MOTT MACDONALD

Proposed Comprehensive Development at Wo Shang Wai, Yuen Long

Quarterly EM&A Summary Report for May 2022 – July 2022 (Rev A)

11 October 2022

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Profit Point Enterprises Limited

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Executive summary

Mott MacDonald Hong Kong Ltd. ("MMHK") has been commissioned by Heng Shung Construction Co. Ltd. to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit (EM&A) for both pre-construction and construction phases of the Proposed Comprehensive Development at Wo Shang Wai, Yuen Long. From August 2016, the Project Proponent, Profit Point Enterprises Limited, commissioned MMHK to continue the ET services.

This is the 49th Quarterly EM&A Summary report and this report summarises the findings on EM&A during the period from 1 May 2022 to 31 July 2022.

Exceedance of Action and Limit Levels

There was no breach of Action or Limit Levels for air quality (1-hr TSP and 24-hr TSP) and noise during the reporting period. However, for water quality, a total of 18 Action Level exceedances were observed. 11 Action Level exceedance of pH were recorded at MP3 in May 2022; four Action Level exceedances of pH and one Action Level exceedance of dissolved oxygen (DO) were recorded at MP3 in June 2022; and two Action Level exceedances of DO were recorded at MP3 in July 2022.

Investigations have been carried out to identify the causes of exceedances. From investigation, the contractor has implemented water quality mitigation measures as recommended in the EIA report. With localised natural variations and external factors such as pond fish culture activities in the fish pond represented by MP3, the exceedances were considered not due to the project's construction works.

Implementation of Mitigation Measures

Site audits were carried out on a weekly basis during the monitoring period to confirm the implementation of environmental mitigation measures undertaken by the Contractor in the reporting period. The status of implementation of mitigation measures in the site is shown in **Appendix F**.

Record of Complaints

There was no record of complaints received in the reporting period.

Future Key Issues

Site works scheduled to be commissioned in the coming three months include regular maintenance work for the Wetland Restoration Area including lowering of the water level and removal of unwanted species in the pond. No major construction works will be carried out. Potential environmental impacts due to the activities, including air quality, noise, water quality, ecology and landscape and visual, will be monitored.

Environmental mitigation measures will be implemented on site as recommended and weekly site audits will be carried out to ensure that the environmental conditions are acceptable.

1 Introduction

1.1 Background

In March 2005, the Project Proponent, Profit Point Enterprises Limited, acquired the development site in Yuen Long at Wo Shang Wai. An Environmental Impact Assessment (EIA) was then carried out under the EIA Ordinance (EIAO), and the Environmental Permit (EP-311/2008) for construction of the comprehensive development in Wo Shang Wai was first granted by EPD on 9 September 2008 and has been subsequently varied, with the current version (EP-311/2008/E) issued by EPD on 19 December 2017.

The Project involves the residential development and associated infrastructure and wetland restoration area and linear landscape area. The construction works under the Environmental Permit commenced on 12 May 2010. The site formation construction works of the Wetland Restoration Area (hereafter WRA) were completed on 15 November 2010, and the WRA was established by October 2012, within 30 months from the commencement of construction as stipulated in the EP. This indicated that planting works as scheduled in the approved Wetland Restoration and Creation Scheme (WRCS; November 2009) were complete, except along the western and southern boundary where the planting is affected by the existing site boundary and noise barrier, and for which a Variation to Environmental Permit (EP-311/2008/C) to defer planting at the location was approved. Consequently, EP (EP-311/2008/D) including specific mitigation measures to minimise certain identified noise impacts during the operation phase was approved. The current valid EP (EP-311/2008/E) comprises varied conditions for the implementation and maintenance of visual and landscape measures, and for the implementation of noise mitigation measures.

Mott MacDonald Hong Kong Ltd. (“MMHK”) has been commissioned to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit (EM&A) for both pre-construction and construction phases of the Proposed Comprehensive Development at Wo Shang Wai, Yuen Long.

This report summarises the findings during the period from 1 May 2022 to 31 July 2022.

1.2 Project Organization

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in **Appendix A**.

1.3 Environmental Status in the reporting period

During the reporting period, construction works of the Project undertaken include:

- General site maintenance work
- Regular maintenance work for the Wetland Restoration Area (including lowering of the water level and removal of unwanted species in the pond)

There were no major construction works carried out. The general layout plan of the Project site is shown in **Figure 1.1**.

1.4 Summary of EM&A Requirements

The EM&A programme requires environmental monitoring of air quality, noise, water quality, ecology and landscape and visual as specified in the approved EM&A Manual.

A summary of impact EM&A requirements is presented in **Table 1.1** below:

Table 1.1: Summary of Impact EM&A Requirements

Parameters	Descriptions	Locations	Frequencies
Air Quality	24-Hour TSP	ASR1, ASR2A, ASR3, ASR4(1)	Once every 6 days
	1-Hour TSP	ASR1, ASR2A, ASR3, ASR4(1)	3 times every 6 days
Noise	L_{eq}, 30min	NSR1, NSR3, NSR5(2), NSR7	Weekly
Water Quality	Dissolved Oxygen (DO), temperature, pH, suspended solids (SS) and Biological Oxygen Demand (BOD)	MP1 to MP6(3)	3 days per week
Ecology	Birds	Within the Project Area and Assessment Area of 500m	Weekly
	Dragonflies and Butterflies	Within the Project Area and Assessment Area of 500m	Once per month during March and September to November, and twice per month during April to August
	Herpetofauna	Within the Project Area and Assessment Area of 500m	Daytime: Once per month during April to November Night-time: Once per month during March to August
	Water quality of Wetland Restoration Area (WRA)	WRA	After filling of WRA with water, monthly for in situ water quality and every six months (end of wet season and end of dry season) for laboratory testing
	Site Inspections	Within the Project Area and Assessment Area of 500m	Weekly
Landscape and Visual	Auditing of protection of existing trees, the transplanting of existing trees, the creation of new wetland, the planting of new trees and shrubs and other landscape and visual mitigation measures	CM1 to CM10 and OM1 to OM7 within the Project Area	Site inspections once every two weeks during construction phase; once every two months during operational phase

Notes:
(1) The air quality stations ASR1 and ASR4 were relocated to new locations on 5 June 2018 as the previous locations will be affected by upcoming construction activities. All monitoring data at ASR1 and ASR4 from June 2018 is measured at the new monitoring locations.
(2) The noise impact monitoring station NSR5 was relocated to a new location on 5 June 2018 as the previous location will be affected by upcoming construction activities. All monitoring data at NSR5 from June 2018 is measured at the new monitoring location.
(3) The water quality impact monitoring at MP1 and MP2 have been terminated since July 2012 due to the withdrawal of access rights by the landowner.

The Environmental Quality Performance Limits for air quality, noise and water quality are shown in **Appendix C**.

1.5 Recommended Mitigation Measures

The EM&A programme followed the recommended mitigation measures in the EM&A Manual. The EM&A requirements as well as the summary of implementation status of the environmental mitigation measures are provided in **Appendix F**. In particular, the following mitigation measures continued to be implemented at the site during the reporting period:

Air Quality

- Dark smoke emission from equipment/plant should be avoided.

Noise

- The noise barriers and hoardings should have no gaps and openings to avoid noise leakage.

Water Quality

- Site effluent should be discharged in accordance with the discharge licence.
- The site should be confined and properly maintained to avoid silt runoff.
- Chemicals will always be stored on drip trays or in bunded areas.

Waste Management

- The chemical waste storage area should be clearly labelled.
- General refuse should be stored in enclosed bins or compaction units separate from construction and demolition (C&D) and chemical wastes.

2 Summary of Monitoring Results

2.1 Air Quality Monitoring

Results and graphical plots of 1-hour TSP and 24-hr TSP at the four monitoring locations are summarised and shown in the **Appendix D**. No exceedance of 1-hour and 24-hour TSP (Action or Limit Level) was recorded in the reporting period.

May 2022 was much cooler and wetter than usual. The monthly mean temperature was 25.0 degrees, 1.3 degrees below the normal figure (26.3 degrees) and the total rainfall reached 436.5 millimetres, which was about 50 percent above the normal of 290.6 millimetres.

June 2022 was cloudy and showery for the first three weeks and mostly sunny and hot for the rest of the month. The monthly mean temperature was 28.6 degrees, 0.3 degree above the normal figure (28.3 degrees). The monthly rainfall was only 349.2 millimetres, about 29 percent below the normal of 491.5 millimetres. The month was also cloudier than usual, with 116.1 hours of bright sunshine, about 20 percent below the normal figure.

July 2022 was the hottest month with a monthly mean temperature of 30.3 degrees, 1.4 degrees above the normal and it was the highest monthly mean value on record. The monthly mean maximum temperature also reached 33.3 degrees, which was 1.7 degrees above the normal and one of the highest on record as well. The month was also much drier than usual, with a total monthly rainfall of 158.5 millimetres, about 41 percent of the normal figure.

For details of wind speed and direction during the monitoring period, please refer to the respective Monthly EM&A Report.

2.2 Construction Noise Monitoring

The construction noise monitoring results and graphical plots are shown in **Appendix D**. No exceedance (Action or Limit Level) of construction noise was recorded in the reporting period.

2.3 Water Quality Monitoring

The water quality monitoring results and the graphical plots of the monitoring data are shown in **Appendix D**.

During May 2022, 11 Action Level exceedances of pH were recorded at MP3.

During June 2022, four Action Level exceedances of pH and one Action Level exceedance of DO were recorded at MP3.

During July 2022, two Action Level exceedances of DO were recorded at MP3.

2.4 Ecological Monitoring

2.4.1 Monitoring of Birds

Monitoring was undertaken following the survey methodology in the EM&A Manual. The WRA was also surveyed during the reporting period as the area became accessible and site formation works for WRA has been completed. A transect was followed in the bird surveys (see **Figure 2.1**).

All bird species of conservation importance and/or wetland dependent were identified and enumerated. Flying birds were not recorded unless they were foraging and associated with the habitat (such as swifts). Further, notable bird observations during other surveys were also recorded.

A summary of the survey data of bird species of conservation importance and/or wetland-dependence recorded is provided in **Appendix E**.

Bird surveys were conducted on a weekly basis. In the survey area (excluding the WRA), a total of 44, 40 and 40 bird species were recorded in May 2022, June 2022 and July 2022 respectively. In each respective month, 23, 17 and 17 of the recorded bird species were of conservation importance and/or wetland-dependence. Within the WRA, a total of 42, 43 and 38 bird species were recorded in May 2022, June 2022 and July 2022 respectively. In each respective month, 18, 14 and 17 of the recorded bird species were of conservation importance and/or wetland-dependence.

In May 2022, two of the three bird target species were recorded within the WRA (high count[1] and mean of the target species respectively): Chinese Pond Heron (4, 3.0) and Little Egret (9, 4.5).

In June 2022, two of the three bird target species were recorded within the WRA (high count and mean of the target species respectively): Chinese Pond Heron (6, 2.8) and Little Egret (2, 1.2).

In July 2022, two of the three bird target species were recorded within the WRA (high count and mean of the target species respectively): Chinese Pond Heron (6, 2.5) and Little Egret (3, 1.0).

The survey data shows that when compared with the surrounding fishponds which cover a much larger area, the WRA attracts a good number of wetland dependent birds or species of conservation importance. A summary of the survey findings is provided in **Appendix E**.

2.4.2 Monitoring of Herpetofauna

Monitoring was undertaken following the survey methodology in the EM&A Manual. One daytime and one night-time herpetofauna surveys were conducted in May 2022, June 2022 and July 2022. Further, notable herpetofauna observations during other surveys were also recorded.

In May 2022, six amphibian species and two reptile species were recorded in the Survey Area (excluding the WRA) during regular surveys. Within the WRA, four amphibian species and four reptile species were recorded during regular surveys, while one reptile species (Bowring's Gecko) was also recorded outside regular surveys.

In June 2022, five amphibian species and three reptile species were recorded in the Survey Area (excluding the WRA) during regular surveys. Within the WRA, six amphibian species and six reptile species were recorded during regular surveys. Among the herpetofauna species recorded within the WRA, Chinese Cobra (*Naja atra*) is listed by Fellowes *et al.* as of "Potential Reginal Concern" in 2002.

In July 2022, six amphibian species and three reptile species were recorded in the Survey Area (excluding the WRA) during regular surveys. Within the WRA, seven amphibian species and five reptile species were recorded during regular surveys.

A summary of the survey findings is provided in **Appendix E**.

[1] The "high count" of a species is the highest number of that species recorded during a particular survey within the survey month.

2.4.3 Monitoring of Dragonflies and Butterflies

In accordance with the EM&A Manual, two odonate and butterfly surveys were scheduled in May 2022, June 2022 and July 2022, respectively. Further, notable odonate and butterfly observations during other surveys were also recorded.

In May 2022, 12 odonate species and 14 butterfly species were recorded in the Survey Area (excluding the WRA) during regular surveys. Within the WRA, 21 odonate species and 22 butterfly species were recorded during regular surveys. Among the odonate species recorded within the WRA, Mangrove Skimmer (*Orthetrum poecilops*) is listed by Fellowes *et al*. as of "Global Concern" in 2002 and also listed by IUCN as "Vulnerable". Ruby Skimmer (*Rhodothemis rufa*) and Scarlet Basker (*Urothemis signata signata*) are listed by Fellowes *et al*. as of "Local Concern" in 2002. Among the butterfly species recorded within the WRA, Danaid Eggfly (*Hypolimnas misippus*) is listed by Fellowes *et al*. as of "Local Concern" in 2002.

In June 2022, 10 odonate species and nine butterfly species were recorded in the Survey Area (excluding the WRA) during regular surveys. Within the WRA, 18 odonate species and 21 butterfly species were recorded during regular surveys. Among the odonate species recorded within the WRA, Ruby Darter (*Rhodothemis rufa*) and Scarlet Basker (*Urothemis signata signata*) are listed by Fellowes *et al*. as of "Local Concern" in 2002.

In July 2022, 11 odonate species and seven butterfly species were recorded in the Survey Area (excluding the WRA) during regular surveys. Within the WRA, 24 odonate species and 25 butterfly species were recorded during regular surveys. Among the odonate species recorded within the WRA, Blue Sprite (*Pseudagrion microcephalum*), Coastal Glider (*Macrodiplax cora*) and Ruby Darter (*Rhodothemis rufa*) are listed by Fellowes *et al*. as of "Local Concern" in 2002. Among the butterfly species recorded within the WRA, Pale Palm Dart (*Telicota colon*) is listed by Fellowes *et al*. as of "Local Concern" in 2002.

A summary of the survey findings is provided in **Appendix E**.

2.4.4 Monitoring of Mammals

Monitoring of mammals was conducted concurrently with other surveys.

In both May and June 2022, two mammal species were recorded in both the Survey Area (excluding the WRA) and within the WRA during regular surveys.

In July 2022, no mammal species was recorded in the Survey Area (excluding the WRA) during regular surveys. Within the WRA, one mammal species (*Japanese Pipistrelle*) was recorded during regular surveys.

A summary of the survey findings is provided in **Appendix E**.

2.4.5 Management Activities

2.4.5.1 Vegetation Management

Vegetation management activities undertaken at the WRA primarily involved the removal of excess grass, shrubs and tree branches. These removals included but were not limited to *Leucaena leucocephala*, *Macaranga tanarius*, *Ficus macrocarpa*, *Rhaphiolepis indica*, *Lantana camara*, *Mimosa* sp., *Pennisetum* sp., *Ipomea* sp., *Bidens alba* and *Paederia foetida*.

Excessive branches along the emergency vehicle access (EVA) were trimmed and broken and fallen branches were cleared. Fallen leaves along the EVA of Cell 3 and Cell 4 were swept aside and formed piles of plant material on both sides of the EVA. These piles were used to attract herpetofauna.

2.4.5.2 Wildlife Management

Excessive vegetation along the EVA and pond bunds was gradually cleared to uncover the soil and road surface. Red Imported Fire Ant nests along the EVA and pond bunds were treated with approved pesticide.

Egg masses of the Apple Snails (*Pomacea canaliculate*) found along the concrete structures of the WRA (e.g. sluice gates between Cells, and concrete walls of Cell 4) were cleared during site inspections.

Mitigation actions have been carried out in the WRA during the survey period to increase the WRA utilization by birds. Mitigation actions include controlling vegetation and water level of Cells 1 to 4.

2.5 Landscape and Visual Monitoring

The audit was undertaken with references to the specific mitigation measures recommended in Section 10.2 of the EM&A Manual and the audit results are summarized in **Table 2.1**.

Representative photos showing the implementation of mitigation measures are presented in **Appendix G**.

Table 2.1: Construction Audit Summary on Landscape and Visual

Area of Works	Items to be Monitored
Works Area	The boundaries of the works area have been established on site in accordance with the contract documents and approved plans (EP), and the limit of current heavy construction activity is now confined to within the site hoardings (North side of the site / access road) and the noise barriers (other sides of the site). Minor works such as horticultural maintenance of the planting and transplanted trees, and boundary fence repair was proceeding along the Royal Palms - Palm Springs boundary. (Photo 1 in **Appendix G**) No construction works were observed to have exceeded the site boundaries. No construction was carried out at the wetland restoration area after 15 November 2010.
Protection of all trees and woodland blocks to be retained	Trees retained within the site along the northeast boundary, beside wetland restoration area, have been identified and protected by temporary protective fencing.
Streams	The works site is partly encircled by a berm / perimeter channel to intercept surface water and prevent it from washing off into any of the neighbouring sites. Surface water is collected within the site in a temporary drainage channel. Gravels beds and barriers have been installed to filter site runoff; sedimentation ponds have been provided to enable primary treatment before discharge to mains drains.
Clearance of existing vegetation	Site clearance was completed prior to the commencement of construction.
Transplanting of trees	Tree transplanting has been completed, with the trees relocated to various points within the planting strip along the southern boundary of the site, outside the noise barrier. Most of the trees continue to re-establish well.
Topsoil stripping	Suitable pond bund and soil material which had been excavated and stockpiled from the original site, has now been re-used within the landscape works. Dust suppression measures are active along all internal site access tracks.
New buildings	No new permanent buildings have been constructed on site.
Boundaries	Hoardings have been erected along most of the boundaries of the site. Installation of new screen fence between the future residential sites and the constructed wetland restoration areas is complete. Fence has been painted green to match with the surrounding vegetated environment. (Photo 1 in **Appendix G**)
Noise Barrier	Noise barriers have been installed along the southern and western boundaries of the site in accordance with the Environmental Permit (EP-311/2008/E) requirements. Their design complies with the mitigation requirements, with upper 6 to 7m portion of the barrier being made from a translucent material with green tinted (to match with the environment). Supporting GMS structure, likewise, has been painted green. (Photo 3 in **Appendix G**).
Night-time lighting	No night-time works were reported to have been carried out during the monitoring period.
Landscape and wetland treatments	Continuous belt of screen planting along the southern and western boundaries of the site has been completed. The formation, soiling and water control structures of the wetland restoration area have been completed. (Photo 3 in **Appendix G**) The wetland areas have been established and the ponds are seasonally filled with rainwater. Planting of areas around the WRA cells has been completed. No construction was carried out at the wetland restoration area after 15 November 2010. (Photo 2 in **Appendix G**)

Area of Works	Items to be Monitored
Soiling, etc.	The soil placement and grading for each of the wetland restoration area has been completed. Refilling of holes from whole tree removal works has been completed.
Plant supply	The plant material used in the Advance Planting Strip and in the WRA are all commonly available species and came from commercial sources. Transplanted reeds (*Phragmites australis*) at the wetland habitat came from the temporary holding nursery onsite.
Planting	Planted tree species are all from the approved list. Seedling trees and shrubs have been established at the margins of the wetland cells. Some invasive species and undesirable exotic species have been found during site inspection; removal of these species should be undertaken on a regular basis.
Establishment Works	The advance planting, the compensatory planting and transplanted trees are generally being maintained by the landscape sub-contractor in accordance with the specification to ensure that the contract requirements are met. Removal of overgrown weeds, unplanned tree seedlings and invasive climbers in the space behind screen noise barrier needs to be undertaken on a monthly basis as they may inhibit the advance planting. Regular removal of invasive species (i.e. apple snails, *Leucaena leucocephala*, *Mikania micrantha, Mimosa pudica, Bidens alba, Ludwigia erecta*, *Sesbania cannabina*, etc.) in WRA should be undertaken. The growth of shrubs / seedlings on the north side of WRA remains fair.

3 Environmental Site Inspection and Audit

3.1 Site Inspection

The ET carried out construction phase weekly site inspections on 5, 13, 19 and 27 May 2022; 2,10, 15, 23 and 29 June 2022; and 8, 15, 22 and 29 July 2022. All observations have been recorded in the site inspection checklist and passed to the Contractor together with the appropriate recommended mitigation measures where necessary.

3.2 Solid and Liquid Waste Management Status

The Contractor has been registered as a chemical waste producer for the Project. Construction and demolition (C&D) material sorting was carried out on site. A sufficient number of receptacles were available for general refuse collection.

As advised by the Contractor, no inert C&D material (i.e. broken concrete/ big boulders) were generated on site and sent to a sorting facility for recycling into rockfill. No metals were generated and collected by registered recycling collector. No paper/cardboard packing and no plastics were generated on site and collected by registered recycling collector. No chemical waste was generated and collected by licensed chemical waste collector. No other types of wastes (e.g. general refuse) were generated on site and disposed of at public landfill facility.

The Contractor is advised to maintain on site waste sorting and recording system and maximize reuse / recycling of C&D wastes, whenever these are generated.

4 Report on Non-compliance and Complaints

4.1 Record on Non-compliance of Action and Limit Levels

4.1.1 Record of Non-compliance

There is no breach of Action or Limit Levels for Air Quality and Noise monitoring in the reporting period.

A total of 18 Action Level exceedances for Water Quality were recorded during the reporting period. These are described as follows:

- May 2022: 11 Action Level exceedances of pH were recorded at MP3.
- June 2022: four Action Level exceedances of pH and one Action Level exceedance of DO were recorded at MP3.
- July 2022: two Action Level exceedances of DO were recorded at MP3.

4.1.2 Constructional Impacts on Water Quality

In order to determine the constructional impacts on water quality, the suspended solids level, which is a good indicator of the quality of effluent from construction site, is selected for assessment. The average value of suspended solids (SS) for water quality monitoring stations (MP3 – MP6) during baseline monitoring and construction phase monitoring for the reporting period are listed in **Table 4.1** below.

Table 4.1: Comparison of Monitoring Data of Suspended Solids

Monitoring Stations	Average Levels of Suspended Solids (mg/L)		Within 130% of mean value of Baseline data?
	During Baseline Monitoring	During Construction Phase Monitoring for the reporting period	
MP3	49.5	21	Yes
MP4	36.9	26	Yes
MP5	47.7	30	Yes
MP6	54.1	32	Yes

The average levels of suspended solids (SS) during the reporting period were within (i.e. below) 130% of the baseline values at MP3, MP4, MP5 and MP6. The above statistics show that the water quality at these locations during the reporting period had not worsened when compared with the baseline condition.

4.1.3 Exceedance Investigations

Water Quality

From investigation, the Contractor has implemented water quality mitigation measures as recommended in the EIA report, including:

- Temporary drainage channels were provided to collect the surface runoff generated within the project site; and
- Installation of barrier at the drainage channels to intercept site runoff and pump the wastewater to the sedimentation tanks as primary treatment prior to treatment by wastewater treatment facilities (AquaSed), which will ensure all site runoff is treated to satisfactory quality before discharging into the northern ditches.

The possible causes of exceedances have been investigated and reported to the IEC during construction phase monitoring. The exceedance investigations have also been included in the monthly EM&A reports and some of them are extracted and summarised in **Table 4.2**. The causes of some of the exceedances were unknown but all of them were considered not related to the project. For details, please refer to the relevant monthly EM&A reports.

Table 4.2: Summary of Exceedance Investigations

Descriptions of exceedances	Possible causes	Exceedance related to project?
Exceedance of pH in May and June 2022; exceedance of DO in June and July 2022	At MP3, exceedances of the Action Level of pH were observed on 3, 5, 7, 12, 14, 18, 20, 23, 25, 27 and 30 May 2022; and 1, 4, 6 and 13 June 2022. Exceedances of the Action Level of DO was observed on 10 June 2022; and 13 and 22 July 2022. As understood, the fish pond near the site (represented by MP3) is separated from the open ditch by the pond bund (since commencement of construction phase EM&A monitoring in May 2010) and from the construction site by the WRA (since it was completed in November 2010). No direct discharge from the project site to the fish pond was observed. Mitigation measures for water quality protection, including the provision of wastewater treatment facilities (including sedimentation tank and AquaSed) and proper drainage system that separates from the WRA, have been implemented. No adverse impact on the fish pond near the site was observed, including on the day with exceedance of water quality parameters. According to the results of the baseline water quality monitoring conducted prior to the commencement of construction works, the pH recorded at MP3 ranged from 7.7 to 8.6 and the DO level recorded at MP3 ranged from 6.6 to 11.9 mg/L. The recorded pH exceedances (7.6 - 7.8) and DO exceedances (6.7-6.8 mg/L) are therefore considered to be very close to / within the range of natural variations at this location. It is also noted from AFCD's Environmental Management of Pond Fish Culture (EMPFC) guidelines from its Series of Good Aquaculture Practice that the pH level of fishpond water should be between 6 and 8.5 and for good water quality DO levels should be maintained above 4 mg/L. The recorded values are well within the guideline recommendations. Nevertheless, aerators continued to be observed on most of the days with pH and DO exceedance. Aerators mitigate low DO levels; help reduce alkalinity and remove excess carbon dioxide, thus improving water quality and stabilizing pH levels.	No. It is concluded that the exceedance was possibly due to localised natural variations and external factors such as pond fish culture activities in the fish pond represented by MP3, which are not related to project construction activities.

4.2 Record on Environmental Complaints Received

There was no new record of complaints received in the reporting period.

4.3 Follow-up Actions Taken

Non-compliance

Although it is considered that the exceedances were not related to the Project, the Contractor was reminded to implement water quality mitigation measures in accordance with the recommendations stated in Sections 5.6.1 to 5.6.4 of the EIA Report as far as practicable. Regular spot checks would be conducted on the nearby discharge by the Contractor and the Contractor would inform ET about the findings for investigation.

It was also advised that the operation condition of the Wastewater Treatment Facilities should be checked regularly to ensure proper functioning of the plant and good quality of effluent discharge.

Complaints

Not applicable for this reporting period.

