days | 16/6/23 | 13/11/23 | 537 | 410,695 | 100% |
| 584 | Installation of Penstocks at RWPS | 45 days | 15/11/23 | 30/12/23 | 319 | | 100% |
| 585 | Installation of Stoplogs at RWPS | 45 days | 15/11/23 | 30/12/23 | 319 | | 100% |
| 586 | Installation of Surge Vessel (4 Nos.) & Air Compressor (2 Nos.) | 116 days | 29/10/23 | 21/2/24 | 535 | 697 | 100% |
| 587 | Installation of Air Blower (2 Nos.) & Air Diffuser (1 set) | 130 days | 20/9/23 | 27/1/24 | 543 | 696 | 100% |
| 588 | Installation of tanks (14 nos.) & Chemical Pumps (12 nos.) | 135 days | 9/9/23 | 21/1/24 | 541 | 652,698 | 100% |
| 589 | Installation of Pipeworks (DI, Chemical pipe, Air pipe) | 140 days | 16/6/23 | 3/11/23 | 549 | | 100% |
| 590 | Installation of Cabling, MCC & DCS | 330 days | 11/7/23 | 4/6/24 | 565 | 699 | 100% |
| 591 | Installation of Instrumentation and Monitoring Stations | 135 days | 11/9/23 | 23/1/24 | 555 | 700 | 100% |
| 592 | Installation of ELV System (CCTV & Access Control) | 70 days | 13/4/24 | 22/6/24 | 451FS-60 days | 701 | 100% |
| 593 | Installation of Plumbing & Drainage Equipment | 360 days | 16/6/23 | 10/6/24 | 547 | 702 | 100% |
| 594 | Installation of PV Panels | 240 days | 16/10/23 | 12/6/24 | 557,285 | 703 | 100% |
| 595 | Installation of LV Switchborad / MCC | 210 days | 14/11/23 | 10/6/24 | 551 | 704 | 100% |
| 596 | Installation of Flowmeter and BV for DN450 Overflow Pipe | 150 days | 23/1/24 | 20/6/24 | 567 | 705 | 100% |
| 597 | **Installation of Reclaimed Water Pumps (6 Nos.)** | **455 days** | **8/9/23** | **5/12/24** | **533,577** | **675** | **66%** |
| 598 | Flooding Event on 8 September 2023 | 1 day | 8/9/23 | 8/9/23 | | 599 | 100% |
| 599 | Preliminary Investigation on the Flooded Pumps (5 Nos.) | 13 days | 9/9/23 | 21/9/23 | 598 | 600 | 100% |
| 600 | Ordering of Parts for Reparing based on Investigation Results | 3 days | 22/9/23 | 24/9/23 | 599 | 601,607 | 100% |
| 601 | **Delivery of Parts** | **60 days** | **25/9/23** | **23/11/23** | **600** | | **100%** |
| 606 | **Detailed Investigation** | **34 days** | **25/9/23** | **28/10/23** | | | **100%** |
| 610 | **KTN Pump Repairing** | **48 days** | **29/10/23** | **15/12/23** | | | **100%** |
| 615 | **TBH Pump Repairing** | **64 days** | **15/12/23** | **16/2/24** | | | **100%** |
| 622 | **KTN Pump Installation** | **94 days** | **1/11/23** | **2/2/24** | | | **100%** |
| 623 | Installation of Pump No.1 (Good Condition) | 28 days | 1/11/23 | 28/11/23 | 312 | 624,625 | 100% |
| 624 | SAT for Pump No.1 | 18 days | 13/1/24 | 30/1/24 | 623,636 | | 100% |
| 625 | Installation of Pump No.2 (Repaired) | 28 days | 29/11/23 | 26/12/23 | 612,623 | 626 | 100% |
| 626 | SAT for Pump No.2 | 18 days | 27/12/23 | 13/1/24 | 625 | | 100% |
| 627 | Installation of Pump No.3 (Repaired) | 28 days | 16/12/23 | 12/1/24 | 614 | 628,630 | 100% |
| 628 | SAT for Pump No.3 | 21 days | 13/1/24 | 2/2/24 | 627 | | 100% |
| 629 | **TBH Pump Installation** | **328 days** | **13/1/24** | **5/12/24** | | | **31%** |
| 630 | Installation of Pump No.1 (Repaired) | 28 days | 13/1/24 | 9/2/24 | 617,627 | 632 | 100% |

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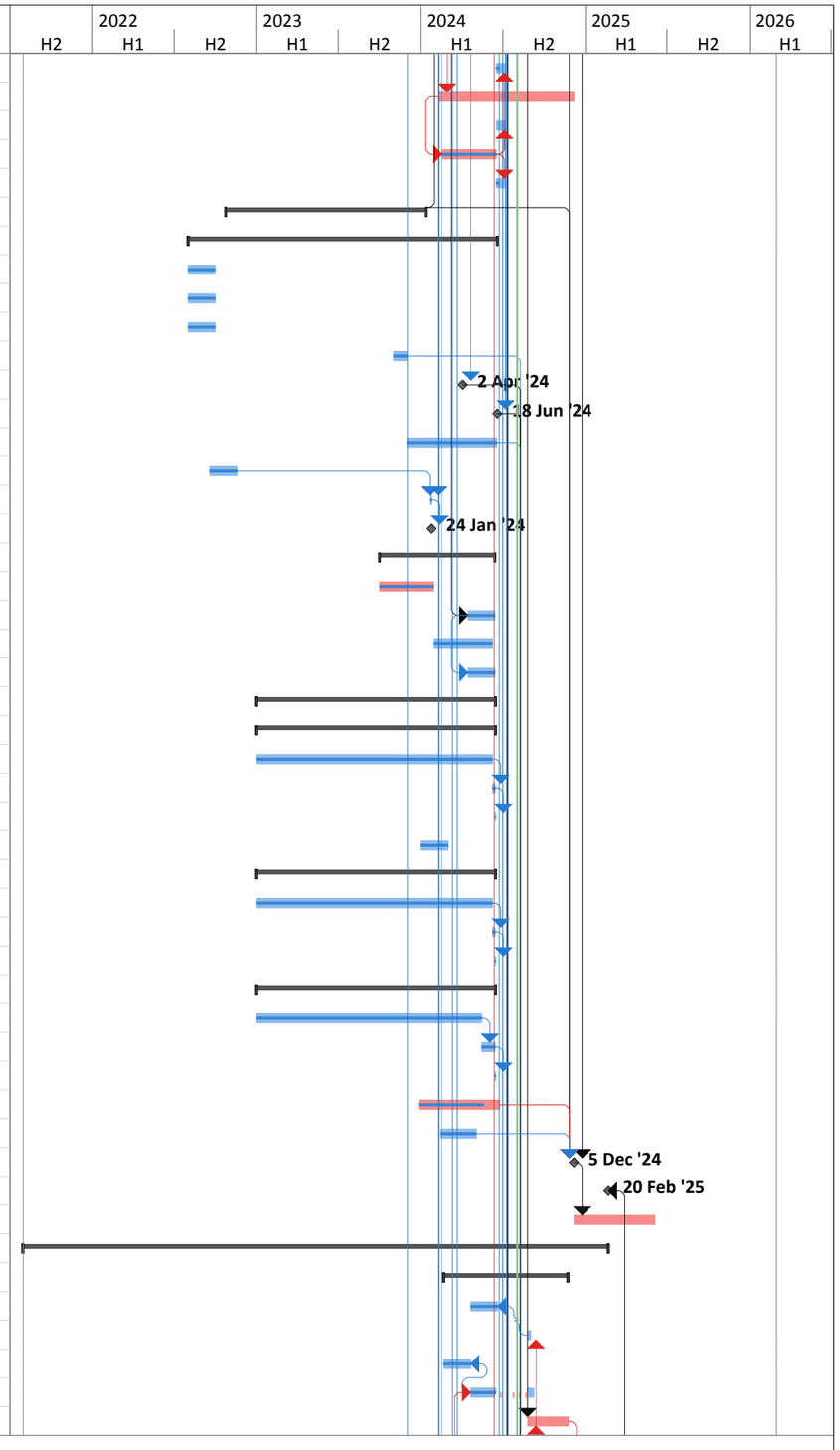
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Task | Inactive Task | Manual Summary Rollup | External Milestone | Manual Progress |
| Split | Inactive Milestone | Manual Summary | Deadline | |
| Milestone | Inactive Summary | Start-only | Critical | |
| Summary | Manual Task | Finish-only | Critical Split | |
| Project Summary | Duration-only | External Tasks | Progress | |

| ID | Task Name | Duration | Start | Finish | Predecessors | Successors | % Complete |
|---|---|---|---|---|---|---|---|
| 631 | SAT for Pump No.1 | 21 days | 16/6/24 | 6/7/24 | 634 | | 30% |
| 632 | Installation of Pump No.2 (Being Repaired) | 300 days | 10/2/24 | 5/12/24 | 619,630 | 634SS | 0% |
| 633 | SAT for Pump No.2 | 21 days | 16/6/24 | 6/7/24 | 634 | | 0% |
| 634 | Installation of Pump No.3 (Repaired) | 120 days | 17/2/24 | 15/6/24 | 621,632SS | 635,631,633 | 100% |
| 635 | SAT for Pump No.3 | 21 days | 16/6/24 | 6/7/24 | 634 | | 30% |
| 636 | **Power Energization Related Items** | **446 days** | **24/10/22** | **12/1/24** | | **624,675** | **100%** |
| 643 | **FS / DG Inspection Related Items** | **688 days** | **1/8/22** | **18/6/24** | | | **100%** |
| 644 | VAC Design Submission to FSD | 60 days | 1/8/22 | 29/9/22 | | | 100% |
| 645 | FS related statutory submission to FSD | 60 days | 1/8/22 | 29/9/22 | | | 100% |
| 646 | Submission of General Building Plan (GBP) to FSD | 60 days | 1/8/22 | 29/9/22 | | | 100% |
| 647 | Construction of Additional R.C. Corridor and Sealing off Roller Shutter Opening | 30 days | 1/11/23 | 30/11/23 | | 711 | 100% |
| 648 | Completion of MVAC | 0 days | 2/4/24 | 2/4/24 | 571 | 711 | 100% |
| 649 | Completion of EVA Lighting | 0 days | 18/6/24 | 18/6/24 | 576 | 711 | 100% |
| 650 | Direct Link Cabling to FSD Laid by HKT | 200 days | 30/11/23 | 17/6/24 | 469 | 711 | 100% |
| 651 | DG Design Submission to FSD | 60 days | 18/9/22 | 16/11/22 | | 652 | 100% |
| 652 | DG Inspection | 3 days | 22/1/24 | 24/1/24 | 651,588 | 653 | 100% |
| 653 | Obtain DG License | 0 days | 24/1/24 | 24/1/24 | 652 | | 100% |
| 654 | **Submission** | **256.5 days** | **1/10/23** | **13/6/24** | | | **100%** |
| 655 | Submission of Testing Procedures & Commissioning Plan | 120 days | 1/10/23 | 28/1/24 | | | 100% |
| 656 | Submission of As Fitted Drawings | 60 days | 14/4/24 | 13/6/24 | 568FS-90 days | 658SS | 100% |
| 657 | Submission of O&M Manual | 130 days | 30/1/24 | 7/6/24 | | | 100% |
| 658 | Submission of Training Material | 60 days | 14/4/24 | 13/6/24 | 656SS | | 100% |
| 659 | **Interface Works** | **531 days** | **1/1/23** | **14/6/24** | | | **100%** |
| 660 | **SWHWRP** | **531 days** | **1/1/23** | **14/6/24** | | | **100%** |
| 661 | Liaison with PCCW | 524 days | 1/1/23 | 7/6/24 | | 662 | 100% |
| 662 | Installation of Workstations | 6 days | 8/6/24 | 13/6/24 | 661 | 663 | 100% |
| 663 | 5G Wireless Network | 1 day | 14/6/24 | 14/6/24 | 662 | | 100% |
| 664 | UV Building in DSD SWHEPP | 60 days | 1/1/24 | 29/2/24 | | | 100% |
| 665 | **Tai Po Tau No. 4 Raw Water Pumping Station** | **531 days** | **1/1/23** | **14/6/24** | | | **100%** |
| 666 | Liaison with PCCW | 524 days | 1/1/23 | 7/6/24 | | 667 | 100% |
| 667 | Installation of Workstations | 6 days | 8/6/24 | 13/6/24 | 666 | 668 | 100% |
| 668 | 5G Wireless Network | 1 day | 14/6/24 | 14/6/24 | 667 | | 100% |
| 669 | **Table Hill Reclaimed Water Service Reservoir** | **531 days** | **1/1/23** | **14/6/24** | | | **100%** |
| 670 | Liaison with PCCW | 500 days | 1/1/23 | 14/5/24 | | 671 | 100% |
| 671 | Installation of Workstations | 30 days | 15/5/24 | 13/6/24 | 670 | 672 | 100% |
| 672 | 5G Wireless Network | 1 day | 14/6/24 | 14/6/24 | 671 | | 100% |
| 673 | **System Commissioning Test** | **180 days** | **27/12/23** | **23/6/24** | | 675 | **80%** |
| 674 | **Evaluation Period** | **79 days** | **14/2/24** | **2/5/24** | | **675** | **99%** |
| 675 | Planned completion for section 1 | 0 days | 5/12/24 | 5/12/24 | 597,636,674,67 | 677 | 0% |
| 676 | Planned completion for section 2 | 0 days | 20/2/25 | 20/2/25 | 685FF | | 0% |
| 677 | **Operator Expertise Transfer Period (OETP)** | **180 days** | **6/12/24** | **3/6/25** | 675 | | **0%** |
| 678 | **Outstanding Works** | **1302 days** | **30/7/21** | **20/2/25** | | | **78%** |
| 679 | **External Works** | **276.5 days** | **20/2/24** | **22/11/24** | | | **61%** |
| 680 | Fabrication of Entrance Gates and Logo Feature | 60 days | 20/4/24 | 19/6/24 | 681SF | | 100% |
| 681 | Installation of Gate 1 and Gate 2 | 7 days | 25/8/24 | 31/8/24 | 712 | 680SF | 0% |
| 682 | Fabrication of steelworks | 60 days | 20/2/24 | 20/4/24 | 683SF | | 100% |
| 683 | Installation of wall finishes and steelworks | 70 days | 20/4/24 | 7/9/24 | 712 | 682SF | 80% |
| 684 | Pavement Works of EVA | 90 days | 25/8/24 | 22/11/24 | 451,712 | 693 | 0% |

