MOTT MACDONALD

# Proposed Comprehensive Development at Wo Shang Wai, Yuen Long

Quarterly EM&A Summary Report for May 2017 – July 2017 (Rev A)

August 2017

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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.

This is the 29th Quarterly EM&A Summary report and this report summarises the findings on EM&A during the period from 1 May 2017 to 31 July 2017.

**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 level (as $L_{eq}$) in the reporting period. However, exceedances of some Action Levels were recorded for Water Quality at MP3 on different monitoring dates. Specifically, exceedances of pH and DO were observed.

The summary of measured water quality is presented in **Section 2.3**.

Investigations have been carried out to identify the causes of exceedance. From investigation, the contractor has implemented water quality mitigation measures as recommended in the EIA report. With external factors affect the adjacent environments, such as natural variations, pond fish culture activities and rainfall, the exceedances were considered not due to 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**

The major site works scheduled to be commissioned in the coming three months include site formation and pond drainage management (to lower the water level and remove unwanted species in the pond). Potential environmental impacts due to the construction 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/D) issued by EPD on 20 March 2013.

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, while the 30-month establishment period of the WRA was concluded in August 2012 – this indicated that planting works as scheduled in the approved Wetland Restoration and Creation Scheme (WRCS; November 2009) was 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. The current valid EP (EP-311/2008/D) includes specific mitigation measures to minimise certain identified noise impacts during the operation phase.

Mott MacDonald Hong Kong Ltd. ("MMHK") has been commissioned by the Contractor, 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.

This report summarises the findings during the period from 1 May 2017 to 31 July 2017.

## 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:

- Removal of fill from site was in progress
- Regular maintenance work for the Wetland Restoration Area (including lowering of the water level and removal of unwanted species in the pond)

The Construction Works Programme of the Project is provided in **Appendix B**. 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 | Once every 6 days |
| | 1-Hour TSP | ASR1, ASR2A, ASR3, ASR4 | 3 times every 6 days |
| Noise | $L_{eq}$, 30min | NSR1, NSR3, NSR5, NSR7 | Weekly |
| Water Quality | Dissolved Oxygen (DO), temperature, pH, suspended solids (SS) and Biological Oxygen Demand (BOD) | MP1 to MP6 | 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 | Once per month during April to November |
| | 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 |

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 were brought to attention during the site audits during the reporting period:

**Water Quality**

- Site effluent should be discharged in accordance with the discharge license conditions.
- Chemicals should always be stored on drip trays.

**Waste Management**

- General refuse should be stored in enclosed bins or compaction units separate from 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 2017 was hot overall and wetter than usual with very heavy rain recorded on 24 May. June 2017 was overall warmer and wetter than usual, with hot weather in the early part of the month followed by rainy spells in the middle of the month. July 2017 was cloudier with above-average rainfall.

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

## 2.2 Construction Noise Monitoring

The construction noise monitoring results and graphical plots are shown in **Appendix D**. No exceedance (Action/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 2017, a total of twelve Action Level exceedances for Water Quality were observed, consisting of twelve Action Level exceedances of pH at MP3.

During June 2017, a total of nine Action Level exceedances for Water Quality were observed, consisting of eight Action Level exceedances of pH and one Action Level exceedance of DO were recorded at MP3.

During July 2017, a total of three Action Level exceedances for Water Quality were observed. One Action Level exceedances of pH was recorded at MP3. 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 40, 29 and 28 bird species were recorded in May 2017, June 2017 and July 2017 respectively; in each respective month, 19, 14 and 14 of the recorded bird species were of conservation importance and/or wetland-dependence. Within the WRA, a total of 28, 30 and 31 bird species were recorded in May 2017, June 2017 and July 2017 respectively; in each respective month, 14, 13 and 15 of the recorded bird species were of conservation importance and/or wetland-dependence.

In May 2017, of all bird target species, two were recorded on-site (high count and mean of the two target species respectively): Chinese Pond Heron (6, 2.0) and Little Egret (85, 19.4). The WRA continues to attract a number of species of conservation importance, including Yellow Bittern, *Ixobrychus sinensis*, Cinnamon Bittern, *Ixobrychus cinnamomeus*, White-throated Kingfisher, *Halcyon smyrnensis*, White-cheeked Starling, *Spodiopsar cineraceus*, and White-shouldered Starling, *Sturnia sinensis*. Yellow Bittern, Cinnamon Bittern, White-throated Kingfisher and White-shouldered Starling are listed by Fellowes *et al*. as of “Local Concern” in 2002. White-cheeked Starling is listed by Fellowes *et a*l. as of “ Potential Regional Concern” in 2002.

In June 2017, of all bird target species, two were recorded within the WRA (high count and mean of the two target species respectively): Chinese Pond Heron (2, 0.8) and Little Egret (5, 2.4). The WRA continues to attract a number of species of conservation importance, including Yellow Bittern, *Ixobrychus sinensis*, Black-winged Stilt, *Himantopus himantopus*, Little Ringed Plover, *Charadrius dubius,* White-throated Kingfisher, *Halcyon smyrnensis,* and White-shouldered Starling, *Sturnia sinensis*. Yellow Bittern, Little Ringed Plover, White-throated Kingfisher and White-shouldered Starling are listed by Fellowes *et al*. as of “Local Concern” in 2002. Black-winged Stilt is listed by Fellowes *et al*. as of “Regional Concern” in 2002.

In July 2017, of all bird target species, two were recorded within the WRA in regular survey (high count and mean of the two target species respectively): Chinese Pond Heron (3, 1.5) and Little Egret (1, 0.3). The WRA continues to attract a number of species of conservation importance, including Black-crowned Night Heron, *Nycticorax nycticorax,* Yellow Bittern, *Ixobrychus sinensis*, Black Kite, *Milvus migrans*, Wood Sandpiper, *Tringa glareola,* White-throated Kingfisher, *Halcyon smyrnensis,* and Red-billed Starling, *Spodiopsar sericeus*. Black-crowned Night Heron, Yellow Bittern, and White-throated Kingfisher are listed by Fellowes *et al*. as of “Local Concern” in 2002. Black Kite is listed by Fellowes *et al*. as of “Regional Concern” in 2002. Red-billed Starling is listed by Fellowes *et al*. as of “Global Concern” in 2002.

In addition to wetland-dependence birds, the WRA also attracts a number of terrestrial birds including Greater Coucal, *Centropus sinensis* which is listed as vulnerable (VU) in the China Red Data Book and it is protected under terrestrial wildlife state protection (category II). Survey findings indicate that the WRA not only provides important habitat for wetland-dependence birds but also the terrestrial birds.

### 2.4.2 Monitoring of Herpetofauna

Monitoring was undertaken following the survey methodology in the EM&A Manual. One day time survey was conducted on monthly basis during the reporting period.

In May 2017, no amphibian species and reptile species were recorded in the Survey Area (excluding the WRA) nor within WRA during the regular survey and additional survey.

In June 2017, one amphibian species and no reptile species were recorded in the Survey Area (excluding the WRA). Within the WRA, one amphibia species and no reptile species were recorded during regular survey and additional survey.

In July 2017, two amphibian species and no reptile species were recorded in the Survey Area (excluding the WRA). Within the WRA, one amphibian species and no reptile species were recorded during regular survey and additional survey.

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

### 2.4.3 Monitoring of Dragonfly and Butterfly

Monitoring of odonates and butterflies was conducted biweekly during May to July 2017 in accordance with EM&A Manual requirements.

In May 2017, two odonata species and no butterfly species were recorded in the Survey Area (excluding the WRA) during the regular survey. Within the WRA, six odonates species and four butterfly species were recorded during the regular survey.

In June 2017, one odonata species and one butterfly species were recorded in the Survey Area (excluding the WRA) during the regular survey. Within the WRA, nine odonates species were recorded while six butterfly species were recorded during the regular survey.

In July 2017, four odonata species and no butterfly species were recorded in the Survey Area (excluding the WRA) during the regular survey. Within the WRA, seven odonates species were recorded while six butterfly species were recorded during the regular survey.

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 and additional night search.

In May 2017, no mammal species was recorded in the Survey Area (excluding the WRA) nor within the WRA during the regular survey. Leopard Cat, *Prionailurus bengalensis* was recorded within the WRA in additional night survey.

In June 2017, no mammal species was recorded in the Survey Area (excluding the WRA) nor within the WRA during the regular survey. Leopard Cat, *Prionailurus bengalensis*, and one unidentified bat were recorded within the WRA in additional night survey.

In July 2017, no mammal species was recorded in the Survey Area (excluding the WRA) nor within the WRA during the regular survey. Leopard Cat, *Prionailurus bengalensis*, Small Indian Civet*, Viverricula indica,* and one unidentified bat were recorded within the WRA in additional night survey.

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

### 2.4.5 Management Activities

#### 2.4.5.1 Vegetation Management

Removal of exotic vegetation in all cells were undertaken; these included but not limited to *Ipomoea* sp., *Mikania* sp., *Mimosa* sp., *Pennisetum* sp. and *Typha* sp..

Vegetation management activities undertaken at the site primarily involved watering of plants, tree pruning, weeding and grass cutting.

#### 2.4.5.2 Wildlife Management

Removal of Golden Apple Snail was undertaken on an “as-seen” basis.

All sighted Red Fire Ant nests were treated with approved pesticide.

Mitigation actions have been done in the WRA during the survey period to increase the WRA utilization by birds. Mitigation actions include:

1. Lowering the water level of Cell 4;
2. Controlling the vegetation at Cell 1 and Cell 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 below in **Table 2.1**.

**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. (**Appendix G** Photo 1 – Table 2.14 CM2 of Monthly EM&A Report refers)<br>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. 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<br>Dust suppression measures are active along all internal site access tracks. |
| New buildings | No new permanent buildings have yet 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. (**Appendix G** Photo 1 – Table 2.14 CM2 of Monthly EM&A Report refers) |
| Noise Barrier | Noise barriers have been installed along the southern and western boundaries of the site in accordance with the contract 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. (**Appendix G** Photo 3 – Table 2.14 CM6 of Monthly EM&A Report refers) |
| 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. (**Appendix G** Photo 3 – Table 2.14 CM6 of Monthly EM&A Report refers)<br>The wetland areas are being established, with the ponds are being seasonally filled with rain water. Planting of areas around the WRA cells is complete. No construction was carried out at the wetland restoration area after 15 November 2010. (**Appendix G** Photo 2 – Table 2.14 CM2 of Monthly EM&A Report refers) |
| Soiling | The soiling for the advance planting strip has been completed. The soil placement and grading for each of the wetland restoration areas 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.<br>Transplanted reeds (*Phragmites australis*) at the wetland habitat came from the temporary holding nursery onsite. |
| Planting | The tree species are all from the approved list.<br>Some of the trees that were identified as dead in the previous month or having defects (i.e. extensive bark damage, cavities, fungal growths, etc.) still need to be replaced with new specimens. Some of the recently planted trees are still in poor condition. These trees are under close monitoring. If the condition of these trees continues to deteriorate, tree replacement will be required.<br>Seedling trees and shrubs, have been established at the margins of the wetland cells. Some additional fill-in planting has been undertaken. Some unplanned invasive vegetation has been cleared, which needs to be carried out on a regular basis. |
| Establishment Works | **May 2017:**<br>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, although treatment of damaged / defective trees needs urgent attention.<br>Some of the trees that were identified as dead in the previous month still need to be replaced with new specimens. Trees with significant defects (i.e. extensive bark damage, cavities, fungal growths, etc.) need to be replaced with new specimens.<br>Some trees are growing (and have become dependent for support) on the noise barrier frame, and are being deformed and damaged. Trees should either be physically separated from the structure, or the structure modified to avoid impacting on trees. Close monitoring for those trees are recommended.<br>Removal of these hanging broken branches is recommended.<br>Pest control measures such as application of pesticide is required to eradicate any pest infestation.<br>Removal of extensive growth of weeds and invasive climbers in the space behind screen noise barrier needs to be undertaken on a monthly basis as they may be inhibiting the advance planting. Climbers were still found on shrub plantings and railing, and should be cleared immediately.<br>Regular horticultural maintenance (grass cutting, weeding, watering etc.) in the shrubs and tree seedling areas around the WRA cells is being undertaken.<br>The growth of shrubs / seedlings on the north side of the WRA remains fair, with some of the shrub planting requiring pruning to avoid obstruction to the access path.<br>Removal of apple snail eggs in the WRA is recommended on an “as-seen” basis.<br>Pruning of broken branch from adjacent properly is recommended. |
| | **June 2017:**<br>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, although treatment of damaged / defective trees needs urgent attention.<br>Some of the trees that were identified as dead in the previous month still need to be replaced with new specimens. Trees with significant defects (i.e. extensive bark damage, cavities, fungal growths, etc.) need to be replaced with new specimens.<br>Some trees are growing (and have become dependent for support) on the noise barrier frame, and are being deformed and damaged. Trees should either be physically separated from the structure, or the structure modified to avoid impacting on trees. Close monitoring for those trees are recommended. |