5 Future Key Issues

5.1 Construction Works for the Coming Months

Site works scheduled to be commissioned in the coming three months involve regular maintenance work for the Wetland Restoration Area (including lowering of the water level and removal of unwanted species in the pond). No other major construction works have been scheduled.

5.2 Key Issues for the Coming Months

Key issues to be considered in the coming three months include:

- Provision of water spraying or dust suppression chemical to prevent generation of dust from activities on-site and the haul road during dry weather conditions;
- Provision of wheel washing facilities at vehicle exit point;
- Generation and treatment of site surface runoffs and wastewater from activities on-site and during wet weather conditions;
- Sorting, recycling, storage and disposal of general refuse and construction waste from activities on-site; and
- Management of chemicals and avoidance of oil spillage on-site and to the drainage.

5.3 Conclusions and Recommendations

5.3.1 Conclusions

The EM&A programme as recommended in the EM&A Manual has been undertaken in the reporting period.

Monitoring of Air Quality, Noise, Water Quality, Ecology and Landscape and Visual impacts due to the Project was underway. In particular, the 1-hr TSP, 24-hr TSP, noise level (as L_{eq}) and water quality parameters (such as pH, DO, turbidity and SS) under monitoring have been checked against established Action and Limit Levels.

There was no breach of Action or Limit Levels for Air Quality and Noise during the reporting period.

As for Water Quality, Action Level exceedances of pH and DO were recorded during the reporting period. However, investigations into the exceedances concluded that these were not related to the Project and may have been due to external factors including natural variations.

5.3.2 Recommendations

With considerations on the construction activities and environment, the following recommendations were provided:

Air Quality

- All stockpiles should be covered by tarpaulin or kept wet by water spraying;
- All vehicles should be washed to remove any dusty materials before leaving the construction sites;
- The portion of road leading the construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials;
- During the dry season, sufficient water spraying should be provided at haul road to reduce dust emission; and
- Ensure proper functioning of the wheel wash facility.

Noise

- Mobile plant should be sited as far away from NSRs as possible;
- Plant known to emit noise strongly in one direction should be orientated to direct noise away from the NSRs; and
- The construction activities should be better scheduled to reduce noise nuisance.

Water Quality

- Effluent should be discharged in accordance with the discharge licence conditions;
- Soil contaminated with chemicals/oils should be removed from site, and the voids created should be filled with suitable materials; and
- Silt and debris should be removed from the temporary drainage channel regularly.

Waste Management

- General refuse should be stored in enclosed bins or compaction units separate from C&D and chemical wastes to minimise odour, pest and litter impacts;
- Reuse the excavated materials as far as practical to reduce the amount of waste disposal;
- C&D waste should be segregated and stored in different containers to other wastes to encourage the re-use or recycling of materials and their proper disposal;
- Ensure drip trays are provided for chemical containers to prevent leakage or soil contamination;
- All plants and vehicles should be properly maintained to prevent oil leakage; and
- Oil stains on soil should be cleared by disposal of contaminated soil.

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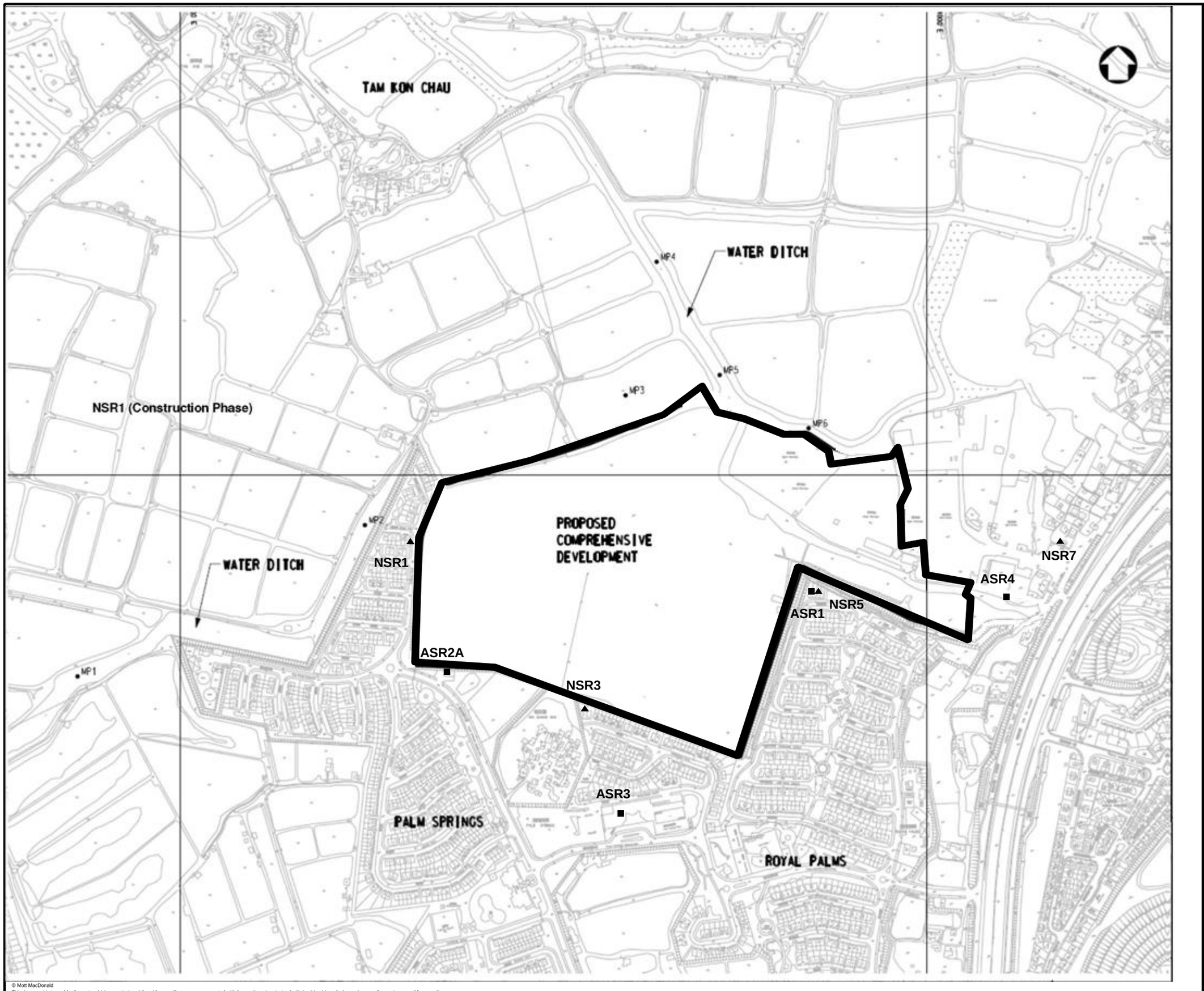
Figures



Notes

Key to symbols

- ■ Air Quality Monitoring Stations
- ▲ Noise Monitoring Stations
- ● Water Quality Monitoring Stations
- ━ Site Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

3/F Manulife Place
348 Kwun Tong Road
Kwun Tong, Kowloon
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W mottmac.com

Client

PROFIT POINT ENTERPRISES LIMITED

Project

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG

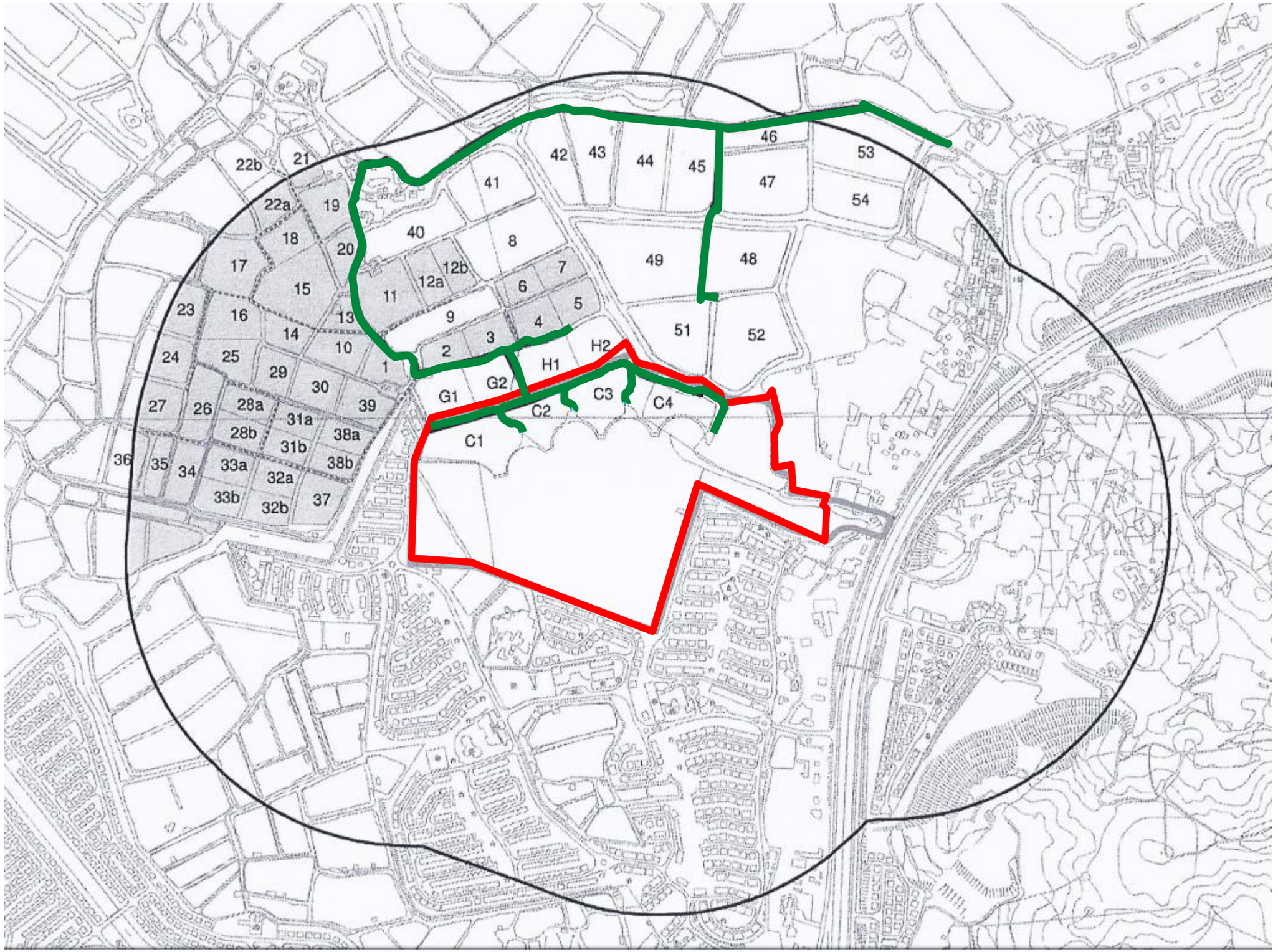
Title

Locations of Water Quality Monitoring Stations

Designed			Eng check		
Drawn			Coordination		
Dwg check			Approved		
Scale at A1		Status		Rev	

Drawing Number

Figure 1.1



Notes

Key to symbols

Project Area

Assessment Area

Transect

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

3/F Manulife Place
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Client

PROFIT POINT ENTERPRISES LIMITED

Project

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG

Title

Survey Area and Transect Walked

Designed			Eng check		
Drawn			Coordination		
Dwg check			Approved		
Scale at A1		Status		Rev	

Drawing Number

Figure 2.1

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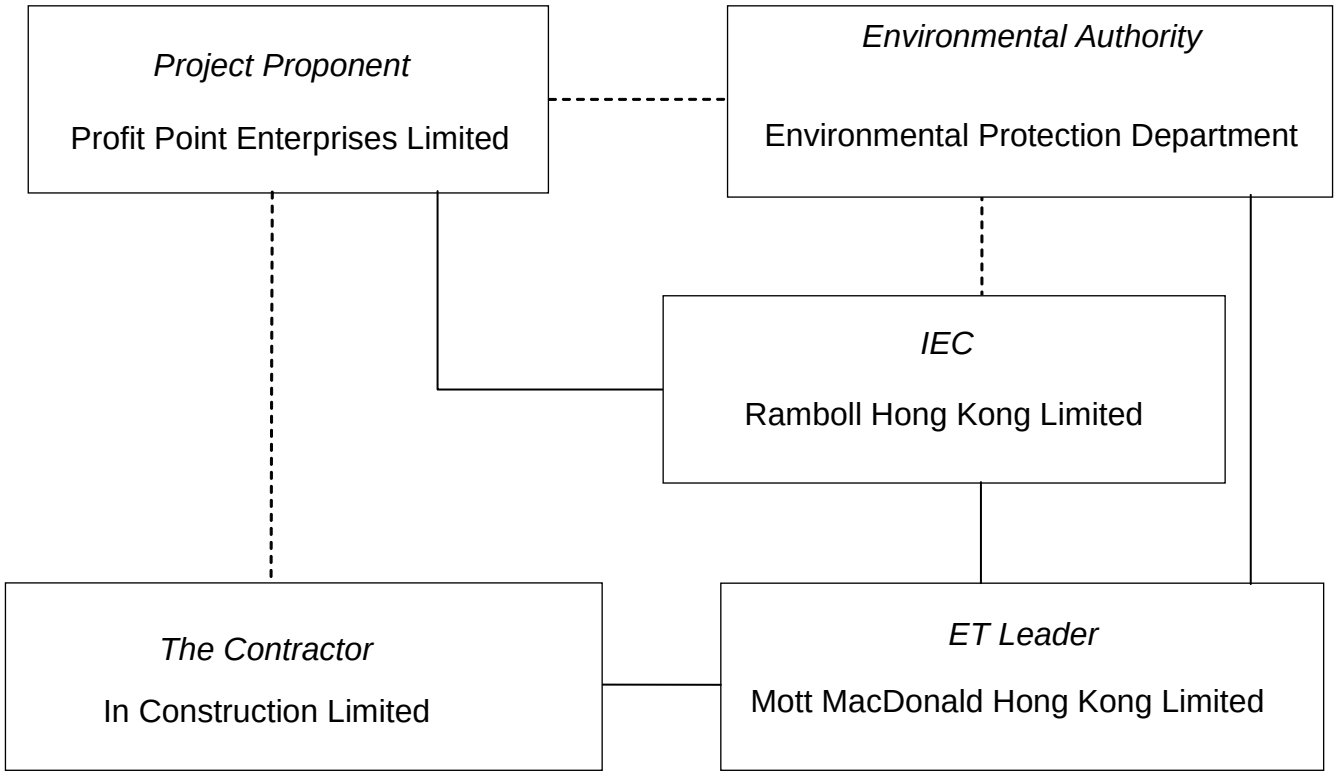
A. Project Organization Chart



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	Safety Officer	Mr. Wong Kam Leung	2710 8663
	Environmental Officer	Mr. Vega T. L. Wong	6113 2368
Ramboll Hong Kong Limited (Independent Environmental Checker (IEC))	Independent Environmental Checker	Mr. David Yeung	3465 2888
Mott MacDonald Hong Kong Ltd. (Environmental Team (ET))	Environmental Team Leader	Ms. Eugenne Yuen (until 31 August 2022) Ms. Nikita Nanwani Nanwani	2828 5998 2828 5960

B. Tentative Construction Programme (not used)

C. Action and Limit Levels for Construction Phase

Air Quality

Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level (μg/m^3)	Limit Level (μg/m^3)
ASR1	226	260
ASR2A	213	260
ASR3	205	260
ASR4	237	260

Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level (μg/m^3)	Limit Level (μg/m^3)
ASR1	378	500
ASR2A	357	500
ASR3	358	500
ASR4	372	500

Noise

Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
NSR1, NSR3, NSR5, NSR7		
0700 – 1900 hours on normal weekdays	When one documented complaint is received from any one of the sensitive receivers	75 dB(A)

Water Quality

Action and Limit Levels for Water Quality

Parameters	DO in mg/L		Turbidity in NTU		SS in mg/L		pH	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
MP1	1.23	1.17	173	177	231	299	< 5.5 or > 7.5	< 4.0 or > 8.0
MP2	1.04	0.89	132	163	170	209		
MP3	6.85	6.65	64	67	65	66		
MP4	3.91	3.82	60	64	50	53		
MP5	4.13	3.87	81	84	66	69		
MP6	4.61	4.52	94	96	75	75		

Notes:
(1) For the Limit Level of DO, 1-percentile of baseline data is adopted as it is greater than 2mg/L. (Refer to Baseline Monitoring Report)

D. Summary and Graphical Plots of the Monitoring Results

Air Quality (1-hr TSP)

Station ASR1

Date	Start Time	Finish Time	TSP Concentration ($\mu g/m^3$)	Weather Condition	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
03-May-22	08:36	09:36	26	Sunny	378	500
03-May-22	09:36	10:36	27	Sunny	378	500
03-May-22	10:36	11:36	25	Sunny	378	500
07-May-22	09:23	10:23	26	Sunny	378	500
07-May-22	10:23	11:23	24	Sunny	378	500
07-May-22	11:23	12:23	23	Sunny	378	500
13-May-22	08:31	09:31	17	Cloudy	378	500
13-May-22	09:31	10:31	15	Cloudy	378	500
13-May-22	10:31	11:31	18	Cloudy	378	500
19-May-22	09:08	10:08	21	Sunny	378	500
19-May-22	10:08	11:08	19	Sunny	378	500
19-May-22	11:08	12:08	18	Sunny	378	500
25-May-22	08:33	09:33	10	Cloudy	378	500
25-May-22	09:33	10:33	12	Cloudy	378	500
25-May-22	10:33	11:33	10	Cloudy	378	500
31-May-22	08:34	09:34	14	Sunny	378	500
31-May-22	09:34	10:34	12	Sunny	378	500
31-May-22	10:34	11:34	13	Sunny	378	500
06-Jun-22	08:51	09:51	17	Sunny	378	500
06-Jun-22	09:51	10:51	15	Sunny	378	500
06-Jun-22	10:51	11:51	14	Sunny	378	500
10-Jun-22	08:42	09:42	13	Cloudy	378	500
10-Jun-22	09:42	10:42	11	Cloudy	378	500
10-Jun-22	10:42	11:42	12	Cloudy	378	500
16-Jun-22	08:50	09:50	23	Sunny	378	500
16-Jun-22	09:50	10:50	20	Sunny	378	500
16-Jun-22	10:50	11:50	21	Sunny	378	500
22-Jun-22	09:08	10:08	18	Sunny	378	500
22-Jun-22	10:08	11:08	17	Sunny	378	500
22-Jun-22	11:08	12:08	18	Sunny	378	500
28-Jun-22	08:29	09:29	16	Sunny	378	500
28-Jun-22	09:29	10:29	17	Sunny	378	500
28-Jun-22	10:29	11:29	17	Sunny	378	500
04-Jul-22	08:23	09:23	40	Cloudy	378	500
04-Jul-22	09:23	10:23	44	Cloudy	378	500
04-Jul-22	10:23	11:23	45	Cloudy	378	500
08-Jul-22	09:23	10:23	14	Sunny	378	500
08-Jul-22	10:23	11:23	16	Sunny	378	500
08-Jul-22	11:23	12:23	14	Sunny	378	500
14-Jul-22	08:21	09:21	12	Sunny	378	500
14-Jul-22	09:21	10:21	19	Sunny	378	500
14-Jul-22	10:21	11:21	17	Sunny	378	500
20-Jul-22	08:48	09:48	27	Sunny	378	500
20-Jul-22	09:48	10:48	29	Sunny	378	500
20-Jul-22	10:48	11:48	26	Sunny	378	500
26-Jul-22	08:38	09:38	17	Sunny	378	500
26-Jul-22	09:38	10:38	19	Sunny	378	500
26-Jul-22	10:38	11:38	15	Sunny	378	500
		Min.	10	for		
		Max.	45	reporting		
		Average	19	period		

Air Quality (1-hr TSP)

Station ASR2A

Date	Start Time	Finish Time	TSP Concentration (μg/m³)	Weather Condition	Action Level (μg/m³)	Limit Level (μg/m³)
03-May-22	13:07	14:07	24	Sunny	357	500
03-May-22	14:07	15:07	22	Sunny	357	500
03-May-22	15:07	16:07	26	Sunny	357	500
07-May-22	13:20	14:20	18	Sunny	357	500
07-May-22	14:20	15:20	18	Sunny	357	500
07-May-22	15:20	16:20	17	Sunny	357	500
13-May-22	13:05	14:05	19	Cloudy	357	500
13-May-22	14:05	15:05	18	Cloudy	357	500
13-May-22	15:05	16:05	17	Cloudy	357	500
19-May-22	13:03	14:03	16	Sunny	357	500
19-May-22	14:03	15:03	14	Sunny	357	500
19-May-22	15:03	16:03	14	Sunny	357	500
25-May-22	13:02	14:02	12	Cloudy	357	500
25-May-22	14:02	15:02	14	Cloudy	357	500
25-May-22	15:02	16:02	17	Cloudy	357	500
31-May-22	13:01	14:01	14	Sunny	357	500
31-May-22	14:01	15:01	12	Sunny	357	500
31-May-22	15:01	16:01	12	Sunny	357	500
06-Jun-22	13:05	14:05	20	Sunny	357	500
06-Jun-22	14:05	15:05	21	Sunny	357	500
06-Jun-22	15:05	16:05	16	Sunny	357	500
10-Jun-22	13:17	14:17	15	Cloudy	357	500
10-Jun-22	14:17	15:17	13	Cloudy	357	500
10-Jun-22	15:17	16:17	16	Cloudy	357	500
16-Jun-22	13:02	14:02	17	Sunny	357	500
16-Jun-22	14:02	15:02	14	Sunny	357	500
16-Jun-22	15:02	16:02	15	Sunny	357	500
22-Jun-22	12:51	13:51	19	Sunny	357	500
22-Jun-22	13:51	14:51	17	Sunny	357	500
22-Jun-22	14:51	15:51	19	Sunny	357	500
28-Jun-22	13:01	14:01	14	Sunny	357	500
28-Jun-22	14:01	15:01	14	Sunny	357	500
28-Jun-22	15:01	16:01	13	Sunny	357	500
04-Jul-22	13:04	14:04	46	Cloudy	357	500
04-Jul-22	14:04	15:04	40	Cloudy	357	500
04-Jul-22	15:04	16:04	38	Cloudy	357	500
08-Jul-22	13:19	14:19	10	Sunny	357	500
08-Jul-22	14:19	15:19	11	Sunny	357	500
08-Jul-22	15:19	16:19	16	Sunny	357	500
14-Jul-22	13:05	14:05	14	Sunny	357	500
14-Jul-22	14:05	15:05	14	Sunny	357	500
14-Jul-22	15:05	16:05	15	Sunny	357	500
20-Jul-22	13:01	14:01	24	Sunny	357	500
20-Jul-22	14:01	15:01	24	Sunny	357	500
20-Jul-22	15:01	16:01	22	Sunny	357	500
26-Jul-22	13:10	14:10	15	Sunny	357	500
26-Jul-22	14:10	15:10	15	Sunny	357	500
26-Jul-22	15:10	16:10	17	Sunny	357	500
		Min.	10	for		
		Max.	46	reporting		
		Average	18	period		

Air Quality (1-hr TSP)