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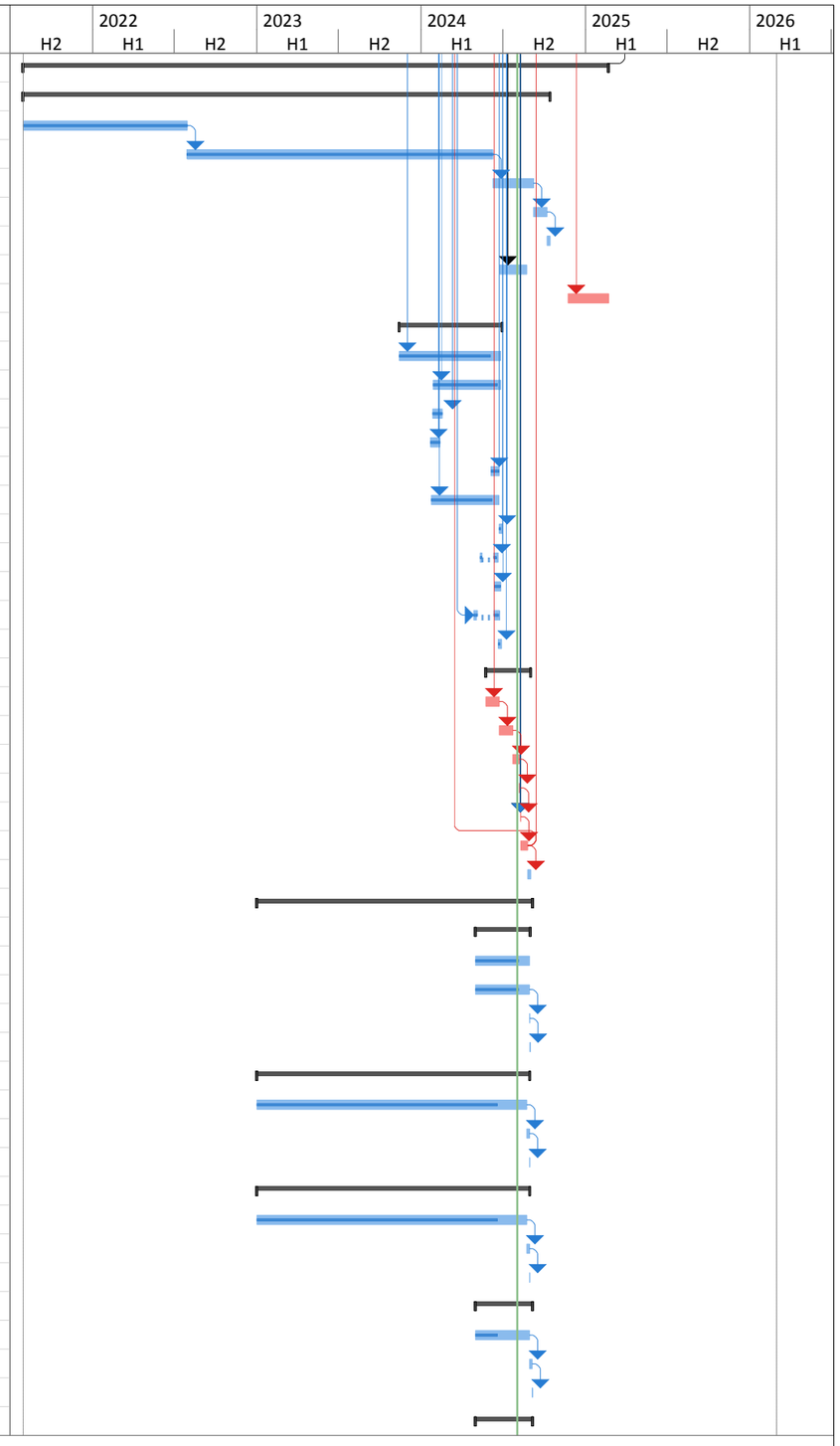
| | | | | | |
|---|---|---|---|---|---|
| Task | Inactive Task | Manual Summary Rollup | External Milestone | Manual Progress | |
| Split | Inactive Milestone | Manual Summary | Deadline | | |
| Milestone | Inactive Summary | Start-only | Critical | | |
| Summary | Manual Task | Finish-only | Critical Split | | |
| Project Summary | Duration-only | External Tasks | Progress | | |

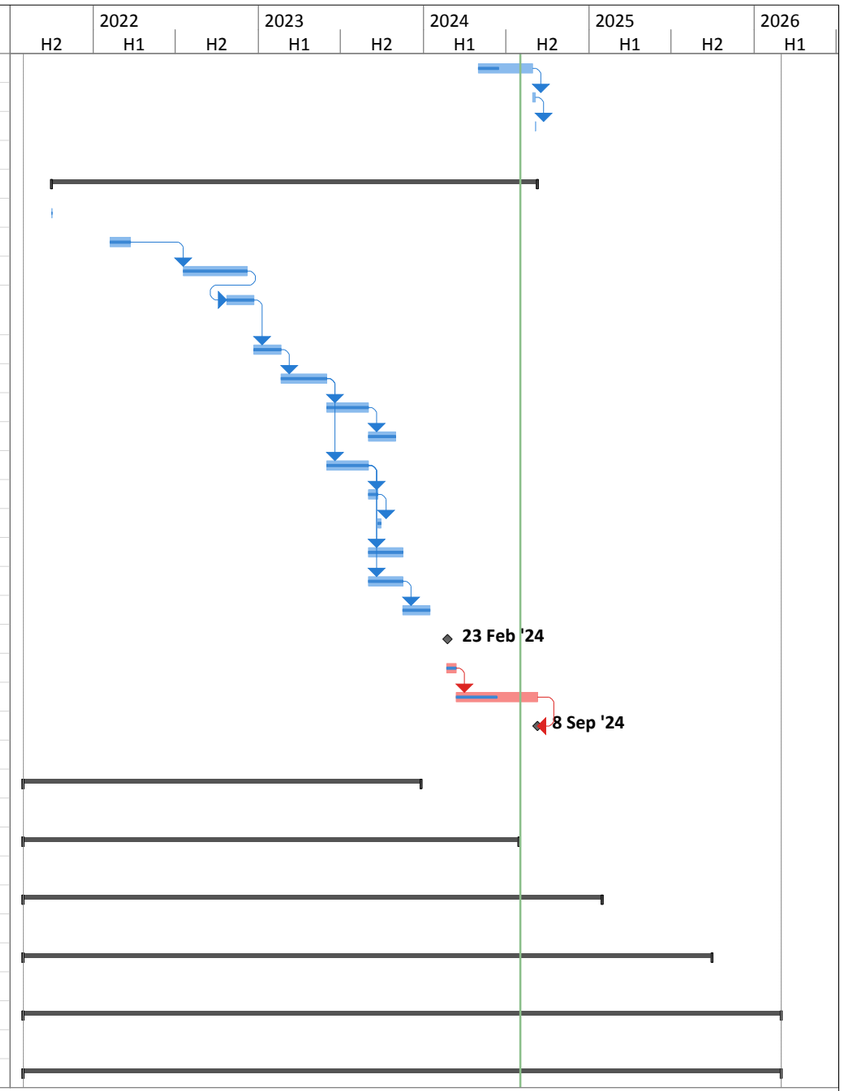
| ID | Task Name | Duration | Start | Finish | Predecessors | Successors | % Complete |
|---|---|---|---|---|---|---|---|
| 685 | **Landscape works** | **1302 days** | **30/7/21** | **20/2/25** | | **676FF** | **79%** |
| 686 | **Irrigation System** | **1172 days** | **30/7/21** | **13/10/24** | | | **89%** |
| 687 | Preliminary Design | 365 days | 30/7/21 | 29/7/22 | | 688 | 100% |
| 688 | Detailed Design | 680 days | 30/7/22 | 8/6/24 | 687 | 689 | 100% |
| 689 | Revision of Landscape Plan to be Covered by PMI & CE | 90 days | 9/6/24 | 6/9/24 | 688 | 690 | 0% |
| 690 | Installation of Irrigation System | 30 days | 7/9/24 | 6/10/24 | 689 | 691 | 0% |
| 691 | SAT of Irrigation System | 7 days | 7/10/24 | 13/10/24 | 690 | | 0% |
| 692 | Landscape works at roof top | 60 days | 24/6/24 | 22/8/24 | 395 | | 0% |
| 693 | Landscape works within SWHWRP | 90 days | 23/11/24 | 20/2/25 | 684 | | 0% |
| 694 | **SAT for E&M Works** | **229 days** | **13/11/23** | **29/6/24** | | | **91%** |
| 695 | Penstocks | 225 days | 13/11/23 | 25/6/24 | 583 | | 90% |
| 696 | Air Blower & Air Diffuser | 150 days | 28/1/24 | 25/6/24 | 587 | | 95% |
| 697 | Surge Vessel & Air Compressor | 21 days | 27/1/24 | 16/2/24 | 586 | | 100% |
| 698 | Chemical Pumps | 21 days | 22/1/24 | 11/2/24 | 588 | | 100% |
| 699 | MCC & DCS | 18 days | 5/6/24 | 22/6/24 | 590 | | 95% |
| 700 | SAT of Instrumentation and Monitoring Stations | 150 days | 24/1/24 | 21/6/24 | 591 | | 90% |
| 701 | SAT of ELV System (CCTV & Access Control) | 7 days | 22/6/24 | 29/6/24 | 592 | | 50% |
| 702 | SAT of Plumbing & Drainage Equipment | 14 days | 11/5/24 | 20/6/24 | 593 | | 70% |
| 703 | SAT of PV Panels | 14 days | 12/6/24 | 26/6/24 | 594 | | 90% |
| 704 | SAT of LV Switchborad / MCC | 21 days | 27/4/24 | 23/6/24 | 595 | | 90% |
| 705 | SAT of Flowmeter and BV for DN450 Overflow Pipe | 7 days | 21/6/24 | 27/6/24 | 596 | | 50% |
| 706 | **FS Inspection** | **100 days** | **24/5/24** | **31/8/24** | | | **0%** |
| 707 | FS Water Pipe Connection | 30 days | 24/5/24 | 22/6/24 | 439 | 708 | 0% |
| 708 | Handover Inspection | 30 days | 23/6/24 | 22/7/24 | 707 | 709 | 0% |
| 709 | Water Sterilization Test | 14 days | 23/7/24 | 5/8/24 | 708 | 710 | 0% |
| 710 | Approval Letter from WSD (FSCA) | 3 days | 6/8/24 | 8/8/24 | 709 | 711 | 0% |
| 711 | Submission of FSI 314 & 501 | 1 day | 9/8/24 | 9/8/24 | 648,649,650,64 | 712 | 0% |
| 712 | Target FS Inpsection | 15 days | 10/8/24 | 24/8/24 | 711 | 713,681,683,68 | 0% |
| 713 | Obtain FSD approval letter (Form FS172 Fire Certificate) | 7 days | 25/8/24 | 31/8/24 | 712 | | 0% |
| 714 | **Interface Works** | **613 days** | **1/1/23** | **4/9/24** | | | **79%** |
| 715 | **MBR Building in DSD SWHSTW** | **122 days** | **1/5/24** | **30/8/24** | | | **79%** |
| 716 | Installation of 3 Additional Water Quality Monitoring Sensors | 120 days | 1/5/24 | 28/8/24 | | | 80% |
| 717 | Liaison with PCCW | 120 days | 1/5/24 | 28/8/24 | | 718 | 80% |
| 718 | Installation of Workstations | 1 day | 29/8/24 | 29/8/24 | 717 | 719 | 0% |
| 719 | 5G Wireless Network | 1 day | 30/8/24 | 30/8/24 | 718 | | 0% |
| 720 | **WSD Kowloon Bay Office** | **607 days** | **1/1/23** | **29/8/24** | | | **88%** |
| 721 | Liaison with PCCW | 600 days | 1/1/23 | 22/8/24 | | 722 | 89% |
| 722 | Installation of Workstations | 6 days | 23/8/24 | 28/8/24 | 721 | 723 | 0% |
| 723 | 5G Wireless Network | 1 day | 29/8/24 | 29/8/24 | 722 | | 0% |
| 724 | **WSD Kowloon Laboratory** | **607 days** | **1/1/23** | **29/8/24** | | | **88%** |
| 725 | Liaison with PCCW | 600 days | 1/1/23 | 22/8/24 | | 726 | 89% |
| 726 | Installation of Workstations | 6 days | 23/8/24 | 28/8/24 | 725 | 727 | 0% |
| 727 | 5G Wireless Network | 1 day | 29/8/24 | 29/8/24 | 726 | | 0% |
| 728 | **DSD- Zone B Control Building** | **127 days** | **1/5/24** | **4/9/24** | | | **38%** |
| 729 | Liaison with PCCW | 120 days | 1/5/24 | 28/8/24 | | 730 | 41% |
| 730 | Installation of Workstations | 6 days | 29/8/24 | 3/9/24 | 729 | 731 | 0% |
| 731 | 5G Wireless Network | 1 day | 4/9/24 | 4/9/24 | 730 | | 0% |
| 732 | **DSD- Zone C Workshop No.2** | **127 days** | **1/5/24** | **4/9/24** | | | **35%** |