| |
|---|
| Removal of these hanging broken branches is recommended. |
| Pest control measures such as application of pesticide is required to eradicate any pest infestation. |
| Removal of extensive growth of weeds and invasive climbers in the space behind screen noise barrier needs to be undertaken on a monthly basis as they may be inhibiting the advance planting. Climbers were still found on shrub plantings and railing, and should be cleared immediately. |
| Regular horticultural maintenance (grass cutting, weeding, watering etc.) in the shrubs and tree seedling areas around the WRA cells is being undertaken. |
| The growth of shrubs / seedlings on the north side of the WRA remains fair, with some of the shrub planting requiring pruning to avoid obstruction to the access path. |
| Removal of apple snail eggs in the WRA is recommended on an “as-seen” basis. |
| Pruning of broken branch from adjacent properly is recommended. |
| **July 2017:** |
| 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, although treatment of damaged / defective trees needs urgent attention. |
| Some of the trees are in poor health condition. Close monitoring for those trees are recommended. |
| Regular weeding for over-grown shrub is recommended. |
| Removal of these hanging tree trunk is recommended. |
| Removal of these hanging branches is recommended. |
| Pest control measures such as application of termiticide is required to eradicate any pest infestation. |
| Removal of insect infestation by treatment and keep close monitoring on the tree is recommended. |
| Removal of extensive growth of weeds and invasive climbers in the space behind screen noise barrier needs to be undertaken on a monthly basis as they may be inhibiting the advance planting. Climbers were still found on shrub plantings and railing, and should be cleared immediately. |
| Regular horticultural maintenance (grass cutting, weeding, watering etc.) in the shrubs and tree seedling areas around the WRA cells is being undertaken. |
| The growth of shrubs / seedlings on the north side of the WRA remains fair, with some of the shrub planting requiring pruning to avoid obstruction to the access path. |

# 3 Environmental Site Inspection and Audit

## 3.1 Site Inspection

The ET carried out construction phase weekly site inspections on 4,10, 17, 24 and 31 May 2017, 7, 14, 21 and 28 June 2017 and 5, 12, 19 and 26 July 2017. 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, 1 tonnes of C&D material were generated on site and disposed to landfill (1 tonne) during the period. 3 kg of metals were generated and collected by registered recycling collector. 4 kg of paper cardboard packing and 3 kg of plastic were generated on site and collected by registered recycling collector. No chemical waste was generated and collected by licensed chemical waste collector. 6 kg of other types of wastes (e.g. general refuse) was generated on site and disposed of at public landfill facility.

As advised by the Contractor, 97,454 tonnes of inert C&D material were reused by other projects during the reporting period. The Contractor is advised to maintain on site waste sorting and recording system and maximize reuse / recycling of C&D wastes.

# 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.

Action Level exceedances of pH and DO were recorded for Water Quality during the reporting period.

pH Action Level was exceeded on twenty one monitoring days at MP3 (twelve in May 2017, eight in June 2017 and one in July 2017).

DO Action Level was exceeded on three monitoring days at MP3 (one in June 2017, two in July 2017).

### 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 | 15.8 | Yes |
| MP4 | 36.9 | 18.2 | Yes |
| MP5 | 47.7 | 19.5 | Yes |
| MP6 | 54.1 | 20.5 | 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. Although there were exceedances of water quality parameters at MP3, the above statistics show that the water quality at these locations during the reporting period has not significantly worsened when compared with the baseline condition.

It was noted that during the reporting period, all the water quality parameters monitored were influenced by the natural environment and other external factors, and in some cases exceedances of criteria were resulted. The exceedances have been investigated and are described in the following section.

### 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 and DO at MP3 | The exceedances of pH and DO may be due to draining and tilling of an adjacent fish pond as well as external factors such as pond fish culture activities which were out of the control of project.<br>Also, according to the results of baseline water quality monitoring conducted prior to the commencement of construction works, the pH recorded at MP3 ranged from 7.7 to 8.6 with average of 8.2. The recorded pH exceedances are therefore considered to be very close to / within the range of natural variations at this location. | No, noting that the fish pond (MP3) was being separated from the construction site by the WRA since November 2010. |

In summary, all of the exceedances were caused by external factors such as natural variations, pond fish culture activities and fish movement. Moreover, as noted by the monitoring team during on-site sampling, no direct muddy water discharge was observed from the site. The exceedances were considered not due to Project works.

## 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 the water quality mitigation measures in accordance with the recommendations stated in 5.6.1 – 5.6.4 of the EIA Report respectively as far as practicable and regular spot check would be conducted on the nearby discharge by Contractor and inform ET 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

The major site works scheduled to be commissioned in the coming three months include:

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

## 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 under way. 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 (as $L_{eq}$) in the reporting period.

Action Level exceedances of pH and DO were recorded at MP3 on different monitoring days. 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, pond fish culture activities and fish movement.

### 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**

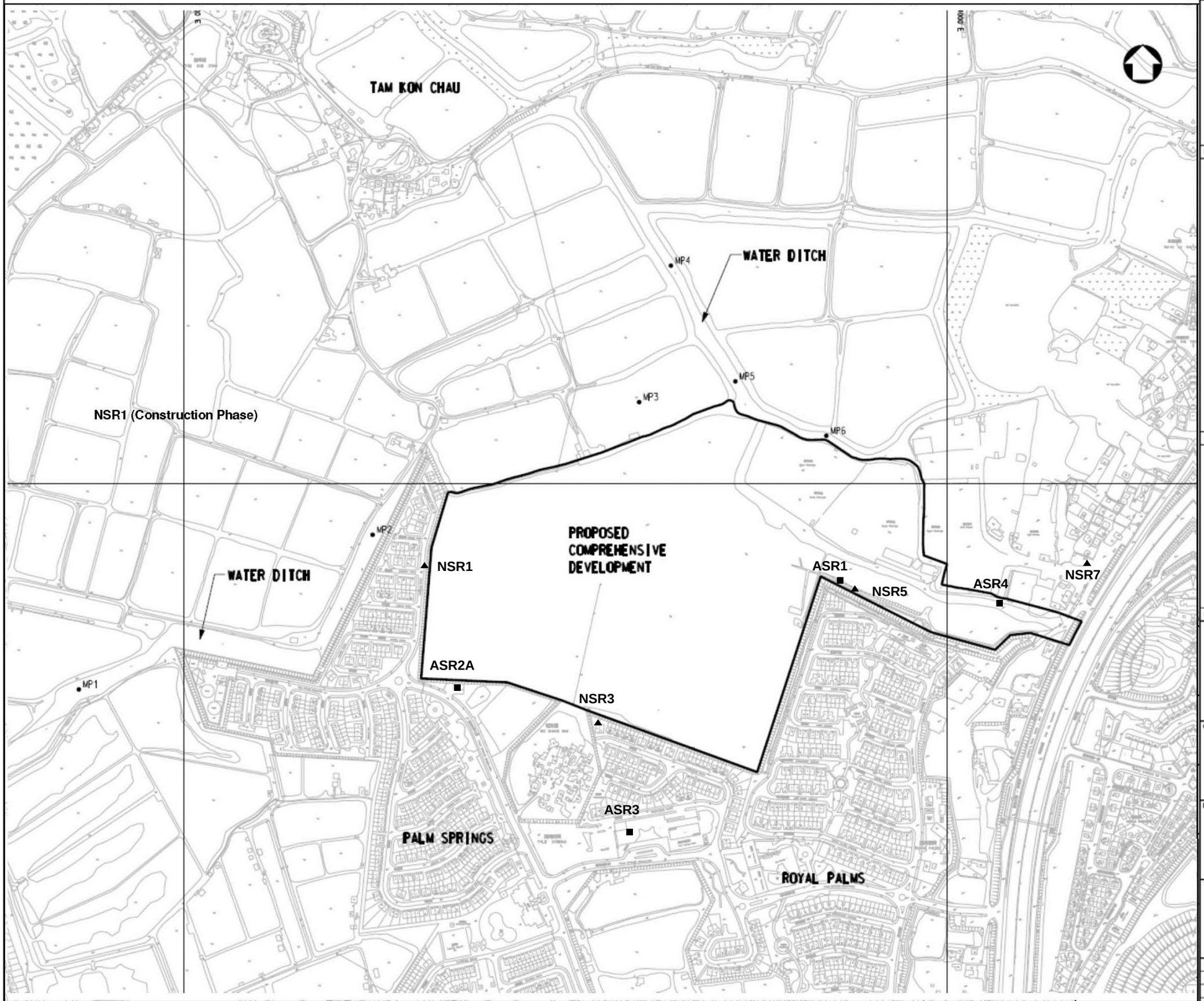
- Mobile plant should be sited as far away from NSRs as possible;
- Plant known to emit noise strongly in one direction should be orientated to direct noise away from the NSRs; and
- The construction activities should be better scheduled to reduce noise nuisance.

**Water Quality**

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

**Waste Management**

- 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.
- The chemical waste storage area should be clearly labelled.
- General refuse should be stored in enclosed bins or compaction units separate from C&D and chemical wastes.
- Disposal of chemical/fuel to air, soil or water bodies should be avoided.




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 |
|---|---|---|---|---|---|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Client