Station ASR3

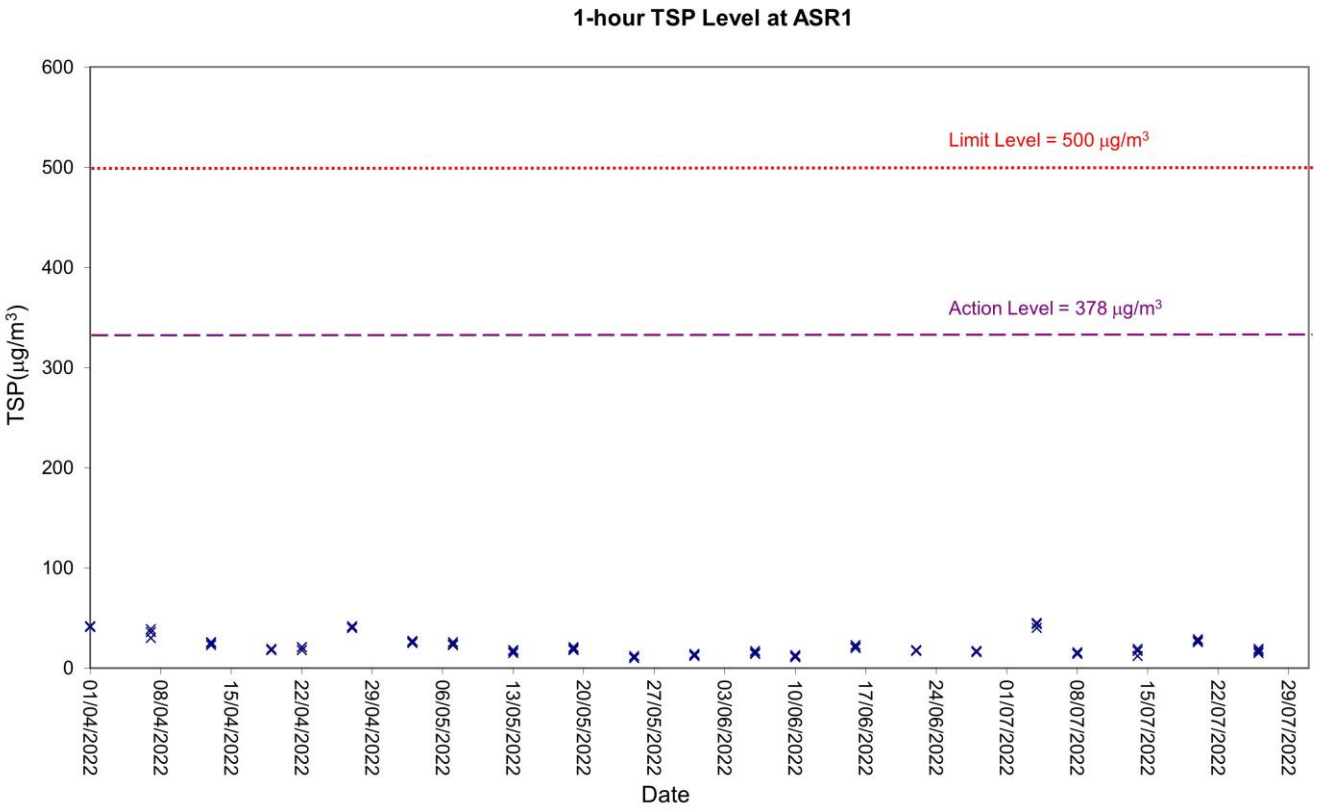
Date	Start Time	Finish Time	TSP Concentration (µg/m³)	Weather Condition	Action Level (µg/m³)	Limit Level (µg/m³)
03-May-22	13:25	14:25	22	Sunny	358	500
03-May-22	14:25	15:25	22	Sunny	358	500
03-May-22	15:25	16:25	23	Sunny	358	500
07-May-22	13:00	14:00	20	Sunny	358	500
07-May-22	14:00	15:00	19	Sunny	358	500
07-May-22	15:00	16:00	17	Sunny	358	500
13-May-22	13:22	14:22	15	Cloudy	358	500
13-May-22	14:22	15:22	15	Cloudy	358	500
13-May-22	15:22	16:22	14	Cloudy	358	500
19-May-22	13:18	14:18	18	Sunny	358	500
19-May-22	14:18	15:18	17	Sunny	358	500
19-May-22	15:18	16:18	16	Sunny	358	500
25-May-22	13:19	14:19	15	Cloudy	358	500
25-May-22	14:19	15:19	17	Cloudy	358	500
25-May-22	15:19	16:19	16	Cloudy	358	500
31-May-22	13:16	14:16	10	Sunny	358	500
31-May-22	14:16	15:16	10	Sunny	358	500
31-May-22	15:16	16:16	11	Sunny	358	500
06-Jun-22	13:22	14:22	17	Sunny	358	500
06-Jun-22	14:22	15:22	14	Sunny	358	500
06-Jun-22	15:22	16:22	14	Sunny	358	500
10-Jun-22	12:59	13:59	11	Cloudy	358	500
10-Jun-22	13:59	14:59	11	Cloudy	358	500
10-Jun-22	14:59	15:59	9	Cloudy	358	500
16-Jun-22	13:20	14:20	19	Sunny	358	500
16-Jun-22	14:20	15:20	20	Sunny	358	500
16-Jun-22	15:20	16:20	20	Sunny	358	500
22-Jun-22	13:06	14:06	20	Sunny	358	500
22-Jun-22	14:06	15:06	21	Sunny	358	500
22-Jun-22	15:06	16:06	17	Sunny	358	500
28-Jun-22	13:18	14:18	12	Sunny	358	500
28-Jun-22	14:18	15:18	14	Sunny	358	500
28-Jun-22	15:18	16:18	16	Sunny	358	500
04-Jul-22	13:22	14:22	42	Cloudy	358	500
04-Jul-22	14:22	15:22	46	Cloudy	358	500
04-Jul-22	15:22	16:22	41	Cloudy	358	500
08-Jul-22	13:00	14:00	15	Sunny	358	500
08-Jul-22	14:00	15:00	15	Sunny	358	500
08-Jul-22	15:00	16:00	14	Sunny	358	500
14-Jul-22	13:24	14:24	13	Sunny	358	500
14-Jul-22	14:24	15:24	12	Sunny	358	500
14-Jul-22	15:24	16:24	12	Sunny	358	500
20-Jul-22	13:18	14:18	25	Sunny	358	500
20-Jul-22	14:18	15:18	29	Sunny	358	500
20-Jul-22	15:18	16:18	28	Sunny	358	500
26-Jul-22	13:28	14:28	13	Sunny	358	500
26-Jul-22	14:28	15:28	14	Sunny	358	500
26-Jul-22	15:28	16:28	19	Sunny	358	500
		Min.	9	for		
		Max.	46	reporting		
		Average	18	period		

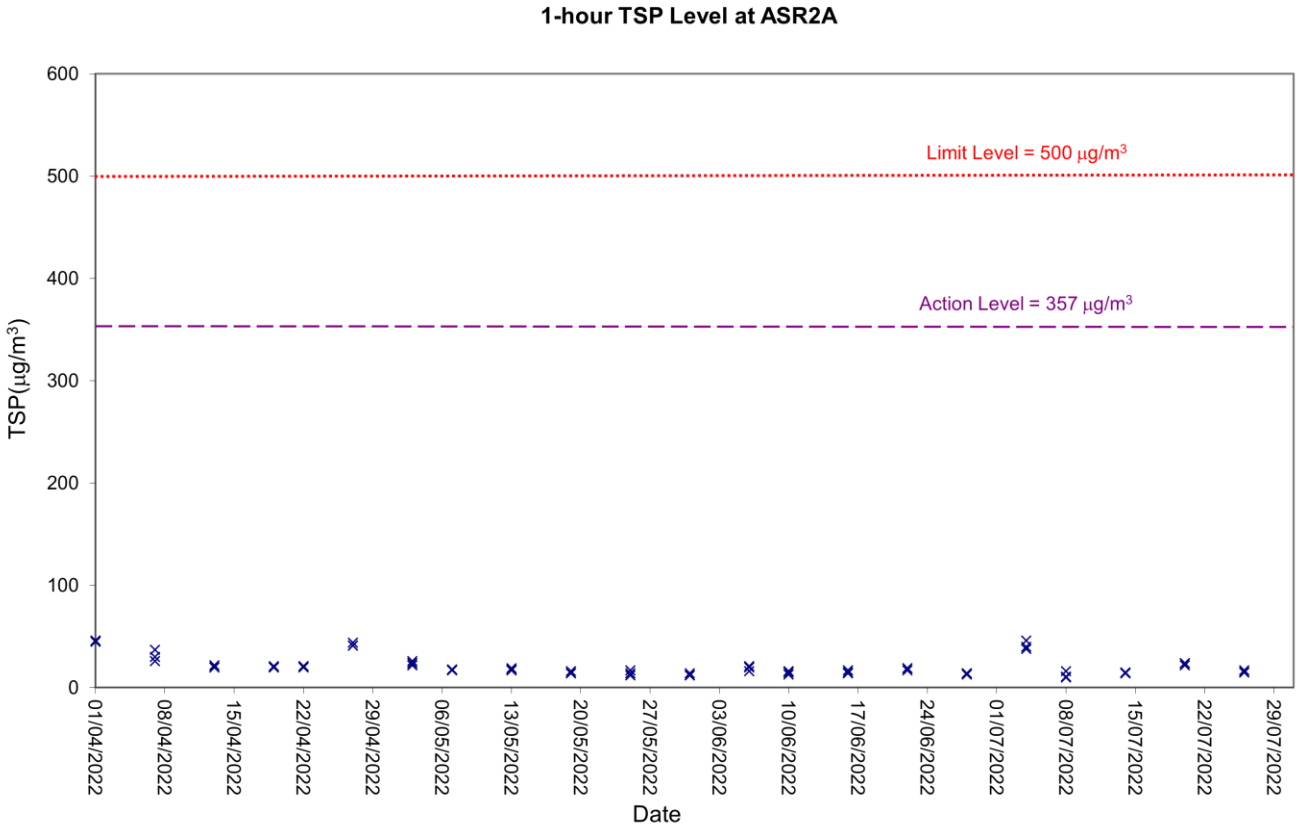
Air Quality (1-hr TSP)

Station ASR4

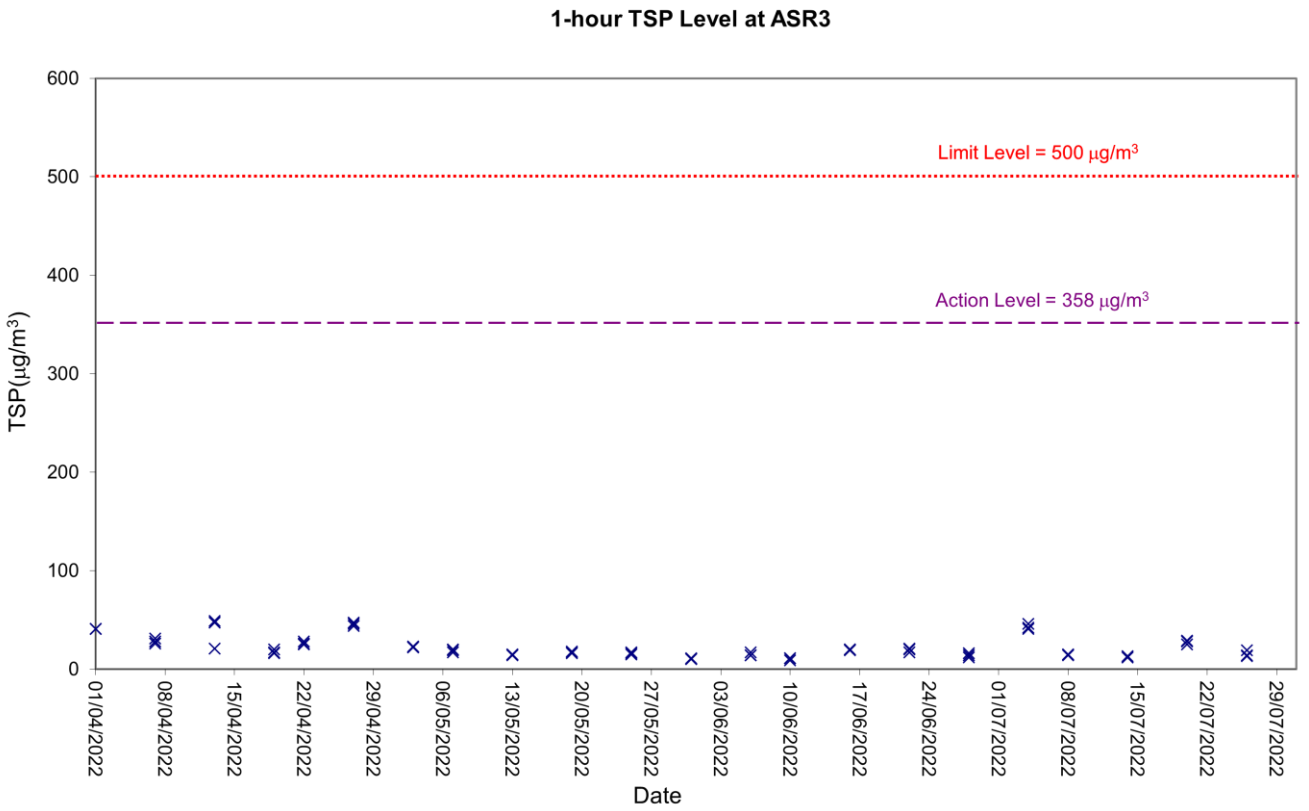
Date	Start Time	Finish Time	TSP Concentration ($\mu g/m^3$)	Weather Condition	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
03-May-22	08:55	09:55	26	Sunny	372	500
03-May-22	09:55	10:55	22	Sunny	372	500
03-May-22	10:55	11:55	25	Sunny	372	500
07-May-22	09:05	10:05	22	Sunny	372	500
07-May-22	10:05	11:05	20	Sunny	372	500
07-May-22	11:05	12:05	21	Sunny	372	500
13-May-22	08:51	09:51	16	Cloudy	372	500
13-May-22	09:51	10:51	15	Cloudy	372	500
13-May-22	10:51	11:51	15	Cloudy	372	500
19-May-22	09:26	10:26	16	Sunny	372	500
19-May-22	10:26	11:26	13	Sunny	372	500
19-May-22	11:26	12:26	12	Sunny	372	500
25-May-22	08:55	09:55	12	Cloudy	372	500
25-May-22	09:55	10:55	17	Cloudy	372	500
25-May-22	10:55	11:55	40	Cloudy	372	500
31-May-22	08:57	09:57	12	Sunny	372	500
31-May-22	09:57	10:57	10	Sunny	372	500
31-May-22	10:57	11:57	11	Sunny	372	500
06-Jun-22	09:08	10:08	19	Sunny	372	500
06-Jun-22	10:08	11:08	14	Sunny	372	500
06-Jun-22	11:08	12:08	15	Sunny	372	500
10-Jun-22	08:24	09:24	12	Cloudy	372	500
10-Jun-22	09:24	10:24	18	Cloudy	372	500
10-Jun-22	10:24	11:24	16	Cloudy	372	500
16-Jun-22	09:06	10:06	18	Sunny	372	500
16-Jun-22	10:06	11:06	15	Sunny	372	500
16-Jun-22	11:06	12:06	19	Sunny	372	500
22-Jun-22	09:24	10:24	22	Sunny	372	500
22-Jun-22	10:24	11:24	22	Sunny	372	500
22-Jun-22	11:24	12:24	21	Sunny	372	500
28-Jun-22	08:51	09:51	19	Sunny	372	500
28-Jun-22	09:51	10:51	18	Sunny	372	500
28-Jun-22	10:51	11:51	17	Sunny	372	500
04-Jul-22	08:40	09:40	33	Cloudy	372	500
04-Jul-22	09:40	10:40	37	Cloudy	372	500
04-Jul-22	10:40	11:40	42	Cloudy	372	500
08-Jul-22	09:01	10:01	18	Sunny	372	500
08-Jul-22	10:01	11:01	12	Sunny	372	500
08-Jul-22	11:01	12:01	12	Sunny	372	500
14-Jul-22	08:36	09:36	13	Sunny	372	500
14-Jul-22	09:36	10:36	16	Sunny	372	500
14-Jul-22	10:36	11:36	12	Sunny	372	500
20-Jul-22	09:07	10:07	31	Sunny	372	500
20-Jul-22	10:07	11:07	33	Sunny	372	500
20-Jul-22	11:07	12:07	33	Sunny	372	500
26-Jul-22	08:57	09:57	13	Sunny	372	500
26-Jul-22	09:57	10:57	16	Sunny	372	500
26-Jul-22	10:57	11:57	12	Sunny	372	500
		Min.	10	for		
		Max.	42	reporting		
		Average	19	period		

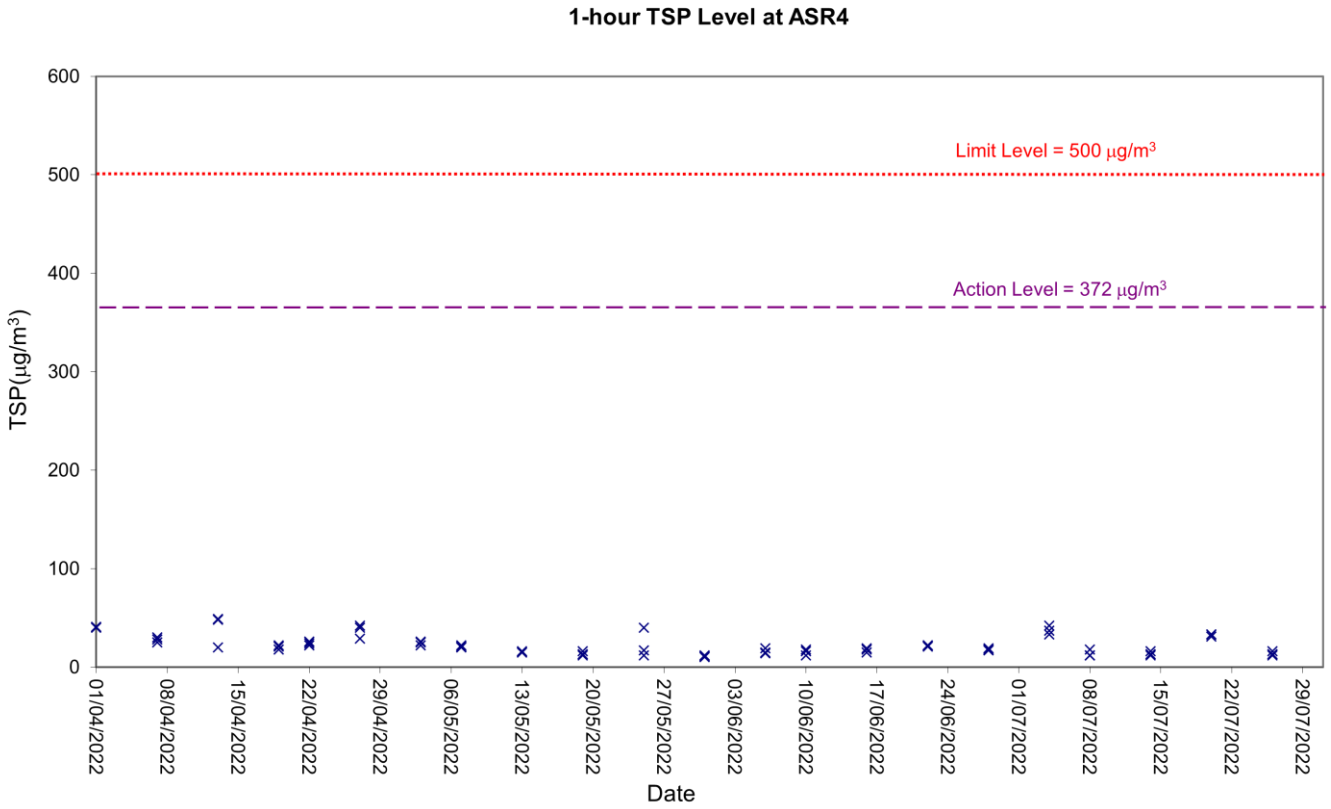
Air Quality (1-hr TSP)





Air Quality (1-hr TSP)





Air Quality (24-hr TSP)

Station ASR1

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			Conc. (µg/m^3)	Weather Condition	Action Level (µg/m^3)	Limit Level (µg/m^3)
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
03-May-22	08:35	04-May-22	08:35	2.7525	2.8480	28762.64	28786.64	24.00	1.3100	1.3100	1.3100	51	Sunny	226	260
07-May-22	09:22	08-May-22	09:22	2.7522	2.8558	28786.64	28810.64	24.00	1.3100	1.3100	1.3100	55	Sunny	226	260
13-May-22	08:30	14-May-22	08:30	2.7514	2.7785	28810.64	28834.64	24.00	1.3100	1.3100	1.3100	14	Cloudy	226	260
19-May-22	09:07	20-May-22	09:07	2.7633	2.8583	28834.64	28858.64	24.00	1.3100	1.3100	1.3100	50	Sunny	226	260
25-May-22	08:32	26-May-22	08:32	2.7683	2.8127	28858.64	28882.64	24.00	1.3100	1.3100	1.3100	24	Cloudy	226	260
31-May-22	08:33	01-Jun-22	08:33	2.7700	2.8237	28882.64	28906.64	24.00	1.3100	1.3100	1.3100	28	Sunny	226	260
06-Jun-22	08:50	07-Jun-22	08:50	2.7463	2.8034	28906.64	28930.64	24.00	1.3100	1.3100	1.3100	30	Sunny	226	260
10-Jun-22	08:41	11-Jun-22	08:41	2.7632	2.8203	28930.64	28954.64	24.00	1.3100	1.3100	1.3100	30	Cloudy	226	260
16-Jun-22	08:49	17-Jun-22	08:49	2.7561	2.8050	28954.64	28978.64	24.00	1.3100	1.3100	1.3100	26	Sunny	226	260
22-Jun-22	09:07	23-Jun-22	09:07	2.7465	2.7923	28978.64	29002.64	24.00	1.2600	1.2600	1.2600	25	Sunny	226	260
28-Jun-22	08:28	29-Jun-22	08:28	2.7677	2.8218	29002.64	29026.64	24.00	1.2600	1.2600	1.2600	30	Sunny	226	260
04-Jul-22	08:22	05-Jul-22	08:22	2.7623	2.8212	29026.64	29050.64	24.00	1.2600	1.2600	1.2600	32	Cloudy	226	260
08-Jul-22	09:22	09-Jul-22	09:22	2.7733	2.8147	29050.64	29074.64	24.00	1.2600	1.2600	1.2600	23	Sunny	226	260
14-Jul-22	08:20	15-Jul-22	08:20	2.7590	2.7957	29074.64	29098.64	24.00	1.2600	1.2600	1.2600	20	Sunny	226	260
20-Jul-22	08:46	21-Jul-22	08:46	2.7780	2.8295	29098.64	29122.64	24.00	1.2600	1.2600	1.2600	28	Sunny	226	260
26-Jul-22	08:37	27-Jul-22	08:37	2.7700	2.8187	29122.64	29146.64	24.00	1.2600	1.2600	1.2600	27	Sunny	226	260
											Min	14	for reporting period		
											Max	55			
											Average	31			

Air Quality (24-hr TSP)

Station ASR2A

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			Conc. (µg/m^3)	Weather Condition	Action Level (µg/m^3)	Limit Level (µg/m^3)
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
03-May-22	13:06	04-May-22	13:06	2.7421	2.8225	31858.02	31882.02	24.00	1.1900	1.1900	1.1900	47	Sunny	213	260
07-May-22	13:19	08-May-22	13:19	2.7414	2.8462	31882.02	31906.02	24.00	1.1900	1.1900	1.1900	61	Sunny	213	260
13-May-22	13:04	14-May-22	13:04	2.7461	2.7804	31906.02	31930.02	24.00	1.1900	1.1900	1.1900	20	Cloudy	213	260
19-May-22	13:02	20-May-22	13:02	2.7798	2.8742	31930.02	31954.02	24.00	1.1900	1.1900	1.1900	55	Sunny	213	260
25-May-22	13:01	26-May-22	13:01	2.7747	2.8195	31954.02	31978.02	24.00	1.1900	1.1900	1.1900	26	Cloudy	213	260
31-May-22	13:00	01-Jun-22	13:00	2.7574	2.8163	31978.02	32002.02	24.00	1.1900	1.1900	1.1900	34	Sunny	213	260
06-Jun-22	13:04	07-Jun-22	13:04	2.7578	2.8335	32002.02	32026.02	24.00	1.1900	1.1900	1.1900	44	Sunny	213	260
10-Jun-22	13:16	11-Jun-22	13:16	2.7609	2.8004	32026.02	32050.02	24.00	1.1900	1.1900	1.1900	23	Cloudy	213	260
16-Jun-22	13:01	17-Jun-22	13:01	2.7393	2.7822	32050.02	32074.02	24.00	1.1900	1.1900	1.1900	25	Sunny	213	260
22-Jun-22	12:50	23-Jun-22	12:50	2.7560	2.7979	32074.02	32098.02	24.00	1.2700	1.2700	1.2700	23	Sunny	213	260
28-Jun-22	13:00	29-Jun-22	13:00	2.7684	2.8154	32098.02	32122.02	24.00	1.2700	1.2700	1.2700	26	Sunny	213	260
04-Jul-22	13:03	05-Jul-22	13:03	2.7651	2.8225	32122.02	32146.02	24.00	1.2700	1.2700	1.2700	31	Cloudy	213	260
08-Jul-22	13:18	09-Jul-22	13:18	2.7627	2.8003	32146.02	32170.02	24.00	1.2700	1.2700	1.2700	21	Sunny	213	260
14-Jul-22	13:04	15-Jul-22	13:04	2.7635	2.8037	32170.02	32194.02	24.00	1.2700	1.2700	1.2700	22	Sunny	213	260
20-Jul-22	12:59	21-Jul-22	12:59	2.7693	2.8181	32194.02	32218.02	24.00	1.2700	1.2700	1.2700	27	Sunny	213	260
26-Jul-22	13:08	27-Jul-22	13:08	2.7618	2.8098	32218.02	32242.02	24.00	1.2700	1.2700	1.2700	26	Sunny	213	260
											Min	20	for		
											Max	61	reporting		
											Average	32	period		

Air Quality (24-hr TSP)

Station ASR3

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			Conc. (µg/m^3)	Weather Condition	Action Level (µg/m^3)	Limit Level (µg/m^3)
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
03-May-22	13:24	04-May-22	13:24	2.7544	2.8390	23042.92	23066.92	24.00	1.1300	1.1300	1.1300	52	Sunny	205	260
07-May-22	12:58	08-May-22	12:58	2.7420	2.8268	23066.92	23090.92	24.00	1.1300	1.1300	1.1300	52	Sunny	205	260
13-May-22	13:21	14-May-22	13:21	2.7588	2.7915	23090.92	23114.92	24.00	1.1300	1.1300	1.1300	20	Cloudy	205	260
19-May-22	13:17	20-May-22	13:17	2.7791	2.8867	23114.92	23138.92	24.00	1.1300	1.1300	1.1300	66	Sunny	205	260
25-May-22	13:18	26-May-22	13:18	2.7595	2.8145	23138.92	23162.92	24.00	1.1300	1.1300	1.1300	34	Cloudy	205	260
31-May-22	13:14	01-Jun-22	13:14	2.7708	2.8362	23162.92	23186.92	24.00	1.1300	1.1300	1.1300	40	Sunny	205	260
06-Jun-22	13:21	07-Jun-22	13:21	2.7361	2.7970	23186.92	23210.92	24.00	1.1300	1.1300	1.1300	37	Sunny	205	260
10-Jun-22	12:58	11-Jun-22	12:58	2.7620	2.8080	23210.92	23234.92	24.00	1.1300	1.1300	1.1300	28	Cloudy	205	260
16-Jun-22	13:19	17-Jun-22	13:19	2.7432	2.8000	23234.92	23258.92	24.00	1.1300	1.1300	1.1300	35	Sunny	205	260
22-Jun-22	13:05	23-Jun-22	13:05	2.7587	2.8158	23258.92	23282.92	24.00	1.0700	1.0700	1.0700	37	Sunny	205	260
28-Jun-22	13:17	29-Jun-22	13:17	2.7610	2.8140	23282.92	23306.92	24.00	1.0700	1.0700	1.0700	34	Sunny	205	260
04-Jul-22	13:21	05-Jul-22	13:21	2.7771	2.8346	23306.92	23330.92	24.00	1.0700	1.0700	1.0700	37	Cloudy	205	260
08-Jul-22	12:58	09-Jul-22	12:58	2.7695	2.8092	23330.92	23354.92	24.00	1.0700	1.0700	1.0700	26	Sunny	205	260
14-Jul-22	13:23	15-Jul-22	13:23	2.7573	2.7957	23354.92	23378.92	24.00	1.0700	1.0700	1.0700	25	Sunny	205	260
20-Jul-22	13:17	21-Jul-22	13:17	2.7796	2.8299	23378.92	23402.92	24.00	1.0700	1.0700	1.0700	33	Sunny	205	260
26-Jul-22	13:27	27-Jul-22	13:27	2.7620	2.8127	23402.92	23426.92	24.00	1.0700	1.0700	1.0700	33	Sunny	205	260
											Min	20	for		
											Max	66	reporting		
											Average	37	period		