Project: 3WSD20 Programme
Programme Rev. 29
(up to 31 May 2024)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Task | Inactive Task | Manual Summary Rollup | External Milestone | Manual Progress |
| Split | Inactive Milestone | Manual Summary | Deadline | |
| Milestone | Inactive Summary | Start-only | Critical | |
| Summary | Manual Task | Finish-only | Critical Split | |
| Project Summary | Duration-only | External Tasks | Progress | |

| ID | Task Name | Duration | Start | Finish | Predecessors | Successors | % Complete |
|---|---|---|---|---|---|---|---|
| 733 | Liaison with PCCW | 120 days | 1/5/24 | 28/8/24 | | 734 | 38% |
| 734 | Installation of Workstations | 6 days | 29/8/24 | 3/9/24 | 733 | 735 | 0% |
| 735 | 5G Wireless Network | 1 day | 4/9/24 | 4/9/24 | 734 | | 0% |
| 736 | | | | | | | |
| 737 | **Section 3 - Modification of Table Hill Reclaimed Water Service Reservoir** | **1074 days** | **1/10/21** | **8/9/24** | | | **92%** |
| 738 | Access Date (part 2 of the Site) | 1 day | 1/10/21 | 1/10/21 | | | 100% |
| 739 | Initial survey and condition survey | 45 days | 7/2/22 | 23/3/22 | | 740FS+117 day | 100% |
| 740 | Design submission and acceptance of the supplementary dosing and dyeing system (E&M) | 141 days | 19/7/22 | 6/12/22 | 739FS+117 day | 741FS-45 days | 100% |
| 741 | Submission and acceptance of method statement for supplementary dosing and dyeing system | 60 days | 23/10/22 | 21/12/22 | 740FS-45 days | 742 | 100% |
| 742 | Selection of sub-contractor | 60 days | 22/12/22 | 19/2/23 | 741 | 743 | 100% |
| 743 | Construction of Chemical Dosing Room | 101 days | 20/2/23 | 31/5/23 | 742 | 744,746 | 100% |
| 744 | Hole Coring and Installation of Pipes into Service Reservoir | 92 days | 1/6/23 | 31/8/23 | 743 | 745 | 100% |
| 745 | Construction of Pipe Trough from Dosing Room to Service Reservoir | 60 days | 1/9/23 | 30/10/23 | 744 | | 100% |
| 746 | Fitting out Works | 92 days | 1/6/23 | 31/8/23 | 743 | 747,749,750 | 100% |
| 747 | Watertightness Test of Roof Slab | 21 days | 1/9/23 | 21/9/23 | 746 | 748 | 100% |
| 748 | Waterproofing Application on Roof Slab | 7 days | 22/9/23 | 28/9/23 | 747 | | 100% |
| 749 | Installation of Steelworks | 76 days | 1/9/23 | 15/11/23 | 746 | | 100% |
| 750 | Installation of supplementary dosing and dyeing system | 76 days | 1/9/23 | 15/11/23 | 746 | 751 | 100% |
| 751 | SAT of E&M equipment | 60 days | 16/11/23 | 14/1/24 | 750 | | 100% |
| 752 | Receive PMI-153 for Provision of Sampling Water Collection System | 0 days | 23/2/24 | 23/2/24 | | | 100% |
| 753 | Construction of Water Tank Structure | 21 days | 21/2/24 | 12/3/24 | | 754 | 100% |
| 754 | Procurement and Installation of Water Pumps | 180 days | 13/3/24 | 8/9/24 | 753 | 755FF | 50% |
| 755 | Planned completion for section 3 | 0 days | 8/9/24 | 8/9/24 | 754FF | | 0% |
| 756 | | | | | | | |
| 757 | **Section 4 - Water main laying works in part 3 of the Site** | **880 days** | **30/7/21** | **26/12/23** | | | **0%** |
| 1201 | | | | | | | |
| 1202 | **Section 5 - Water main laying works in part 4 of the Site** | **1096 days** | **30/7/21** | **29/7/24** | | | **0%** |
| 1428 | | | | | | | |
| 1429 | **Section 6 - Water main laying works in part 5 of the Site** | **1280 days** | **30/7/21** | **29/1/25** | | | **0%** |
| 1485 | | | | | | | |
| 1486 | **Section 7 - Water main laying works in part 6 of the Site** | **1523 days** | **30/7/21** | **29/9/25** | | | **0%** |
| 1637 | | | | | | | |
| 1638 | **Section 8 - Water main laying works in part 7 of the Site** | **1676 days** | **30/7/21** | **1/3/26** | | | **0%** |
| 1817 | | | | | | | |
| 1818 | **Section 9 - Conversion works to effect the supply of reclaimed water** | **1676 days** | **30/7/21** | **1/3/26** | | | **0%** |

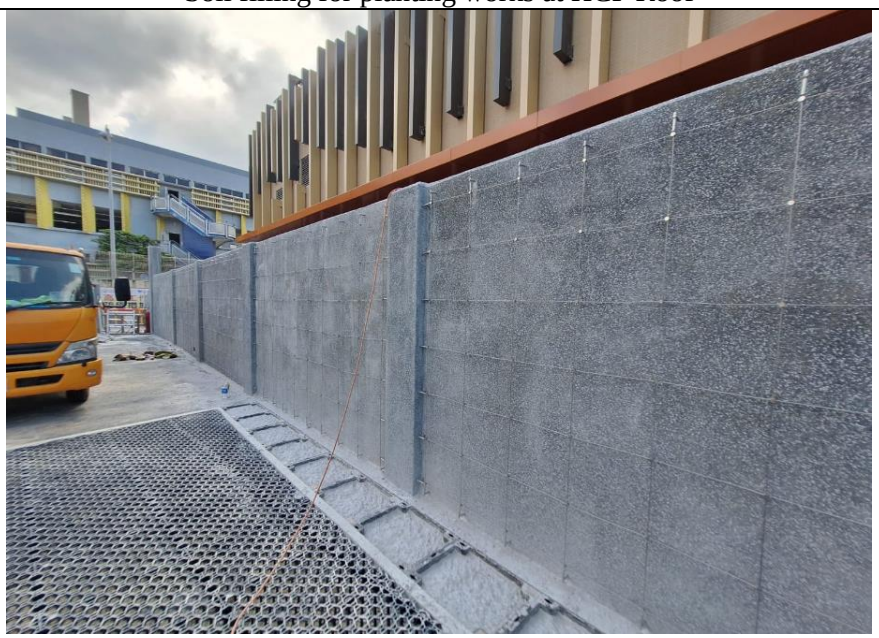



Project: 3WSD20 Programme
Programme Rev. 29
(up to 31 May 2024)

| | | | | | |
|---|---|---|---|---|---|
| Task | Inactive Task | Manual Summary Rollup | External Milestone | Manual Progress | |
| Split | Inactive Milestone | Manual Summary | Deadline | | |
| Milestone | Inactive Summary | Start-only | Critical | | |
| Summary | Manual Task | Finish-only | Critical Split | | |
| Project Summary | Duration-only | External Tasks | Progress | | |

**SITE OVERVIEW PHOTO IN THE REPORTING PERIOD**

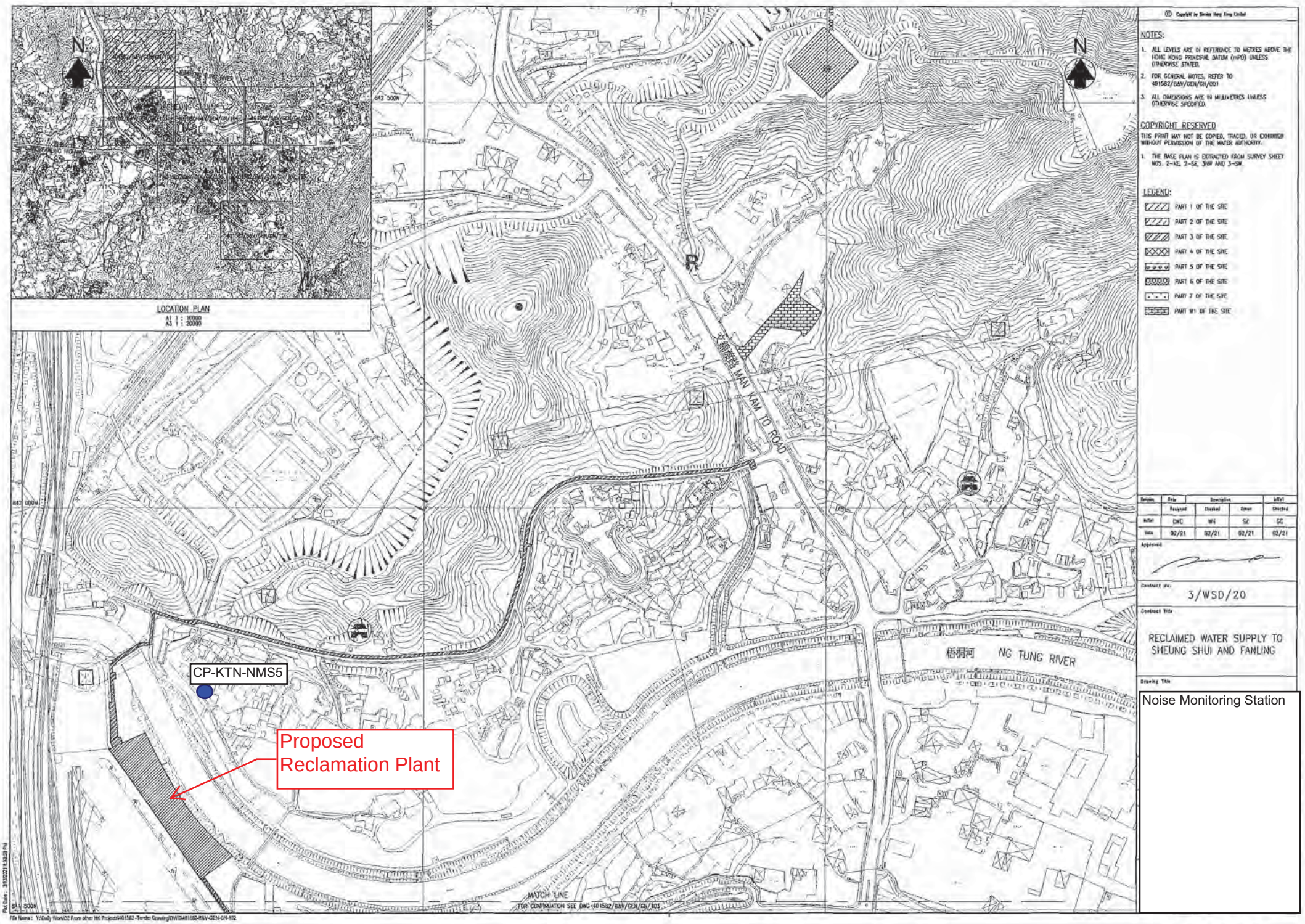
Soil filling for planting works at HCF Roof



Installation of Vertical Green Mesh

# Appendix D

# Location of Designated Noise Monitoring Station CP-KTN-NMS5






NOTES:

1. ALL LEVELS ARE IN REFERENCE TO METRES ABOVE THE HONG KONG PRINCIPAL DATUM (mPD) UNLESS OTHERWISE STATED.
2. FOR GENERAL NOTES, REFER TO 401582/GAN/GEN/GN/001
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.



1. THE BASE PLAN IS EXTRACTED FROM SURVEY SHEET NOS. 2-NG, 2-SE, 3NW AND 3-SW.

LEGEND:

- PART 1 OF THE SITE
- PART 2 OF THE SITE
- PART 3 OF THE SITE
- PART 4 OF THE SITE
- PART 5 OF THE SITE
- PART 6 OF THE SITE
- PART 7 OF THE SITE
- PART W1 OF THE SITE

| Revision | Date | Description | | | Initial |
|---|---|---|---|---|---|
| | Designed | Checked | Drawn | Checked |
| Initial | CWC | WH | SZ | GC |
| Date | 02/21 | 02/21 | 02/21 | 02/21 |

Approved

Contract No.
3/WSD/20

Contract Title
RECLAIMED WATER SUPPLY TO SHEUNG SHUI AND FANLING

Drawing Title
Noise Monitoring Station

Plot Date: 3/03/2021 8:03:28 PM
File Name: Y:\Daily Work\CC From other HK Projects\401582-Tender Drawing\DWG\401582-BSV-GEN-GN-102

# Appendix E

# Valid Calibration Certificates of Monitoring Equipment

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

# Certificate of Calibration
# 校正證書

Certificate No. : C236947
證書編號

**ITEM TESTED / 送檢項目** ( Job No. / 序引編號 : IC23-2369 ) Date of Receipt / 收件日期 : 23 November 2023

Description / 儀器名稱 : Sound Level Meter (EQ015)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00142581
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

**TEST CONDITIONS / 測試條件**

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

**TEST SPECIFICATIONS / 測試規範**

Calibration check

**DATE OF TEST / 測試日期** : 3 December 2023

**TEST RESULTS / 測試結果**

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

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Tested By 測試 : H T Wong
Assistant Engineer

Certified By 核證 : K C Lee
Engineer

Date of Issue 簽發日期 : 4 December 2023



Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

# Certificate of Calibration
# 校正證書

Certificate No. : C236947
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

| Equipment ID | Description | Certificate No. |
|---|---|---|
| CL280 | 40 MHz Arbitrary Waveform Generator | C230306 |
| CL281 | Multifunction Acoustic Calibrator | CDK2302738 |

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Limit (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Function | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | | |
| 30 - 130 | $L_A$ | A | Fast | 94.00 | 1 | 93.9 | ± 1.1 |

6.1.2 Linearity

| UUT Setting | | | | Applied Value | | UUT Reading (dB) |
|---|---|---|---|---|---|---|
| Range (dB) | Function | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | |
| 30 - 130 | $L_A$ | A | Fast | 94.00 | 1 | 93.9 (Ref.) |
| | | | | 104.00 | | 103.9 |
| | | | | 114.00 | | 113.9 |

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

6.2 Time Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Limit (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Function | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | | |
| 30 - 130 | $L_A$ | A | Fast | 94.00 | 1 | 93.9 | Ref. |
| | | | Slow | | | 93.9 | ± 0.3 |



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c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