PROFIT POINT ENTERPRISES LIMITED

Project

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG

Title

**General Site Layout and Locations of Monitoring Stations**

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

Drawing Number

Figure 1.1


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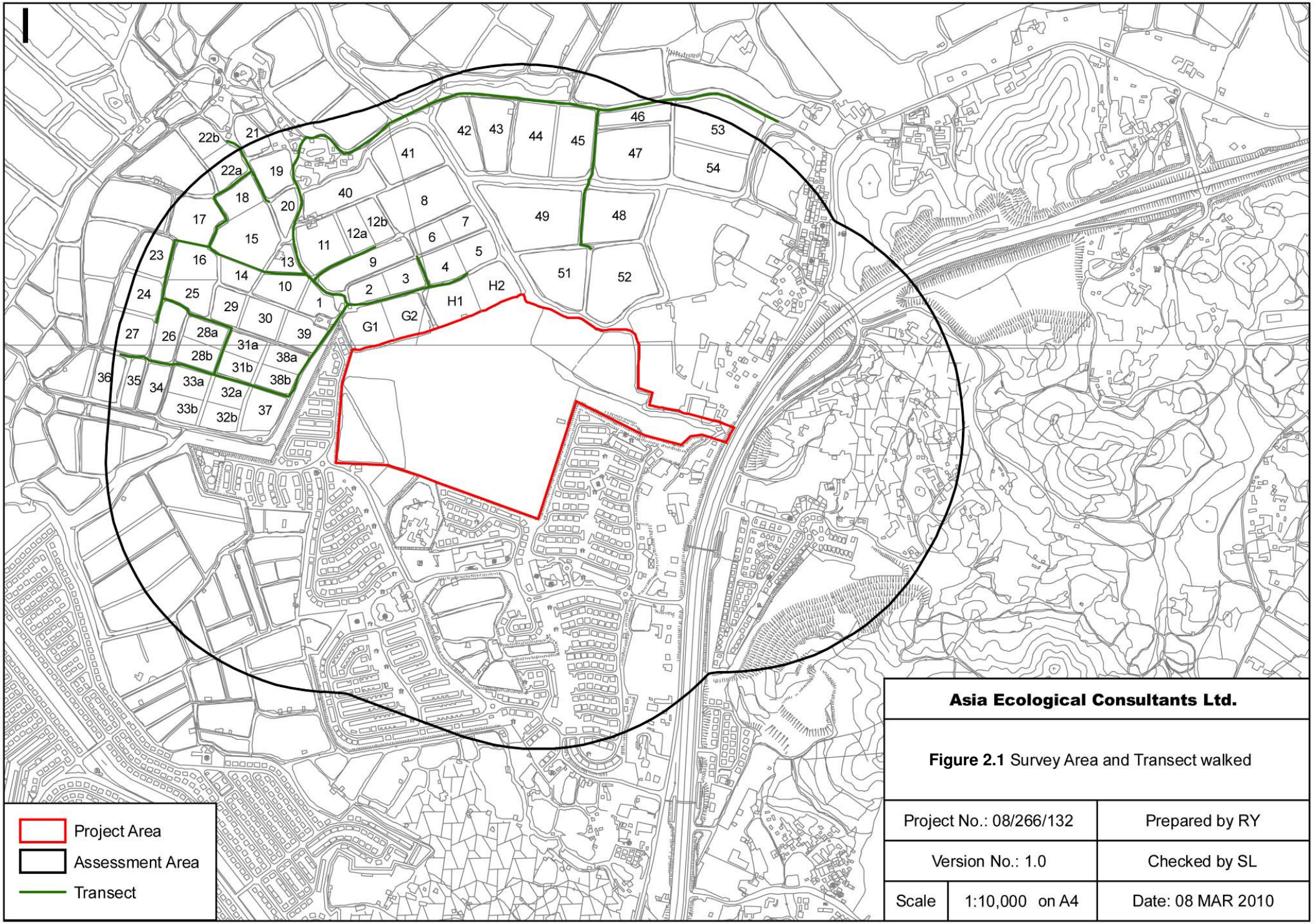
C:\temp\Title Block.dgn DATE:29/08/2018 TIME:17:25:53 USER:ylm42169




**Asia Ecological Consultants Ltd.**

**Figure 2.1** Survey Area and Transect walked

| | | |
|---|---|---|
| Project No.: 08/266/132 | | Prepared by RY |
| Version No.: 1.0 | | Checked by SL |
| Scale | 1:10,000 on A4 | Date: 08 MAR 2010 |

# Appendices


| | | |
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| A. | Project Organization Chart | 17 |
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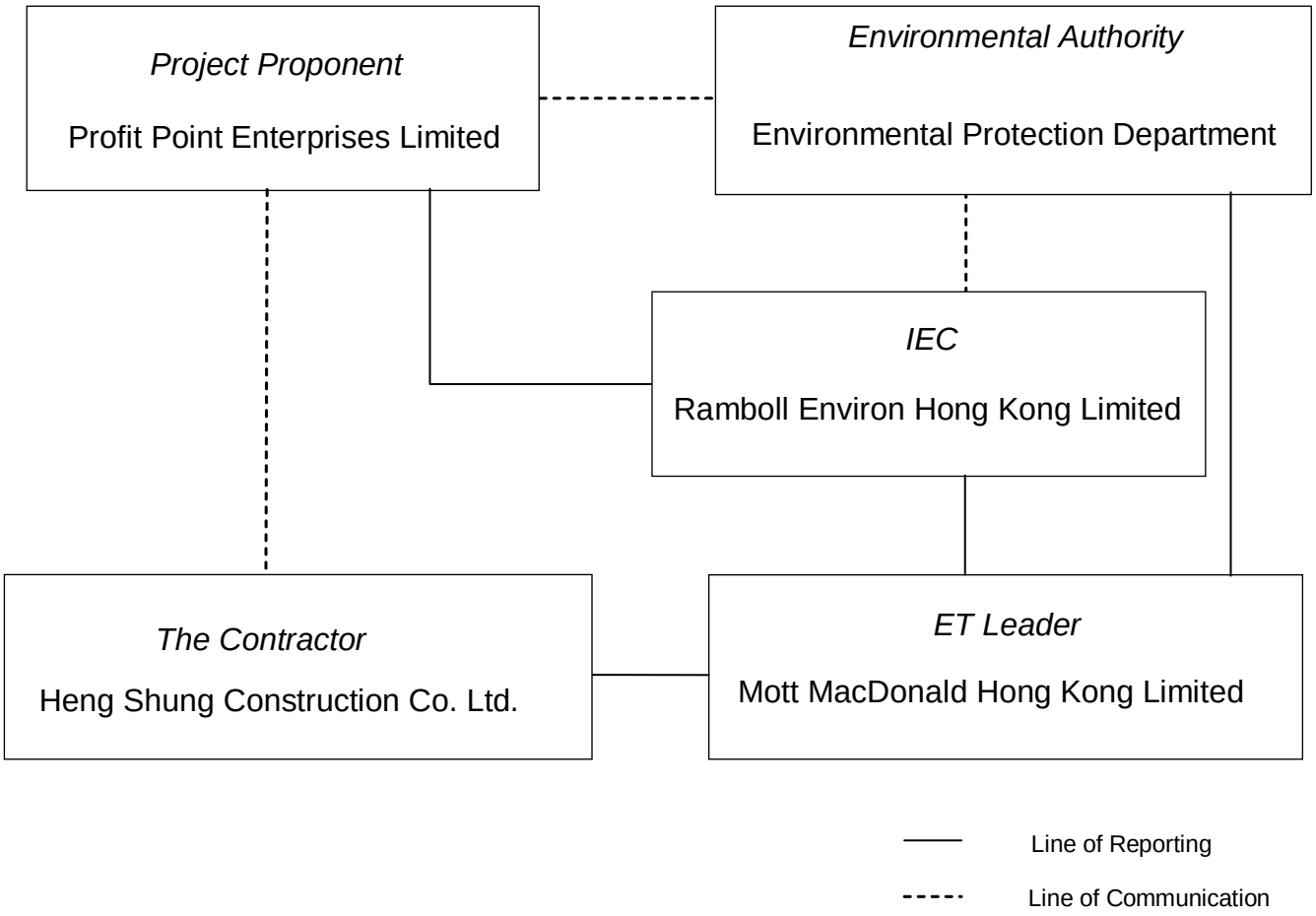
# A. Project Organization Chart



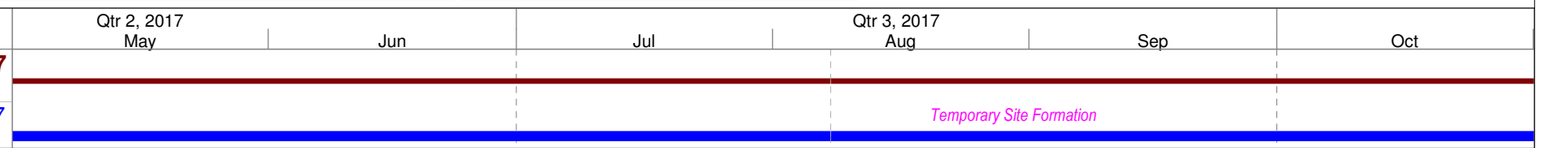

**Contact information:**

| Company | Position | Name | Telephone |
|---|---|---|---|
| Profit Point Enterprises Limited (Project Proponent) | Project Manager | Mr. Kelvin LAU | 2908 8114 |
| Heng Shung Construction Co. Ltd. (The Contractor) | Assistant Construction Manager | Ms. Lynne HUNG | 2908 2391 |
| | Site Agent | Mr. Wai Tung CHEUNG | 6110 1395 |
| | Environmental Officer | Mr. Terence CHEUNG | 9889 4013 |
| Ramboll Environ 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 | Mr. Brandon WONG | 2828 5875 |

# B. Tentative Construction Programme

# Wo Shang Wai Construction Works Programme (Including TOA)

| Task Name | Working | Start | Finish |
|---|---|---|---|
| **Wo Shang Wai Construction Phase** | **2153 da...** | **Mon 03/01/11** | **Sun 31/12/17** |
| Temporary Site Formation | 2153 days | Mon 03/01/11 | Sun 31/12/17 |




**Project : Wo Shang Wai**
**Revision : I**
**Print Date : 03/11/15**

| | | | |
|---|---|---|---|
| Task | Inactive Milestone | | Manual Summary Rollup |
| Milestone | Inactive Summary | | Manual Summary |
| Summary | Manual Task | | Start-only |
| Inactive Task | Duration-only | | Finish-only |

# 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 | Action 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 | | |

# D. Summary and Graphical Plots of the Monitoring Results

## Air Quality (1-hr TSP)

### Station ASR1

| Date | Start Time | Finish Time | TSP Concentration (μg/m³) | Weather Condition | Action Level (μg/m³) | Limit Level (μg/m³) |
|---|---|---|---|---|---|---|
| 04-May-17 | 12:51 | 13:51 | 241 | Cloudy | 378 | 500 |
| 04-May-17 | 13:51 | 14:51 | 280 | Cloudy | 378 | 500 |
| 04-May-17 | 14:51 | 15:51 | 263 | Cloudy | 378 | 500 |
| 09-May-17 | 12:11 | 13:11 | 167 | Cloudy | 378 | 500 |
| 09-May-17 | 13:11 | 14:11 | 189 | Cloudy | 378 | 500 |
| 09-May-17 | 14:11 | 15:11 | 171 | Cloudy | 378 | 500 |
| 15-May-17 | 12:28 | 13:28 | 56 | Cloudy | 378 | 500 |
| 15-May-17 | 13:28 | 14:28 | 58 | Cloudy | 378 | 500 |
| 15-May-17 | 14:28 | 15:28 | 61 | Cloudy | 378 | 500 |
| 19-May-17 | 12:17 | 13:17 | 118 | Cloudy | 378 | 500 |
| 19-May-17 | 13:17 | 14:17 | 120 | Cloudy | 378 | 500 |
| 19-May-17 | 14:17 | 15:17 | 126 | Cloudy | 378 | 500 |
| 25-May-17 | 12:12 | 13:12 | 109 | Cloudy | 378 | 500 |
| 25-May-17 | 13:12 | 14:12 | 113 | Cloudy | 378 | 500 |
| 25-May-17 | 14:12 | 15:12 | 117 | Cloudy | 378 | 500 |
| 31-May-17 | 12:18 | 13:18 | 155 | Sunny | 378 | 500 |
| 31-May-17 | 13:18 | 14:18 | 169 | Sunny | 378 | 500 |
| 31-May-17 | 14:18 | 15:18 | 171 | Sunny | 378 | 500 |
| 06-Jun-17 | 12:11 | 13:11 | 126 | Sunny | 378 | 500 |
| 06-Jun-17 | 13:11 | 14:11 | 122 | Sunny | 378 | 500 |
| 06-Jun-17 | 14:11 | 15:11 | 129 | Sunny | 378 | 500 |
| 12-Jun-17 | 12:06 | 13:06 | 53 | Cloudy | 378 | 500 |
| 12-Jun-17 | 13:06 | 14:06 | 56 | Cloudy | 378 | 500 |
| 12-Jun-17 | 14:06 | 15:06 | 58 | Cloudy | 378 | 500 |
| 16-Jun-17 | 12:13 | 13:13 | 63 | Cloudy | 378 | 500 |
| 16-Jun-17 | 13:13 | 14:13 | 64 | Cloudy | 378 | 500 |
| 16-Jun-17 | 14:13 | 15:13 | 65 | Cloudy | 378 | 500 |
| 22-Jun-17 | 12:07 | 13:07 | 57 | Sunny | 378 | 500 |
| 22-Jun-17 | 13:07 | 14:07 | 60 | Sunny | 378 | 500 |
| 22-Jun-17 | 14:07 | 15:07 | 63 | Sunny | 378 | 500 |
| 28-Jun-17 | 12:18 | 13:18 | 114 | Sunny | 378 | 500 |
| 28-Jun-17 | 13:18 | 14:18 | 104 | Sunny | 378 | 500 |
| 28-Jun-17 | 14:18 | 15:18 | 108 | Sunny | 378 | 500 |
| 04-Jul-17 | 12:21 | 13:21 | 55 | Cloudy | 378 | 500 |
| 04-Jul-17 | 13:21 | 14:21 | 58 | Cloudy | 378 | 500 |
| 04-Jul-17 | 14:21 | 15:21 | 62 | Cloudy | 378 | 500 |
| 10-Jul-17 | 12:48 | 13:48 | 58 | Sunny | 378 | 500 |
| 10-Jul-17 | 13:48 | 14:48 | 60 | Sunny | 378 | 500 |
| 10-Jul-17 | 14:48 | 15:48 | 65 | Sunny | 378 | 500 |
| 14-Jul-17 | 12:00 | 13:00 | 90 | Sunny | 378 | 500 |
| 14-Jul-17 | 13:00 | 14:00 | 93 | Sunny | 378 | 500 |
| 14-Jul-17 | 14:00 | 15:00 | 89 | Sunny | 378 | 500 |
| 20-Jul-17 | 12:11 | 13:11 | 109 | Sunny | 378 | 500 |
| 20-Jul-17 | 13:11 | 14:11 | 110 | Sunny | 378 | 500 |
| 20-Jul-17 | 14:11 | 15:11 | 120 | Sunny | 378 | 500 |
| 26-Jul-17 | 12:10 | 13:10 | 97 | Sunny | 378 | 500 |
| 26-Jul-17 | 13:10 | 14:10 | 98 | Sunny | 378 | 500 |
| 26-Jul-17 | 14:10 | 15:10 | 115 | Sunny | 378 | 500 |
| | | Min. | 53 | for | | |
| | | Max. | 280 | reporting | | |
| | | Average | 108 | period | | |