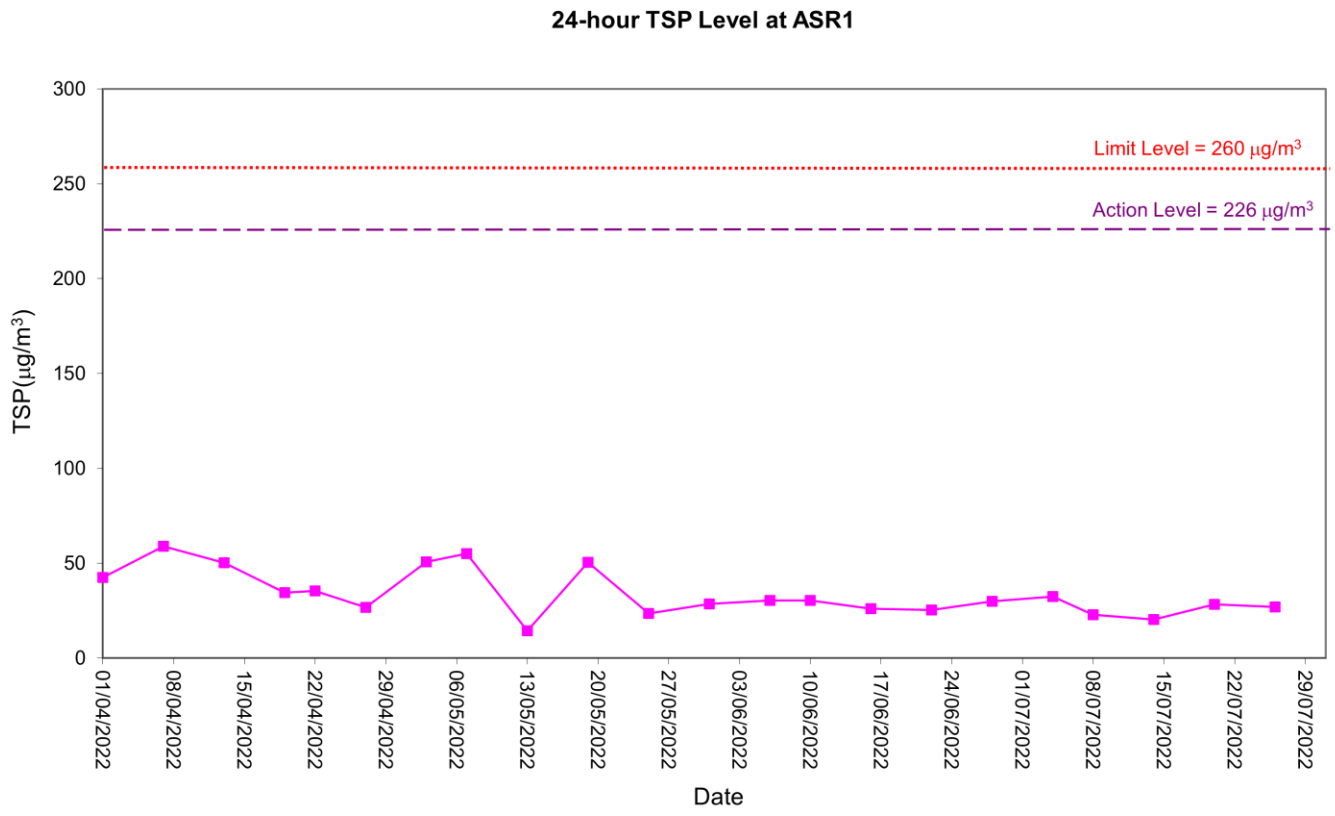
Air Quality (24-hr TSP)

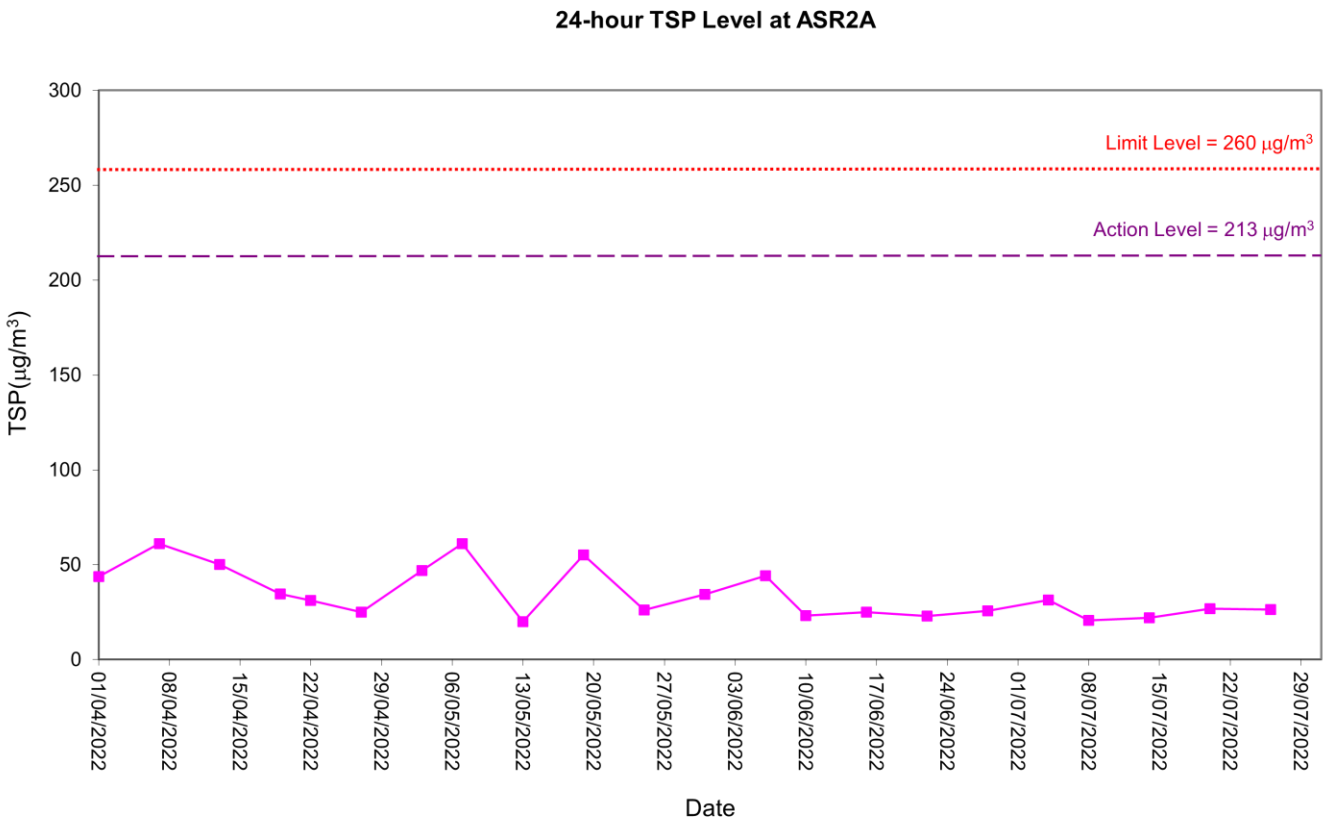
Station ASR4

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			Conc. (µg/m^3)	Weather Condition	Action Level (µg/m^3)	Limit Level (µg/m^3)
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
03-May-22	08:54	04-May-22	08:54	2.7568	2.8585	30640.54	30664.54	24.00	1.2800	1.2800	1.2800	55	Sunny	237	260
07-May-22	09:03	08-May-22	09:03	2.7465	2.8206	30664.54	30688.54	24.00	1.2800	1.2800	1.2800	40	Sunny	237	260
13-May-22	08:50	14-May-22	08:50	2.7581	2.8510	30688.54	30712.54	24.00	1.2800	1.2800	1.2800	50	Cloudy	237	260
19-May-22	09:25	20-May-22	09:25	2.7456	2.7895	30712.54	30736.54	24.00	1.2800	1.2800	1.2800	24	Sunny	237	260
25-May-22	08:54	26-May-22	08:54	2.7843	2.8417	30736.54	30760.54	24.00	1.2800	1.2800	1.2800	31	Cloudy	237	260
31-May-22	08:55	01-Jun-22	08:55	2.7739	2.8309	30760.54	30784.54	24.00	1.2800	1.2800	1.2800	31	Sunny	237	260
06-Jun-22	09:07	07-Jun-22	09:07	2.7444	2.8409	30784.54	30808.54	24.00	1.2800	1.2800	1.2800	52	Sunny	237	260
10-Jun-22	08:23	11-Jun-22	08:23	2.7617	2.8147	30808.54	30832.54	24.00	1.2800	1.2800	1.2800	29	Cloudy	237	260
16-Jun-22	09:05	17-Jun-22	09:05	2.7589	2.8137	30832.54	30856.54	24.00	1.2800	1.2800	1.2800	30	Sunny	237	260
22-Jun-22	09:23	23-Jun-22	09:23	2.7320	2.7866	30856.54	30880.54	24.00	1.3300	1.3300	1.3300	29	Sunny	237	260
28-Jun-22	08:50	29-Jun-22	08:50	2.7726	2.8529	30880.54	30904.54	24.00	1.3300	1.3300	1.3300	42	Sunny	237	260
04-Jul-22	08:39	05-Jul-22	08:39	2.7552	2.8218	30904.54	30928.54	24.00	1.3300	1.3300	1.3300	35	Cloudy	237	260
08-Jul-22	09:00	09-Jul-22	09:00	2.7734	2.8356	30928.54	30952.54	24.00	1.3300	1.3300	1.3300	32	Sunny	237	260
14-Jul-22	08:35	15-Jul-22	08:35	2.7759	2.8285	30952.54	30976.54	24.00	1.3300	1.3300	1.3300	27	Sunny	237	260
20-Jul-22	09:06	21-Jul-22	09:06	2.7547	2.8064	30976.54	31000.54	24.00	1.3300	1.3300	1.3300	27	Sunny	237	260
26-Jul-22	08:56	27-Jul-22	08:56	2.7594	2.8145	31000.54	31024.54	24.00	1.3300	1.3300	1.3300	29	Sunny	237	260

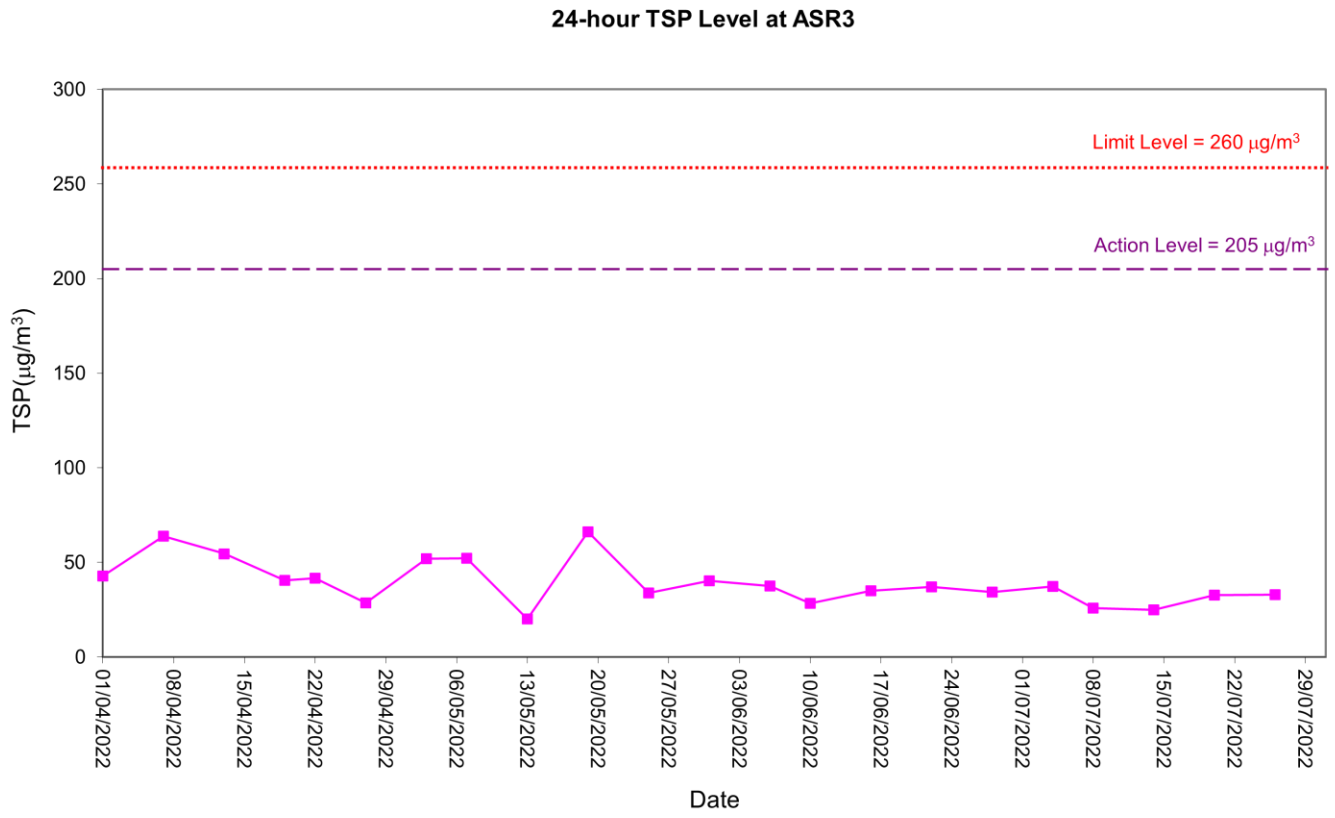
Min	24	for
Max	55	reporting
Average	35	period

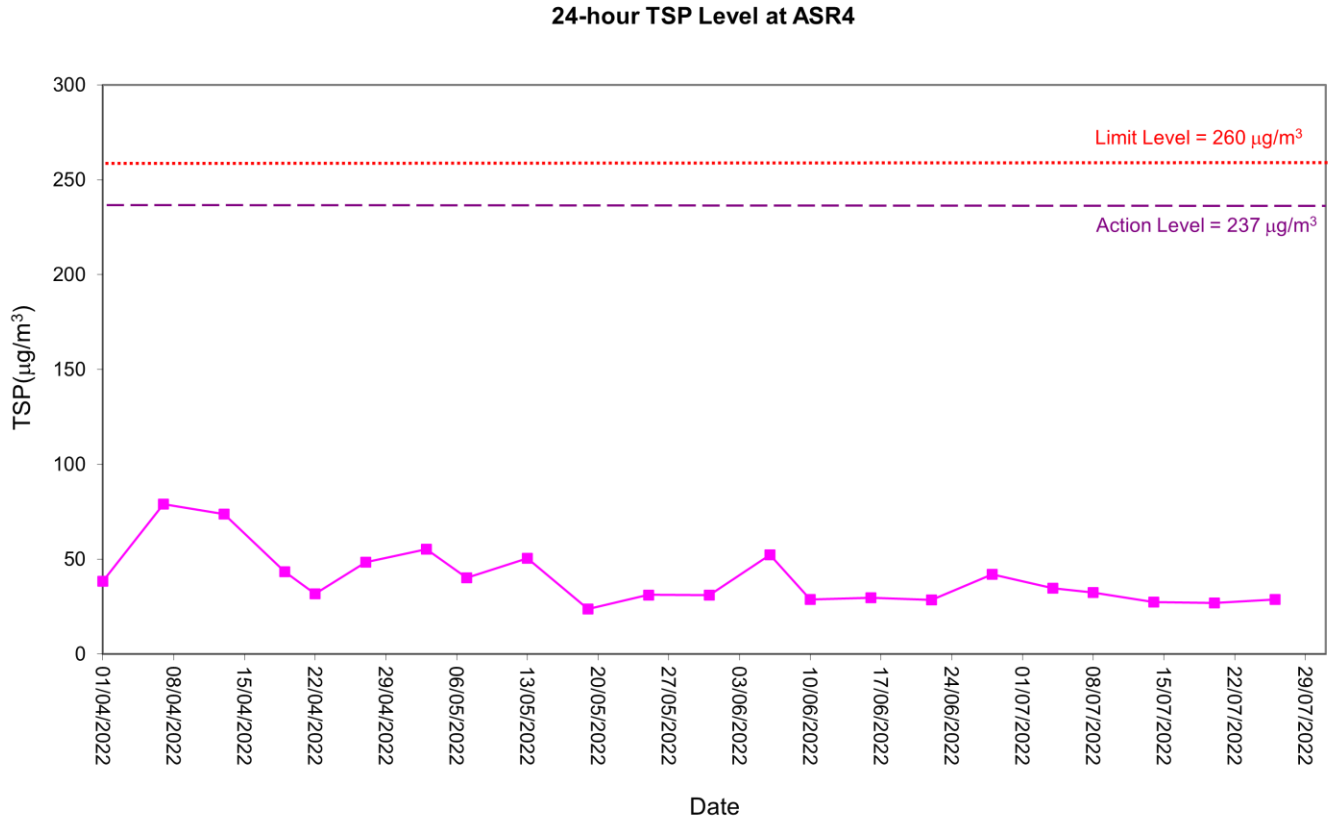
Air Quality (24-hr TSP)





Air Quality (24-hr TSP)





Noise

Station NSR1

Date	Start Time	Noise Level for 30 min, dB(A)			Wind Speed (m/s)	Weather Condition	Limit Level, dB(A)
		L_{eq}	L_{10}	L_{90}			
03-May-22	11:23	49	53	39	0.2	Sunny	75
13-May-22	11:20	52	53	42	0.4	Cloudy	75
19-May-22	14:14	50	52	42	0.3	Sunny	75
25-May-22	11:24	52	54	42	0.3	Cloudy	75
31-May-22	11:27	51	52	43	0.2	Sunny	75
06-Jun-22	11:29	52	55	42	0.7	Sunny	75
16-Jun-22	11:28	51	54	44	0.2	Sunny	75
22-Jun-22	14:06	49	50	44	0.3	Sunny	75
28-Jun-22	11:17	50	52	41	0.2	Sunny	75
04-Jul-22	11:14	50	53	42	0.5	Cloudy	75
14-Jul-22	11:15	48	52	41	0.2	Sunny	75
20-Jul-22	11:28	47	51	41	0.3	Sunny	75
26-Jul-22	11:22	50	53	40	0.2	Sunny	75

Station NSR3

Date	Start Time	Noise Level for 30 min, dB(A)			Wind Speed (m/s)	Weather Condition	Limit Level, dB(A)
		L_{eq}	L_{10}	L_{90}			
03-May-22	10:36	45	47	40	0.3	Sunny	75
13-May-22	10:33	47	49	40	0.6	Cloudy	75
19-May-22	13:26	47	49	41	0.2	Sunny	75
25-May-22	10:34	46	49	41	0.2	Cloudy	75
31-May-22	10:41	48	51	42	0.3	Sunny	75
06-Jun-22	10:46	48	50	43	0.5	Sunny	75
16-Jun-22	10:45	50	51	46	0.3	Sunny	75
22-Jun-22	13:19	47	49	41	0.2	Sunny	75
28-Jun-22	10:30	46	49	40	0.2	Sunny	75
04-Jul-22	10:25	46	49	41	0.6	Cloudy	75
14-Jul-22	10:22	47	49	41	0.2	Sunny	75
20-Jul-22	10:48	44	47	39	0.2	Sunny	75
26-Jul-22	10:38	44	46	40	0.3	Sunny	75

Noise

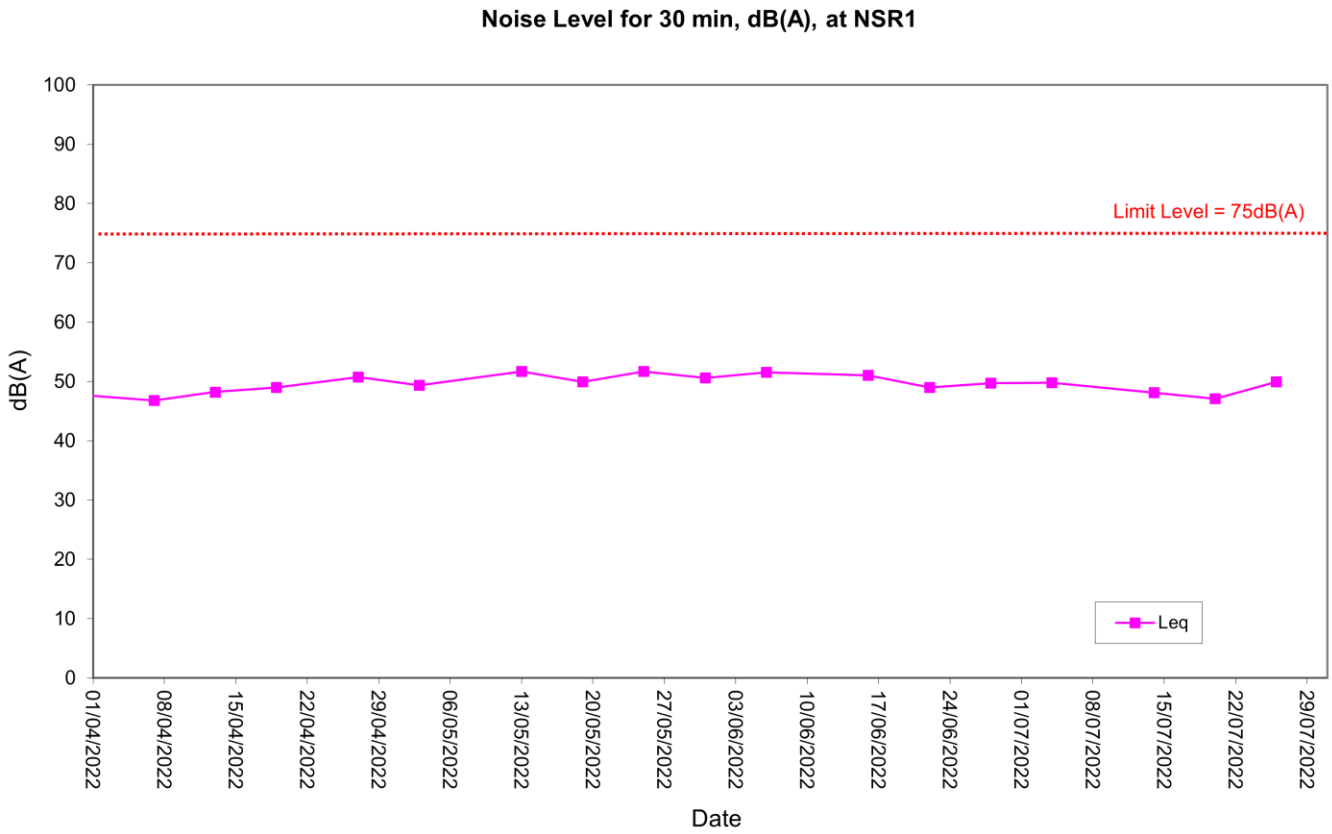
Station NSR5

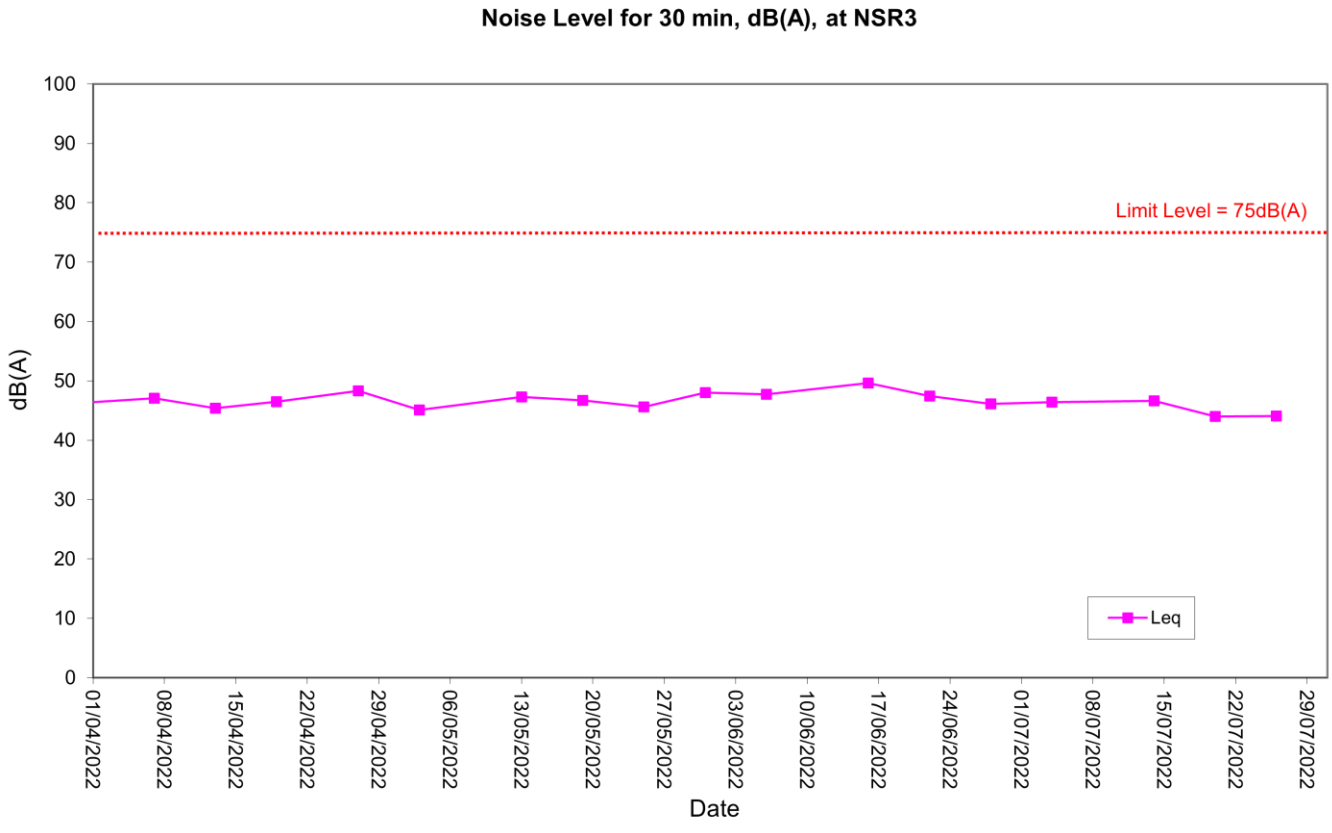
Date	Start Time	Noise Level for 30 min, dB(A)			Wind Speed (m/s)	Weather Condition	Limit Level, dB(A)
		L_{eq}	L_{10}	L_{90}			
03-May-22	09:45	48	49	44	0.2	Sunny	75
13-May-22	09:43	48	50	45	0.7	Cloudy	75
19-May-22	10:34	50	53	45	0.3	Sunny	75
25-May-22	09:46	51	53	44	0.2	Cloudy	75
31-May-22	09:52	52	54	47	0.2	Sunny	75
06-Jun-22	09:58	51	53	46	0.3	Sunny	75
16-Jun-22	09:57	50	53	47	0.4	Sunny	75
22-Jun-22	10:50	52	54	46	0.3	Sunny	75
28-Jun-22	09:42	50	52	43	0.2	Sunny	75
04-Jul-22	09:34	51	53	46	0.5	Cloudy	75
14-Jul-22	09:30	48	51	43	0.3	Sunny	75
20-Jul-22	09:59	49	51	42	0.2	Sunny	75
26-Jul-22	09:48	50	53	41	0.3	Sunny	75