# Certificate of Calibration
# 校正證書

Certificate No. : C236947
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Limit (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Function | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 30 - 130 | $L_A$ | A | Fast | 94.00 | 63 Hz | 67.8 | -26.2 ± 1.5 |
| | | | | | 125 Hz | 77.8 | -16.1 ± 1.5 |
| | | | | | 250 Hz | 85.4 | -8.6 ± 1.4 |
| | | | | | 500 Hz | 90.8 | -3.2 ± 1.4 |
| | | | | | 1 kHz | 93.9 | Ref. |
| | | | | | 2 kHz | 94.8 | +1.2 ± 1.6 |
| | | | | | 4 kHz | 94.4 | +1.0 ± 1.6 |
| | | | | | 8 kHz | 92.7 | -1.1 (+2.1 ; -3.1) |
| | | | | | 16 kHz | 86.9 | -6.6 (+3.5 ; -17.0) |

6.3.2 C-Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Limit (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Function | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 30 - 130 | $L_C$ | C | Fast | 94.00 | 63 Hz | 93.2 | -0.8 ± 1.5 |
| | | | | | 125 Hz | 93.9 | -0.2 ± 1.5 |
| | | | | | 250 Hz | 94.0 | 0.0 ± 1.4 |
| | | | | | 500 Hz | 94.0 | 0.0 ± 1.4 |
| | | | | | 1 kHz | 93.9 | Ref. |
| | | | | | 2 kHz | 93.4 | -0.2 ± 1.6 |
| | | | | | 4 kHz | 92.6 | -0.8 ± 1.6 |
| | | | | | 8 kHz | 90.8 | -3.0 (+2.1 ; -3.1) |
| | | | | | 16 kHz | 85.0 | -8.5 (+3.5 ; -17.0) |



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c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

# Certificate of Calibration
# 校正證書

Certificate No. : C236947
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 22275

- Mfr's Limit : IEC 61672 Class 1

- Uncertainties of Applied Value :

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

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

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

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



Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

# Certificate of Calibration
# 校正證書

Certificate No. : C236944
證書編號

**ITEM TESTED / 送檢項目** ( Job No. / 序引編號 : IC23-2369 ) Date of Receipt / 收件日期 : 23 November 2023

Description / 儀器名稱 : Sound Calibrator (EQ083)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-74
Serial No. / 編號 : 34246492
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

**TEST CONDITIONS / 測試條件**

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

**TEST SPECIFICATIONS / 測試規範**

Calibration check

**DATE OF TEST / 測試日期** : 3 December 2023

**TEST RESULTS / 測試結果**

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

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Hottinger Brüel & Kjær Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Assistant Engineer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 4 December 2023



Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

# Certificate of Calibration
# 校正證書

Certificate No. : C236944
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

| Equipment ID | Description | Certificate No. |
|---|---|---|
| CL130 | Universal Counter | C233799 |
| CL281 | Multifunction Acoustic Calibrator | CDK2302738 |
| TST150A | Measuring Amplifier | C221750 |

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

| UUT Nominal Value | Measured Value (dB) | Mfr's Limit (dB) | Uncertainty of Measured Value (dB) |
|---|---|---|---|
| 94 dB, 1 kHz | 94.05 | ± 0.3 | ± 0.20 |

5.2 Frequency Accuracy

| UUT Nominal Value (kHz) | Measured Value (kHz) | Mfr's Limit | Uncertainty of Measured Value (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.



Sun Creation Engineering Limited – Calibration & Testing Laboratory
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Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

# Appendix F

# Monitoring Schedule of the Reporting Month and Coming Month

## The Reporting Monitoring Schedule (July 2024)

| Date | | Noise Monitoring (Leq30min) | Ecology Monitoring (Water Bird) |
|---|---|---|---|
| Thu | 1-Aug-24 | | |
| Fri | 2-Aug-24 | | |
| Sat | 3-Aug-24 | | |
| Sun | 4-Aug-24 | | |
| Mon | 5-Aug-24 | ✓ | ✓**(Low Tide)** |
| Tue | 6-Aug-24 | | |
| Wed | 7-Aug-24 | | |
| Thu | 8-Aug-24 | | ✓**(High Tide)** |
| Fri | 9-Aug-24 | | |
| Sat | 10-Aug-24 | | |
| Sun | 11-Aug-24 | | |
| Mon | 12-Aug-24 | | |
| Tue | 13-Aug-24 | | ✓**(Low Tide)** |
| Wed | 14-Aug-24 | | |
| Thu | 15-Aug-24 | | |
| Fri | 16-Aug-24 | ✓ | ✓**(High Tide)** |
| Sat | 17-Aug-24 | | |
| Sun | 18-Aug-24 | | |
| Mon | 19-Aug-24 | | |
| Tue | 20-Aug-24 | | |
| Wed | 21-Aug-24 | | ✓**(Low Tide)** |
| Thu | 22-Aug-24 | ✓ | |
| Fri | 23-Aug-24 | | ✓**(High Tide)** |
| Sat | 24-Aug-24 | | |
| Sun | 25-Aug-24 | | |
| Mon | 26-Aug-24 | | ✓**(Low Tide)** |
| Tue | 27-Aug-24 | | ✓**(High Tide)** |
| Wed | 28-Aug-24 | ✓ | |
| Thu | 29-Aug-24 | | |
| Fri | 30-Aug-24 | | |
| Sat | 31-Aug-24 | | |

| | |
|---|---|
| ✓ | Monitoring Day |
| | Sunday or Public Holiday |

## The Coming Month Monitoring Schedule (September 2024)

| Date | | Noise Monitoring (Leq30min) | Ecology Monitoring (Water Bird) |
|---|---|---|---|
| Sun | 1-Sep-24 | | |
| Mon | 2- Sep -24 | | |
| Tue | 3- Sep -24 | ✓ | |
| Wed | 4- Sep -24 | | |
| Thu | 5- Sep -24 | | ✓ |
| Fri | 6- Sep -24 | | |
| Sat | 7- Sep -24 | | |
| Sun | 8- Sep -24 | | |
| Mon | 9- Sep -24 | ✓ | |
| Tue | 10- Sep -24 | | |
| Wed | 11- Sep -24 | | ✓ |
| Thu | 12- Sep -24 | | |
| Fri | 13- Sep -24 | | |
| Sat | 14- Sep -24 | | |
| Sun | 15- Sep -24 | | |
| Mon | 16- Sep -24 | | |
| Tue | 17- Sep -24 | | ✓ |
| Wed | 18- Sep -24 | | |
| Thu | 19- Sep -24 | | |
| Fri | 20- Sep -24 | ✓ | |
| Sat | 21- Sep -24 | | |
| Sun | 22- Sep -24 | | |
| Mon | 23- Sep -24 | | ✓ |
| Tue | 24- Sep -24 | | |
| Wed | 25- Sep -24 | | |
| Thu | 26- Sep -24 | ✓ | |
| Fri | 27- Sep -24 | | |
| Sat | 28- Sep -24 | | |
| Sun | 29- Sep -24 | | |
| Mon | 30- Sep -24 | | |

*Note:*

*Ecology monitoring dates are tentative and are subject to change*

| | |
|---|---|
| ✓ | Monitoring Day |
| | Sunday or Public Holiday |

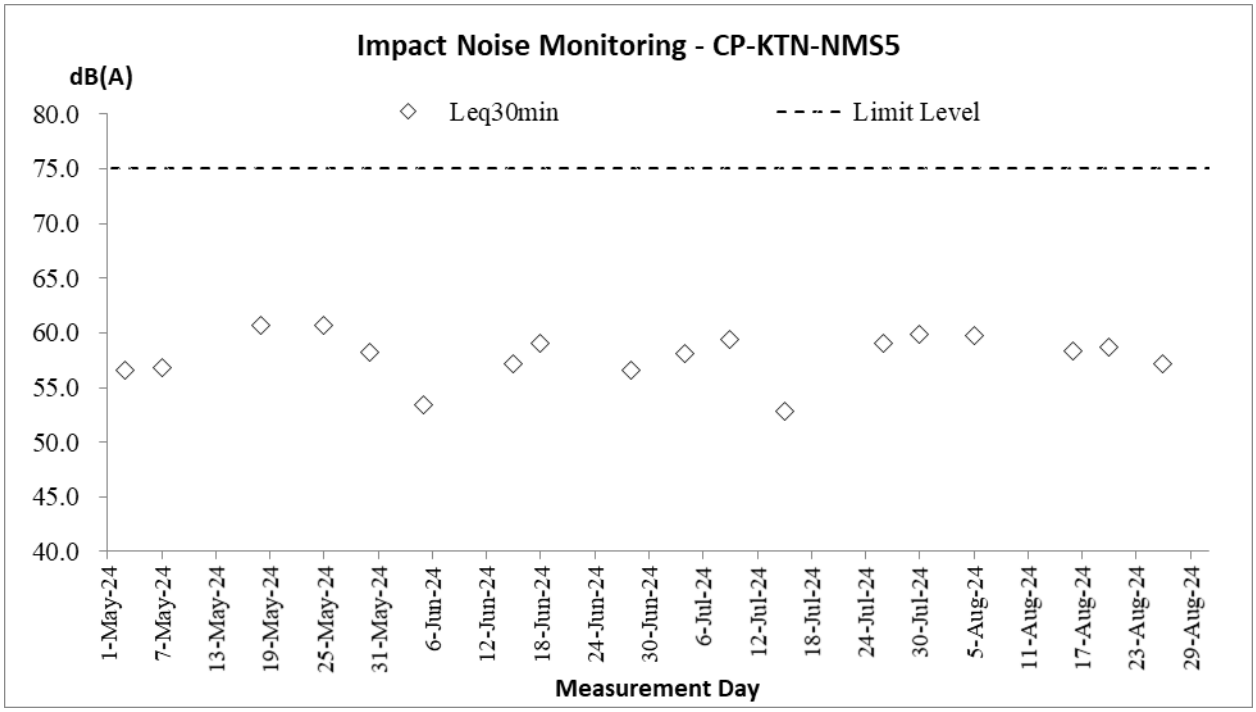
# Appendix G

# Database of Monitoring Result

| Daytime Noise Measurement Results (dB) at CP-KTN-NMS5 | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **Start Time** | **1st Leq (5min)** | | | **2nd Leq (5min)** | | | **3rd Leq (5min)** | | | **4th Leq (5min)** | | | **5th Leq (5min)** | | | **6th Leq (5min)** | | | **Leq30min, dB(A)** | **Corrected Leq30min dB(A)** |
| | | **Leq, dB(A)** | **L10, dB(A)** | **L90, dB(A)** | **Leq, dB(A)** | **L10, dB(A)** | **L90, dB(A)** | **Leq, dB(A)** | **L10, dB(A)** | **L90, dB(A)** | **Leq, dB(A)** | **L10, dB(A)** | **L90, dB(A)** | **Leq, dB(A)** | **L10, dB(A)** | **L90, dB(A)** | **Leq, dB(A)** | **L10, dB(A)** | **L90, dB(A)** | | |
| 5-Aug-24 | 13:05 | 57.2 | 59.7 | 53.8 | 61.8 | 63.5 | 55.9 | 58.4 | 61.2 | 54.3 | 59.5 | 62.3 | 54.4 | 60.1 | 64.4 | 55.2 | 59.9 | 63.0 | 54.3 | 59.7 | 62.7 |
| 16-Aug-24 | 9:15 | 57.2 | 60.7 | 53.2 | 55.9 | 58.3 | 53.5 | 57.4 | 60.1 | 53.7 | 59.0 | 62.2 | 54.5 | 58.8 | 61.5 | 55.1 | 60.5 | 63.9 | 54.7 | 58.4 | 61.4 |
| 20-Aug-24 | 14:30 | 57.2 | 59.7 | 53.9 | 57.8 | 60.2 | 53.0 | 58.4 | 61.2 | 54.3 | 60.2 | 62.7 | 55.9 | 57.8 | 62.4 | 55.6 | 59.7 | 62.6 | 54.3 | 58.7 | 61.7 |
| 26-Aug-24 | 14:45 | 56.7 | 59.1 | 53.3 | 57.0 | 60.8 | 52.9 | 58.4 | 61.5 | 54.3 | 56.1 | 58.4 | 53.2 | 57.9 | 61.8 | 52.9 | 56.5 | 59.0 | 53.1 | 57.2 | 60.2 |

# Appendix H

# Graphical Plots for Monitoring Result


Impact Noise Monitoring - CP-KTN-NMS5
dB(A)
Leq30min
Limit Level
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
1-May-24
7-May-24
13-May-24
19-May-24
25-May-24
31-May-24
6-Jun-24
12-Jun-24
18-Jun-24
24-Jun-24
30-Jun-24
6-Jul-24
12-Jul-24
18-Jul-24
24-Jul-24
30-Jul-24
5-Aug-24
11-Aug-24
17-Aug-24
23-Aug-24
29-Aug-24
Measurement Day

# Appendix I

# Monthly Summary Waste Flow Table

Contract No. : 3/WSD/20
Contact Name: Reclaimed Water Supply to Sheung Shui and Fanling

## Monthly Summary Waste Flow Table for _2024_

| Month | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | | Actual Quantities of C&D Wastes Generated Monthly | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total Quantity Generated | Hard Rock and Large Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed as Public Fill | Imported Fill | Metals | Paper/ cardboard packaging | Plastics (see Note 3) | Chemical Waste | Others, e.g. general refuse |
| | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000 kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000$m^3$) |
| Jan | 0.259 | 0 | 0 | 0 | 0.259 | 0 | 0 | 0 | 0 | 0 | 0.008 |
| Feb | 0.177 | 0 | 0 | 0 | 0.177 | 0 | 0 | 0 | 0 | 0 | 0.003 |
| Mar | 0.485 | 0 | 0 | 0 | 0.485 | 0 | 0 | 0 | 0 | 0 | 0.007 |
| Apr | 0.179 | 0 | 0 | 0 | 0.179 | 0 | 0 | 0 | 0 | 0 | 0.004 |
| May | 0.351 | 0 | 0 | 0 | 0.351 | 0 | 0 | 0 | 0 | 0 | 0.004 |
| June | 0.371 | 0 | 0 | 0 | 0.371 | 0 | 0 | 0 | 0 | 0 | 0.003 |
| July | 0.191 | 0 | 0 | 0 | 0.191 | 0 | 0 | 0 | 0 | 0 | 0.000 |
| Aug | 0.362 | 0 | 0 | 0 | 0.362 | 0 | 0 | 0 | 0 | 0 | 0.003 |
| Sept | | | | | | | | | | | |
| Oct | | | | | | | | | | | |
| Nov | | | | | | | | | | | |
| Dec | | | | | | | | | | | |
| Total | 2.361 | 0 | 0 | 0 | 2.361 | 0 | 0 | 0 | 0 | 0 | 0.027 |

Data updated as of 25 August 2024

| Forecast of Total Quantities of C&D Materials to be Generated from the Contract* | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Quantity Generated | Hard Rock and Large Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed as Public Fill | Imported Fill | Metals | Paper/ cardboard packaging | Plastics (see Note 3) | Chemical Waste | Others, e.g. general refuse |
| (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000$m^3$) | (in '000 kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000$m^3$) |
| 25.472 | 5.386 | 0 | 0 | 25.472 | 0 | 0 | 0 | 0 | 0 | 0.3885 |

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(3) The quantities of C&D material indicated in the half-yearly status report should be in tonnes. If the project offices do not have information on the densities of the material for the time being, they could initially adopt the following conversion factors for reporting purpose: insitu densities of rock and soil to be 2.5 tonnes/m3 and 2.0 tonnes/m3 respectively; and densities of imported rock and soil to be 2.0 tonnes/m3 and 1.8 tonnes/m3 respectively.