## Air Quality (1-hr TSP)

### Station ASR2A

| Date | Start Time | Finish Time | TSP Concentration ($\mu g/m^3$) | Weather Condition | Action Level ($\mu g/m^3$) | Limit Level ($\mu g/m^3$) |
|---|---|---|---|---|---|---|
| 04-May-17 | 09:02 | 10:02 | 99 | Cloudy | 357 | 500 |
| 04-May-17 | 10:02 | 11:02 | 88 | Cloudy | 357 | 500 |
| 04-May-17 | 11:02 | 12:02 | 91 | Cloudy | 357 | 500 |
| 09-May-17 | 08:52 | 09:52 | 72 | Cloudy | 357 | 500 |
| 09-May-17 | 09:52 | 10:52 | 62 | Cloudy | 357 | 500 |
| 09-May-17 | 10:52 | 11:52 | 69 | Cloudy | 357 | 500 |
| 15-May-17 | 08:37 | 09:37 | 50 | Cloudy | 357 | 500 |
| 15-May-17 | 09:37 | 10:37 | 52 | Cloudy | 357 | 500 |
| 15-May-17 | 10:37 | 11:37 | 56 | Cloudy | 357 | 500 |
| 19-May-17 | 08:31 | 09:31 | 82 | Cloudy | 357 | 500 |
| 19-May-17 | 09:31 | 10:31 | 86 | Cloudy | 357 | 500 |
| 19-May-17 | 10:31 | 11:31 | 92 | Cloudy | 357 | 500 |
| 25-May-17 | 08:14 | 09:14 | 80 | Cloudy | 357 | 500 |
| 25-May-17 | 09:14 | 10:14 | 76 | Cloudy | 357 | 500 |
| 25-May-17 | 10:14 | 11:14 | 76 | Cloudy | 357 | 500 |
| 31-May-17 | 08:26 | 09:26 | 98 | Sunny | 357 | 500 |
| 31-May-17 | 09:26 | 10:26 | 106 | Sunny | 357 | 500 |
| 31-May-17 | 10:26 | 11:26 | 116 | Sunny | 357 | 500 |
| 06-Jun-17 | 08:42 | 09:42 | 71 | Sunny | 357 | 500 |
| 06-Jun-17 | 09:42 | 10:42 | 82 | Sunny | 357 | 500 |
| 06-Jun-17 | 10:42 | 11:42 | 86 | Sunny | 357 | 500 |
| 12-Jun-17 | 08:52 | 09:52 | 58 | Cloudy | 357 | 500 |
| 12-Jun-17 | 09:52 | 10:52 | 62 | Cloudy | 357 | 500 |
| 12-Jun-17 | 10:52 | 11:52 | 64 | Cloudy | 357 | 500 |
| 16-Jun-17 | 08:33 | 09:33 | 58 | Cloudy | 357 | 500 |
| 16-Jun-17 | 09:33 | 10:33 | 62 | Cloudy | 357 | 500 |
| 16-Jun-17 | 10:33 | 11:33 | 64 | Cloudy | 357 | 500 |
| 22-Jun-17 | 08:31 | 09:31 | 56 | Sunny | 357 | 500 |
| 22-Jun-17 | 09:31 | 10:31 | 58 | Sunny | 357 | 500 |
| 22-Jun-17 | 10:31 | 11:31 | 62 | Sunny | 357 | 500 |
| 28-Jun-17 | 08:31 | 09:31 | 62 | Sunny | 357 | 500 |
| 28-Jun-17 | 09:31 | 10:31 | 64 | Sunny | 357 | 500 |
| 28-Jun-17 | 10:31 | 11:31 | 64 | Sunny | 357 | 500 |
| 04-Jul-17 | 08:53 | 09:53 | 59 | Cloudy | 357 | 500 |
| 04-Jul-17 | 09:53 | 10:53 | 62 | Cloudy | 357 | 500 |
| 04-Jul-17 | 10:53 | 11:53 | 64 | Cloudy | 357 | 500 |
| 10-Jul-17 | 09:21 | 10:21 | 53 | Sunny | 357 | 500 |
| 10-Jul-17 | 10:21 | 11:21 | 58 | Sunny | 357 | 500 |
| 10-Jul-17 | 11:21 | 12:21 | 62 | Sunny | 357 | 500 |
| 14-Jul-17 | 08:39 | 09:39 | 63 | Sunny | 357 | 500 |
| 14-Jul-17 | 09:39 | 10:39 | 65 | Sunny | 357 | 500 |
| 14-Jul-17 | 10:39 | 11:39 | 65 | Sunny | 357 | 500 |
| 20-Jul-17 | 08:36 | 09:36 | 71 | Sunny | 357 | 500 |
| 20-Jul-17 | 09:36 | 10:36 | 78 | Sunny | 357 | 500 |
| 20-Jul-17 | 10:36 | 11:36 | 81 | Sunny | 357 | 500 |
| 26-Jul-17 | 08:31 | 09:31 | 83 | Sunny | 357 | 500 |
| 26-Jul-17 | 09:31 | 10:31 | 78 | Sunny | 357 | 500 |
| 26-Jul-17 | 10:31 | 11:31 | 78 | Sunny | 357 | 500 |
| | | Min. | 50 | for | | |
| | | Max. | 116 | reporting | | |
| | | Average | 72 | period | | |

## Air Quality (1-hr TSP)

### Station ASR3

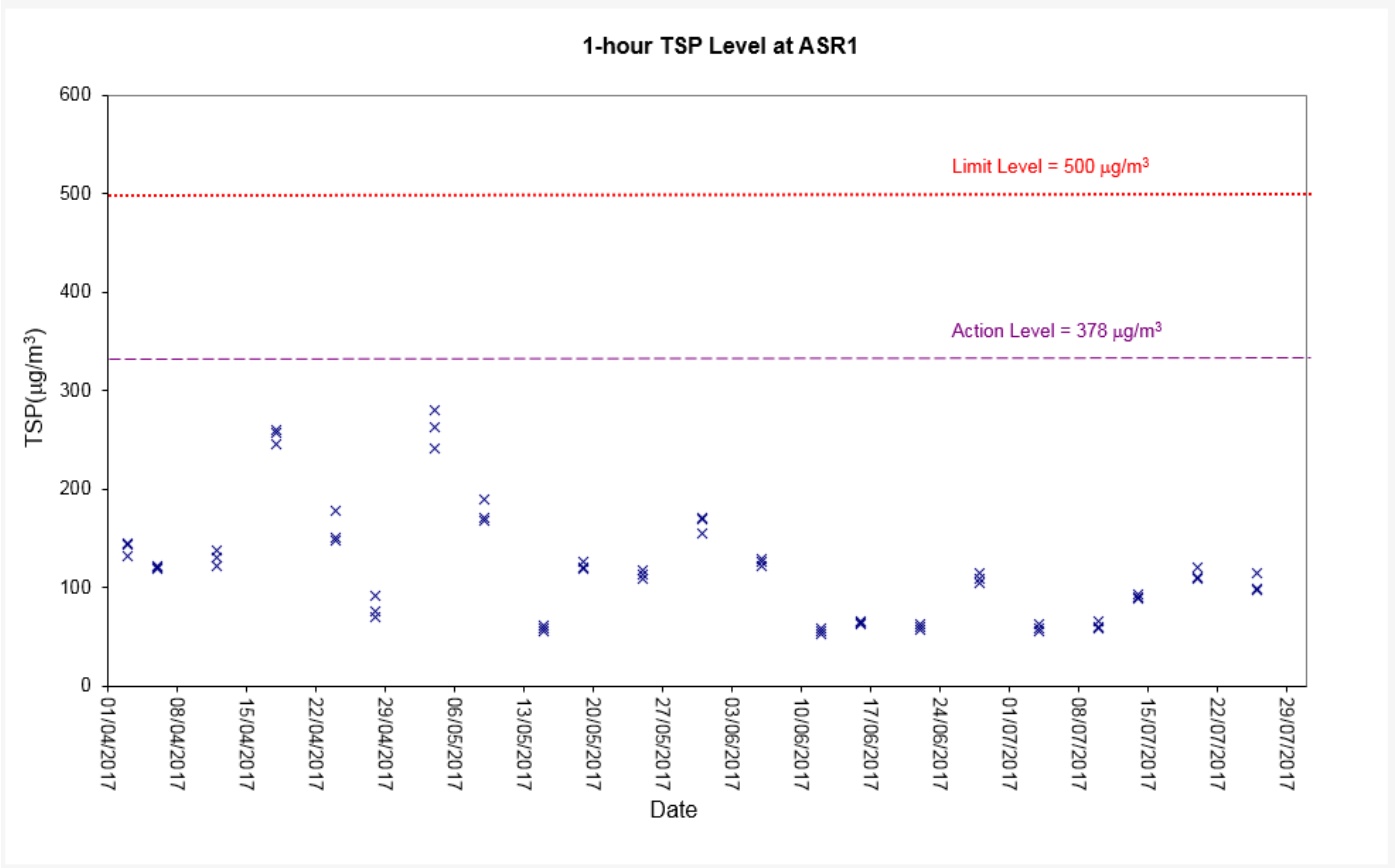
| Date | Start Time | Finish Time | TSP Concentration ($\mu g/m^3$) | Weather Condition | Action Level ($\mu g/m^3$) | Limit Level ($\mu g/m^3$) |
|---|---|---|---|---|---|---|
| 04-May-17 | 08:46 | 09:46 | 110 | Cloudy | 358 | 500 |
| 04-May-17 | 09:46 | 10:46 | 87 | Cloudy | 358 | 500 |
| 04-May-17 | 10:46 | 11:46 | 115 | Cloudy | 358 | 500 |
| 09-May-17 | 08:41 | 09:41 | 115 | Cloudy | 358 | 500 |
| 09-May-17 | 09:41 | 10:41 | 134 | Cloudy | 358 | 500 |
| 09-May-17 | 10:41 | 11:41 | 137 | Cloudy | 358 | 500 |
| 15-May-17 | 08:21 | 09:21 | 60 | Cloudy | 358 | 500 |
| 15-May-17 | 09:21 | 10:21 | 65 | Cloudy | 358 | 500 |
| 15-May-17 | 10:21 | 11:21 | 65 | Cloudy | 358 | 500 |
| 19-May-17 | 08:22 | 09:22 | 99 | Cloudy | 358 | 500 |
| 19-May-17 | 09:22 | 10:22 | 102 | Cloudy | 358 | 500 |
| 19-May-17 | 10:22 | 11:22 | 116 | Cloudy | 358 | 500 |
| 25-May-17 | 08:02 | 09:02 | 86 | Cloudy | 358 | 500 |
| 25-May-17 | 09:02 | 10:02 | 92 | Cloudy | 358 | 500 |
| 25-May-17 | 10:02 | 11:02 | 97 | Cloudy | 358 | 500 |
| 31-May-17 | 08:13 | 09:13 | 109 | Sunny | 358 | 500 |
| 31-May-17 | 09:13 | 10:13 | 112 | Sunny | 358 | 500 |
| 31-May-17 | 10:13 | 11:13 | 120 | Sunny | 358 | 500 |
| 06-Jun-17 | 08:30 | 09:30 | 112 | Sunny | 358 | 500 |
| 06-Jun-17 | 09:30 | 10:30 | 120 | Sunny | 358 | 500 |
| 06-Jun-17 | 10:30 | 11:30 | 130 | Sunny | 358 | 500 |
| 12-Jun-17 | 08:39 | 09:39 | 64 | Cloudy | 358 | 500 |
| 12-Jun-17 | 09:39 | 10:39 | 68 | Cloudy | 358 | 500 |
| 12-Jun-17 | 10:39 | 11:39 | 65 | Cloudy | 358 | 500 |
| 16-Jun-17 | 08:21 | 09:21 | 64 | Cloudy | 358 | 500 |
| 16-Jun-17 | 09:21 | 10:21 | 68 | Cloudy | 358 | 500 |
| 16-Jun-17 | 10:21 | 11:21 | 65 | Cloudy | 358 | 500 |
| 22-Jun-17 | 08:22 | 09:22 | 67 | Sunny | 358 | 500 |
| 22-Jun-17 | 09:22 | 10:22 | 72 | Sunny | 358 | 500 |
| 22-Jun-17 | 10:22 | 11:22 | 76 | Sunny | 358 | 500 |
| 28-Jun-17 | 08:19 | 09:19 | 81 | Sunny | 358 | 500 |
| 28-Jun-17 | 09:19 | 10:19 | 84 | Sunny | 358 | 500 |
| 28-Jun-17 | 10:19 | 11:19 | 89 | Sunny | 358 | 500 |
| 04-Jul-17 | 08:41 | 09:41 | 56 | Cloudy | 358 | 500 |
| 04-Jul-17 | 09:41 | 10:41 | 58 | Cloudy | 358 | 500 |
| 04-Jul-17 | 10:41 | 11:41 | 58 | Cloudy | 358 | 500 |
| 10-Jul-17 | 09:00 | 10:00 | 63 | Sunny | 358 | 500 |
| 10-Jul-17 | 10:00 | 11:00 | 68 | Sunny | 358 | 500 |
| 10-Jul-17 | 11:00 | 12:00 | 71 | Sunny | 358 | 500 |
| 14-Jul-17 | 08:30 | 09:30 | 72 | Sunny | 358 | 500 |
| 14-Jul-17 | 09:30 | 10:30 | 76 | Sunny | 358 | 500 |
| 14-Jul-17 | 10:30 | 11:30 | 80 | Sunny | 358 | 500 |
| 20-Jul-17 | 08:24 | 09:24 | 87 | Sunny | 358 | 500 |
| 20-Jul-17 | 09:24 | 10:24 | 89 | Sunny | 358 | 500 |
| 20-Jul-17 | 10:24 | 11:24 | 92 | Sunny | 358 | 500 |
| 26-Jul-17 | 08:13 | 09:13 | 88 | Sunny | 358 | 500 |
| 26-Jul-17 | 09:13 | 10:13 | 92 | Sunny | 358 | 500 |
| 26-Jul-17 | 10:13 | 11:13 | 94 | Sunny | 358 | 500 |
| | | Min. | 56 } for | | | |
| | | Max. | 137 } reporting | | | |
| | | Average | 87 } period | | | |