Station NSR7

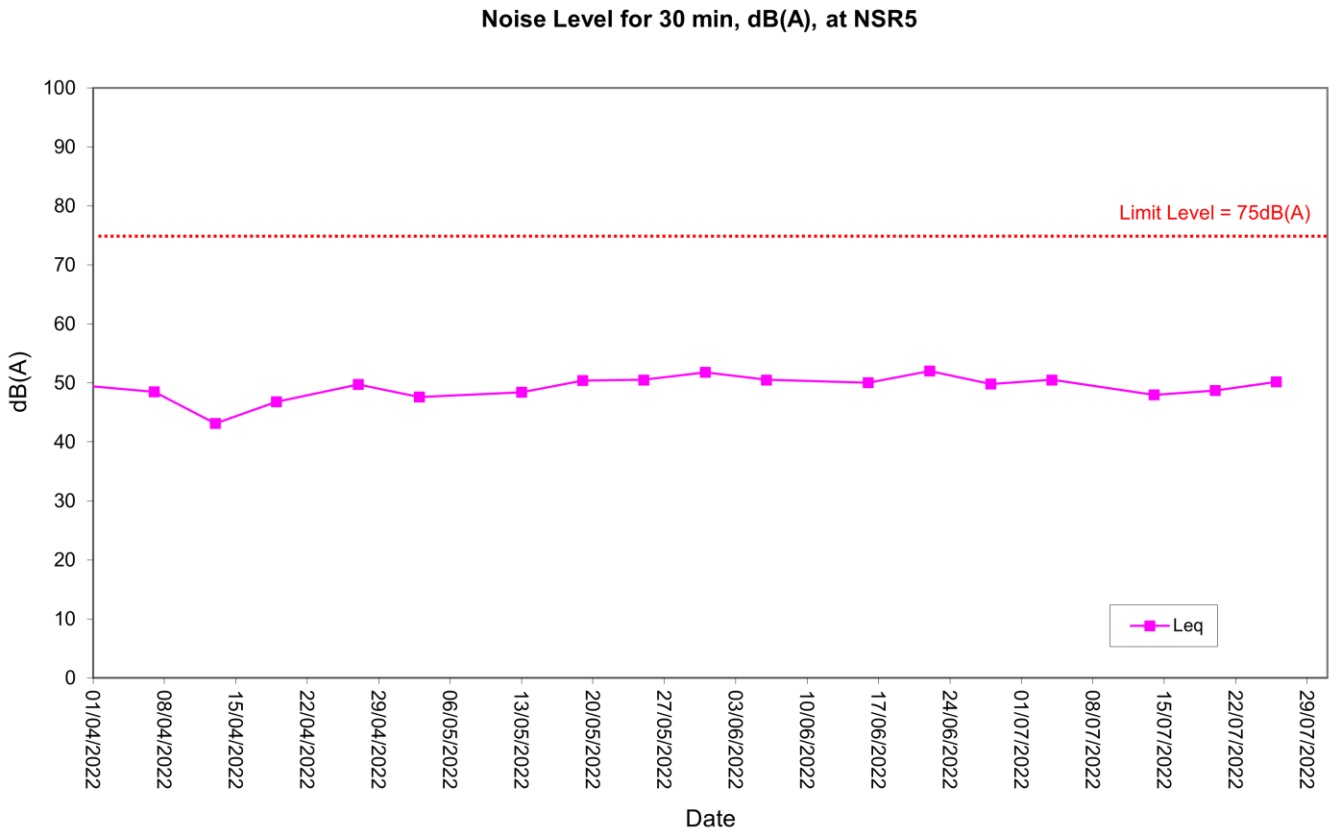
Date	Start Time	Noise Level for 30 min, dB(A)			Wind Speed (m/s)	Weather Condition	Limit Level, dB(A)
		L_{eq}	L_{10}	L_{90}			
03-May-22	09:00	66	68	63	0.3	Sunny	75
13-May-22	08:55	67	68	64	0.6	Cloudy	75
19-May-22	09:43	66	67	62	0.2	Sunny	75
25-May-22	08:59	66	68	63	0.3	Cloudy	75
31-May-22	09:04	66	68	63	0.2	Sunny	75
06-Jun-22	09:11	65	67	63	0.4	Sunny	75
16-Jun-22	09:10	67	69	64	0.3	Sunny	75
22-Jun-22	10:00	66	68	63	0.3	Sunny	75
28-Jun-22	08:54	67	69	64	0.3	Sunny	75
04-Jul-22	08:45	68	70	64	0.3	Cloudy	75
14-Jul-22	08:42	67	70	64	0.2	Sunny	75
20-Jul-22	09:13	66	69	63	0.2	Sunny	75
26-Jul-22	09:02	67	69	63	0.3	Sunny	75

Noise


Noise Level for 30 min, dB(A), at NSR1
100
90
80
70
60
50
40
30
20
10
0
dB(A)
Limit Level = 75dB(A)
Leq
01/04/2022
08/04/2022
15/04/2022
22/04/2022
29/04/2022
06/05/2022
13/05/2022
20/05/2022
27/05/2022
03/06/2022
10/06/2022
17/06/2022
24/06/2022
01/07/2022
08/07/2022
15/07/2022
22/07/2022
29/07/2022
Date


Noise Level for 30 min, dB(A), at NSR3
100
90
80
70
60
50
40
30
20
10
0
dB(A)
Limit Level = 75dB(A)
Leq
01/04/2022
08/04/2022
15/04/2022
22/04/2022
29/04/2022
06/05/2022
13/05/2022
20/05/2022
27/05/2022
03/06/2022
10/06/2022
17/06/2022
24/06/2022
01/07/2022
08/07/2022
15/07/2022
22/07/2022
29/07/2022
Date

Noise


Noise Level for 30 min, dB(A), at NSR5
100
90
80
70
60
50
40
30
20
10
0
dB(A)
Limit Level = 75dB(A)
Leq
01/04/2022
08/04/2022
15/04/2022
22/04/2022
29/04/2022
06/05/2022
13/05/2022
20/05/2022
27/05/2022
03/06/2022
10/06/2022
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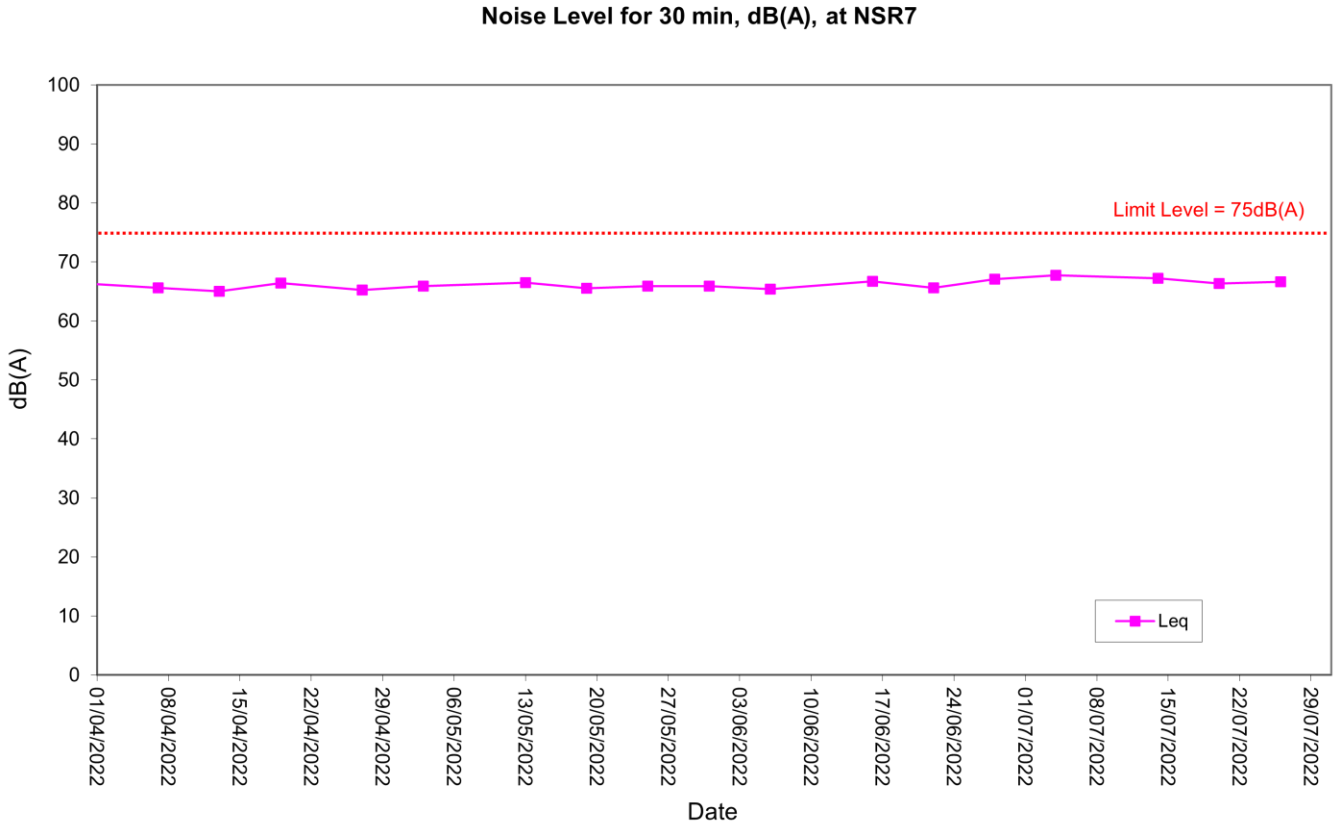
24/06/2022
01/07/2022
08/07/2022
15/07/2022
22/07/2022
29/07/2022
Date


Noise Level for 30 min, dB(A), at NSR7
100
90
80
70
60
50
40
30
20
10
0
dB(A)
Limit Level = 75dB(A)
Leq
01/04/2022
08/04/2022
15/04/2022
22/04/2022
29/04/2022
06/05/2022
13/05/2022
20/05/2022
27/05/2022
03/06/2022
10/06/2022
17/06/2022
24/06/2022
01/07/2022
08/07/2022
15/07/2022
22/07/2022
29/07/2022
Date

Water Quality

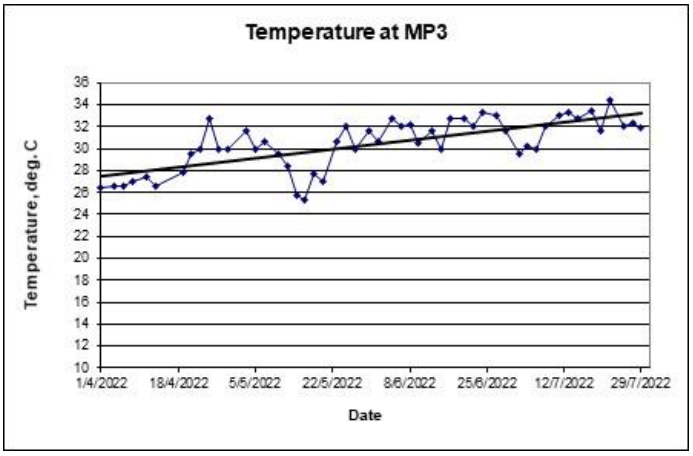
Monitoring Location MP3

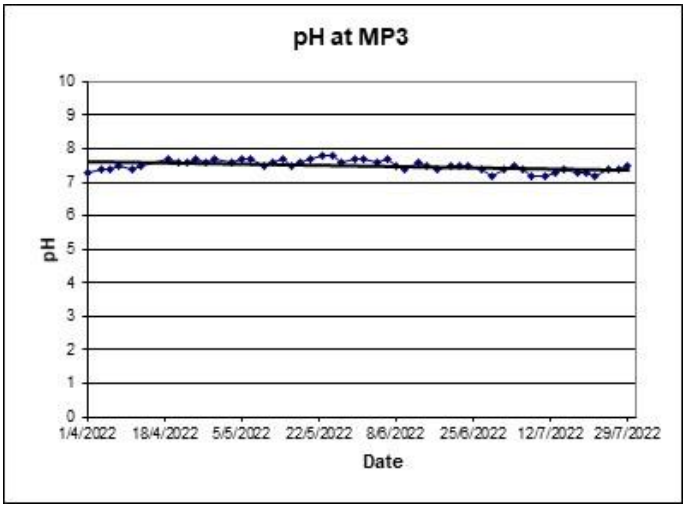
Monitoring Date	Temp (°C)	pH	Dissolved Oxygen (mg/L)	DO (%)	Turbidity (NT)	BOD (mg/L)	Suspended Solids (mg/L)
MP3							
03/05/2022	31.6	**7.6**	7.1	99.0	25.3	4	24
05/05/2022	30.0	**7.7**	7.3	104.7	18.6	2	17
07/05/2022	30.7	**7.7**	7.0	96.6	33.5	3	30
10/05/2022	29.5	7.5	7.4	98.0	21.2	5	21
12/05/2022	28.4	**7.6**	7.8	99.7	42.8	6	39
14/05/2022	25.7	7.7	7.4	92.8	32.7	4	33
16/05/2022	25.3	7.5	7.8	96.3	36.1	4	37
18/05/2022	27.7	**7.6**	7.6	97.1	32.7	5	32
20/05/2022	27.0	**7.7**	7.8	96.1	22.4	3	20
23/05/2022	30.7	**7.8**	7.0	96.2	26.2	3	27
25/05/2022	32.1	**7.8**	7.1	98.0	22.9	4	24
27/05/2022	29.9	**7.6**	7.2	96.9	24.3	4	28
30/05/2022	31.7	**7.7**	7.0	94.7	22.1	4	31
01/06/2022	30.6	**7.7**	6.9	97.0	33.0	4	31
04/06/2022	32.8	**7.6**	7.2	102.0	14.2	<2	12
06/06/2022	32.1	**7.7**	7.1	98.9	27.5	3	27
08/06/2022	32.2	7.5	7.0	96.9	28.3	4	34
10/06/2022	30.5	7.4	**6.7**	96.3	25.3	4	24
13/06/2022	31.6	**7.6**	7.1	99.1	26.8	5	26
15/06/2022	30.0	7.5	7.3	103.6	25.5	3	23
17/06/2022	32.8	7.4	7.2	102.8	15.2	6	15
20/06/2022	32.8	7.5	7.2	101.5	13.7	6	11
22/06/2022	32.1	7.5	7.1	98.3	11.5	6	9
24/06/2022	33.3	7.5	7.2	101.1	16.5	5	15
27/06/2022	33.0	7.4	7.0	97.7	17.7	9	14
29/06/2022	31.7	7.2	7.0	95.0	14.3	6	14
02/07/2022	29.5	7.4	7.4	98.5	24.1	4	15
04/07/2022	30.2	7.5	6.9	93.0	22.6	5	18
06/07/2022	30.0	7.4	7.3	103.1	20.8	5	17
08/07/2022	32.1	7.2	7.1	99.1	16.7	4	12
11/07/2022	33.0	7.2	7.0	96.9	17.2	5	14
13/07/2022	33.3	7.3	**6.8**	96.1	16.0	6	15
15/07/2022	32.8	7.4	6.9	96.1	17.1	5	13
18/07/2022	33.5	7.3	7.1	103.1	17.5	6	14
20/07/2022	31.7	7.3	7.1	94.7	20.6	7	18
22/07/2022	34.4	7.2	**6.7**	97.7	17.3	5	13
25/07/2022	32.0	7.4	7.0	95.5	23.7	7	23
27/07/2022	32.4	7.4	7.2	98.9	23.1	6	11
29/07/2022	31.9	7.5	7.3	99.7	23.5	7	20
Average	31.1	7.5	7.2	98.1	22.8	5	21
Action Level	-	<5.5 or >7.5	<6.85	-	>64	-	>65
Limit Level	-	<4.0 or >8.0	<6.65	-	>67	-	>66

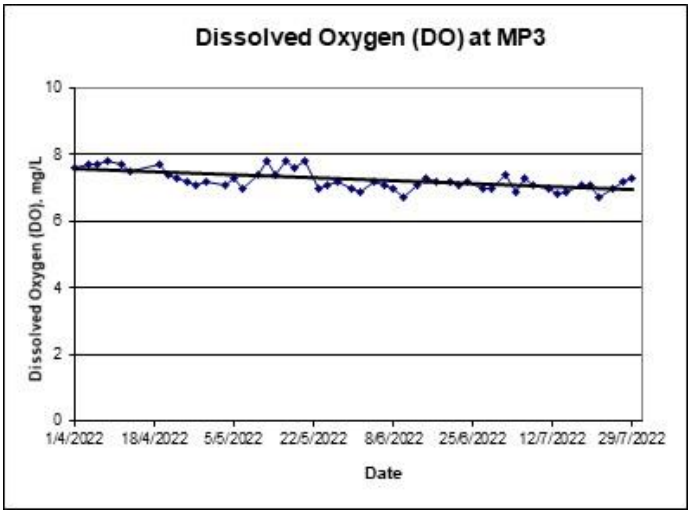
Notes:
(1) <2: Value is too low to indicate (<2mg/L).
(2) For the Limit Level of DO, 1-percentile of baseline data is adopted as it is greater than 2mg/L. (Refer to Baseline Monitoring Report)
(3) Values **Bold** indicate Action Level exceedance.
(4) Values **Underlined and Bold** indicate Limit Level exceedance.

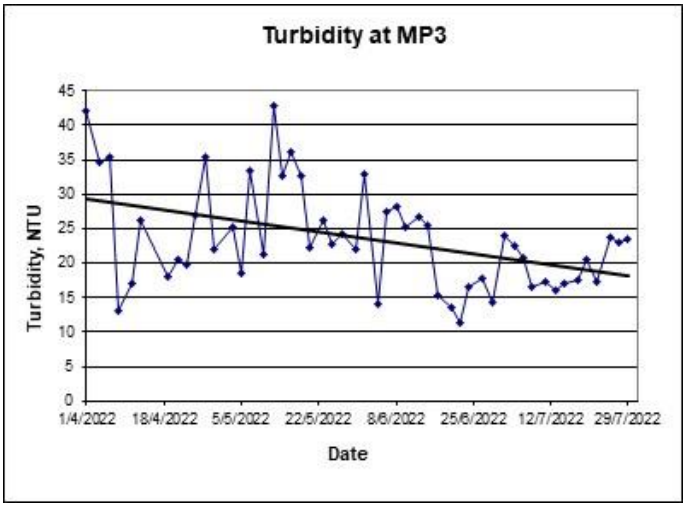
Water Quality

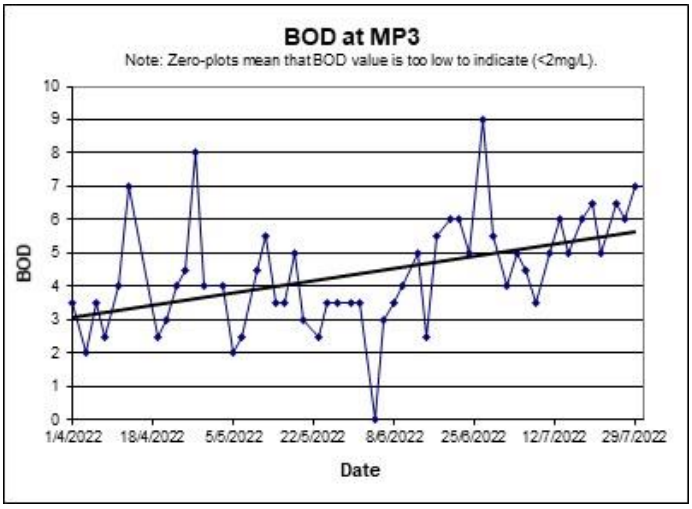
Monitoring Location MP3

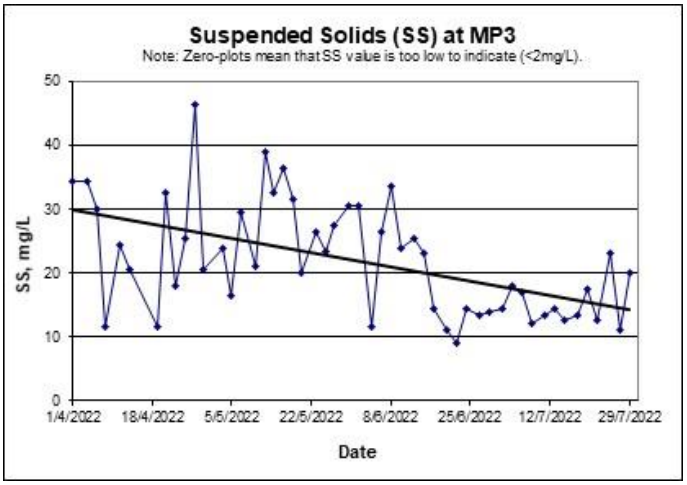












Water Quality

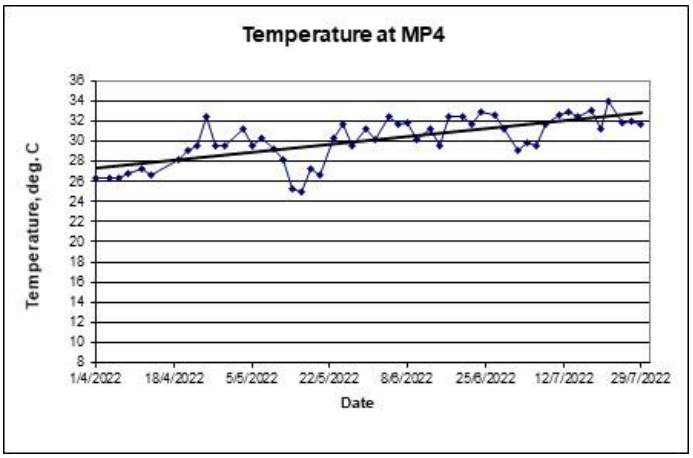
Monitoring Location MP4

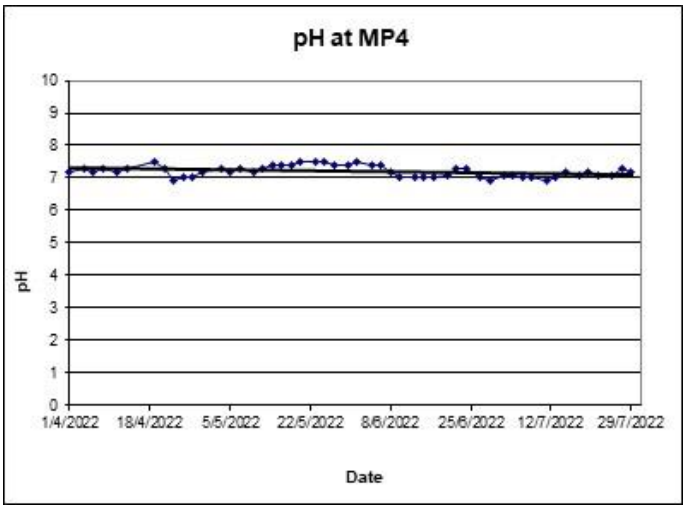
Monitoring Date	Temp (ºC)	pH	Dissolved Oxygen (mg/L)	DO (%)	Turbidity (NT)	BOD (mg/L)	Suspended Solids (mg/L)
MP4							
03/05/2022	31.2	7.3	5.6	64.0	21.1	5	18
05/05/2022	29.6	7.2	5.3	57.1	22.1	3	20
07/05/2022	30.3	7.3	5.0	66.0	34.0	4	31
10/05/2022	29.2	7.2	5.3	58.0	23.5	4	24
12/05/2022	28.1	7.3	5.4	55.9	34.4	3	28
14/05/2022	25.3	7.4	5.5	49.1	35.7	7	32
16/05/2022	24.9	7.4	5.0	54.7	38.4	4	37
18/05/2022	27.3	7.4	5.0	62.4	42.0	4	41
20/05/2022	26.6	7.5	5.4	65.0	23.8	5	31
23/05/2022	30.3	7.5	5.0	66.5	21.7	3	19
25/05/2022	31.7	7.5	5.1	71.6	29.1	4	25
27/05/2022	29.5	7.4	5.3	59.9	21.3	4	22
30/05/2022	31.3	7.4	4.9	58.2	36.6	4	38
01/06/2022	30.2	7.5	5.3	57.8	30.0	4	30
04/06/2022	32.4	7.4	5.0	67.8	19.3	3	15
06/06/2022	31.7	7.4	5.1	70.6	23.7	3	22
08/06/2022	31.8	7.2	5.4	61.6	33.2	3	41
10/06/2022	30.1	7.0	5.3	63.9	24.3	4	24
13/06/2022	31.2	7.0	5.1	64.4	37.1	3	30
15/06/2022	29.6	7.0	5.3	57.8	38.6	3	37
17/06/2022	32.4	7.0	5.0	68.2	30.1	3	30
20/06/2022	32.4	7.1	5.0	67.8	28.0	3	37
22/06/2022	31.7	7.3	5.1	70.8	17.9	4	15
24/06/2022	32.9	7.3	5.0	63.0	25.7	3	27
27/06/2022	32.6	7.0	4.8	62.4	32.1	5	29
29/06/2022	31.3	6.9	4.9	58.3	45.4	3	38
02/07/2022	29.1	7.1	5.3	55.5	26.2	5	17
04/07/2022	29.8	7.1	5.0	63.9	21.6	3	19
06/07/2022	29.6	7.0	5.3	57.5	23.1	4	21
08/07/2022	31.7	7.0	5.1	70.8	20.2	2	21
11/07/2022	32.6	6.9	4.8	62.9	14.0	3	10
13/07/2022	32.9	7.0	5.0	59.7	42.6	4	39
15/07/2022	32.4	7.2	5.4	75.3	31.4	6	26
18/07/2022	33.1	7.1	5.4	71.4	23.5	3	16
20/07/2022	31.3	7.2	4.9	58.5	34.3	5	34
22/07/2022	34.0	7.1	5.0	61.5	23.5	2	21
25/07/2022	31.8	7.1	5.1	69.8	21.2	4	28
27/07/2022	32.0	7.3	5.2	71.6	30.3	3	15
29/07/2022	31.7	7.2	5.3	73.9	42.0	3	38
Average	30.7	7.2	5.2	63.4	28.8	4	26
Action Level	-	<5.5 or >7.5	<3.91	-	>60	-	>50
Limit Level	-	<4.0 or >8.0	<3.82	-	>64	-	>53