(4) Boken concrete and bitumen = 2.4 tonnes/m3

(5) Conversion to 1000m3 for general refuse is weight in 1000kg multiply by 0.002

# Appendix J

# Implementation Schedule for Environmental Mitigation Measures (ISEMM)

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| ***Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)*** | | | | | | | |
| ***Construction Dust Impact*** | | | | | | | |
| S3.8 | D1 | Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road is proposed to achieve dust removal efficiency of 92.1%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.7 L/m2 to achieve the respective dust removal efficiencies. | Minimize dust impact at the nearby sensitive receivers | Contractor | All construction sites | Construction phase | APCO<br>To control the dust impact to meet HKAQO and TM-EIAO |
| S3.8 | D2 | The Contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation. | Minimize dust impact at the nearby sensitive receivers | Contractor | All construction sites | Construction phase | APCO<br>To control the dust impact to meet HKAQO and TM-EIAO |
| S3.8 | D3 | Following dust suppression measures should also be incorporated by the Contractor to control the dust nuisance throughout the construction phase:<br>• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;<br>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;<br>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones;<br>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;<br>• Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hard cores;<br>• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; | Minimize dust impact at the nearby sensitive receivers | Contractor | All construction sites | Construction phase | APCO<br>To control the dust impact to meet HKAQO and TM-EIAO |

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| | | • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;<br>• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;<br>• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;<br>• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;<br>• Any skip hoist for material transport should be totally enclosed by impervious sheeting; and<br>• Every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. | | | | | |
| ***Noise Impact (Construction Phase)*** | | | | | | | |
| S4.9 | N1 | Implement the following good site management practices:<br>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;<br>• machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;<br>• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;<br>• silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;<br>• mobile plant should be sited as far away from NSRs as possible and practicable; and<br>• material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. | Control construction airborne noise | Contractor | All construction sites | Construction phase | Annex 5, TM-EIAO |
| S4.9 | N2 | Install temporary site hoarding (approx. 2.4m high) located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period. | Reduce the construction noise levels at low-level | Contractor | All construction sites | Construction phase | Annex 5, TM-EIAO |

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| | | | zone of NSRs through partial screening. | | | | |
| S4.9 | N3 | Install movable noise barriers, full enclosure and acoustic mat, screen the noisy plants including air compressor and generator. | Screen the noisy plant items to be used at all construction sites | Contractor | All construction sites | Construction phase | Annex 5, TM-EIAO |
| S4.9 | N4 | Use of "Quiet" Plant and Working Methods | Reduce the noise levels of plant items | Contractor | All construction sites | Construction phase | Annex 5, TM-EIAO |
| S4.9 | N5 | Sequencing operation of construction plants where practicable. | Operate sequentially within the same work site to reduce the construction airborne noise | Contractor | All construction sites | Construction phase | Annex 5, TM-EIAO |
| ***Water Quality Impact (Construction Phase)*** | | | | | | | |
| S5.7 | W1 | Construction Runoff<br>In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN 1/94), construction phase mitigation measures should be provided and the Storm Water Pollution Control Plan is given below.<br>**Storm Water Pollution Control Plan**<br>• At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the Contractor prior to the commencement of construction.<br>• Diversion of natural stormwater should be provided as far as possible. The design of temporary on-site drainage should prevent runoff going through site surface, construction machinery and equipment in order to avoid or minimize polluted runoff. Sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m3 capacities, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and suited to applications | Control construction runoff | Contractor | All construction sites | Construction phase | WPCO, EIAO, TM-EIAO |

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| | | where the influent is pumped.<br>• The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a silt/sediment trap. The silt/sediment traps should be incorporated in the permanent drainage channels to enhance deposition rates.<br>• The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of the sand/silt traps should be undertaken by the Contractor prior to the commencement of construction.<br>• Construction works should be programmed to minimize surface excavation works during the rainy seasons (April to September). All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.<br>• All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.<br>• Measures should be taken to minimize the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, it should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.<br>• All open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.<br>• Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.<br>• Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff | | | | | |

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| | | during storm events.<br>• All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.<br>• Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain.<br>• Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.<br>• All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.<br>• Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the meander, wetlands and fish ponds. | | | | | |
| S5.7 | W2 | **Sewage from Workforce**<br>• Portable chemical toilets and sewage holding tanks should be provided for handling the construction sewage generated by the workforce. A licensed Contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.<br>• Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project. Regular environmental audit on the construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the Project would not cause water quality impact after undertaking all required measures. | Handling of site sewage | Contractor | All construction sites | Construction phase | WPCO, EIAO, TM-EIAO |

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| ***Waste Management (Construction Waste)*** | | | | | | | |
| S7.6 | WM1 | Waste Reduction Measures<br>Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction:<br>• segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal;<br>• proper storage and site practices to minimize the potential for damage and contamination of construction materials;<br>• plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste;<br>• sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.); and<br>• provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling. | Reduce waste generation | Contractor | All construction sites where practicable | Prior to the commencement of construction | Waste Disposal Ordinance |
| S7.6 | WM2 | Prepare Waste Management Plan and submit to the Engineer for approval | Minimize waste generation during construction | Contractor | All construction sites | Construction phase | Waste Disposal Ordinance |
| S7.6 | WM3 | **Good Site Practice**<br>The following good site practices are recommended throughout the construction activities:<br>• nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;<br>• training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;<br>• provision of sufficient waste disposal points and regular collection for disposal;<br>• appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;<br>• regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; | Minimize waste generation during construction | Contractor | All construction sites | Construction phase | Waste Disposal Ordinance |
| S7.6 | WM4 | **Storage of Waste**<br>The following recommendation should be implemented to minimize the impacts: | Minimize waste from storage impacts | Contractor | All construction | Construction phase | Waste Disposal Ordinance |

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| | | • waste such as soil should be handled and stored well to ensure secure containment;<br>• stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away;<br>• different locations should be designated to stockpile each material to enhance reuse; | | | sites | | |
| S7.6 | WM5 | **Collection and Transportation of Waste**<br>The following recommendation should minimize the impacts:<br>• remove waste in timely manner;<br>• employ the trucks with cover or enclosed containers for waste transportation;<br>• obtain relevant waste disposal permits from the appropriate authorities; and<br>• disposal of waste should be done at licensed waste disposal facilities. | Minimize waste from storage impacts | Contractor | All construction sites | Construction phase | Waste Disposal Ordinance |
| S7.6 | WM6 | **Excavated and C&D Material**<br>Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure acceptability at public filling areas or reclamation sites. The following mitigation measures should be implemented in handling the excavated and C&D materials:<br>• maintain temporary stockpiles and reuse excavated fill material for backfilling;<br>• carry out on-site sorting;<br>• deliver surplus artificial hard materials to Tuen Mun Area 38 recycling plant or its successor for recycling into subsequent useful products;<br>• make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;<br>• implement a recording system for the amount of waste generated, recycled and disposed of for checking;<br>Standard formwork should be used as far as practicable in order to minimize the arising of C&D waste. The use of more durable formwork (e.g. metal hoarding) or plastic facing should be encouraged in order to enhance the possibility of recycling. The purchasing of construction materials should be carefully planned in order to avoid over ordering and wastage. Wheel wash facilities have to be provided at the site entrance before the trucks leaving the works area. | Minimize waste impacts from excavated and C&D materials | Contractor | All construction sites | Construction phase | • Land (Miscellaneous Provisions) Ordinance<br>• Waste Disposal Ordinance<br>• ETWB TCW No. 19/2005 |
| S7.6 | WM8 | **Chemical Waste**<br>• If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste Contractor. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical | Control the chemical waste and ensure proper storage, handling and disposal. | Contractor | All construction sites | Construction phase | • Waste Disposal (Chemical Waste) General) Regulation<br>• Code of Practice on the Packaging, Labelling and |

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| | | waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. | | | | | Storage of Chemical Waste |
| S7.6 | WM9 | **General Waste**<br>• General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling.<br>• Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean.<br>• A reputable waste collector should be employed to remove general refuse on a daily basis. | Minimize production of the general refuse and avoid odour, pest and litter impacts | Contractor | All construction sites | Construction phase | • Waste Disposal Ordinance |
| S7.6 | WM10 | **Sewage**<br>• The WMP should document the locations and number of portable chemical toilets depending on the number of workers, land availability, site condition and activities.<br>• Regularly collection by licensed collectors should be arranged to minimize potential environmental impacts. | Minimize production of sewage impacts | Contractor | All construction sites | Construction phase | • Waste Disposal Ordinance |
| S7.6 | WM11 | **Topsoil reuse** – Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. This is considered a general measure for good site practice. | Good site practice | Contractor / Project Proponent | Onsite | Construction Phase | • ETWB Technical Circular (Works) No.29/2004 |
| ***Landscape and Visual (Construction)*** | | | | | | | |
| S.12.9 MM3 | LV5 | Open Space Provision - the principles adopted in the RODP planning ensure that public open space systems are incorporated. All requirements for open space areas stipulated in the planning documents for the formulation of the Preliminary Layout Plan should be adhered to. | Reprovision of open space.<br>Enhance visual amenity of the area and improve the overall landscape character | Government Developer / Detailed Design Consultant / Contractor | Onsite as stipulated in the planning documents for the formulation of the Preliminary Layout Plan | Prior to Construction and Construction Phase | Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines |
| S.12.9 MM4 | LV6 | Tree Protection & Preservation – Exiting trees to be retained within the Project Site should be carefully protected during construction. In particular OVTs will be preserved according to ETWB Technical Circular (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to | Protect and Preserve Trees | Government Developer / Detailed Design Consultant / Contractor | Onsite as stipulated in the planning documents for the formulation of | Prior to Construction and Construction Phase | ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006 |

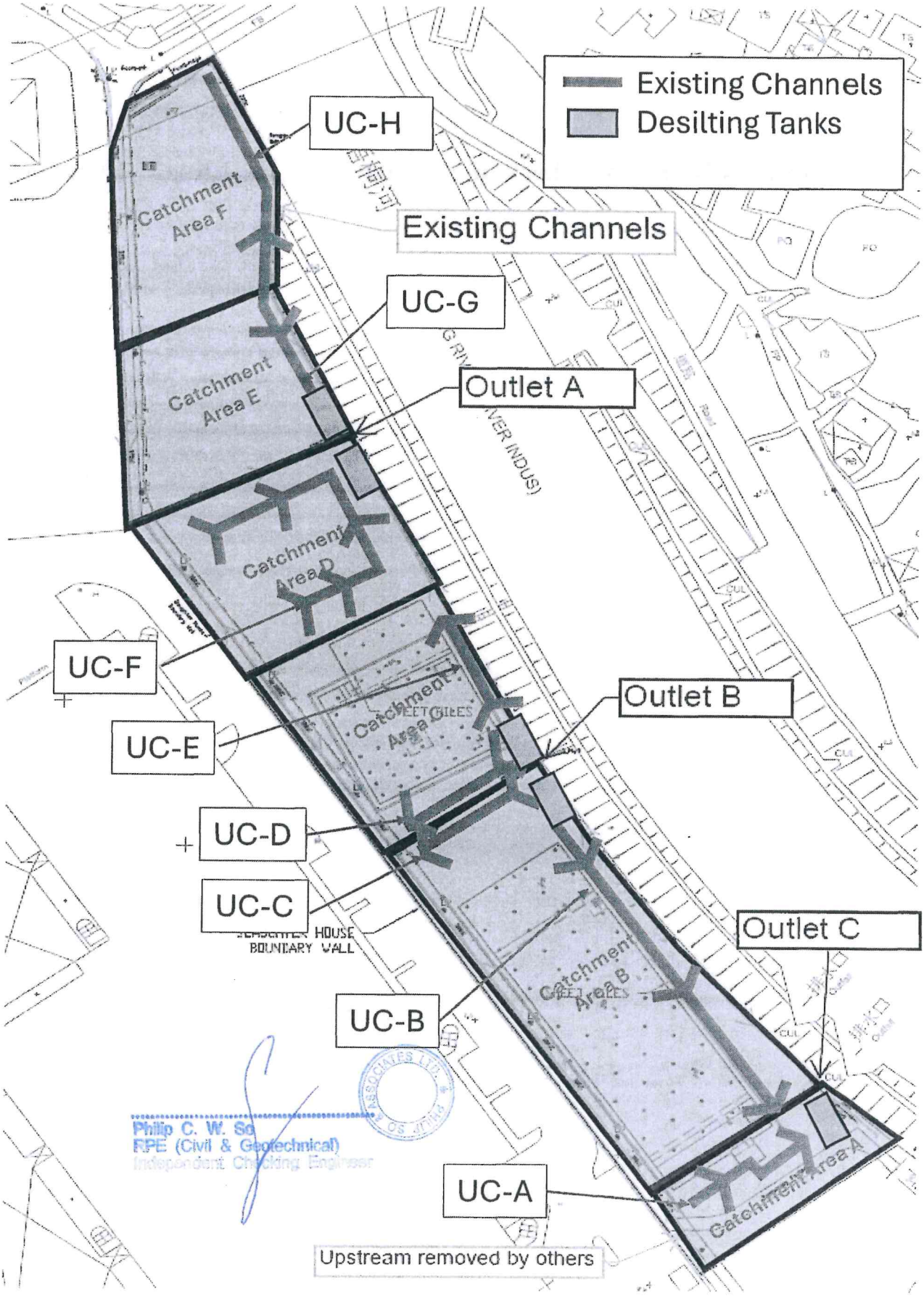
| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| | | undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.<br>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained. | | | the Preliminary Layout Plan | | |
| S.12.9 MM5 | LV7 | Tree Transplantation – Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.<br>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.<br>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to. | Transplant Trees where suitable for transplantation | Government Developer / Detailed Design Consultant / Contractor | Onsite where possible. Otherwise consider offsite locations | Prior to Construction, Construction Phase & Maintenance in Operation Phase | ETWB TCW 3/2006 and 2/2004<br>HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit |
| S.12.9 MM7 | LV9 | Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under ETWBTC 3/2006.<br>Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.<br>Compensatory planting for shrubs should be considered in suitable locations. Native species such as *Melastoma malabathricum, Diospyros vaccinioides, Gardenia jasminoides, Ixora chinensis, Ligustrum sinense, Litsea rotundifolia, Melastoma dodecandrum, Atalantia buxifolia, Rhodomyrtus tomentosa, Rhaphiolepis indica,* and *Rhododendron simsii* are suggested. | Compensate for trees and shrubs lost due to the Project. | Government Developer / Detailed Design Consultant / Contractor | Onsite where possible. Otherwise consider offsite locations | Prior to Construction, Construction Phase & Maintenance in Operation Phase | ETWB TCW 3/2006 and 2/2004 |
| S.12.9 MM9 | LV11 | Vertical Greening – Planting of climbers to grow up vertical surfaces were appropriate (e.g. building edges, piers). | Soften hard surfaces and | Project Proponent / | On appropriate | Prior to Construction, | ETWB TCW No. 11/2004 – Cyber |