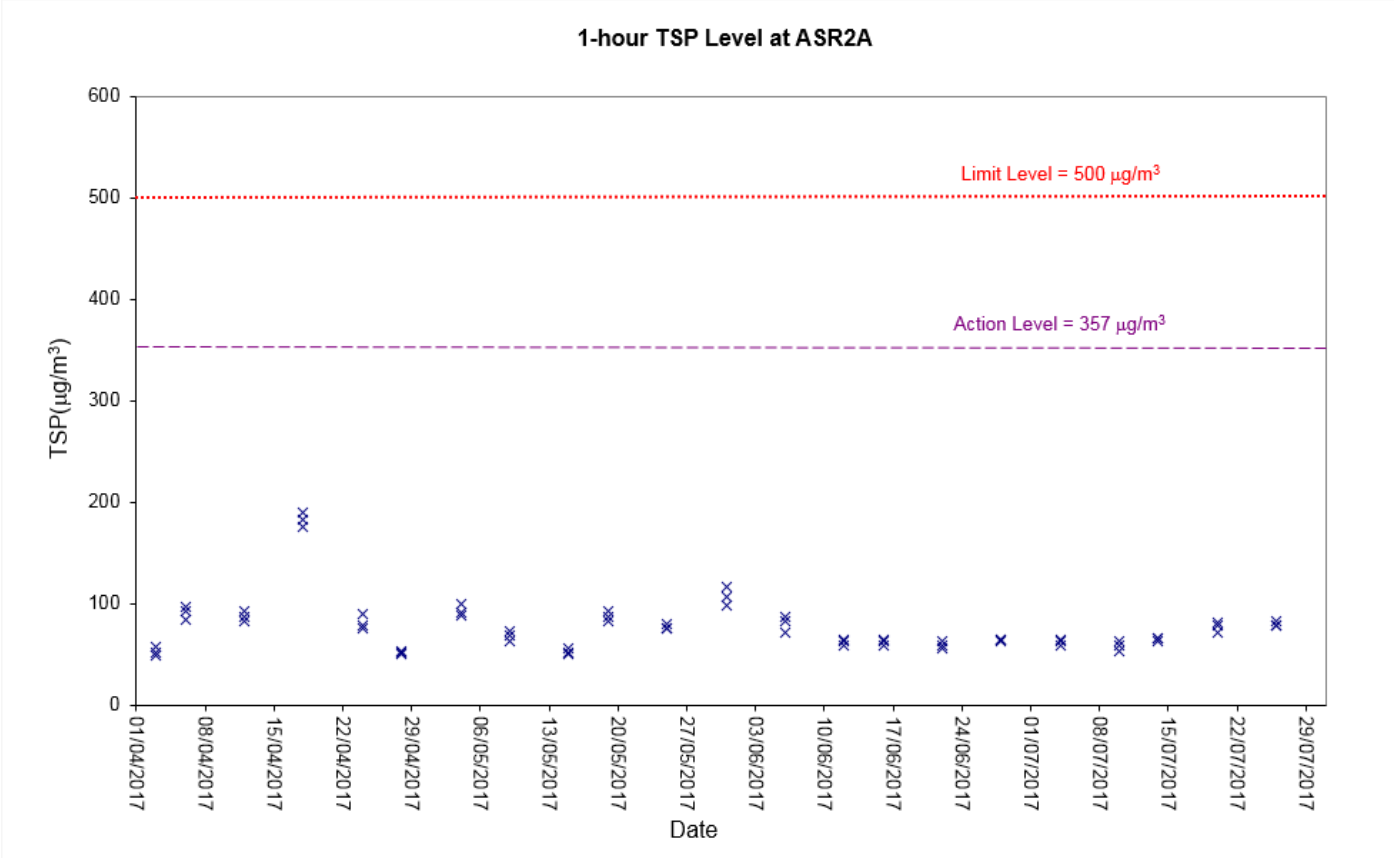
## Air Quality (1-hr TSP)

### Station ASR4

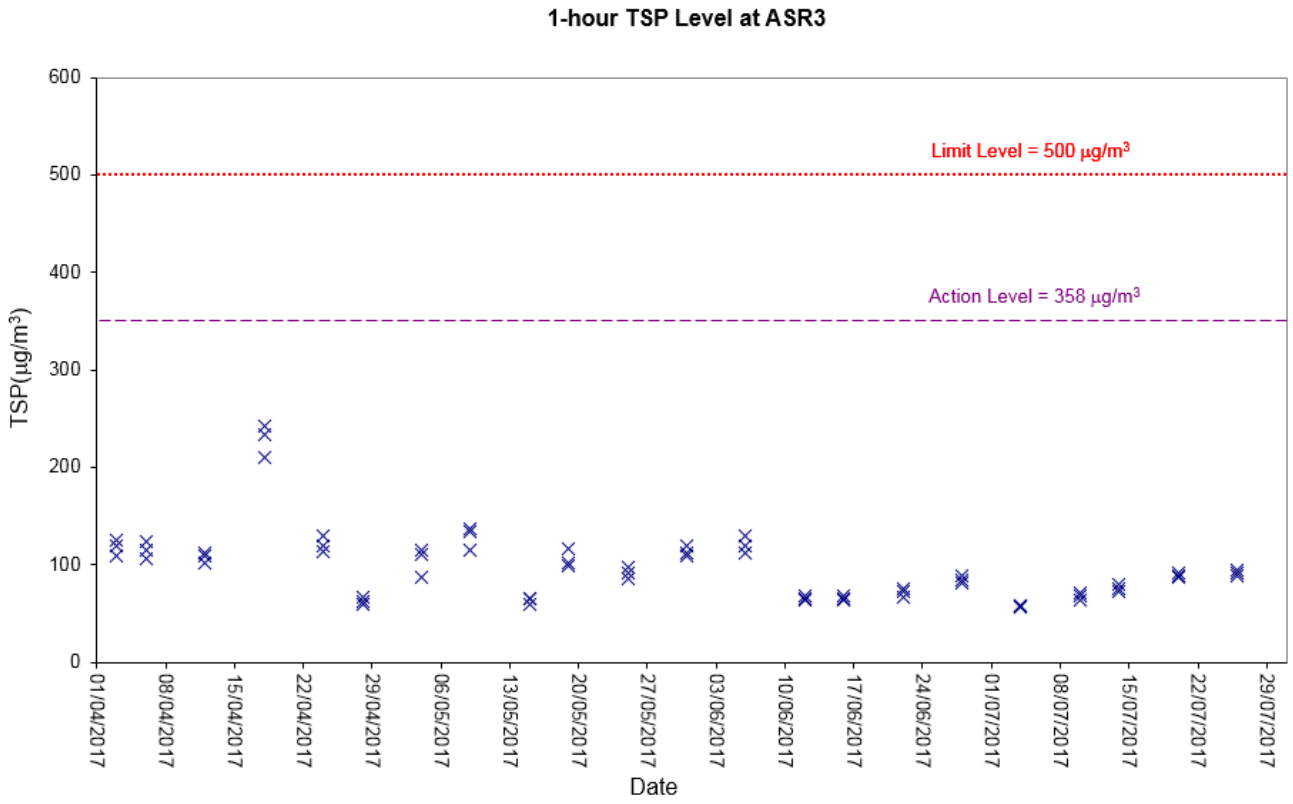
| Date | Start Time | Finish Time | TSP Concentration (μg/m³) | Weather Condition | Action Level (μg/m³) | Limit Level (μg/m³) |
|---|---|---|---|---|---|---|
| 04-May-17 | 12:46 | 13:46 | 154 | Cloudy | 372 | 500 |
| 04-May-17 | 13:46 | 14:46 | 209 | Cloudy | 372 | 500 |
| 04-May-17 | 14:46 | 15:46 | 210 | Cloudy | 372 | 500 |
| 09-May-17 | 12:06 | 13:06 | 191 | Cloudy | 372 | 500 |
| 09-May-17 | 13:06 | 14:06 | 192 | Cloudy | 372 | 500 |
| 09-May-17 | 14:06 | 15:06 | 170 | Cloudy | 372 | 500 |
| 15-May-17 | 12:21 | 13:21 | 57 | Cloudy | 372 | 500 |
| 15-May-17 | 13:21 | 14:21 | 60 | Cloudy | 372 | 500 |
| 15-May-17 | 14:21 | 15:21 | 63 | Cloudy | 372 | 500 |
| 19-May-17 | 12:12 | 13:12 | 117 | Cloudy | 372 | 500 |
| 19-May-17 | 13:12 | 14:12 | 115 | Cloudy | 372 | 500 |
| 19-May-17 | 14:12 | 15:12 | 119 | Cloudy | 372 | 500 |
| 25-May-17 | 12:04 | 13:04 | 118 | Cloudy | 372 | 500 |
| 25-May-17 | 13:04 | 14:04 | 120 | Cloudy | 372 | 500 |
| 25-May-17 | 14:04 | 15:04 | 116 | Cloudy | 372 | 500 |
| 31-May-17 | 12:11 | 13:11 | 137 | Sunny | 372 | 500 |
| 31-May-17 | 13:11 | 14:11 | 144 | Sunny | 372 | 500 |
| 31-May-17 | 14:11 | 15:11 | 154 | Sunny | 372 | 500 |
| 06-Jun-17 | 12:08 | 13:08 | 148 | Sunny | 372 | 500 |
| 06-Jun-17 | 13:08 | 14:08 | 154 | Sunny | 372 | 500 |
| 06-Jun-17 | 14:08 | 15:08 | 147 | Sunny | 372 | 500 |
| 12-Jun-17 | 12:12 | 13:12 | 59 | Cloudy | 372 | 500 |
| 12-Jun-17 | 13:12 | 14:12 | 57 | Cloudy | 372 | 500 |
| 12-Jun-17 | 14:12 | 15:12 | 57 | Cloudy | 372 | 500 |
| 16-Jun-17 | 12:07 | 13:07 | 57 | Cloudy | 372 | 500 |
| 16-Jun-17 | 13:07 | 14:07 | 60 | Cloudy | 372 | 500 |
| 16-Jun-17 | 14:07 | 15:07 | 62 | Cloudy | 372 | 500 |
| 22-Jun-17 | 12:02 | 13:02 | 88 | Sunny | 372 | 500 |
| 22-Jun-17 | 13:02 | 14:02 | 89 | Sunny | 372 | 500 |
| 22-Jun-17 | 14:02 | 15:02 | 91 | Sunny | 372 | 500 |
| 28-Jun-17 | 12:11 | 13:11 | 92 | Sunny | 372 | 500 |
| 28-Jun-17 | 13:11 | 14:11 | 101 | Sunny | 372 | 500 |
| 28-Jun-17 | 14:11 | 15:11 | 106 | Sunny | 372 | 500 |
| 04-Jul-17 | 12:17 | 13:17 | 67 | Cloudy | 372 | 500 |
| 04-Jul-17 | 13:17 | 14:17 | 70 | Cloudy | 372 | 500 |
| 04-Jul-17 | 14:17 | 15:17 | 84 | Cloudy | 372 | 500 |
| 10-Jul-17 | 12:43 | 13:43 | 73 | Sunny | 372 | 500 |
| 10-Jul-17 | 13:43 | 14:43 | 76 | Sunny | 372 | 500 |
| 10-Jul-17 | 14:43 | 15:43 | 86 | Sunny | 372 | 500 |
| 14-Jul-17 | 11:52 | 12:52 | 84 | Sunny | 372 | 500 |
| 14-Jul-17 | 12:52 | 13:52 | 86 | Sunny | 372 | 500 |
| 14-Jul-17 | 13:52 | 14:52 | 81 | Sunny | 372 | 500 |
| 20-Jul-17 | 12:07 | 13:07 | 120 | Sunny | 372 | 500 |
| 20-Jul-17 | 13:07 | 14:07 | 131 | Sunny | 372 | 500 |
| 20-Jul-17 | 14:07 | 15:07 | 127 | Sunny | 372 | 500 |
| 26-Jul-17 | 12:04 | 13:04 | 90 | Sunny | 372 | 500 |
| 26-Jul-17 | 13:04 | 14:04 | 92 | Sunny | 372 | 500 |
| 26-Jul-17 | 14:04 | 15:04 | 97 | Sunny | 372 | 500 |
| | | Min. | 57 | for | | |
| | | Max. | 210 | reporting | | |
| | | Average | 108 | period | | |