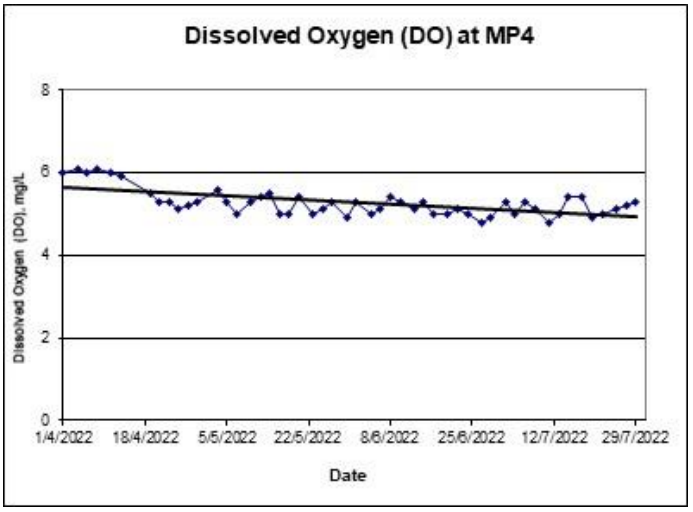
Notes:
(1) <2: Value is too low to indicate (<2mg/L).
(2) For the Limit Level of DO, 1-percentile of baseline data is adopted as it is greater than 2mg/L. (Refer to Baseline Monitoring Report)
(3) Values **Bold** indicate Action Level exceedance.
(4) Values **Underlined and Bold** indicate Limit Level exceedance

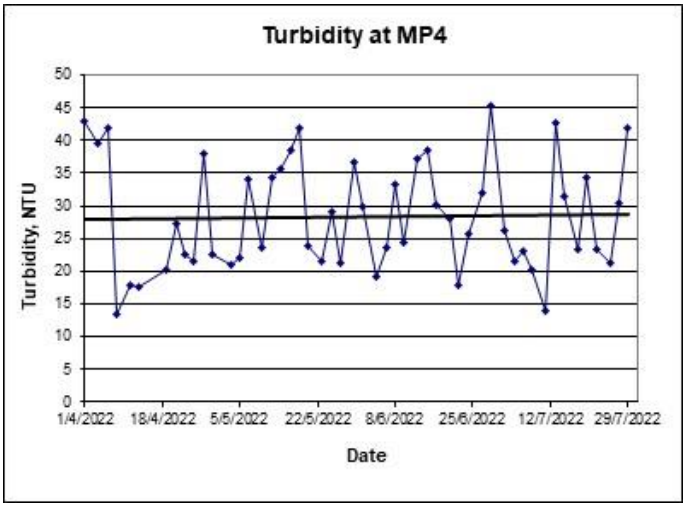
Water Quality

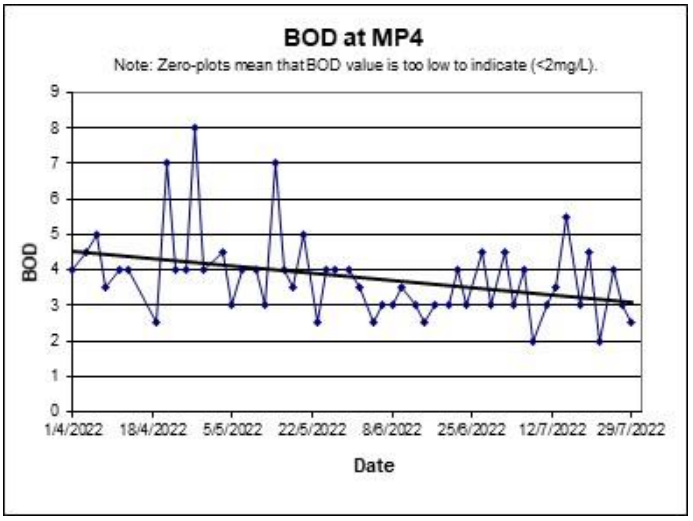
Monitoring Location MP4

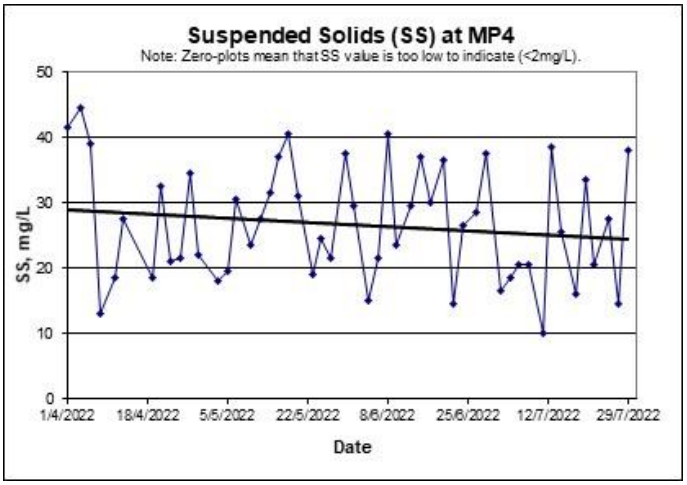












Water Quality

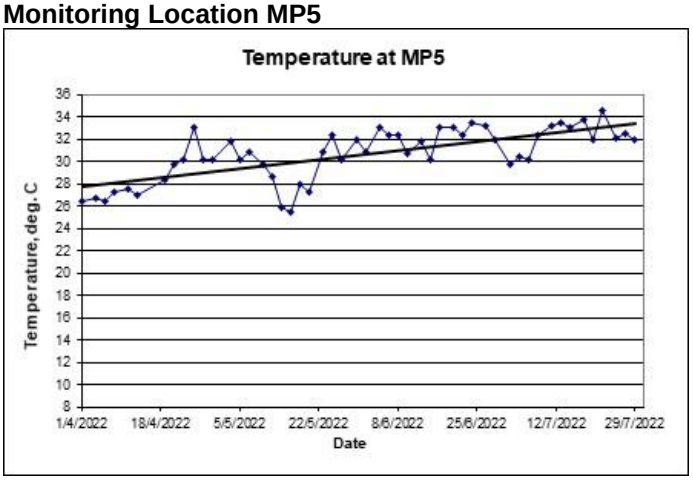
Monitoring Location MP5

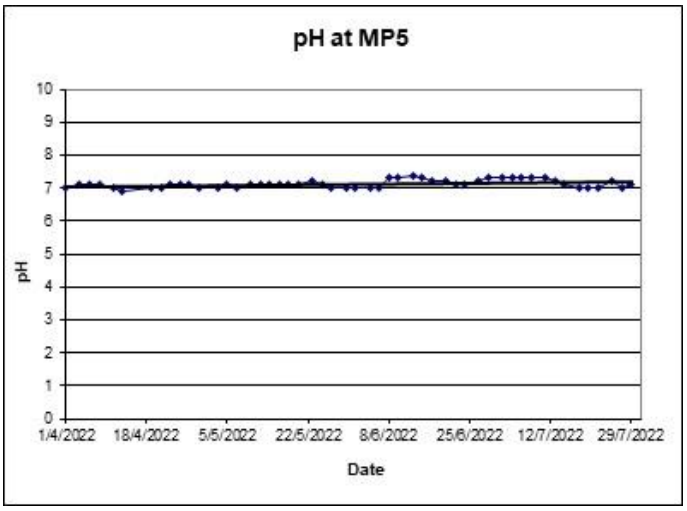
Monitoring Date	Temp (°C)	pH	Dissolved Oxygen (mg/L)	DO (%)	Turbidity (NT)	BOD (mg/L)	Suspended Solids (mg/L)
MP5							
03/05/2022	31.8	7.0	5.5	67.3	29.7	3	28
05/05/2022	30.2	7.1	5.1	58.4	30.1	4	27
07/05/2022	30.9	7.0	5.3	69.1	40.0	4	34
10/05/2022	29.7	7.1	5.2	60.4	27.8	4	21
12/05/2022	28.6	7.1	5.2	55.1	45.7	4	34
14/05/2022	25.9	7.1	5.0	51.2	45.7	6	39
16/05/2022	25.5	7.1	5.0	56.8	46.3	4	42
18/05/2022	27.9	7.1	4.8	57.8	42.9	4	44
20/05/2022	27.2	7.1	4.9	55.2	36.8	7	44
23/05/2022	30.9	7.2	5.3	70.8	37.4	3	35
25/05/2022	32.3	7.1	5.2	70.1	41.4	5	38
27/05/2022	30.1	7.0	5.4	63.0	32.9	4	35
30/05/2022	31.9	7.0	5.3	69.9	45.1	5	43
01/06/2022	30.8	7.0	5.3	59.8	44.3	4	44
04/06/2022	33.0	7.0	5.2	70.9	21.6	2	16
06/06/2022	32.3	7.0	5.2	70.3	37.0	3	34
08/06/2022	32.4	7.3	4.9	55.8	38.9	4	40
10/06/2022	30.7	7.3	5.1	61.9	24.9	4	26
13/06/2022	31.8	7.4	5.2	66.9	38.3	3	28
15/06/2022	30.2	7.3	5.1	57.4	41.0	3	42
17/06/2022	33.0	7.2	5.2	70.8	32.7	4	31
20/06/2022	33.0	7.2	5.2	71.0	30.5	3	30
22/06/2022	32.3	7.1	5.2	70.3	20.7	4	18
24/06/2022	33.5	7.1	4.9	59.8	28.1	3	28
27/06/2022	33.2	7.2	5.0	68.1	37.0	4	35
29/06/2022	31.9	7.3	5.3	69.1	46.1	3	41
02/07/2022	29.7	7.3	5.2	60.7	30.5	5	13
04/07/2022	30.4	7.3	5.3	69.8	24.4	3	16
06/07/2022	30.2	7.3	5.1	58.1	24.4	4	25
08/07/2022	32.3	7.3	5.2	70.4	23.5	2	24
11/07/2022	33.2	7.3	5.0	68.1	15.7	3	11
13/07/2022	33.5	7.2	5.1	64.1	46.4	4	39
15/07/2022	33.0	7.1	5.5	76.0	43.0	3	35
18/07/2022	33.7	7.0	4.9	65.0	24.9	3	19
20/07/2022	31.9	7.0	5.3	69.0	35.1	3	36
22/07/2022	34.6	7.0	4.9	60.5	27.0	3	21
25/07/2022	32.1	7.2	5.0	68.4	23.1	3	15
27/07/2022	32.5	7.0	5.1	70.0	32.7	2	11
29/07/2022	32.0	7.1	5.0	68.5	46.1	3	41
Average	31.3	7.1	5.1	64.7	34.3	4	30
Action Level	-	<5.5 or >7.5	<4.13	-	>81	-	>66
Limit Level	-	<4.0 or >8.0	<3.87	-	>84	-	>69

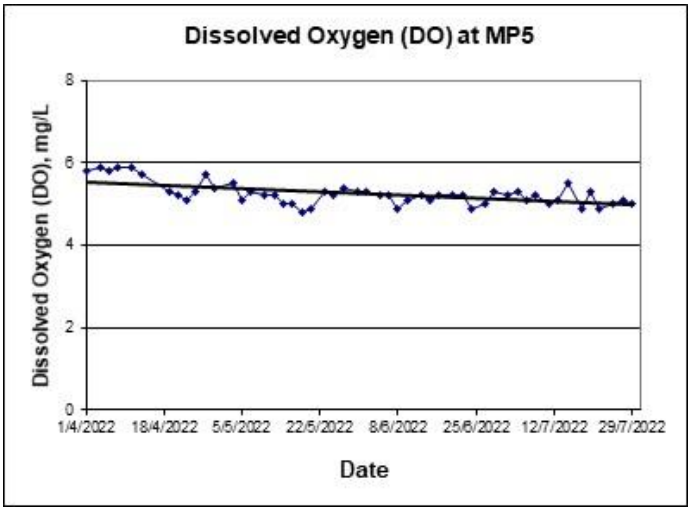
Notes:
(1) <2: Value is too low to indicate (<2mg/L).
(2) For the Limit Level of DO, 1-percentile of baseline data is adopted as it is greater than 2mg/L. (Refer to Baseline Monitoring Report)
(3) Values **Bold** indicate Action Level exceedance.
(4) Values **Underlined and Bold** indicate Limit Level exceedance.

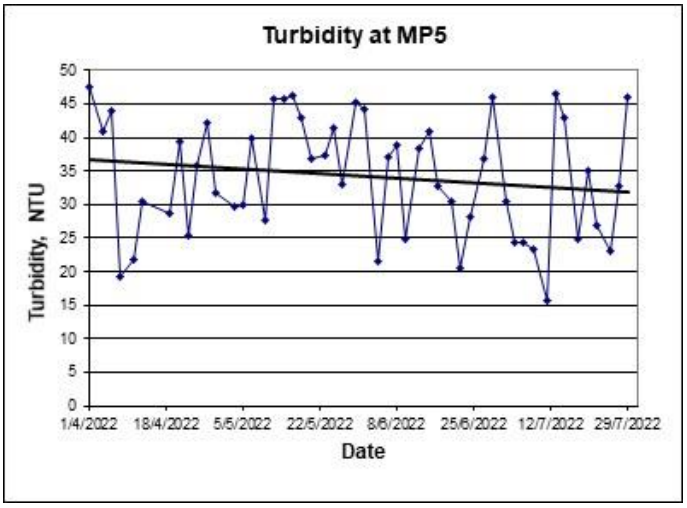
Water Quality

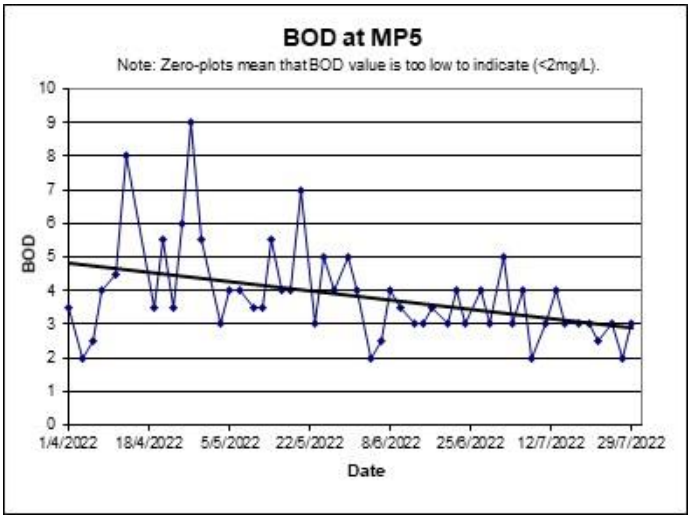
Monitoring Location MP5

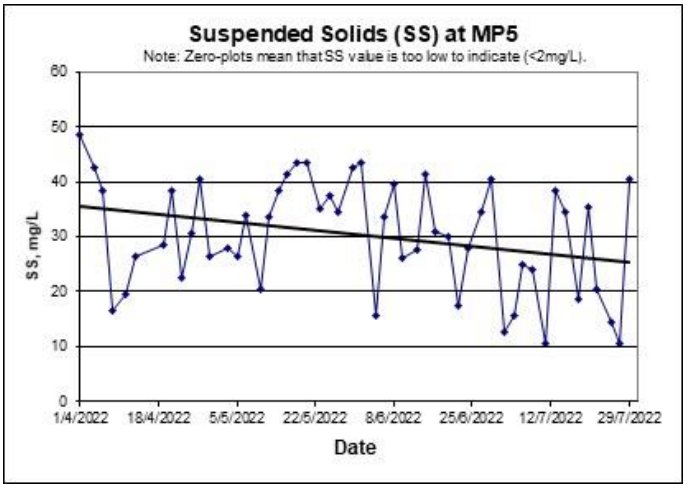












Water Quality

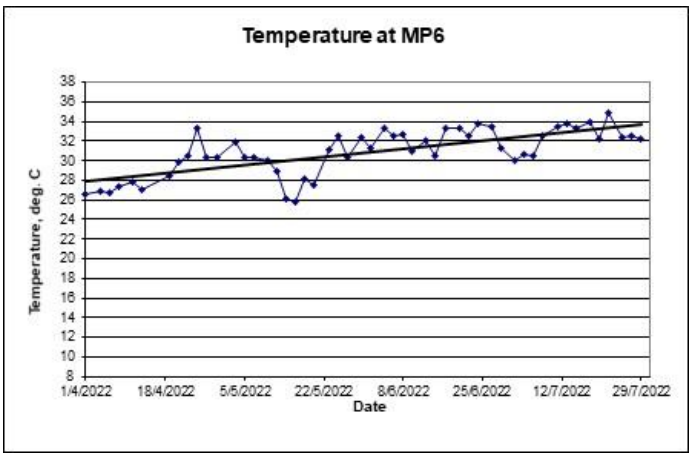
Monitoring Location MP6

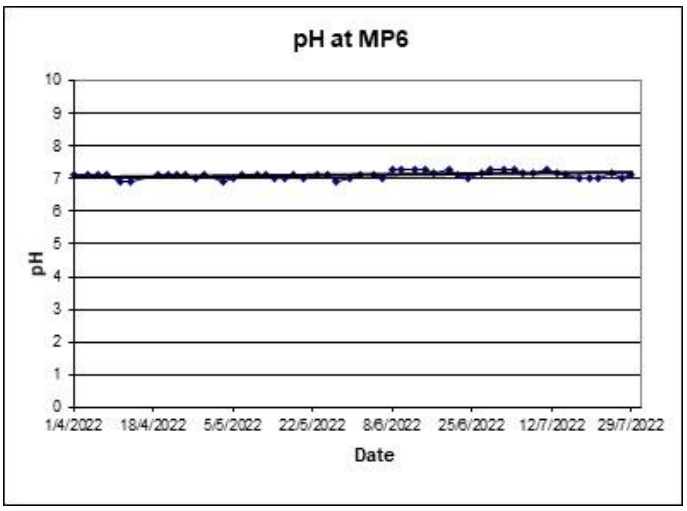
Monitoring Date	Temp (°C)	pH	Dissolved Oxygen (mg/L)	DO (%)	Turbidity (NT)	BOD (mg/L)	Suspended Solids (mg/L)
MP6							
03/05/2022	31.9	6.9	5.4	64.2	31.4	4	26
05/05/2022	30.4	7.0	5.0	56.4	32.7	4	32
07/05/2022	30.4	7.1	5.5	63.2	41.1	4	35
10/05/2022	30.0	7.1	4.9	50.7	28.9	4	22
12/05/2022	28.9	7.1	5.2	56.1	47.4	4	38
14/05/2022	26.1	7.0	4.9	46.2	48.3	6	44
16/05/2022	25.8	7.0	4.9	51.7	47.7	4	48
18/05/2022	28.2	7.1	4.9	55.3	47.3	4	46
20/05/2022	27.5	7.0	4.8	50.5	37.5	7	39
23/05/2022	31.2	7.1	5.4	71.1	43.3	3	41
25/05/2022	32.6	7.1	5.4	72.7	45.1	5	42
27/05/2022	30.4	6.9	5.4	60.1	39.3	4	40
30/05/2022	32.3	7.0	5.2	64.3	46.3	6	41
01/06/2022	31.3	7.1	4.8	52.7	47.3	6	44
04/06/2022	33.3	7.1	5.2	70.0	24.4	3	20
06/06/2022	32.6	7.0	5.4	71.8	40.9	4	38
08/06/2022	32.7	7.3	5.0	52.4	39.5	4	41
10/06/2022	31.0	7.3	5.0	59.8	25.0	5	24
13/06/2022	32.1	7.3	4.9	61.7	42.7	3	31
15/06/2022	30.5	7.3	5.0	56.1	42.4	3	39
17/06/2022	33.3	7.2	5.2	70.6	34.8	4	34
20/06/2022	33.3	7.3	5.2	71.0	35.7	4	33
22/06/2022	32.6	7.1	5.4	71.9	21.1	4	17
24/06/2022	33.8	7.0	5.1	62.3	29.4	3	28
27/06/2022	33.5	7.2	5.1	68.5	38.3	5	35
29/06/2022	31.3	7.3	5.2	64.1	49.2	3	42
02/07/2022	30.0	7.3	4.9	50.9	32.3	6	16
04/07/2022	30.7	7.3	5.1	63.5	25.5	3	18
06/07/2022	30.5	7.2	5.0	55.4	48.7	2	47
08/07/2022	32.6	7.2	5.4	71.6	25.0	2	22
11/07/2022	33.5	7.3	5.1	69.3	16.1	3	11
13/07/2022	33.8	7.2	4.9	58.9	48.0	4	44
15/07/2022	33.3	7.1	5.2	70.0	48.9	3	32
18/07/2022	34.0	7.0	5.1	62.1	27.6	3	26
20/07/2022	32.2	7.0	5.2	65.4	37.2	3	37
22/07/2022	34.9	7.0	4.7	57.8	27.8	3	25
25/07/2022	32.3	7.2	4.9	67.5	24.1	3	18
27/07/2022	32.6	7.0	5.0	69.1	34.6	3	14
29/07/2022	32.2	7.1	4.9	67.4	48.9	4	42
Average	31.5	7.1	5.1	62.1	37.2	4	32
Action Level	-	<5.5 or >7.5	<4.61	-	>94	-	>75
Limit Level	-	<4.0 or >8.0	<4.52	-	>96	-	>75

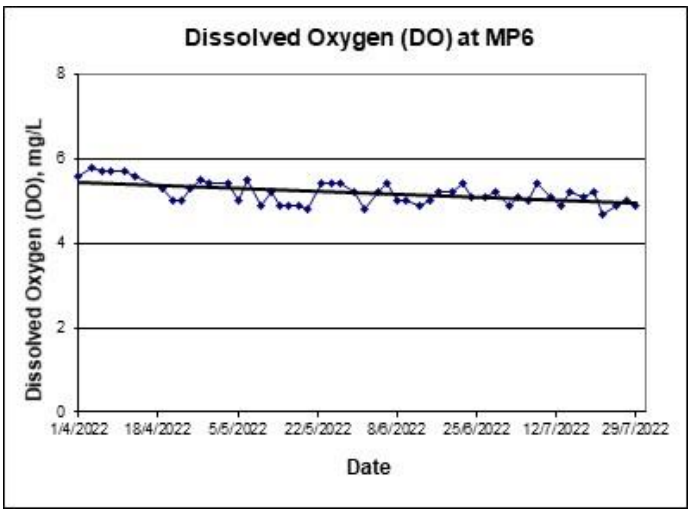
Notes:
(1) <2: Value is too low to indicate (<2mg/L).
(2) For the Limit Level of DO, 1-percentile of baseline data is adopted as it is greater than 2mg/L. (Refer to Baseline Monitoring Report)
(3) Values **Bold** indicate Action Level exceedance.
(4) Values **Underlined and Bold** indicate Limit Level exceedance.