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| | | | facilities | Detailed Design Consultant / Contractor / Maintenance Authority | structures | Construction Phase & Maintenance in Operation Phase | Manual for Greening |
| S.12.9 MM10 | LV12 | Green Roof – Roof greening where appropriate should be established on proposed buildings as per the guidelines stated. These guidelines provide further details including information regarding structural loading, design, maintenance, etc. considerations as well as providing information on what types of plants might be suitable. | Reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels. Provide greening. | Project Proponent / Detailed Design Consultant / Contractor / Maintenance Authority | On appropriate buildings | Prior to Construction, Construction Phase & Maintenance in Operation Phase | CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011);<br>ArchSD/Urbis Study on Green Roof Application in HK (2007) |
| S.12.9 MM11 | LV13 | Screen Planting – Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting. | To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment | Government / Developer / Detailed Design Consultant / Contractor | Along roads, around suitable built structures, or around VSRs to contain their view out to the NDA Maintenance and create a pleasant Contractor structures | Prior to Construction, Construction Phase & Maintenance in Operation Phase | ETWBTC 3/2006 |
| S12.9 MM14.5 | LV20 | Screen Hoarding – Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, nonreflective, recessive colours be used.<br>Any works areas near the ecological sensitive areas should erect 2m high dull green site boundary fence. Details can refer to the ecological impact assessment (Chapter 13 of the EIA report). | To screen undesirable views of the works site. | Contractor | Throughout NDAs | Construction Phase | |
| S12.9 | LV21 | Light Control – Construction day and night time lighting should be controlled to | To minimize glare | Government / | Throughout | Construction | |

| EIA Ref. | EM&A Log Ref | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Who to implement the Measures? | Location of the measures | When to implement the Measures? | What requirements or standards for the measures to achieve? |
|---|---|---|---|---|---|---|---|
| MM14.6 | | minimize glare impact to adjacent VSRs during the Construction phase.<br>Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase. | impact to adjacent VSRs | Developer / Contractor | NDAs | and Operation Phases | |
| ***Ecology (Construction Phase)*** | | | | | | | |
| S.13.9 | E13 | Review design and construction methods for bridges, especially those on the Sheung Yue and tidal Ng Tung Rivers, and adopt measures which minimize impacts on rivers and disturbance and fragmentation impacts on fauna.<br>No construction during ardeid breeding season (1 March to 31 July) along Sheung Yue River north and east of KTN area D1-5 and east of D1-9 and C2-3 and restriction of working hours on new pedestrian bridges over the Sheung Yue River and tidal Ng Tung River to 09.00 to 17.30 during the ardeid breeding season (1 March to 31 July).<br>Provision of alternative foraging habitat along main river channels for large waterbirds. | Minimize impacts on rivers and disturbance and fragmentation impacts on fauna. | Project Proponent / Detailed Design Consultant / Contractor | Along and within the Sheung Yue, Ng Tung and Shek Sheung Rivers | Detailed design and construction phases. | TM-EIAO. |
| S.13.9 | E16 | Creation of Green Corridors along the Sheung Yue, Ng Tung and Shek Sheung Rivers, retention and provision of screen plantings where feasible; provision of Open Space areas and development areas along river corridors;<br>Design and erection of 2m high solid dull green site barrier fence between river channel and any active works area along or adjacent to Ng Tung, Sheung Yue and Shek Sheung Rivers.<br>Ng Tung, Sheung Yue and Shek Sheung Rivers screen planting. | Minimize disturbance to waterbirds using Ng Tung, Sheung Yue and Shek Sheung River channels. | Detailed Design Consultant / Contractor | Ng Tung, Sheung Yue and Shek Sheung Rivers | Detailed design and construction phases. | TM-EIAO. |
| S.13.9 | E19 | Use opaque, non-transparent, non-reflective noise barriers for all construction sites.<br>Unnecessary lighting should be avoided. | Minimize mortality impacts on birds. | Contractor | All construction sites | Construction phase. | TM-EIAO. |

# Appendix K

# As-built Drawing of Site Temporary Drainage


Existing Channels
Desilting Tanks
UC-H
Existing Channels
UC-G
Outlet A
UC-F
UC-E
Outlet B
UC-D
UC-C
Outlet C
UC-B
UC-A
Upstream removed by others
Catchment Area F
Catchment Area E
Catchment Area D
Catchment Area C
Catchment Area B
Catchment Area A
BOUNDARY WALL
Philip C. W. So
RPE (Civil & Geotechnical)
Independent Checking Engineer

# Appendix L

# Waterbirds Survey Report for the Reporting Month

ecology
biodiversity
landscape

aec

# WSD Contract No. 3/WSD/20 - Reclaimed Water Supply to Sheung Shui and Fanling - Provision of EM&A (Ecological) Monitoring

Monthly Report for August 2024
(Issue 1)

Job Ref.: 21/2063/582 AUES-SWHTSE
Date: 9th September 2024

www.aechk.hk

# WSD Contract No. 3/WSD/20 - Reclaimed Water Supply to Sheung Shui and Fanling - Provision of EM&A (Ecological) Monitoring

Monthly Report for August 2024

(Issue 1)

September 2024

| | Name | Signature |
|---|---|---|
| Prepared by: | **Nicholas Tam** |  |
| Reviewed by: | **Ida Yu** |  |
| Date: | **9th September 2024** | |

Job Ref.: 21/2063/582 AUES-SWHTSE

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# 1 INTRODUCTION

1.1 According to Section 12.3.2.5 of "Updated EM&A Manual for Advance and First Stage Works of Kwu Tung North and Fanling North New Development Areas", monitor of measures to minimise disturbance to waterbirds on Ng Tung, Sheung Tue and Shek Sheung Rivers is required.

1.2 aec Ltd. has been appointed by Action-United Environmental Services & Consulting (AUES) to conduct weekly transect bird surveys at high and low tides along Ng Tung River, Sheung Yue River and Shek Sheung River; and identify sources of actual and potential disturbances to birds due to construction activities of WSD Contract No. 3/WSD/20 – Reclaimed Water Supply to Sheung Shui and Fanling. As instructed by the Contractor, the commencement date of the survey was in the week of 10th January 2022. This monthly report summarises the monitoring findings in August 2024.

# 2 MONITORING METHODOLOGY

2.1 The survey methodology references the methodology stated in approved Baseline Monitoring Report (Ecology) (Version 1) (prepared by Cinotech Consultants Limited (2019)) under "*Contract No. SPW 08/2019 – Shek Wu Hui Effluent Polishing Plant – Main Works Stage 1*". Three transects and seven point count locations were selected within the 500m boundary of Ng Tung, Sheung Yue and Shek Sheung River. These locations are shown in **Figure 1** and summarized in **Table 1**.

**Table 1** Ecological Monitoring Stations

| Monitoring Stations | Descriptions | Influenced by Tidal Action |
|---|---|---|
| Transect T1 | Along Ng Tung River | No |
| Transect T2 | | |
| Point Count Location P1 | | |
| Point Count Location P2 | | |
| Point Count Location P3 | | |
| Point Count Location P4 | | |
| Point Count Location P5 | At Shek Sheung River (Low-flow Channel) | No |
| Transect T3 | Along Shek Sheung River & Sheung Yue River | Yes |
| Point Count Location P6 | At Shek Sheung River | Yes |
| Point Count Location P7 | At Intersection between Sheung Yue and Shek Sheung River | Yes |

2.2 Surveys were conducted on a weekly basis at both high and low tides (it is considered high tide when tidal levels are above 1.5m and low tide when tidal levels are below 1.5m at Tsim Bei Tsui Station).

2.3 All avifauna species that were seen or heard were identified and quantified along transects and at point count locations. Survey data would be recorded continuously by the surveyor as they walked along the transects, while survey data of each point count location would be collected for 5-minutes after surveyor reached the designated point count location. During the surveys, the utilisation of Ng Tung River, Sheung Yue River and Shek Shui River and their immediate environs/habitats by waterbirds would be focused. For comparison and data analysis, the transect routes and point count locations followed Figure 1 of the approved Baseline Monitoring Report (Ecology) (Version 1). Locations of T1, T2, and P1 to P4 were adjusted to the opposite side of Ng Tung River as the original transects were inaccessible due to various construction projects.

2.4 Noticeable behaviours such as breeding, nesting, roosting, feeding and presence of recently fledged juveniles were recorded and reported. In the case which such behaviours were observed for species of conservation importance, the Resident Engineer (RE), the Contractor and the Independent Environmental Checker (IEC) would be immediately notified after the survey such that the Contractor could review the current construction programme and minimize disturbances due to construction activities.

2.5 Weather conditions, tidal information, time of the survey and other noticeable activities occurring within the vicinity of the survey area were recorded.

# 3 ANALYTICAL METHODOLOGY

3.1 Total numbers of waterbirds and six representative waterbird species (listed in **Table 2**) are used as an indicator of the level disturbance to waterbirds at each of the survey locations. Species listed as wetland-dependant according to Carey *et al*. (2001) are defined as waterbirds. A significant decline in the abundance of all or representative waterbirds would indicate a high level of disturbance.

**Table 2** Representative Waterbirds

| Common Name | Species Name | Chinese Name |
|---|---|---|
| Chinese Pond Heron | *Ardeola bacchus* | 池鷺 |
| Eastern Cattle Egret | *Bubulcus coromandus* | 牛背鷺 |
| Grey Heron | *Ardea cinerea* | 蒼鷺 |
| Great Egret | *Ardea alba* | 大白鷺 |
| Little Egret | *Egretta garzetta* | 小白鷺 |
| Great Cormorant | *Phalacrocorax carbo* | 普通鸕鷀 |

Survey data from each month is compared to the baseline monitoring data. Baseline monitoring data was downloaded and extracted from the Baseline Monitoring Report retrieved from the following hyperlink (the extracted summer dataset of the baseline monitoring data is shown in **Appendix D**): https://www.epd.gov.hk/eia/register/english/permit/fep1792018/documents/blmrev1/pdf/blmrev1.pdf. When a decline in the total number of Waterbirds or the number of the representative Waterbird species is recorded the survey data would be compared to the baseline data (from Shek Wu Hui Effluent Polishing Plant Baseline Monitoring Report (Ecology) by Cinotech Consultants Limited, 2019) using a two-sample one-tailed Student's t-test assuming unequal variance to analyse whether the decline is significant.

3.2 If the collected data for the reporting month shows a significant difference at the 95% confidence level, the action level will be triggered. If the collected data for the reporting month shows a significant difference at the 99% confidence level, the limit level is triggered and corresponding suggestions would be given to minimize the disturbances according to **Table 3**.

**Table 3** Action and Limit Levels and Responses to Evidence of Disturbance to Waterbirds using Ng Tung, Sheung Yue and Shek Sheung Rivers during Construction Phase

| Action Level | Response | Limit Level | Response |
|---|---|---|---|
| Decline in numbers of all waterbird species relative to numbers during Baseline | Investigate cause(s) and if cause(s) identified as related to NDAs project instigate remedial action | Decline in numbers of all waterbird species relative to numbers during Baseline Monitoring such that the | Investigate cause(s) and if cause(s) identified as related to the NDAs project instigate remedial action. |

| Action Level | Response | Limit Level | Response |
|---|---|---|---|
| Monitoring such that the Action Level response is triggered. | to remove or reduce source of disturbance. | Limit Level response is triggered. | Review and adjust project's Long Valley Nature Park (LVNP) management measures to improve conditions for affected species. |
| Decline in numbers of any one Waterbird species occurring in significant numbers* during Baseline Monitoring such that the Action Level response is triggered. | Investigate cause(s) and if cause(s) identified as related to NDAs project instigate remedial action to remove or reduce source of disturbance. | Decline in numbers of any one Waterbird species occurring in significant numbers* during Baseline Monitoring such that the Limit Level response is triggered. | Investigate cause(s) and if cause(s) identified as related to the NDAs project instigate remedial action. Review and adjust project's LVNP management measures to improve conditions for affected species. |

Note: Whether numbers are significant depend on species and season after collection and evaluation of baseline survey data.