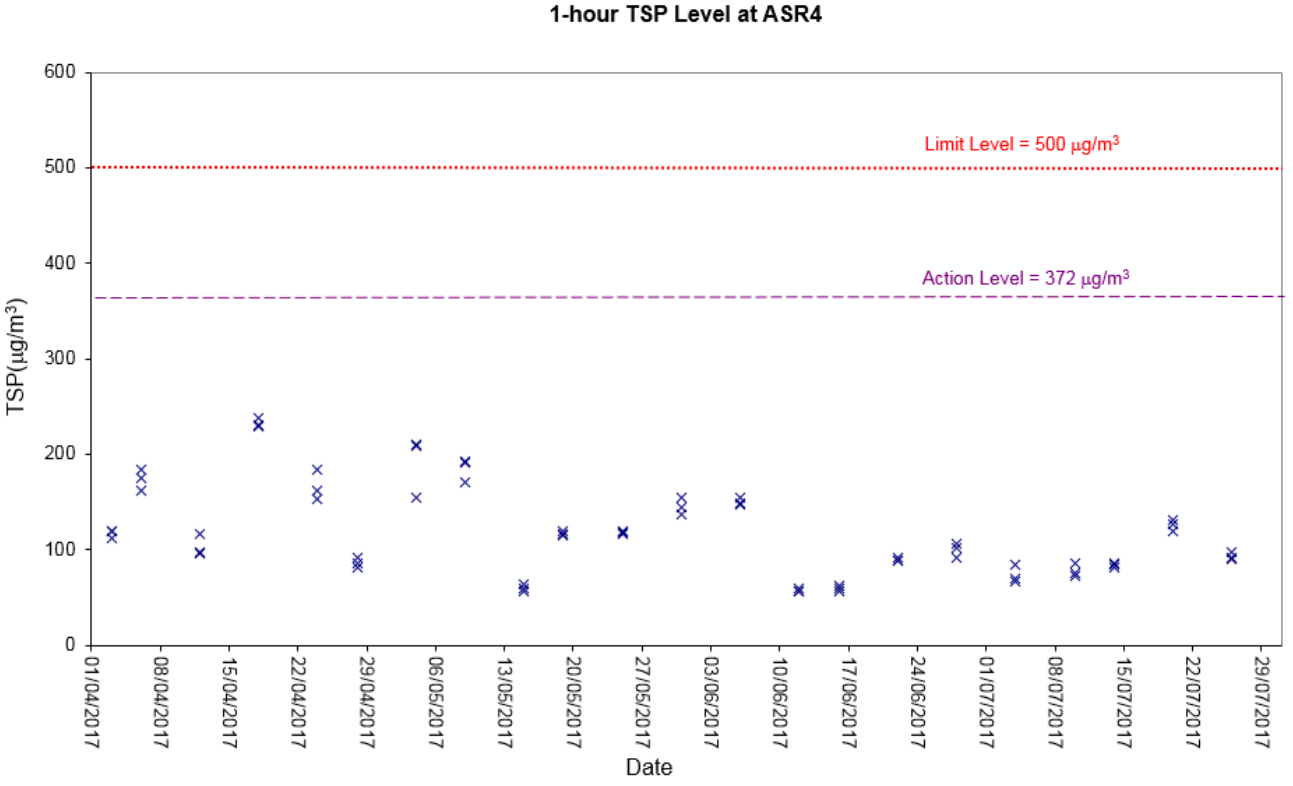
## Air Quality (1-hr TSP)



## 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 | | | | |
| 04-May-17 | 12:52 | 05-May-17 | 12:52 | 2.7625 | 2.8521 | 20612.68 | 20636.68 | 24.00 | 1.2400 | 1.2400 | 1.2400 | 50 | Cloudy | 226 | 260 |
| 09-May-17 | 12:12 | 10-May-17 | 12:12 | 2.7442 | 2.8811 | 20636.68 | 20660.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 74 | Cloudy | 226 | 260 |
| 15-May-17 | 12:29 | 16-May-17 | 12:29 | 2.7711 | 2.8799 | 20660.68 | 20684.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 59 | Cloudy | 226 | 260 |
| 19-May-17 | 12:18 | 20-May-17 | 12:18 | 2.7977 | 2.9125 | 20684.68 | 20708.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 62 | Cloudy | 226 | 260 |
| 25-May-17 | 12:13 | 26-May-17 | 12:13 | 2.7622 | 2.8701 | 20708.68 | 20732.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 59 | Cloudy | 226 | 260 |
| 31-May-17 | 12:19 | 01-Jun-17 | 12:19 | 2.7524 | 2.8411 | 20732.68 | 20756.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 48 | Sunny | 226 | 260 |
| 06-Jun-17 | 12:12 | 07-Jun-17 | 12:12 | 2.7714 | 2.8755 | 20756.68 | 20780.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 56 | Sunny | 226 | 260 |
| 12-Jun-17 | 12:07 | 13-Jun-17 | 12:07 | 2.7119 | 2.8010 | 20780.68 | 20804.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 48 | Cloudy | 226 | 260 |
| 16-Jun-17 | 12:13 | 17-Jun-17 | 12:13 | 2.7419 | 2.8355 | 20804.68 | 20828.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 51 | Cloudy | 226 | 260 |
| 22-Jun-17 | 12:08 | 23-Jun-17 | 12:08 | 2.7911 | 2.8700 | 20828.68 | 20852.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 43 | Sunny | 226 | 260 |
| 28-Jun-17 | 12:20 | 29-Jun-17 | 12:20 | 2.7625 | 2.8491 | 20852.68 | 20876.68 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 47 | Sunny | 226 | 260 |
| 04-Jul-17 | 12:22 | 05-Jul-17 | 12:22 | 2.7191 | 2.8010 | 20876.68 | 20900.68 | 24.00 | 1.3200 | 1.3200 | 1.3200 | 43 | Cloudy | 226 | 260 |
| 10-Jul-17 | 12:49 | 11-Jul-17 | 12:49 | 2.7611 | 2.8690 | 20900.68 | 20924.68 | 24.00 | 1.3200 | 1.3200 | 1.3200 | 57 | Sunny | 226 | 260 |
| 14-Jul-17 | 12:04 | 15-Jul-17 | 12:04 | 2.7759 | 2.8791 | 20924.68 | 20948.68 | 24.00 | 1.3200 | 1.3200 | 1.3200 | 54 | Sunny | 226 | 260 |
| 20-Jul-17 | 12:12 | 21-Jul-17 | 12:12 | 2.7512 | 2.8719 | 20948.68 | 20972.68 | 24.00 | 1.3200 | 1.3200 | 1.3200 | 63 | Sunny | 226 | 260 |
| 26-Jul-17 | 12:11 | 27-Jul-17 | 12:11 | 2.7244 | 2.8191 | 20252.68 | 20276.68 | 24.00 | 1.3200 | 1.3200 | 1.3200 | 50 | Sunny | 226 | 260 |
| | | | | | | | | | | | Min | 43 | } for | | |
| | | | | | | | | | | | Max | 74 | } reporting | | |
| | | | | | | | | | | | Average | 54 | } period | | |