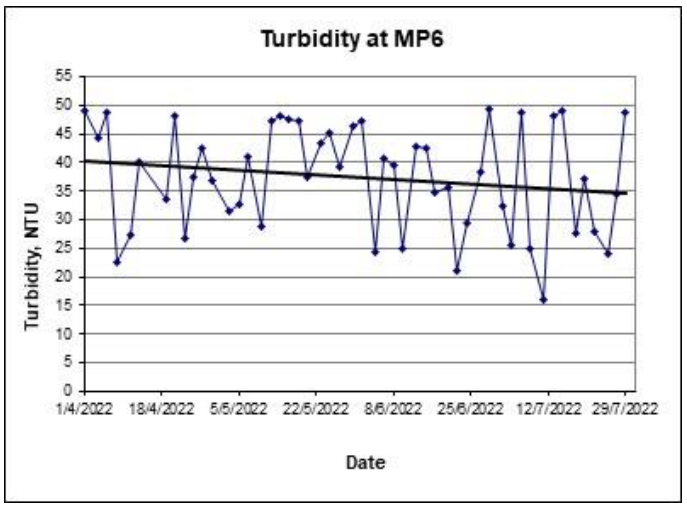
Water Quality

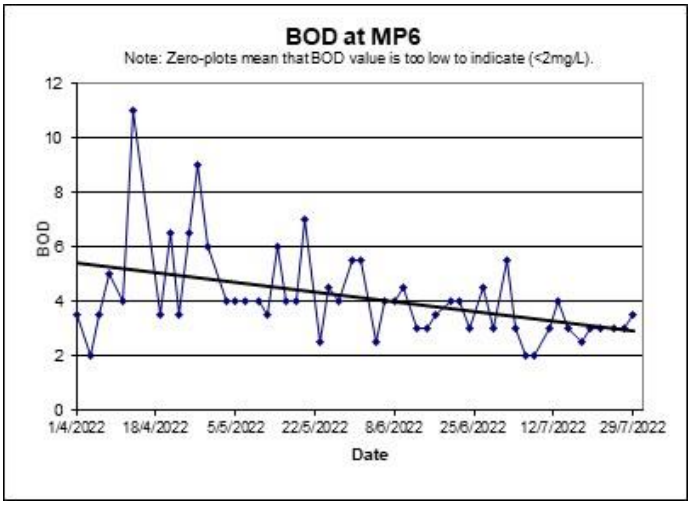
Monitoring Location MP6

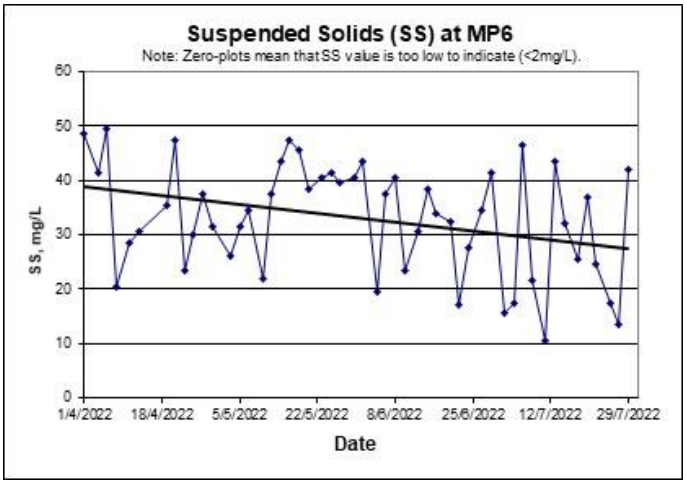












E. Summary of Ecological Monitoring Results

Table E1. Summary of bird species of conservation importance and/or wetland-dependence recorded in the Survey Area (excluding the WRA)

Species Name[1]	Scientific Name[1]	Wetland Dependence	Conservation Status[2]	May 2022		Records outside survey[5]
				Occurrence[3]	Mean[4]	
Little Grebe	*Tachybaptus ruficollis*	Y	LC	4	12.5	0
Grey Heron	*Ardea cinerea*	Y	PRC	1	0.3	0
Great Egret	*Ardea alba*	Y	PRC, (RC)	4	9.8	0
Intermediate Egret	*Egretta intermedia*	Y	RC	1	0.3	0
Little Egret	*Egretta garzetta*	Y	PRC, (RC)	4	23.3	0
Chinese Pond Heron	*Ardeola bacchus*	Y	PRC, (RC)	4	13.0	0
Yellow Bittern	*Ixobrychus sinensis*	Y	(LC)	1	0.3	0
Black-crowned Night Heron	*Nycticorax nycticorax*	Y	(LC)	3	4.0	0
Black Kite#	*Milvus migrans*	Y	Class II, (RC)	2	0.8	0
White-breasted Waterhen	*Amaurornis phoenicurus*	Y	-	4	4.8	0
Black-winged Stilt	*Himantopus himantopus*	Y	RC	3	3.0	0
Little Ringed Plover	*Charadrius dubius*	Y	(LC)	1	0.5	0
Common Greenshank	*Tringa nebularia*	Y	RC	1	0.5	0
Common Sandpiper	*Actitis hypoleucos*	Y	-	2	0.5	0
Whiskered Tern	*Chlidonias hybrida*	Y	-	2	4.8	0
White-winged Tern	*Chlidonias leucopterus*	Y	-	1	6.5	0
Pacific Swift	*Apus pacificus*	N	(LC)	1	0.5	0
Pied Kingfisher	*Ceryle rudis*	Y	(LC)	2	0.5	0
Common Kingfisher	*Alcedo atthis*	Y	-	2	1.0	0
Eastern Yellow Wagtail	*Motacilla tschutschensis*	Y	-	1	0.3	0
White Wagtail	*Motacilla alba*	Y	-	3	5.5	0
White-shouldered Starling	*Sturnia sinensis*	Y	(LC)	4	6.0	0
Collared Crow	*Corvus torquatus*	Y	LC, NT	1	0.5	0
			No. of Species Recorded			**23**

Species Name[1]	Scientific Name[1]	Wetland Dependence	Conservation Status[2]	Jun 2022		Records outside survey[5]
				Occurrence[3]	Mean[4]	
Little Grebe	*Tachybaptus ruficollis*	Y	LC	5	15.4	0
Grey Heron	*Ardea cinerea*	Y	PRC	2	0.4	0
Great Egret	*Ardea alba*	Y	PRC, (RC)	5	14.0	0

Species Name[1]	Scientific Name[1]	Wetland Dependence	Conservation Status[2]	Jun 2022		Records outside survey[5]
				Occurrence[3]	Mean[4]	
Little Egret	*Egretta garzetta*	Y	PRC, (RC)	5	24.8	0
Chinese Pond Heron	*Ardeola bacchus*	Y	PRC, (RC)	5	16.8	0
Yellow Bittern	*Ixobrychus sinensis*	Y	(LC)	4	1.0	0
Black-crowned Night Heron	*Nycticorax nycticorax*	Y	(LC)	4	5.8	0
Black Kite#	*Milvus migrans*	Y	Class II, (RC)	2	1.0	0
White-breasted Waterhen	*Amaurornis phoenicurus*	Y	-	5	6.4	0
Common Moorhen	*Gallinula chloropus*	Y	-	2	0.8	0
Black-winged Stilt	*Himantopus himantopus*	Y	RC	3	3.2	0
Pied Kingfisher	*Ceryle rudis*	Y	(LC)	2	0.8	0
White-throated Kingfisher#	*Halcyon smyrnensis*	Y	Class II, (LC)	1	0.2	0
Common Kingfisher	*Alcedo atthis*	Y	-	5	2.2	0
White Wagtail	*Motacilla alba*	Y	-	5	6.2	0
White-shouldered Starling	*Sturnia sinensis*	Y	(LC)	5	7.6	0
Collared Crow	*Corvus torquatus*	Y	LC, NT	3	1.8	0
			No. of Species Recorded			**17**

Species Name[1]	Scientific Name[1]	Wetland Dependence	Conservation Status[2]	Jul 2022		Records outside survey[5]
				Occurrence[3]	Mean[4]	
Little Grebe	*Tachybaptus ruficollis*	Y	LC	4	11.5	0
Grey Heron	*Ardea cinerea*	Y	PRC	1	0.5	0
Great Egret	*Ardea alba*	Y	PRC, (RC)	4	8.3	0
Little Egret	*Egretta garzetta*	Y	PRC, (RC)	4	20.8	0
Chinese Pond Heron	*Ardeola bacchus*	Y	PRC, (RC)	4	18.5	0
Yellow Bittern	*Ixobrychus sinensis*	Y	(LC)	2	0.5	0
Black-crowned Night Heron	*Nycticorax nycticorax*	Y	(LC)	4	5.5	0
Black Kite#	*Milvus migrans*	Y	Class II, (RC)	4	3.3	0
White-breasted Waterhen	*Amaurornis phoenicurus*	Y	-	4	2.3	0
Common Moorhen	*Gallinula chloropus*	Y	-	1	0.3	0
Black-winged Stilt	*Himantopus himantopus*	Y	RC	2	1.0	0
Common Sandpiper	*Actitis hypoleucos*	Y	-	1	1.5	0
Pied Kingfisher	*Ceryle rudis*	Y	(LC)	3	1.0	0
Common Kingfisher	*Alcedo atthis*	Y	-	4	1.5	0
White Wagtail	*Motacilla alba*	Y	-	4	8.8	0
White-shouldered Starling	*Sturnia sinensis*	Y	(LC)	4	3.5	0
Collared Crow	*Corvus torquatus*	Y	LC, NT	3	2.3	0

Species Name[1]	Scientific Name[1]	Wetland Dependence	Conservation Status[2]	Jul 2022		Records outside survey[5]
				Occurrence[3]	Mean[4]	
			No. of Species Recorded			**17**

(1) Follows the List of Hong Kong Birds (ver. 2020-03-10)
(2) Conservation status follows that of *Fellowes et al*. (2002) and Bird Life International listing (2017). Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence. (*Fellowes et al*. 2002)
(3) Indicates number of surveys recorded within each month of the reporting period.
(4) Refers to the mean number of individuals recorded in each survey in the Survey Area (excluding the WRA).
(5) Includes observations during other surveys and/or site visits.
Birds tagged with '#' are Category II protected under terrestrial wildlife state protection.

Table E2. Summary of bird species of conservation importance and/or wetland-dependence recorded in the WRA

Species Name[1]	Scientific Name[1]	Wetland Dependence	Conservation Status[2]	May 2022		Records outside survey[5]
				Occurrence[3]	Mean[4]	
Little Grebe	*Tachybaptus ruficollis*	Y	LC	-	-	V
Grey Heron	*Ardea cinerea*	Y	PRC	1	0.3	0
Great Egret	*Ardea alba*	Y	PRC, (RC)	2	0.8	0
Intermediate Egret	*Egretta intermedia*	Y	RC	1	0.3	0
Little Egret	*Egretta garzetta*	Y	PRC, (RC)	4	4.5	0
Chinese Pond Heron	*Ardeola bacchus*	Y	PRC, (RC)	4	3.0	0
Black-crowned Night Heron	*Nycticorax nycticorax*	Y	(LC)	4	1.8	0
Black Kite#	*Milvus migrans*	Y	Class II, (RC)	1	0.3	0
White-breasted Waterhen	*Amaurornis phoenicurus*	Y	-	3	2.3	0
Common Moorhen	*Gallinula chloropus*	Y	-	1	0.3	0
Black-winged Stilt	*Himantopus himantopus*	Y	RC	-	-	V
Common Sandpiper	*Actitis hypoleucos*	Y	-	1	0.3	0
White-winged Tern	*Chlidonias leucopterus*	Y	-	1	0.3	0
Pied Kingfisher	*Ceryle rudis*	Y	(LC)	1	0.3	V
White-throated Kingfisher#	*Halcyon smyrnensis*	Y	Class II, (LC)	1	0.3	0
Common Kingfisher	*Alcedo atthis*	Y	-	1	0.3	0
Eastern Yellow Wagtail	*Motacilla tschutschensis*	Y	-	1	0.8	0
White Wagtail	*Motacilla alba*	Y	-	2	1.3	0
			No. of Species Recorded			**18**

Species Name[1]	Scientific Name[1]	Wetland Dependence	Conservation Status[2]	Jun 2022		Records outside survey[5]
				Occurrence[3]	Mean[4]	
Grey Heron	*Ardea cinerea*	Y	PRC	2	0.4	0
Great Egret	*Ardea alba*	Y	PRC, (RC)	5	2.2	0
Little Egret	*Egretta garzetta*	Y	PRC, (RC)	3	1.2	0
Chinese Pond Heron	*Ardeola bacchus*	Y	PRC, (RC)	5	2.8	0

Species Name[1]	Scientific Name[1]	Wetland Dependence	Conservation Status[2]	Jun 2022		Records outside survey[5]
				Occurrence[3]	Mean[4]	
Yellow Bittern	*Ixobrychus sinensis*	Y	(LC)	1	0.2	0
Black-crowned Night Heron	*Nycticorax nycticorax*	Y	(LC)	5	5.4	0
Black Kite#	*Milvus migrans*	Y	Class II, (RC)	2	0.8	0
White-breasted Waterhen	*Amaurornis phoenicurus*	Y	-	4	1.6	0
Common Moorhen	*Gallinula chloropus*	Y	-	2	0.8	0
Pied Kingfisher	*Ceryle rudis*	Y	(LC)	2	0.4	0
Common Kingfisher	*Alcedo atthis*	Y	-	5	1.6	0
White Wagtail	*Motacilla alba*	Y	-	2	0.8	0
White-shouldered Starling	*Sturnia sinensis*	Y	(LC)	2	1.6	0
Collared Crow	*Corvus torquatus*	Y	LC, NT	1	0.2	0
			No. of Species Recorded			**14**

Species Name[1]	Scientific Name[1]	Wetland Dependence	Conservation Status[2]	Jul 2022		Records outside survey[5]
				Occurrence[3]	Mean[4]	
Little Grebe	*Tachybaptus ruficollis*	Y	LC	1	0.3	0
Great Egret	*Ardea alba*	Y	PRC, (RC)	2	0.8	0
Little Egret	*Egretta garzetta*	Y	PRC, (RC)	2	1.0	0
Chinese Pond Heron	*Ardeola bacchus*	Y	PRC, (RC)	3	2.5	0
Yellow Bittern	*Ixobrychus sinensis*	Y	(LC)	1	0.3	0
Black-crowned Night Heron	*Nycticorax nycticorax*	Y	(LC)	4	3.8	0
Black-winged Kite#	*Elanus caeruleus*	Y	Class II, LC	1	0.3	0
Black Kite#	*Milvus migrans*	Y	Class II, (RC)	2	0.5	0
White-breasted Waterhen	*Amaurornis phoenicurus*	Y	-	7	1.8	0
Common Moorhen	*Gallinula chloropus*	Y	-	1	0.3	0
Common Sandpiper	*Actitis hypoleucos*	Y	-	1	0.3	0
Pied Kingfisher	*Ceryle rudis*	Y	(LC)	1	0.8	0
White-throated Kingfisher#	*Halcyon smyrnensis*	Y	Class II, (LC)	1	0.3	0
Common Kingfisher	*Alcedo atthis*	Y	-	4	1.5	0
White Wagtail	*Motacilla alba*	Y	-	3	1.8	0
White-shouldered Starling	*Sturnia sinensis*	Y	(LC)	2	1.8	0
Collared Crow	*Corvus torquatus*	Y	LC, NT	3	1.3	0
			No. of Species Recorded			**17**

(1) Follows the List of Hong Kong Birds (ver. 2020-03-10)
(2) Conservation status follows that of Fellowes *et al*. (2002) and BirdLife International listing (2017). Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence. (Fellowes *et al*. 2002).
(3) Indicates number of surveys recorded within each month of the reporting period.
(4) Refers to the mean number of individuals recorded in each survey in the WRA.
(5) Includes observations during other surveys and/or site visits.
Birds tagged with '#' are Category II protected under terrestrial wildlife state protection.

Table E3. Summary of herpetofauna monitoring in the Survey Area (excluding the WRA)

Species Name	Scientific Name	Conservation Status[1]	May 2022		Records outside surveys[4]
			Occurrence[2]	Mean[3]	
Amphibian		**No. of Species Recorded**	**6**		
Asian Common Toad	*Bufo melanostictus*	-	2	3.0	0
Gunther's Frog	*Hylarana guentheri*	-	2	2.0	0
Brown Tree Frog	*Polypedates megacephalus*	-	1	3.0	0
Asiatic Painted Frog	*Kaloula pulchra pulchra*	-	1	0.5	0
Ornate Pygmy Frog	*Microhyla fissipes*	-	1	1.5	0
Greenhouse Frog	*Eleutherodactylus planirostris*	-	1	2.0	0
			Occurrence[2]	Mean[3]	
Reptiles		**No. of Species Recorded**	**2**		
Bowring's Gecko	*Hemidactylus bowringii*	-	1	8.5	0
Changeable Lizard	*Calotes versicolor*	-	1	0.5	0

Species Name	Scientific Name	Conservation Status[1]	Jun 2022		Records outside surveys[4]
			Occurrence[2]	Mean[3]	
Amphibian		**No. of Species Recorded**	**5**		
Asian Common Toad	*Bufo melanostictus*	-	1	5.0	0
Gunther's Frog	*Hylarana guentheri*	-	2	1.5	0
Brown Tree Frog	*Polypedates megacephalus*	-	1	1.5	0
Asiatic Painted Frog	*Kaloula pulchra pulchra*	-	1	0.5	0
Ornate Pygmy Frog	*Microhyla fissipes*	-	1	3.0	0
			Occurrence[2]	Mean[3]	
Reptiles		**No. of Species Recorded**	**3**		
Red-eared Slider	*Trachemys scripta elegans*	-	1	1.0	0
Bowring's Gecko	*Hemidactylus bowringii*	-	1	14.0	0
Changeable Lizard	*Calotes versicolor*	-	1	1.0	0

Species Name	Scientific Name	Conservation Status[1]	Jul 2022		Records outside surveys[4]
			Occurrence[2]	Mean[3]	
Amphibian		**No. of Species Recorded**	**6**		
Asian Common Toad	*Bufo melanostictus*	-	1	10.0	0
Gunther's Frog	*Hylarana guentheri*	-	2	3.5	0
Paddy Frog	*Fejervarya limnocharis*	-	1	1.0	0
Brown Tree Frog	*Polypedates megacephalus*	-	1	5.0	0
Asiatic Painted Frog	*Kaloula pulchra pulchra*	-	1	3.0	0

Ornate Pygmy Frog	*Microhyla fissipes*	-	1	3.0	0
			Occurrence(2)	**Mean(3)**	
Reptiles		**No. of Species Recorded**	**3**		
Red-eared Slider	*Trachemys scripta elegans*	-	1	0.5	0
Bowring's Gecko	*Hemidactylus bowringii*	-	1	10.5	0
Long-tailed Skink	*Eutropis longicaudata*	-	1	0.5	0

(1) Conservation status follows that of Fellowes *et al*. (2002), Chan *et al*. (2005) and Karsen *et al*. (1998).
(2) Indicates number of surveys recorded within the reporting period.
(3) Refers to the mean number of individuals recorded in the reporting period (excluding the WRA)
(4) Includes observations during other surveys and/or site visits.

Table E4. Summary of herpetofauna monitoring in the WRA

Species Name	Scientific Name	Conservation Status(1)	May 2022		Records outside surveys(4)
			Occurrence(2)	Mean(3)	
Amphibian		**No. of Species Recorded**	**4**		
Asian Common Toad	*Bufo melanostictus*	-	1	1.5	0
Gunther's Frog	*Hylarana guentheri*	-	2	2.5	0
Ornate Pygmy Frog	*Microhyla fissipes*	-	1	2.5	0
Greenhouse Frog	*Eleutherodactylus planirostris*	-	1	3.0	0
			Occurrence(2)	**Mean(3)**	
Reptiles		**No. of Species Recorded**	**4**		
Bowring's Gecko	*Hemidactylus bowringii*	-	2	7.0	V
Changeable Lizard	*Calotes versicolor*	-	1	0.5	0
Long-tailed Skink	*Eutropis longicaudata*	-	1	0.5	0
Checkered Keelback	*Xenochrophis flavipunctatus*	-	1	0.5	0

Species Name	Scientific Name	Conservation Status(1)	Jun 2022		Records outside surveys(4)
			Occurrence(2)	Mean(3)	
Amphibian		**No. of Species Recorded**	**6**		
Asian Common Toad	*Bufo melanostictus*	-	1	5.0	0
Gunther's Frog	*Hylarana guentheri*	-	1	1.0	0
Brown Tree Frog	*Polypedates megacephalus*	-	1	1.0	0
Asiatic Painted Frog	*Kaloula pulchra pulchra*	-	1	1.0	0
Ornate Pygmy Frog	*Microhyla fissipes*	-	1	2.0	0
Greenhouse Frog	*Eleutherodactylus planirostris*	-	1	2.5	0

Species Name	Scientific Name	Conservation Status[1]	Jun 2022		Records outside surveys[4]
			Occurrence[2]	Mean[3]	
Reptiles		**No. of Species Recorded**	**6**		
Bowring's Gecko	*Hemidactylus bowringii*	-	1	5.5	0
Long-tailed Skink	*Eutropis longicaudata*	-	1	2.0	0
Reeve's Smooth Skink	*Scincella reevesii*	-	1	1.0	0
Checkered Keelback	*Xenochrophis flavipunctatus*	-	1	0.5	0
Many-banded Krait	*Bungarus multicinctus multicinctus*	-	1	0.5	0
Chinese Cobra	*Naja atra*	PRC	1	1.0	0
Species Name	**Scientific Name**	**Conservation Status[1]**	**Jul 2022**		**Records outside surveys[4]**
			Occurrence[2]	**Mean[3]**	
Amphibian		**No. of Species Recorded**	**7**		
Asian Common Toad	*Bufo melanostictus*	-	1	6.5	0
Gunther's Frog	*Hylarana guentheri*	-	2	4.5	0
Paddy Frog	*Fejervarya limnocharis*	-	1	3.0	0
Brown Tree Frog	*Polypedates megacephalus*	-	1	1.0	0
Asiatic Painted Frog	*Kaloula pulchra pulchra*	-	1	1.5	0
Ornate Pygmy Frog	*Microhyla fissipes*	-	1	3.5	0
Greenhouse Frog	*Eleutherodactylus planirostris*	-	1	4.0	0
			Occurrence[2]	**Mean[3]**	
Reptiles		**No. of Species Recorded**	**5**		
Red-eared Slider	*Trachemys scripta elegans*	-	1	0.5	0
Bowring's Gecko	*Hemidactylus bowringii*	-	1	4.5	0
Long-tailed Skink	*Eutropis longicaudata*	-	1	0.5	0
Reeve's Smooth Skink	*Scincella reevesii*	-	1	1.0	0
Many-banded Krait	*Bungarus multicinctus multicinctus*	-	1	0.5	0

(1) Conservation status follows that of Fellowes *et al*. (2002), Chan *et al*. (2005) and Karsen *et al*. (1998).
(2) Indicates number of surveys recorded within the reporting period.
(3) Refers to the mean number of individuals recorded in the reporting period in the WRA
(4) Includes observations during other surveys and/or site visits.

Table E5. Summary of mammal monitoring in the Survey Area (excluding the WRA)

Species Name	Scientific Name	Conservation Status[1]	May 2022		Records outside surveys[4]
			Occurrence[2]	Max [3]	
Mammal	**No. of**	**Species Recorded**	**2**		
Short-nosed Fruit Bat	*Cynopterus sphinx*	-	1	1	0
Japanese Pipistrelle	*Pipistrellus abramus*	-	1	2	0

Species Name	Scientific Name	Conservation Status[1]	May 2022		Records outside surveys[4]
			Occurrence[2]	Max [3]	
Mammal	**No. of**	**Species Recorded**	**2**		
Short-nosed Fruit Bat	*Cynopterus sphinx*	-	1	1	0
Japanese Pipistrelle	*Pipistrellus abramus*	-	1	5	0

Species Name	Scientific Name	Conservation Status[1]	May 2022		Records outside surveys[4]
			Occurrence[2]	Max [3]	
Mammal	**No. of**	**Species Recorded**	**0**		
No record in July 2022					

(1) Conservation status follows that of Fellowes *et al*. (2002) and Shek (2006).
(2) Indicates number of surveys recorded within the reporting period.
(3) Refers to the maximum number of individuals recorded in the reporting period (excluding the WRA).
(4) Includes observations during other surveys and/or site visits.

Table E6. Summary of mammal monitoring in the WRA

Species Name	Scientific Name	Conservation Status[1]	Mar 2022		Records outside surveys[4]
			Occurrence[2]	Max [3]	
Mammal	**No. of**	**Species Recorded**	**2**		
Short-nosed Fruit Bat	*Cynopterus sphinx*	-	1	5	0
Japanese Pipistrelle	*Pipistrellus abramus*	-	1	5	0

Species Name	Scientific Name	Conservation Status[1]	Mar 2022		Records outside surveys[4]
			Occurrence[2]	Max [3]	
Mammal	**No. of**	**Species Recorded**	**2**		
Short-nosed Fruit Bat	*Cynopterus sphinx*	-	1	5	0
Japanese Pipistrelle	*Pipistrellus abramus*	-	1	5	0

Species Name	Scientific Name	Conservation Status[1]	Apr 2022		Records outside surveys[4]
			Occurrence[2]	Max [3]	
Mammal	**No. of**	**Species Recorded**	**1**		
Japanese Pipistrelle	*Pipistrellus abramus*	-	1	9	0

(1) Conservation status follows that of Fellowes *et al*. (2002) and Shek (2006).
(2) Indicates number of surveys recorded within the reporting period.
(3) Refers to the maximum number of individuals recorded in the reporting period in the WRA
(4) Includes observations during other surveys and/or site visits.

Table E7. Summary of dragonfly and butterfly monitoring in the Survey Area (excluding the WRA)

Species Name	Scientific Name	Conservation Status[1]	May 2022		Records Outside Surveys[4]
			Occurrence[2]	Mean[3]	
Odonate	**No. of Species Recorded**		**12**		
Orange-tailed Sprite	*Ceriagrion auranticum ryukyuanum*	-	1	0.5	0
Common Bluetail	*Ischnura senegalensis*	-	2	78.0	0
Pale-spotted Emperor	*Anax guttatus*	-	1	1.0	0
Common Flangetail	*Ictinogomphus pertinax*	-	1	1.5	0
Golden Flangetail	*Sinictinogomphus clavatus*	-	2	3.5	0
Regal Pond Cruiser	*Epophthalmia elegans*	-	1	0.5	0
Asian Amberwing	*Brachythemis contaminata*	-	2	18.5	0
Green Skimmer	*Orthetrum sabina sabina*	-	2	23.5	0
Wandering Glider	*Pantala flavescens*	-	2	19.5	0
Pied Skimmer	*Pseudothemis zonata*	-	1	1.0	0
Variegated Flutterer	*Rhyothemis variegata arria*	-	2	77.0	0
Saddlebag Glider	*Tramea virginia*	-	2	6.5	0
			Occurrence[2]	Mean[3]	
Butterfly	**No. of Species Recorded**		**14**		
Great Egg-fly	*Hypolimnas bolina kezia*	-	1	1.0	0
Angled Castor	*Ariadne ariadne atternus*	-	1	1.0	0
Dark Brand Bush Brown	*Mycalesis mineus mineus*	-	2	1.5	0
Pale Grass Blue	*Pseudozizeeria maha serica*	-	2	6.5	0
Tiny Grass Blue	*Zizula hylax*	-	1	0.5	0
Dark Cerulean	*Jamides bochus bochus*	-	1	1.0	0
Red-base Jezebel	*Delias pasithoe pasithoe*	-	2	2.5	0
Indian Cabbage White	*Pieris canidia canidia*	-	1	0.5	0
Small Cabbage White	*Pieris rapae crucivora*	-	1	1.5	0
Lemon Emigrant	*Catopsilia pomona pomona*	-	1	0.5	0
Common Grass Yellow	*Eurema hecabe hecabe*	-	1	0.5	0
Three-spot Grass Yellow	*Eurema blanda hylama*	-	1	0.5	0
Common Mormon	*Papilio polytes polytes*	-	2	2.5	0
Paris Peacock	*Papilio paris*	-	1	0.5	0

Species Name	Scientific Name	Conservation Status[1]	Jun 2022		Records Outside Surveys[4]
			Occurrence[2]	Mean[3]	
Odonate	**No. of Species Recorded**		**10**		
Common Bluetail	*Ischnura senegalensis*	-	2	17.0	0
Common Flangetail	*Ictinogomphus pertinax*	-	1	0.5	0
Golden Flangetail	*Sinictinogomphus clavatus*	-	1	1.5	0
Regal Pond Cruiser	*Epophthalmia elegans*	-	1	0.5	0
Asian Amberwing	*Brachythemis contaminata*	-	2	25.0	0
Crimson Darter	*Crocothemis servilia servilia*	-	1	1.5	0
Green Skimmer	*Orthetrum sabina sabina*	-	2	16.5	0
Wandering Glider	*Pantala flavescens*	-	2	6.0	0

Species Name	Scientific Name	Conservation Status[1]	Jun 2022		Records Outside Surveys[4]
			Occurrence[2]	Mean[3]	
Variegated Flutterer	*Rhyothemis variegata arria*	-	2	38.0	0
Saddlebag Glider	*Tramea virginia*	-	1	3.0	0
			Occurrence[2]	Mean[3]	
Butterfly	**No. of Species Recorded**		**9**		
Plain Tiger	*Danaus chrysippus*	-	1	0.5	0
Great Egg-fly	*Hypolimnas bolina kezia*	-	1	0.5	0
Common Sailor	*Neptis hylas hylas*	-	1	1.0	0
Dark Brand Bush Brown	*Mycalesis mineus mineus*	-	2	1.5	0
Pale Grass Blue	*Pseudozizeeria maha serica*	-	2	6.0	0
Lemon Emigrant	*Catopsilia pomona pomona*	-	2	1.0	0
Common Grass Yellow	*Eurema hecabe hecabe*	-	1	3.0	0
Three-spot Grass Yellow	*Eurema blanda hylama*	-	1	0.5	0
Common Mormon	*Papilio polytes polytes*	-	2	2.5	0

Species Name	Scientific Name	Conservation Status[1]	Jul 2022		Records Outside Surveys[4]
			Occurrence[2]	Mean[3]	
Odonate	**No. of Species Recorded**		**11**		
Pale-spotted Emperor	*Anax guttatus*	-	1	3.0	0
Common Flangetail	*Ictinogomphus pertinax*	-	1	0.5	0
Regal Pond Cruiser	*Epophthalmia elegans*	-	1	0.5	0
Asian Amberwing	*Brachythemis contaminata*	-	2	25.5	0
Crimson Darter	*Crocothemis servilia servilia*	-	2	4.0	0
Amber-winged Glider	*Hydrobasileus croceus*	-	1	0.5	0
Coastal Glider	*Macrodiplax cora*	LC	2	2.0	0
Green Skimmer	*Orthetrum sabina sabina*	-	2	8.5	0
Wandering Glider	*Pantala flavescens*	-	1	17.5	0
Variegated Flutterer	*Rhyothemis variegata arria*	-	2	17.5	0
Saddlebag Glider	*Tramea virginia*	-	1	1.0	0
			Occurrence[2]	Mean[3]	
Butterfly	**No. of Species Recorded**		**7**		
Lemon Pansy	*Junonia lemonias lemonias*	-	1	0.5	0
Great Egg-fly	*Hypolimnas bolina kezia*	-	2	2.0	0
Pale Grass Blue	*Pseudozizeeria maha serica*	-	1	2.0	0
Red-base Jezebel	*Delias pasithoe pasithoe*	-	1	1.0	0
Lemon Emigrant	*Catopsilia pomona pomona*	-	2	1.0	0
Common Grass Yellow	*Eurema hecabe hecabe*	-	1	1.0	0
Common Mormon	*Papilio polytes polytes*	-	1	1.0	0

(1) Conservation status follows that of Fellowes *et al*. (2002), Lo & Hui (2004), Tam *et al*. (2011) and Young & Yiu (2002).
(2) Indicates number of surveys recorded within the reporting period.
(3) Refers to the mean number of individuals recorded in the reporting period (excluding the WRA)
(4) Includes observations during other surveys and/or site visits.