3.3 In order to increase the sample size and reduce the random error on each survey day, survey data would be collectively analysed on a monthly basis. The collective data of each month is also compared to the baseline data of the respective month and season instead of the entire data set, to account for the seasonal variation in the abundance of waterbirds. In this study, the winter season is defined as October to March, while the summer season is defined as April to September.

# 4 RESULTS

4.1 The weather conditions and tide levels on the survey dates are listed in the table below.

**Table 4** Weather Conditions and Tidal Information of Survey Dates in the Reporting Month

| High Tide | | | | Low Tide | | | |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **Tide (m)** | **Weather** | **Date** | **Time** | **Tide (m)** | **Weather** |
| 08-Aug-24 | 14:00 | 2.16 | Sunny | 05-Aug-24 | 16:00 | 1.08 | Cloudy |
| 16-Aug-24 | 09:00 | 2.07 | Cloudy | 13-Aug-24 | 10:00 | 0.97 | Cloudy |
| 23-Aug-24 | 11:00 | 2.35 | Cloudy | 21-Aug-24 | 16:00 | 1.25 | Cloudy |
| 27-Aug-24 | 17:00 | 1.39 | Sunny | 26-Aug-24 | 10:30 | 0.64 | Sunny |

4.2 Abundance and diversity of total bird species and representative waterbird species are summarized in **Tables 5** and **6** respectively**.** Detailed list of avifauna recorded is provided in **Appendix A**.

**Table 5** Total Bird Species and Abundance at Point Count Locations in the Reporting Month

| Category | Number of Species | Abundance |
|---|---|---|
| All Avifauna | 20 | 235 |
| Waterbirds | 10 | 159 |

**Table 6** Abundance of Representative Waterbirds at Point Count Locations in the Reporting Month

| Common Name | Species Name | Chinese Name | Abundance |
|---|---|---|---|
| Chinese Pond Heron | *Ardeola bacchus* | 池鷺 | 28 |
| Eastern Cattle Egret | *Bubulcus coromandus* | 牛背鷺 | 12 |
| Grey Heron | *Ardea cinerea* | 蒼鷺 | 10 |
| Great Egret | *Ardea alba* | 大白鷺 | 25 |
| Little Egret | *Egretta garzetta* | 小白鷺 | 51 |
| Great Cormorant | *Phalacrocorax carbo* | 普通鸕鷀 | 0 |

# 5 ANALYSIS

5.1 The results of Student's t-test for all waterbirds and representative waterbirds are compiled in **Table 7** respectively. Further details are provided in **Appendices B** and **C**.

**Table 7** T-test Result for Waterbirds in the Reporting Month

| Category | Monthly | | | | | Seasonal | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-value | *df* | *p* | Action Level | Limit Level | T-value | *df* | *p* | Action Level | Limit Level |
| All Waterbirds | No decline | | | | | -1.180 | 5 | 0.146 | | |
| Chinese Pond Heron | -2.580 | 6 | 0.021 | * | | -4.000 | 4 | 0.008 | * | * |
| Eastern Cattle Egret | No decline | | | | | No decline | | | | |
| Grey Heron | No decline | | | | | No decline | | | | |
| Great Egret | No decline | | | | | No decline | | | | |
| Little Egret | -1.555 | 4 | 0.097 | | | -2.392 | 3 | 0.048 | * | |
| Great Cormorant | No decline | | | | | No decline | | | | |

* = level triggered

5.2 In this reporting month, decline in Chinese Pond Herons has triggered the action level when compared to the monthly data, also triggering the limit level when compared to the seasonal data. Decline in Little Egrets has triggered the action level when compared to the seasonal data.

5.3 As discussed in previous reports, the declines of individual waterbird species should not be the result of increased disturbances from the Project or surrounding on-going projects, as increased disturbance would discourage multiple waterbird species from foraging near the transects and point count locations instead. Thus, it is suggested that construction of the current project did not directly cause the declines in these two bird species.

5.4 Nevertheless, it was noted from the visits that exterior construction of the Project mostly ceased, and that interior construction was underway. Other construction and anthropogenic activities around the survey transects have still been active during the reporting month and the following activities were noted.

5.5 A playback device for bird calls has been found near the mitigation wetland in T1 next to P2 managed by AFCD since the survey on 3rd April 2023. Egret dummies, which are assumed to attract roosting ardeids, have been observed being tied on the trees of the same pond since the survey on 17th October 2023.

5.6 Road enhancement and sewerage system upgrade works by DSD along T2 near P3 were observed active throughout the surveying month, this construction has extended to P4 since the survey on 17th April 2024, where excavators have been in use. The use of crane trucks was also observed on the pavement next to P4 since the survey on 23rd May 2024 and a pit resulting from excavation has been

present since the survey on 12th July 2024 (Photo 3 of **Appendix E**), and hence the disturbance level at P3 is expected to increase.

5.7 An extension of the sewerage system upgrade works (Section 5.6) has been in operation at the eastern bank of Shek Sheung River near P5, since the survey on 23rd August 2023. Machinery and stockpiles have been present within its construction area, which may be a potential source of disturbance that discourages birds from foraging near P5.

5.8 The construction by Civil Engineering and Development Department (CEDD) near P7 was observed active throughout the entire reporting month. Piling works of the same construction was also observed at T3, roughly midway between P6 and P7, and since the survey on 11th September 2023, excavators have been used on the opposite bank to the survey transect as well. Concrete blocks with metal bars attached have been placed in the river next to the piling site since the survey on 29th November 2023. The latest condition of this construction is provided in Photo 4 of **Appendix E**.

5.9 Unknown construction works owned by Build King – Richwell Engineering Joint Venture (BKREJV) were observed to have started since the survey on 9th January 2024. The construction was located in a cleared area between Sheung Yue River and the Sheung Shui Slaughterhouse, and it involved excavation and drilling works. Since the survey on 31st May 2024, the excavated pit was seen to be filled halfway. Latest condition of this construction is provided in Photo 5 of **Appendix E**.

5.10 Monitoring work will be continued next month to evaluate any construction impact on waterbirds. The construction site should continue keeping the best site practice in noise control to minimize disturbance caused to waterbirds. No further action is advised at the moment.

# 6 OBSERVATIONS

6.1 The types of waterbird behavior observed during ecological monitoring are listed below:

- Flying
- Resting
- Foraging

6.2 The anthropogenic activities observed during ecological monitoring are listed in **Table 8.**

**Table 8** Observations of the anthropogenic activities during the Ecological Monitoring in the Reporting Month

| Location | Observations | |
|---|---|---|
| | Project Related | Non-project Related |
| T1 (PC1, PC2) | / | Fishing, placement of egret dummies at nearby pond (AFCD) |
| T2 (PC3, PC4) | Interior building works | Fishing, Sewerage system upgrade and road enhancement (DSD) |
| PC5 | / | Placement of construction materials on riverbank (part of the sewerage system upgrade by DSD) |
| T3 (PC6, PC7) | / | Fishing, construction works at P7 and along T3 (CEDD), construction works (BKREJV), planting in cylindrical tubes and laying of concrete blocks |

# 7 REFERENCES

Carey, G.J., Chalmers, M.L., Diskin, D.A., Kennerley, P.R., Leader, P.J., Leven, M.R., Lewthwaite, R.W., Melville, D.S., Turnbull, M., and Young, L. 2001. The Avifauna of Hong Kong. Hong Kong Bird Watching Society, Hong Kong.

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## **Appendix A** Recorded Bird Species and their Abundance in the Reporting Month

| Common Name | Chinese Name | Scientific Name | Waterbird | Point Count Abundance | Transect Abundance |
|---|---|---|---|---|---|
| Black-crowned Night Heron | 夜鷺 | *Nycticorax nycticorax* | Y | | ++ |
| Chinese Pond Heron | 池鷺 | *Ardeola bacchus* | Y | 28 | +++++ |
| Eastern Cattle Egret | 牛背鷺 | *Bubulcus coromandus* | Y | 12 | ++++ |
| Grey Heron | 蒼鷺 | *Ardea cinerea* | Y | 10 | + |
| Great Egret | 大白鷺 | *Ardea alba* | Y | 25 | ++++ |
| Little Egret | 小白鷺 | *Egretta garzetta* | Y | 51 | ++++ |
| White-breasted Waterhen | 白胸苦惡鳥 | *Amaurornis phoenicurus* | Y | | + |
| Black-winged Stilt | 黑翅長腳鷸 | *Himantopus himantopus* | Y | 5 | + |
| Common Sandpiper | 磯鷸 | *Actitis hypoleucos* | Y | 4 | + |
| Marsh Sandpiper | 澤鷸 | *Tringa stagnatilis* | Y | 7 | |
| Common Greenshank | 青腳鷸 | *Tringa nebularia* | Y | 13 | + |
| Spotted Dove | 珠頸斑鳩 | *Spilopelia chinensis* | N | 8 | +++ |
| Asian Koel | 噪鵑 | *Eudynamys scolopaceus* | N | 1 | + |
| White-throated Kingfisher | 白胸翡翠 | *Halcyon smyrnensis* | Y | 4 | + |
| Common Kingfisher | 普通翠鳥 | *Alcedo atthis* | Y | | + |
| Alexandrine Parakeet | 亞歷山大鸚鵡 | *Psittacula eupatria* | N | | + |
| Hair-crested Drongo | 髮冠卷尾 | *Dicrurus hottentottus* | N | | + |
| Red-billed Blue Magpie | 紅嘴藍鵲 | *Urocissa erythroryncha* | N | | + |
| Japanese Tit | 日本山雀 | *Parus minor* | N | 1 | + |
| Red-whiskered Bulbul | 紅耳鵯 | *Pycnonotus jocosus* | N | | + |
| Chinese Bulbul | 白頭鵯 | *Pycnonotus sinensis* | N | | + |
| Barn Swallow | 家燕 | *Hirundo rustica* | N | | + |
| Yellow-bellied Prinia | 黃腹鷦鶯 | *Prinia flaviventris* | N | 2 | + |
| Common Tailorbird | 長尾縫葉鶯 | *Orthotomus sutorius* | N | 3 | ++ |
| Masked Laughingthrush | 黑臉噪鶥 | *Pterorhinus perspicillatus* | N | | + |
| Swinhoe's white-eye | 暗綠繡眼鳥 | *Zosterops simplex* | N | | ++ |
| Crested Myna | 八哥 | *Acridotheres cristatellus* | N | 49 | +++++ |
| Common Myna | 家八哥 | *Acridotheres tristis* | N | 1 | + |
| Black-collared Starling | 黑領椋鳥 | *Gracupica nigricollis* | N | 2 | ++++ |
| Oriental Magpie Robin | 鵲鴝 | *Copsychus saularis* | N | 1 | + |
| Eurasian Tree Sparrow | 樹麻雀 | *Passer montanus* | N | | + |
| Scaly-Breasted Munia | 斑文鳥 | *Lonchura punctulata* | N | | ++ |
| White Wagtail | 白鶺鴒 | *Motacilla alba* | N | 8 | ++ |
| | | Total Point Count Abundance | | 235 | |
| | | Total Waterbirds | | 159 | |

For transect abundance, +: 1-10, ++: 11-20, +++: 21-30, ++++: 31-40, +++++: >40

## **Appendix B** Total Waterbird Abundance from Point Count

| Survey Information | | | | Number of Waterbirds | |
|---|---|---|---|---|---|
| **Week** | **Date** | **Time** | **Tide Level** | **Individuals Recorded** | **Total** |
| 1 | 05-Aug-24 | 16:00 | Low | 16 | 33 |
| | 08-Aug-24 | 14:00 | High | 17 | |
| 2 | 13-Aug-24 | 10:00 | Low | 21 | 32 |
| | 16-Aug-24 | 09:00 | High | 11 | |
| 3 | 21-Aug-24 | 16:00 | Low | 39 | 49 |
| | 23-Aug-24 | 11:00 | High | 10 | |
| 4 | 26-Aug-24 | 10:30 | Low | 22 | 45 |
| | 27-Aug-24 | 17:00 | High | 23 | |
| | | | Survey Average | | 39.75 |
| | | | Baseline | August Average | 37 |
| | | | | Summer Average | 45.34 |

## **Appendix C** Abundance of Representative Waterbirds from Point Count

| Representative Species | | Recorded Abundance (August 2024) | | | | | | Baseline | |
|---|---|---|---|---|---|---|---|---|---|
| Common Name | Species Name | Week 1 | Week 2 | Week 3 | Week 4 | | Average | August Average | Summer Average |
| Chinese Pond Heron | *Ardeola bacchus* | 12 | 4 | 3 | 9 | | 7 | 14.25 | 16.18 |
| Eastern Cattle Egret | *Bubulcus coromandus* | 2 | 1 | 9 | 0 | | 3 | 0.5 | 3.32 |
| Grey Heron | *Ardea cinerea* | 3 | 2 | 3 | 2 | | 2.5 | 0 | 0.55 |
| Great Egret | *Ardea alba* | 3 | 4 | 10 | 8 | | 6.25 | 2 | 2.61 |
| Little Egret | *Egretta garzetta* | 10 | 8 | 22 | 11 | | 12.75 | 18 | 20.53 |
| Great Cormorant | *Phalacrocorax carbo* | 0 | 0 | 0 | 0 | | 0 | 0 | 0 |