## 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 | | | | |
| 04-May-17 | 09:03 | 05-May-17 | 09:03 | 2.7557 | 2.8425 | 14312.69 | 14336.69 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 49 | Cloudy | 213 | 260 |
| 09-May-17 | 08:53 | 10-May-17 | 08:53 | 2.7642 | 2.8917 | 14336.69 | 14360.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 71 | Cloudy | 213 | 260 |
| 15-May-17 | 08:38 | 16-May-17 | 08:38 | 2.7622 | 2.8719 | 14360.69 | 14384.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 61 | Cloudy | 213 | 260 |
| 19-May-17 | 08:32 | 20-May-17 | 08:32 | 2.7756 | 2.8922 | 14384.69 | 14408.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 65 | Cloudy | 213 | 260 |
| 25-May-17 | 08:15 | 26-May-17 | 08:15 | 2.7611 | 2.8705 | 14408.69 | 14432.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 61 | Cloudy | 213 | 260 |
| 31-May-17 | 08:27 | 01-Jun-17 | 08:27 | 2.7649 | 2.8797 | 14432.69 | 14456.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 64 | Sunny | 213 | 260 |
| 06-Jun-17 | 08:43 | 07-Jun-17 | 08:43 | 2.7591 | 2.8419 | 14456.69 | 14480.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 46 | Sunny | 213 | 260 |
| 12-Jun-17 | 08:53 | 13-Jun-17 | 08:53 | 2.7622 | 2.8495 | 14480.69 | 14504.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 49 | Cloudy | 213 | 260 |
| 16-Jun-17 | 08:34 | 17-Jun-17 | 08:34 | 2.7197 | 2.8009 | 14504.69 | 14528.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 45 | Cloudy | 213 | 260 |
| 22-Jun-17 | 08:32 | 23-Jun-17 | 08:32 | 2.7849 | 2.8650 | 14528.69 | 14552.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 45 | Sunny | 213 | 260 |
| 28-Jun-17 | 08:32 | 29-Jun-17 | 08:32 | 2.7724 | 2.8719 | 14552.69 | 14576.69 | 24.00 | 1.2500 | 1.2500 | 1.2500 | 55 | Sunny | 213 | 260 |
| 04-Jul-17 | 08:54 | 05-Jul-17 | 08:54 | 2.7422 | 2.8500 | 14576.69 | 14600.69 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 58 | Cloudy | 213 | 260 |
| 10-Jul-17 | 09:22 | 11-Jul-17 | 09:22 | 2.7529 | 2.8541 | 15600.69 | 15624.69 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 55 | Sunny | 213 | 260 |
| 14-Jul-17 | 08:40 | 15-Jul-17 | 08:40 | 2.7321 | 2.8400 | 15624.69 | 15648.69 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 59 | Sunny | 213 | 260 |
| 20-Jul-17 | 08:37 | 21-Jul-17 | 08:37 | 2.7469 | 2.8618 | 15648.69 | 15672.69 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 62 | Sunny | 213 | 260 |
| 26-Jul-17 | 08:31 | 27-Jul-17 | 08:31 | 2.7349 | 2.8497 | 13952.69 | 13976.69 | 24.00 | 1.2800 | 1.2800 | 1.2800 | 62 | Sunny | 213 | 260 |
| | | | | | | | | | | | Min | 45 | } for | | |
| | | | | | | | | | | | Max | 71 | } reporting | | |
| | | | | | | | | | | | Average | 57 | } period | | |

## Air Quality (24-hr TSP)

### Station ASR3

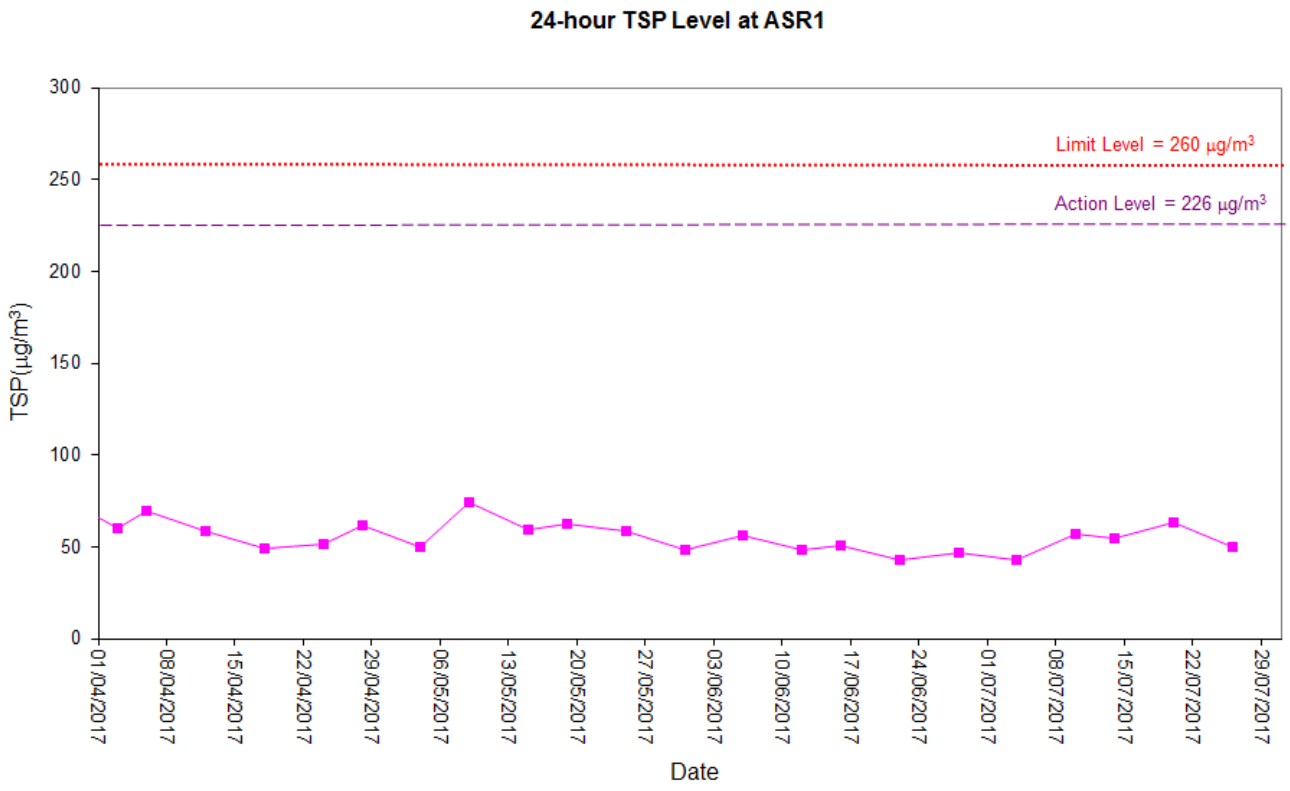
| Start | | Finish | | Filter Weight (g) | | Elapsed Time Reading | | Sampling Time (hrs) | Flow Rate ($m^3$/min) | | | Conc. (µg/$m^3$) | Weather Condition | Action Level (µg/$m^3$) | Limit Level (µg/$m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | Date | Time | Initial | Final | Initial | Final | | Initial | Final | Average | | | | |
| 04-May-17 | 08:47 | 05-May-17 | 08:47 | 2.7510 | 2.8519 | 14192.89 | 14216.89 | 24.00 | 1.2900 | 1.2900 | 1.2900 | 54 | Cloudy | 205 | 260 |
| 09-May-17 | 08:42 | 10-May-17 | 08:42 | 2.7846 | 2.9044 | 14216.89 | 14240.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 64 | Cloudy | 205 | 260 |
| 15-May-17 | 08:22 | 16-May-17 | 08:22 | 2.7552 | 2.8711 | 14240.89 | 14264.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 61 | Cloudy | 205 | 260 |
| 19-May-17 | 08:23 | 20-May-17 | 08:23 | 2.7750 | 2.8966 | 14264.89 | 14288.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 64 | Cloudy | 205 | 260 |
| 25-May-17 | 08:03 | 26-May-17 | 08:03 | 2.8009 | 2.9142 | 14288.89 | 14312.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 60 | Cloudy | 205 | 260 |
| 31-May-17 | 08:14 | 01-Jun-17 | 08:14 | 2.7562 | 2.8800 | 14312.89 | 14336.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 66 | Sunny | 205 | 260 |
| 06-Jun-17 | 08:31 | 07-Jun-17 | 08:31 | 2.7556 | 2.8479 | 14336.89 | 14360.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 49 | Sunny | 205 | 260 |
| 12-Jun-17 | 08:40 | 13-Jun-17 | 08:40 | 2.7797 | 2.8642 | 14360.89 | 14384.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 45 | Cloudy | 205 | 260 |
| 16-Jun-17 | 08:22 | 17-Jun-17 | 08:22 | 2.7447 | 2.8222 | 14384.89 | 14408.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 41 | Cloudy | 205 | 260 |
| 22-Jun-17 | 08:23 | 23-Jun-17 | 08:23 | 2.7744 | 2.8699 | 14408.89 | 14432.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 51 | Sunny | 205 | 260 |
| 28-Jun-17 | 08:20 | 29-Jun-17 | 08:20 | 2.7511 | 2.8591 | 14432.89 | 14456.89 | 24.00 | 1.3100 | 1.3100 | 1.3100 | 57 | Sunny | 205 | 260 |
| 04-Jul-17 | 08:42 | 05-Jul-17 | 08:42 | 2.7345 | 2.8190 | 14456.89 | 14480.89 | 24.00 | 1.2000 | 1.2000 | 1.2000 | 49 | Cloudy | 205 | 260 |
| 10-Jul-17 | 09:01 | 11-Jul-17 | 09:01 | 2.7711 | 2.8846 | 14480.89 | 14504.89 | 24.00 | 1.2000 | 1.2000 | 1.2000 | 66 | Sunny | 205 | 260 |
| 14-Jul-17 | 08:31 | 15-Jul-17 | 08:31 | 2.7575 | 2.8499 | 14504.89 | 14528.89 | 24.00 | 1.2000 | 1.2000 | 1.2000 | 53 | Sunny | 205 | 260 |
| 20-Jul-17 | 08:25 | 21-Jul-17 | 08:25 | 2.7676 | 2.8910 | 14528.89 | 14552.89 | 24.00 | 1.2000 | 1.2000 | 1.2000 | 71 | Sunny | 205 | 260 |
| 26-Jul-17 | 08:13 | 27-Jul-17 | 08:13 | 2.7512 | 2.8800 | 13832.89 | 13856.89 | 24.00 | 1.2000 | 1.2000 | 1.2000 | 75 | Sunny | 205 | 260 |
| | | | | | | | | | | | Min | 41 | } for | | |
| | | | | | | | | | | | Max | 75 | } reporting | | |
| | | | | | | | | | | | Average | 58 | } period | | |

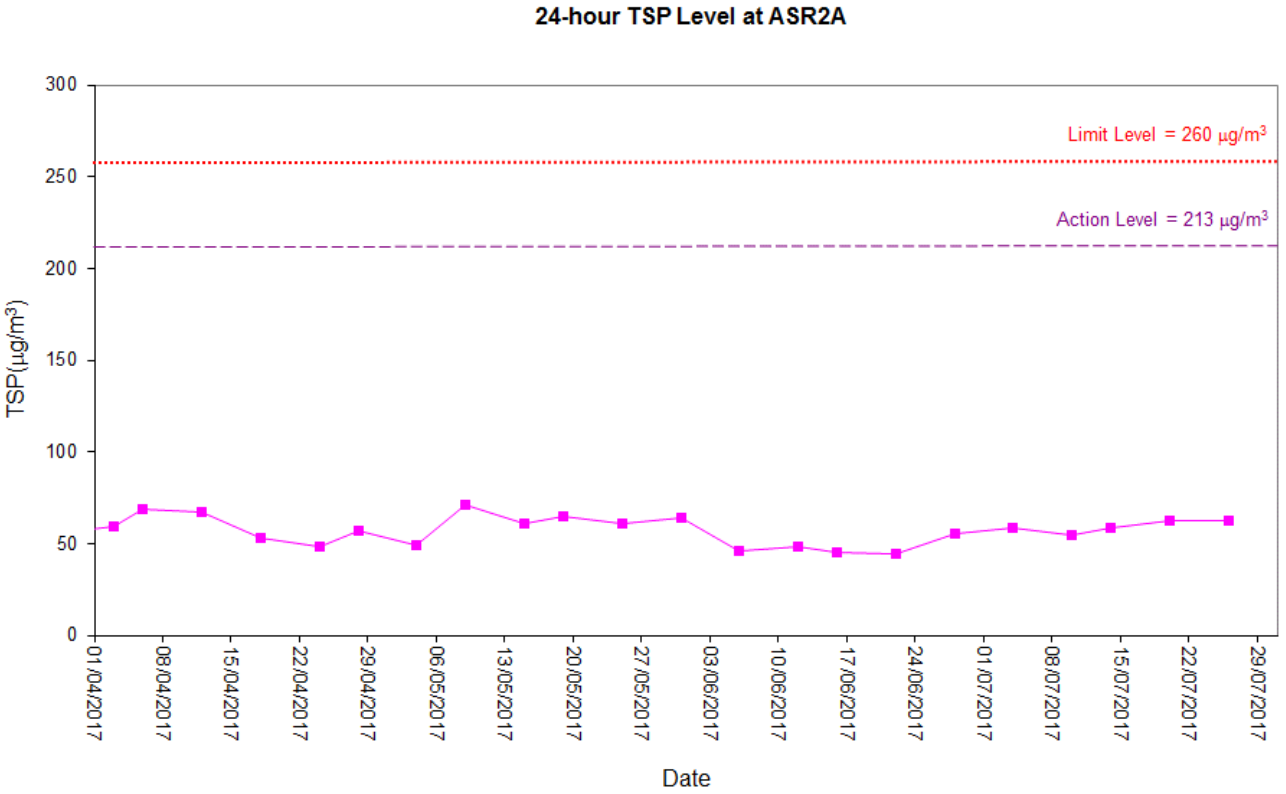
## Air Quality (24-hr TSP)