Table E8. Summary of dragonfly and butterfly monitoring in the WRA

Species Name	Scientific Name	Conservation Status[1]	May 2022		Records Outside Surveys[4]
			Occurrence[2]	Mean[3]	
Odonate	**No. of Species Recorded**		**21**		
Orange-tailed Sprite	*Ceriagrion auranticum ryukyuanum*	-	1	1.5	0
Common Bluetail	*Ischnura senegalensis*	-	2	10.5	0
Pale-spotted Emperor	*Anax guttatus*	-	2	3.0	0
Common Flangetail	*Ictinogomphus pertinax*	-	1	0.5	0
Golden Flangetail	*Sinictinogomphus clavatus*	-	1	1.0	0
Asian Pintail	*Acisoma panorpoides*	-	1	1.0	0
Blue Dasher	*Brachydiplax chalybea flavovittata*	-	2	7.0	0
Asian Amberwing	*Brachythemis contaminata*	-	1	2.0	0
Crimson Darter	*Crocothemis servilia servilia*	-	2	5.0	0
Blue Percher	*Diplacodes trivialis*	-	1	0.5	0
Pied Percher	*Neurothemis tullia tullia*	-	2	13.0	0
Mangrove Skimmer	*Orthetrum poecilops*	GC, VU	1	0.5	0
Green Skimmer	*Orthetrum sabina sabina*	-	2	8.5	0
Wandering Glider	*Pantala flavescens*	-	2	9.0	0
Pied Skimmer	*Pseudothemis zonata*	-	2	2.0	0
Ruby Darter	*Rhodothemis rufa*	LC	1	0.5	V
Variegated Flutterer	*Rhyothemis variegata arria*	-	2	36.5	0
Evening Skimmer	*Tholymis tillarga*	-	2	3.5	0
Saddlebag Glider	*Tramea virginia*	-	2	6.0	0
Scarlet Basker	*Urothemis signata signata*	LC	1	1.5	0
Dingy Dusk-darter	*Zyxomma petiolatum*	-	1	1.5	0
			Occurrence[2]	Mean[3]	
Butterfly	**No. of Species Recorded**		**22**		
Blue-spotted Crow	*Euploea midamus midamus*	-	1	0.5	0
Great Egg-fly	*Hypolimnas bolina kezia*	-	1	0.5	0
Danaid Eggfly	*Hypolimnas misippus*	LC	2	1.5	0
Common Evening Brown	*Melanitis leda*	-	-	-	V
Common Palmfly	*Elymnias hypermnestra hainana*	-	-	-	V
Dark Brand Bush Brown	*Mycalesis mineus mineus*	-	1	0.5	0
Long-tailed Blue	*Lampides boeticus*	-	1	1.5	0
Pale Grass Blue	*Pseudozizeeria maha serica*	-	2	7.0	0
Tiny Grass Blue	*Zizula hylax*	-	2	1.5	0
Tailless Line Blue	*Prosotas dubiosa*	-	2	3.5	0
Red-base Jezebel	*Delias pasithoe pasithoe*	-	1	0.5	0
Indian Cabbage White	*Pieris canidia canidia*	-	1	0.5	0
Small Cabbage White	*Pieris rapae crucivora*	-	1	2.0	0
Lemon Emigrant	*Catopsilia pomona pomona*	-	2	7.0	0
Common Grass Yellow	*Eurema hecabe hecabe*	-	2	2.5	0
Three-spot Grass Yellow	*Eurema blanda hylama*	-	2	2.0	0
Common Bluebottle	*Graphium sarpedon sarpedon*	-	1	0.5	0
Common Mime	*Chilasa clytia clytia*	-	1	1.5	0

Species Name	Scientific Name	Conservation Status[1]	May 2022 Occurrence[2]	May 2022 Mean[3]	Records Outside Surveys[4]
Common Mormon	*Papilio polytes polytes*	-	2	1.5	0
Paris Peacock	*Papilio paris*	-	1	0.5	0
Dart	*Potanthus sp.*	-	1	0.5	0
Banana Skipper	*Erionota torus*	-	1	0.5	0
Species Name	**Scientific Name**	**Conservation Status[1]**	**Jun 2022 Occurrence[2]**	**Jun 2022 Mean[3]**	**Records Outside Surveys[4]**
Odonate	**No. of Species Recorded**		**18**		
Common Bluetail	*Ischnura senegalensis*	-	2	3.0	0
Pale-spotted Emperor	*Anax guttatus*	-	2	2.0	0
Common Flangetail	*Ictinogomphus pertinax*	-	1	1.0	0
Golden Flangetail	*Sinictinogomphus clavatus*	-	1	0.5	0
Regal Pond Cruiser	*Epophthalmia elegans*	-	1	0.5	0
Blue Dasher	*Brachydiplax chalybea flavovittata*	-	2	4.0	0
Asian Amberwing	*Brachythemis contaminata*	-	2	2.0	0
Crimson Darter	*Crocothemis servilia servilia*	-	2	6.0	0
Pied Percher	*Neurothemis tullia tullia*	-	1	0.5	0
Green Skimmer	*Orthetrum sabina sabina*	-	2	5.0	0
Wandering Glider	*Pantala flavescens*	-	1	2.0	0
Pied Skimmer	*Pseudothemis zonata*	-	2	3.0	0
Ruby Darter	*Rhodothemis rufa*	LC	1	1.0	0
Variegated Flutterer	*Rhyothemis variegata arria*	-	2	39.0	0
Evening Skimmer	*Tholymis tillarga*	-	2	5.0	0
Saddlebag Glider	*Tramea virginia*	-	1	5.0	0
Scarlet Basker	*Urothemis signata signata*	LC	1	0.5	0
Dingy Dusk-darter	*Zyxomma petiolatum*	-	1	0.5	0
			Occurrence[2]	**Mean[3]**	
Butterfly	**No. of Species Recorded**		**21**		
Great Egg-fly	Hypolimnas bolina kezia	-	1	0.5	0
Common Sailor	Neptis hylas hylas	-	1	0.5	0
Common Duffer	Discophora sondaica tulliana	-	1	0.5	0
Common Palmfly	Elymnias hypermnestra hainana	-	1	0.5	0
Dark Brand Bush Brown	Mycalesis mineus mineus	-	1	0.5	0
Pale Grass Blue	Pseudozizeeria maha serica	-	2	9.0	0
Lesser Grass Blue	Zizina otis	-	1	1.0	0
Tiny Grass Blue	Zizula hylax	-	1	0.5	0
Tailless Line Blue	Prosotas dubiosa	-	1	3.0	0
Dark Cerulean	Jamides bochus bochus	-	1	0.5	0
Lemon Emigrant	Catopsilia pomona pomona	-	2	1.0	0
Common Grass Yellow	Eurema hecabe hecabe	-	2	2.0	0
Three-spot Grass Yellow	Eurema blanda hylama	-	1	0.5	0
Common Mime	Chilasa clytia clytia	-	1	0.5	0
Lime Butterfly	Papilio demoleus	-	1	1.0	0
Common Mormon	Papilio polytes polytes	-	1	0.5	0

Species Name	Scientific Name	Conservation Status[1]	Jun 2022		Records Outside Surveys[4]
			Occurrence[2]	Mean[3]	
Dart	*Potanthus sp.*	-	1	0.5	0
Formosan Swift	*Borbo cinnara*	-	1	1.0	0
Small Branded Swift	*Pelopidas mathias oberthueri*	-	1	0.5	0
Rare Swift	*Parnara ganga*	-	1	1.0	0
Colon Swift	*Caltoris bromus*	-	2	1.0	0

Species Name	Scientific Name	Conservation Status[1]	Jul 2022		Records Outside Surveys[4]
			Occurrence[2]	Mean[3]	
Odonate	**No. of Species Recorded**		**24**		
Wandering Midget	*Agriocnemis pygmaea*	-	2	2.5	0
Orange-tailed Sprite	*Ceriagrion auranticum ryukyuanum*	-	1	1.0	0
Common Bluetail	*Ischnura senegalensis*	-	1	4.0	0
Blue Sprite	*Pseudagrion microcephalum*	LC	1	0.5	0
Yellow Featherlegs	*Copera marginipes*	-	1	0.5	0
Pale-spotted Emperor	*Anax guttatus*	-	2	5.0	0
Lesser Emperor	*Anax parthenope julius*	-	1	0.5	0
Common Flangetail	*Ictinogomphus pertinax*	-	1	3.0	0
Regal Pond Cruiser	*Epophthalmia elegans*	-	1	1.0	0
Blue Dasher	*Brachydiplax chalybea flavovittata*	-	2	8.0	0
Asian Amberwing	*Brachythemis contaminata*	-	1	4.5	0
Crimson Darter	*Crocothemis servilia servilia*	-	2	9.5	0
Amber-winged Glider	*Hydrobasileus croceus*	-	1	1.0	0
Coastal Glider	*Macrodiplax cora*	LC	1	2.0	0
Pied Percher	*Neurothemis tullia tullia*	-	2	7.5	0
Common Red Skimmer	*Orthetrum pruinosum neglectum*	-	1	0.5	0
Green Skimmer	*Orthetrum sabina sabina*	-	2	6.5	0
Wandering Glider	*Pantala flavescens*	-	1	15.5	0
Pied Skimmer	*Pseudothemis zonata*	-	2	2.5	0
Ruby Darter	*Rhodothemis rufa*	LC	2	2.5	0
Variegated Flutterer	*Rhyothemis variegata arria*	-	2	36.5	0
Evening Skimmer	*Tholymis tillarga*	-	2	4.5	0
Saddlebag Glider	*Tramea virginia*	-	2	2.5	0
Dingy Dusk-darter	*Zyxomma petiolatum*	-	1	0.5	0
			Occurrence[2]	Mean[3]	
Butterfly	**No. of Species Recorded**		**25**		
Blue Tiger	*Tirumala limniace*	-	1	0.5	0
Blue-spotted Crow	*Euploea midamus midamus*	-	1	0.5	0
Common Indian Crow	*Euploea core amymone*	-	1	0.5	0
Lemon Pansy	*Junonia lemonias lemonias*	-	1	0.5	0
Great Egg-fly	*Hypolimnas bolina kezia*	-	2	2.0	0
Common Sailor	*Neptis hylas hylas*	-	1	0.5	0
Red Ring Skirt	*Hestina assimilis assimilis*	-	1	1.0	0
Angled Castor	*Ariadne ariadne alterna*	-	1	0.5	0
Dark Brand Bush Brown	*Mycalesis mineus mineus*	-	2	2.5	0

Species Name	Scientific Name	Conservation Status[1]	Jul 2022		Records Outside Surveys[4]
			Occurrence[2]	Mean[3]	
Pale Grass Blue	*Pseudozizeeria maha serica*	-	2	4.5	0
Lesser Grass Blue	*Zizina otis*	-	1	2.0	0
Tiny Grass Blue	*Zizula hylax*	-	1	0.5	0
Tailless Line Blue	*Prosotas dubiosa*	-	1	2.0	0
Red-base Jezebel	*Delias pasithoe pasithoe*	-	1	0.5	0
Lemon Emigrant	*Catopsilia pomona pomona*	-	2	1.0	0
Common Grass Yellow	*Eurema hecabe hecabe*	-	1	2.5	0
Three-spot Grass Yellow	*Eurema blanda hylama*	-	1	0.5	0
Common Mime	*Chilasa clytia clytia*	-	1	0.5	0
Common Mormon	*Papilio polytes polytes*	-	2	3.5	0
Pale Palm Dart	*Telicota colon*	LC	1	0.5	0
Formosan Swift	*Borbo cinnara*	-	1	0.5	0
Conjoined Swift	*Pelopidas conjunctus*	-	1	1.0	0
Colon Swift	*Caltoris bromus*	-	1	0.5	0
Chinese Dart	*Potanthus confucius confucius*	-	1	0.5	0
Indian Palm Bob	*Suastus gremius gremius*	-	1	0.5	0

(1) Conservation status follows that of Fellowes *et al*. (2002), Lo & Hui (2004), Tam *et al*. (2011) and Young & Yiu (2002).
(2) Indicates number of surveys recorded within the reporting period.
(3) Refers to the mean number of individuals recorded in the reporting period in the WRA
(4) Includes observations during other surveys and/or site visits.

F. Environmental Mitigation Measures - Implementation Status

Air Quality – Recommended Mitigation Measures

Air Quality Mitigation Measures during construction	Implementation Status
• access roads should be sprayed with water or dust suppression chemical to maintain the entire road surface wet or paved;	✓
• every stock of more than 20 bags of cement or dry PFA should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;	N/A
• de-bagging, batching or mixing process should be carried out in sheltered areas during the use of bagged cement;	N/A
• use of effective dust screens, sheeting or netting to be provided to enclose dry scaffolding which may be provided from the ground floor level of the building or if a canopy is provided at the first-floor level, from the first-floor level, up to the highest level (maximum four floors for this Project) of the scaffolding where scaffolding is erected around the perimeter of a building under construction;	N/A
• dump trucks for material transport should be totally enclosed using impervious sheeting;	✓
• any excavated dusty materials or stockpile of dusty materials should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet, and recovered or backfilled or reinstated within 24 hours of the excavation or unloading;	✓
• dusty materials remaining after a stockpile is removed should be wetted with water;	✓
• the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with e.g. concrete, bituminous materials or hardcore or similar;	✓
• the portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials;	✓
• stockpile of dusty materials to be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides; or sprayed with water so as to maintain the entire surface wet;	✓
• all dusty materials to be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet;	✓
• vehicle speed to be limited to 10 kph except on completed access roads;	✓
• every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites;	✓
• the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle; and	✓
• the working area of excavation should be sprayed with water immediately before, during and immediately after (as necessary) the operations so as to maintain the entire surface wet.	✓
Odour mitigation measures	
• all malodorous excavated material should be placed as far as possible from any ASRs;	N/A
• the stockpiled malodorous material should be removed from site as soon as possible; and	N/A
• the stockpiled malodorous material should be covered entirely by plastic tarpaulin sheets.	N/A

Noise – Recommended Mitigation Measures

Noise Mitigation Measures during construction	Implementation Status
• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works;	✓
• machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;	✓
• plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs;	✓
• silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction period;	✓
• mobile plant should be sited as far away from NSRs as possible;	✓
• material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities;	✓
• air compressor and hand-held breaker should be fitted with valid noise emission labels during operation; and	N/A
• The Contractor shall at all times comply with all current statutory environmental legislation.	✓
Selection of quieter plant and working methods The Contractor shall obtain particular models of plant that are quieter than standards given in GW-TM. The list of assumed quieter plants can be found in the Table 4–14 of the EIA report. The Contractor shall select from the available models achieving the assumed sound levels while making reference to the GW-TM and BS5228: Part 1: 1997	✓
Use of Noise Barriers Noise barriers are proposed along the site boundary to block the direct line of sight from the most affected NSRs to the major noise contribution construction phases. The height of the noise barriers ranged from 9-10m. The noise barriers shall be built before the commencement of construction works in order to ensure protection to nearby NSRs. The noise barrier should have a surface density of at least 10kg/m^2 or material providing equivalent transmission loss. The noise barriers and hoardings should have no gaps and openings to avoid noise leakage.	✓

Water Quality – Recommended Mitigation Measures

Water Quality Mitigation Measures during construction	Implementation Status
• The site should be confined to avoid silt runoff to the site;	✓
• No discharge of silty water into the storm drain and drainage channel within and the vicinity of the site;	✓
• Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials;	P
• Stockpiles to be covered by tarpaulin to avoid spreading of materials during rainstorms;	✓
• Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;	✓
• Chemical waste containers shall be labelled with appropriate warning signs in English and Chinese to avoid accidents. there shall also be clear instructions showing what action to take in the event of an accidental;	✓
• Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area;	✓
• Any construction plant which causes pollution to the water system due to leakage of oil or fuel shall be removed off-site immediately;	N/A
• Spillage or leakage of chemical waste to be controlled by using suitable absorbent materials;	N/A
• Chemicals will always be stored on drip trays or in bunded areas where the volume is 110% of the stored volume; and	✓
• Regular clearance of domestic waste generated in the temporary sanitary facilities to avoid waste water spillage.	✓

Water Quality Mitigation Measures during construction	Implementation Status
• Temporary sanitary facilities to be provided for on-site workers during construction;	✓
• Temporary drainage channel and associated facilities will be provided to collect the surface runoff generated within the Project Area during the construction phase;	✓
• Sandbags or silt traps will need to be placed to avoid silt runoff to the drainage channel draining the water in the northern ditch. Draining of the ditches should avoid rainy weather; and	✓
• Excavated soil which needs to be temporarily stockpiled should be stored in a specially designated area and provided with a tarpaulin cover to avoid runoff into the drainage channels.	✓

Waste Management – Recommended Mitigation Measures

Waste Management Mitigation Measures during construction	Implementation Status
Site Clearance Waste	✓
• The major construction works of Wo Shang Wai is in the development of residential buildings and other associated facilities (club house, tennis courts, etc.). The amount of site clearance works will be limited with the exception of the excavated materials. The thin layer of vegetation removed can be stored and reused for landscaping.	
Excavated Materials	✓
The intention is to maximize the reuse of the excavated materials on-site as fill materials.	
Imported Filling Material	✓
The excavated/imported filling material may have to be temporarily stockpiled on-site for the construction of road embankment and foundation of viaduct substructure. Control measures should be taken at the stockpiling area to prevent the generation of dust and pollution of stormwater channels. However, to eliminate the risk of blocking drains in the wet season, it is recommended that stockpiling of excavated materials at during wet season should be avoided as far as practicable.	
Construction and Demolition Materials	✓
Careful design, planning and good site management can minimise over-ordering and generation of waste materials such as concrete, mortars and cement grouts. The design of formwork should maximise the use of standard wooden panels so that high reuse levels can be achieved. Alternatives such as steel formwork of plastic facing should be considered to increase the potential for reuse.	
The Contractor should reuse any C&D material on-site. C&D waste should be segregated and stored in different containers to other wastes to encourage the re-use or recycling of materials and their proper disposal.	✓
Chemical Waste	N/A
For those processes which generate chemical waste, it may be possible to find alternatives which generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste.	
Containers used for the storage of chemical wastes should:	
• be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed;	✓
• have a capacity of less than 450 litres unless the specification has been approved by the EPD; and	✓
• display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.	✓
The storage area for chemical wastes should:	
• be clearly labelled and used solely for the storage of chemical waste;	P
• be enclosed on at least 3 sides;	✓
• have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area whichever is the greatest;	✓
• have adequate ventilation;	✓
• be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and	✓
• be arranged so that incompatible materials are adequately separated.	✓

Waste Management Mitigation Measures during construction	Implementation Status
Disposal of chemical waste should:	
• be via a licensed waste collector; and	N/A
• be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers, or	N/A
• to be reuser of the waste, under approval from the EPD.	N/A
General Refuse Should be stored in enclosed bins or compaction units separate from C&D and chemical wastes. The Contractor should employ a reputable waste collector to remove general refuse from the site, separate from C&D and chemical wastes, on a regular basis to minimise odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.	P
Disposal of Excavated Sediment at Sea	
The requirements and procedures for excavated sediment disposal are specified under the ETWB TCW No. 34/2002 and PNAP 252. The management of the excavation, use and disposal of sediment is monitored by Fill Management Committee, whilst the licensing of marine dumping is the responsibility of the Director of Environmental Protection (DEP).	N/A
The excavated sediment would be loaded onto barges or other appropriate vessel and transported to the designated marine disposal site. Category L sediment and Category M sediment passing the biological test would be suitable for disposal at a gazetted open sea disposal ground. Category M sediment failing the biological test and Category H sediment passing the biological test would require confined marine disposal.	N/A
During transportation and disposal of the dredged sediment, the following measures should be taken to minimize potential impacts on water quality:	N/A
• Bottom opening transport vessels should be fitted with tight fitting seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of vessels before the vessel is moved.	N/A
• Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels should be equipped with automatic self-monitoring devices as specified by the DEP.	N/A

Ecology – Recommended Mitigation Measures

Ecology Mitigation Measures during construction	Implementation Status
Clear Definition of Site Limit	
Clear definition of the site limit should be provided in order to minimize and confine the disturbance during the construction period, especially the northern limit of the Site which is adjacent to fishponds within the Conservation Area (CA) zone and are considered to be ecological sensitive receivers.	✓
During wetland construction stage the WRA boundary will be delineated using a temporary hoarding in order to reduce disturbance to off-site habitats and wildlife. During the establishment phase this hoarding will be replaced with a 1 m high chain-link fence in order to reduce disturbance to the WRA through access by humans and dogs, and a hoarding will be established around the residential construction site.	N/A (WRA construction completed)
Dust and Noise Suppression and Avoidance of Water Pollution	
Good site practices of dust and noise suppression should be strictly implemented to ensure that disturbance is minimized to acceptable levels. Mitigation measures for the off-site disturbance impacts on the fishponds in the CA include hoarding at the northern site boundary during construction of the WRA to reduce noise and dust impacts to the adjacent habitats. Through the use of quieter plant and temporary/movable noise barriers, the noise level would be reduced significantly to an acceptable level. Hoarding at the northern boundary should be replaced with a 1 m high chain-link fence following construction and the WRA will then act as a buffer between the existing wetland areas and the residential part of the site until construction is completed. Hoarding will be retained between the WRA and ongoing construction work to avoid visual disturbance and reduce noise and dust emissions. Pollution of watercourses and sedimentary runoff will be minimized by good site practice, especially the containment of water and sediment within the site for removal.	✓

Ecology Mitigation Measures during construction	Implementation Status
These standard noise and air and water quality site practices are considered to be effective measures for minimizing the disturbance impact during the construction period.	
Planning of Construction Schedule	
The construction of the proposed project should be scheduled in phases. Because mitigation is preferably carried out in advance of the main works rather than after the completion of works, the construction of the WRA will commence at the start of the project. Construction work within the WRA is scheduled to take place in a single wet season, followed by 1.5 years of wetland establishment. During the wetland establishment period no noisy work will be undertaken within the WRA to minimize the disturbance to off-site habitats and wildlife.	N/A (WRA construction completed)
Reusing Onsite Materials	
Soil and plants on-site should be reused (e.g. used as fill material) as far as practical. Stock piles of these reusable materials should be stored in an appropriate area on-site. In particular, the re-use of the wetland soils and topsoil should be considered.	✓
Construction of the Wetland Restoration Area The WRA will be operational within 2.5 years from the commencement of construction (1 year for site formation and 1.5 years for establishment) and will compensate for the predicted ecological impacts of the proposed development.	✓

Landscape and Visual – Recommended Mitigation Measures

Landscape and Visual Mitigation Measures during construction	Implementation Status
CM1 - The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape.	✓
CM2 - Screening of construction works by hoarding / noise barriers.	✓ (see Appendix G Photo 1 & 3 *)
CM3 - Reduction of construction period to practical minimum.	✓
CM4 - Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where the soil material meets acceptable criteria and where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate.	✓
CM5 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone).	✓
CM6 - Advance screen planting of noise barriers	✓ (see Appendix G Photo 3 *)
CM7 - Control night-time lighting and glare by hooding all lights.	N/A
CM8 - Ensure no run-off into streams adjacent to the Project Area.	✓
CM9 - Protection of existing trees on boundary of site shall be carefully protected during construction. 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 undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at S16 and Tree Removal Application stage).	✓
CM10 - Trees unavoidably affected by the works shall be transplanted where practical. Trees should be transplanted straight to their destinations and not held in a nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.	✓

Legend:
✓ Implemented
× Not implemented
P Partially implemented
N/A Not applicable
* Representative photos showing the implementation of mitigation measures are presented in Appendix G

G. Landscape and Visual Audit Photos

Photo 1: The Construction works have been screened by hoarding / noise barriers. (CM2)

Photo 2: The wetland areas have been established and the ponds are seasonally filled with rainwater (OM4)

Photo 3: Advance screen planting of noise barrier has been undertaken (CM6, OM2)