## **Appendix D** Baseline Survey Data (Summer)

** Only include data from "All Waterbirds" and the six representative waterbird species for data analysis*

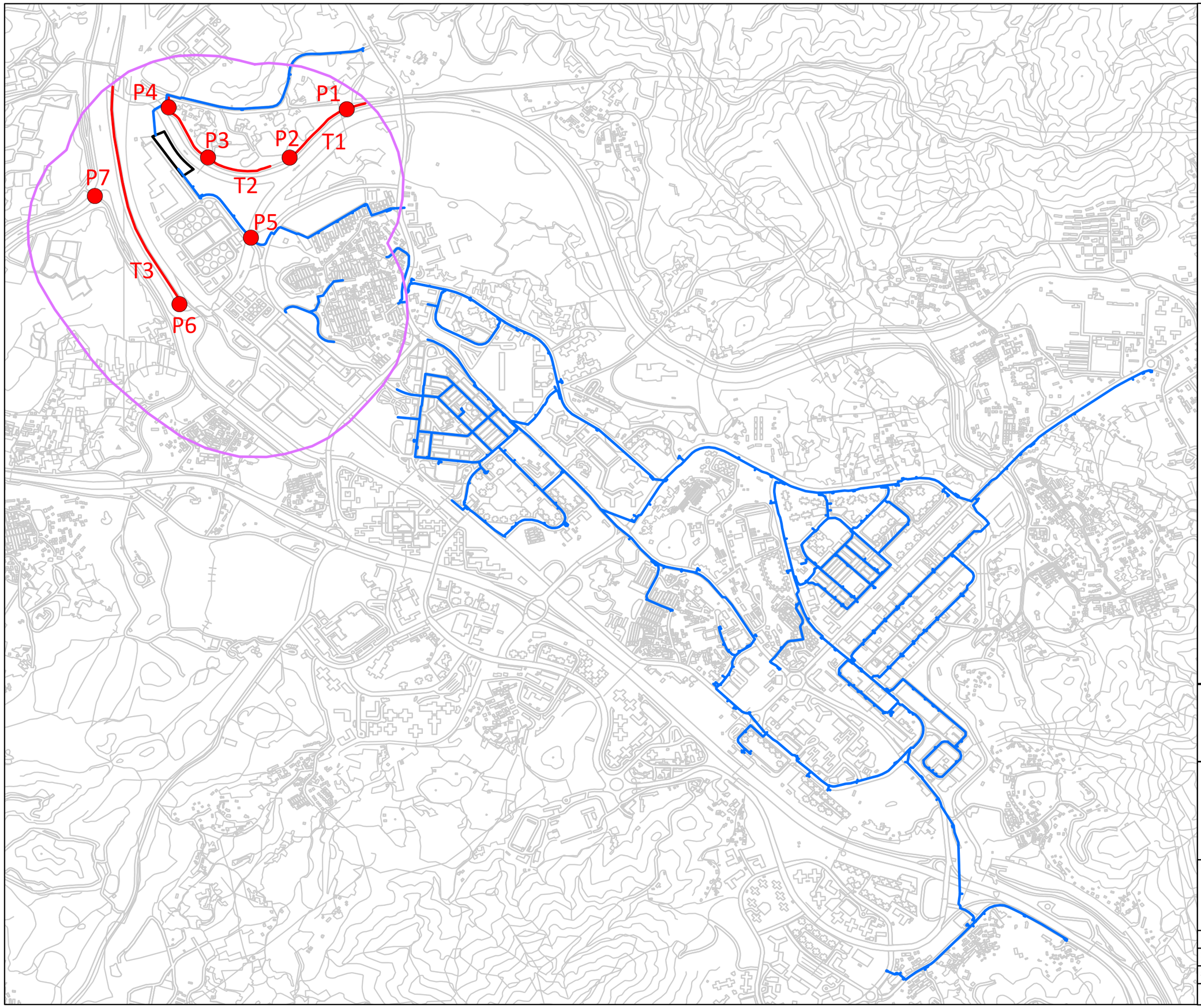
| Representative Species | | Recorded Abundance (Summer Baseline) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Common Name** | **Species Name** | **06-04-18** | **13-04-18** | **19-04-18** | **27-04-18** | **04-05-18** | **11-05-18** | **17-05-18** | **25-05-18** |
| All Waterbirds | | 37 | 71 | 78 | 52 | 59 | 47 | 48 | 50 |
| Chinese Pond Heron | *Ardeola bacchus* | 9 | 27 | 21 | 10 | 17 | 16 | 14 | 19 |
| Eastern Cattle Egret | *Bubulcus coromandus* | 5 | 9 | 24 | 15 | 13 | 0 | 2 | 1 |
| Grey Heron | *Ardea cinerea* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Great Egret | *Ardea alba* | 2 | 6 | 2 | 5 | 6 | 5 | 1 | 2 |
| Little Egret | *Egretta garzetta* | 16 | 24 | 30 | 22 | 18 | 18 | 29 | 28 |
| Great Cormorant | *Phalacrocorax carbo* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Representative Species** | | **Recorded Abundance (Summer Baseline)** | | | | | | | |
| **Common Name** | **Species Name** | **01-06-18** | **04-06-18** | **15-06-18** | **20-06-18** | **26-06-18** | **01-07-18** | **13-07-18** | **16-07-18** |
| All Waterbirds | | 68 | 63 | 55 | 51 | 50 | 59 | 40 | 43 |
| Chinese Pond Heron | *Ardeola bacchus* | 26 | 25 | 23 | 18 | 20 | 24 | 13 | 18 |
| Eastern Cattle Egret | *Bubulcus coromandus* | 8 | 8 | 5 | 5 | 3 | 2 | 2 | 3 |
| Grey Heron | *Ardea cinerea* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Great Egret | *Ardea alba* | 3 | 4 | 2 | 5 | 4 | 3 | 2 | 2 |
| Little Egret | *Egretta garzetta* | 29 | 26 | 25 | 23 | 21 | 29 | 23 | 20 |
| Great Cormorant | *Phalacrocorax carbo* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Representative Species** | | **Recorded Abundance (Summer Baseline)** | | | | | | | |
| **Common Name** | **Species Name** | **27-07-18** | **10-08-18** | **13-08-18** | **24-08-18** | **27-08-18** | **07-09-18** | **10-09-18** | **21-09-18** |
| All Waterbirds | | 47 | 39 | 41 | 33 | 35 | 25 | 48 | 54 |
| Chinese Pond Heron | *Ardeola bacchus* | 17 | 14 | 19 | 10 | 14 | 6 | 16 | 13 |
| Eastern Cattle Egret | *Bubulcus coromandus* | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| Grey Heron | *Ardea cinerea* | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 9 |
| Great Egret | *Ardea alba* | 3 | 2 | 3 | 0 | 3 | 3 | 6 | 4 |
| Little Egret | *Egretta garzetta* | 27 | 21 | 18 | 18 | 15 | 9 | 21 | 18 |
| Great Cormorant | *Phalacrocorax carbo* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Representative Species** | | **Recorded Abundance (Summer Baseline)** | | | | | | | |
| **Common Name** | **Species Name** | **26-09-18** | **04-04-19** | **10-04-19** | **18-04-10** | **22-04-19** | **03-05-19** | **08-05-19** | **17-05-19** |
| All Waterbirds | | 48 | 30 | 30 | 48 | 39 | 34 | 28 | 23 |
| Chinese Pond Heron | *Ardeola bacchus* | 19 | 11 | 12 | 11 | 13 | 16 | 10 | 4 |
| Eastern Cattle Egret | *Bubulcus coromandus* | 0 | 3 | 0 | 0 | 3 | 3 | 0 | 0 |
| Grey Heron | *Ardea cinerea* | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Great Egret | *Ardea alba* | 7 | 1 | 2 | 2 | 0 | 0 | 1 | 0 |
| Little Egret | *Egretta garzetta* | 14 | 14 | 15 | 25 | 23 | 14 | 16 | 18 |
| Great Cormorant | *Phalacrocorax carbo* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Representative Species** | | **Recorded Abundance (Summer Baseline)** | | | | | | | |
| **Common Name** | **Species Name** | **20-05-19** | **31-05-19** | **05-06-19** | **14-06-19** | **18-06-19** | | | |
| All Waterbirds | | 45 | 39 | 33 | 40 | 57 | | | |
| Chinese Pond Heron | *Ardeola bacchus* | 23 | 16 | 15 | 18 | 23 | | | |
| Eastern Cattle Egret | *Bubulcus coromandus* | 2 | 0 | 0 | 0 | 7 | | | |
| Grey Heron | *Ardea cinerea* | 0 | 0 | 0 | 0 | 0 | | | |
| Great Egret | *Ardea alba* | 0 | 0 | 2 | 3 | 2 | | | |
| Little Egret | *Egretta garzetta* | 19 | 20 | 16 | 17 | 22 | | | |
| Great Cormorant | *Phalacrocorax carbo* | 0 | 0 | 0 | 0 | 0 | | | |

## **Appendix E** Survey Photos

| | |
|---|---|
| **Photo 1** Site conditions of the project site at P3 (16/8/2024) | **Photo 2** Fishing activities at P3 (21/8/2024) |
|  |  |
| **Photo 3** Extension of road construction at T2 near P4 (1/8/2024) | **Photo 4** Construction at T3 by CEDD (8/8/2024) |
|  |  |
| **Photo 5** Works Progress of Construction by BKREJV at T3 (27/8/2024) | **Photo 6** Group of waterbirds at P2 (21/8/2024) |
|  |  |

# Figure 1

# Transect and Point Count Location




Proposed Shek Wu Hui Water Reclamation Plant

500m Survey Boundary

Proposed Retained Water Mains

Walk Transects

Point Count Locations

ecology
biodiversity
landscape
aec

Project Title:

WSD Contract No. 3/WSD/20 -
Reclaimed Water Supply to Sheung Shui and Fanling -
Provision of EM&A (Ecological) Monitoring

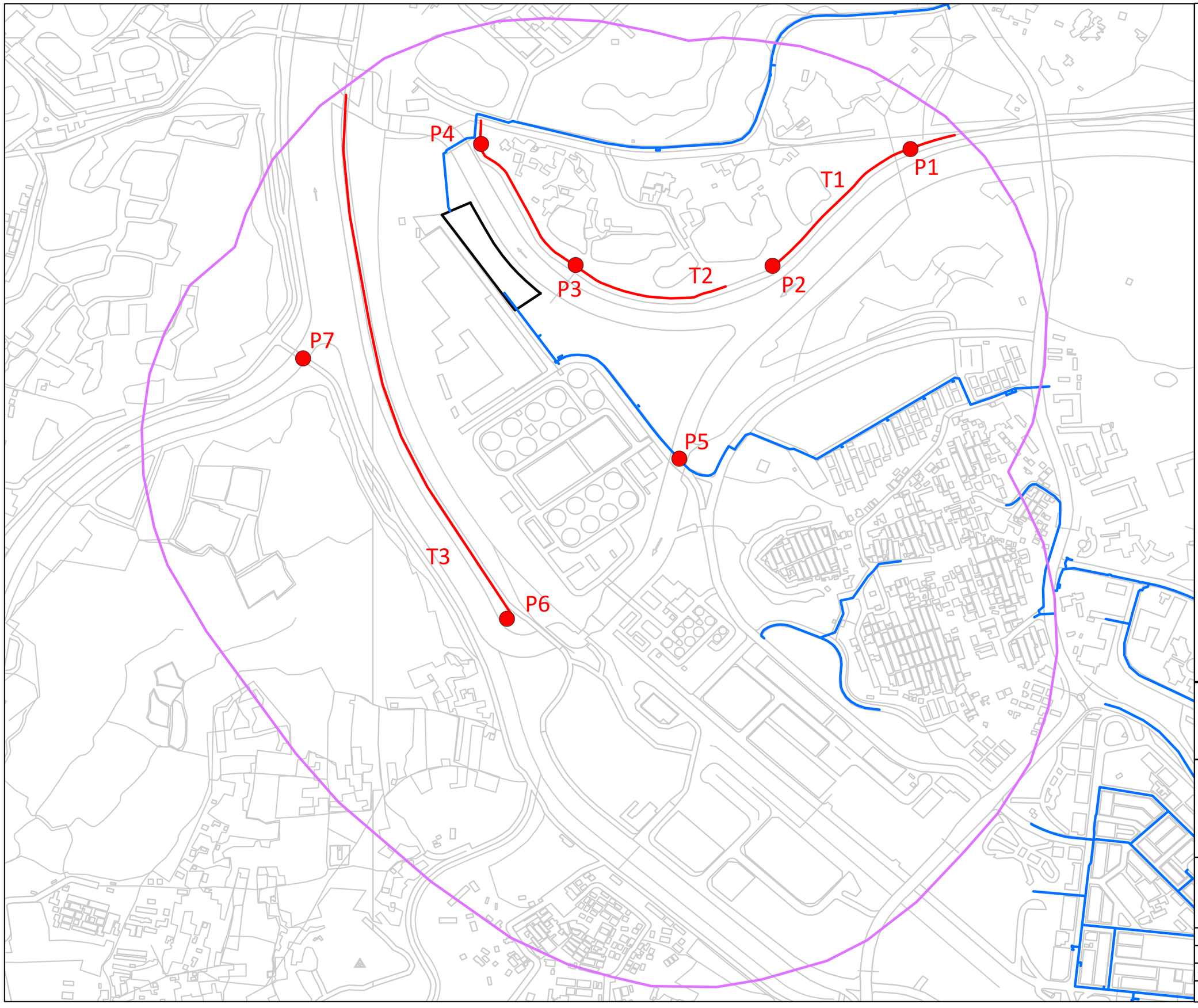
Figure Title:

Transect and Point Count Locations

| | | | |
|---|---|---|---|
| Drawn by: | NT | Scale: | 1:14,500 on A3 |
| Checked By: | NT | Date: | 5 July 2022 |
| Approved by: | IY | | |
| Figure Number: | Figure 1 | Revision: | 2 |

# Figure 1a

# Transect and Point Count Location (Zoomed In)




Proposed Shek Wu Hui Water Reclamation Plant

500m Survey Boundary

Proposed Retained Water Mains

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Figure Title:

Transect and Point Count Locations (zoomed in)

| | | | |
|---|---|---|---|
| Drawn by: | NT | Scale: 1:6,000 | on A3 |
| Checked By: | NT | Date: 5 July 2022 | |
| Approved by: | IY | | |
| Figure Number: | Figure 1a | | Revision: 2 |