### Station ASR4

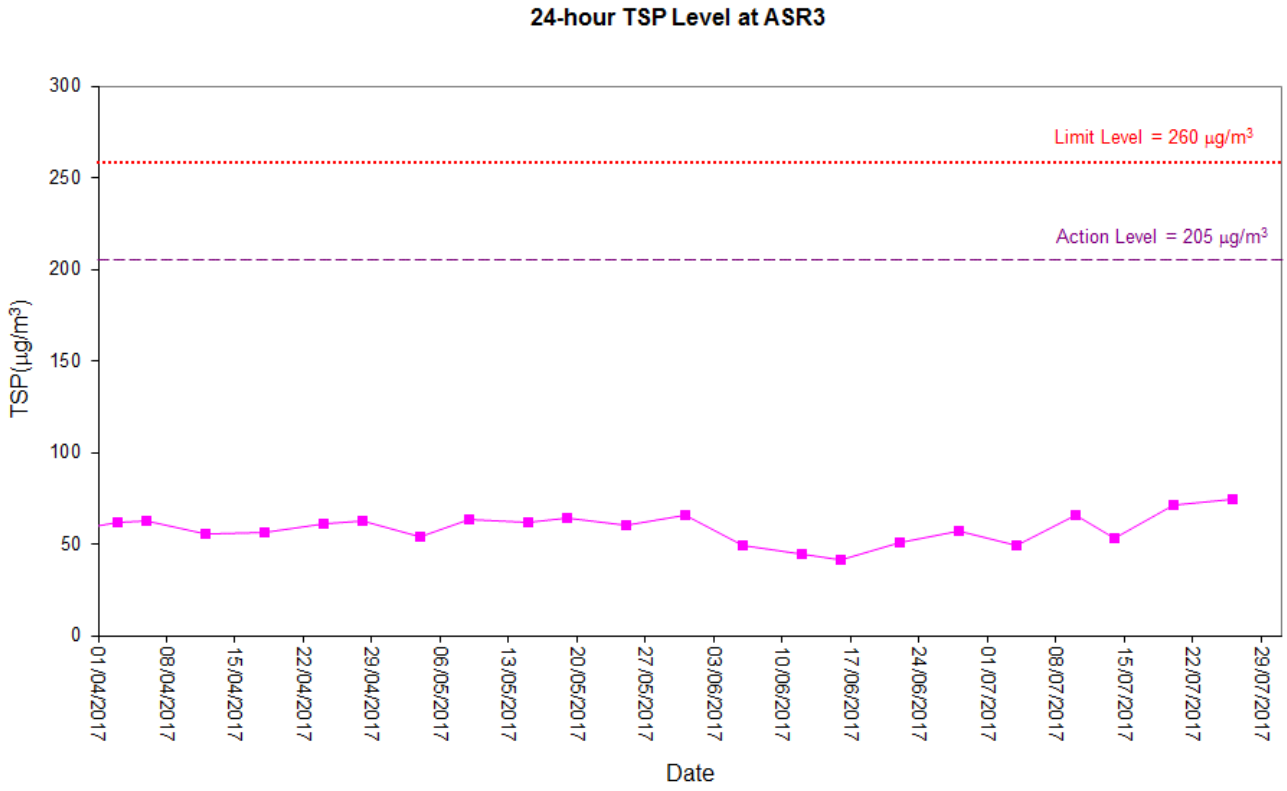
| Start | | Finish | | Filter Weight (g) | | Elapsed Time Reading | | Sampling Time (hrs) | Flow Rate ($m^3$/min) | | | Conc. (µg/$m^3$) | Weather Condition | Action Level (µg/$m^3$) | Limit Level (µg/$m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | Date | Time | Initial | Final | Initial | Final | | Initial | Final | Average | | | | |
| 04-May-17 | 12:47 | 05-May-17 | 12:47 | 2.7341 | 2.8209 | 21517.84 | 21541.84 | 24.00 | 1.1500 | 1.1500 | 1.1500 | 52 | Cloudy | 237 | 260 |
| 09-May-17 | 12:07 | 10-May-17 | 12:07 | 2.7911 | 2.9400 | 21541.84 | 21565.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 84 | Cloudy | 237 | 260 |
| 15-May-17 | 12:22 | 16-May-17 | 12:22 | 2.7642 | 2.8797 | 21565.84 | 21589.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 65 | Cloudy | 237 | 260 |
| 19-May-17 | 12:13 | 20-May-17 | 12:13 | 2.7662 | 2.8960 | 21589.84 | 21613.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 73 | Cloudy | 237 | 260 |
| 25-May-17 | 12:06 | 26-May-17 | 12:06 | 2.7819 | 2.9042 | 21613.84 | 21637.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 69 | Cloudy | 237 | 260 |
| 31-May-17 | 12:12 | 01-Jun-17 | 12:12 | 2.7500 | 2.8691 | 21637.84 | 21661.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 67 | Sunny | 237 | 260 |
| 06-Jun-17 | 12:09 | 07-Jun-17 | 12:09 | 2.7602 | 2.8594 | 21661.84 | 21685.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 56 | Sunny | 237 | 260 |
| 12-Jun-17 | 12:13 | 13-Jun-17 | 12:13 | 2.7695 | 2.8471 | 21685.84 | 21709.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 44 | Cloudy | 237 | 260 |
| 16-Jun-17 | 12:08 | 17-Jun-17 | 12:08 | 2.7117 | 2.8002 | 21709.84 | 21733.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 50 | Cloudy | 237 | 260 |
| 22-Jun-17 | 14:03 | 23-Jun-17 | 14:03 | 2.7552 | 2.8391 | 21733.84 | 21757.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 47 | Sunny | 237 | 260 |
| 28-Jun-17 | 12:12 | 29-Jun-17 | 12:12 | 2.7602 | 2.8599 | 21757.84 | 21781.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 56 | Sunny | 237 | 260 |
| 04-Jul-17 | 12:18 | 05-Jul-17 | 12:18 | 2.7462 | 2.8510 | 21781.84 | 21805.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 59 | Sunny | 237 | 260 |
| 10-Jul-17 | 12:44 | 11-Jul-17 | 12:44 | 2.7552 | 2.8601 | 21805.84 | 21829.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 59 | Sunny | 237 | 260 |
| 14-Jul-17 | 11:53 | 15-Jul-17 | 11:53 | 2.7197 | 2.8190 | 21829.84 | 21853.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 56 | Sunny | 237 | 260 |
| 20-Jul-17 | 12:08 | 21-Jul-17 | 12:08 | 2.7246 | 2.8500 | 21853.84 | 21877.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 71 | Sunny | 237 | 260 |
| 26-Jul-17 | 12:05 | 27-Jul-17 | 12:05 | 2.7449 | 2.8567 | 21133.84 | 21157.84 | 24.00 | 1.2300 | 1.2300 | 1.2300 | 63 | Sunny | 237 | 260 |
| | | | | | | | | | | | Min | 44 | for | | |
| | | | | | | | | | | | Max | 84 | reporting | | |
| | | | | | | | | | | | Average | 61 | period | | |

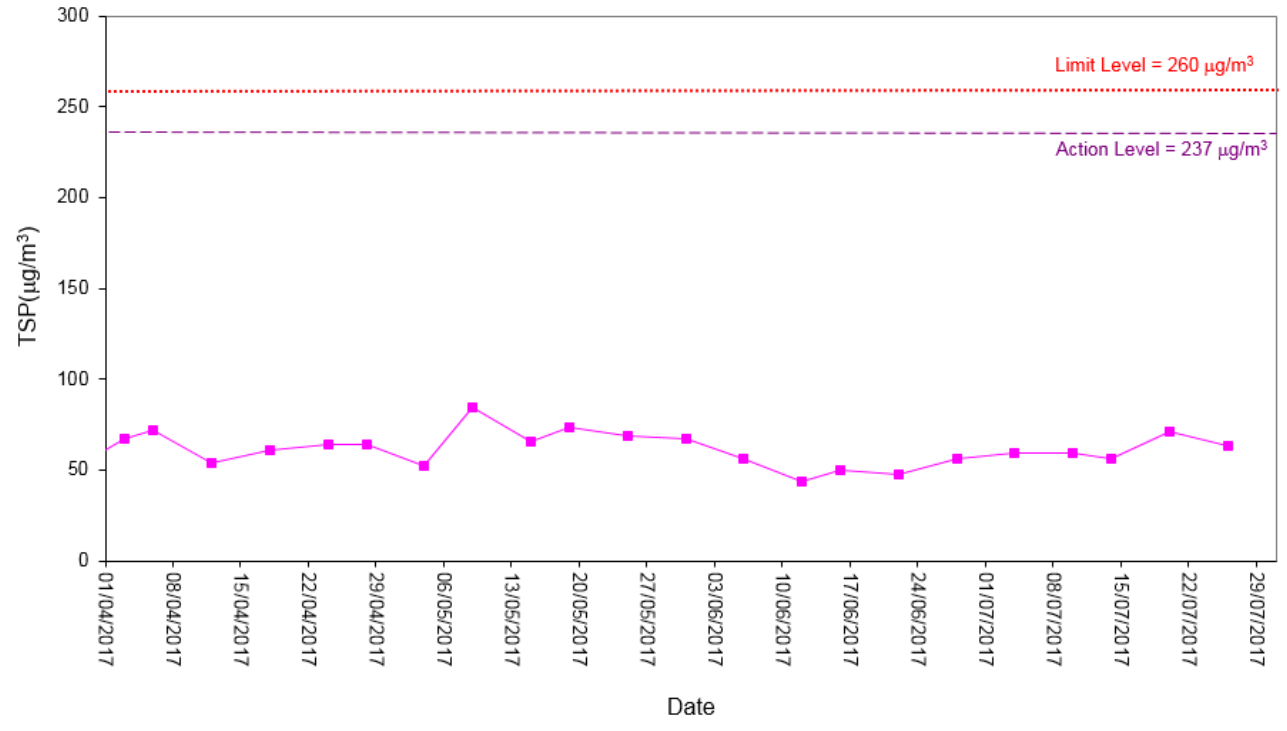
## Air Quality (24-hr TSP)



## 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) |
|---|---|---|---|---|---|---|---|
| | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | | | |
| 04-May-17 | 09:14 | 53 | 56 | 44 | 0.4 | Cloudy | 75 |
| 09-May-17 | 09:03 | 53 | 54 | 50 | 0.4 | Cloudy | 75 |
| 15-May-17 | 09:28 | 52 | 55 | 50 | 0.4 | Cloudy | 75 |
| 25-May-17 | 09:16 | 49 | 50 | 43 | 0.4 | Cloudy | 75 |
| 31-May-17 | 09:23 | 55 | 56 | 48 | 0.4 | Sunny | 75 |
| 06-Jun-17 | 09:32 | 54 | 59 | 44 | 0.4 | Sunny | 75 |
| 12-Jun-17 | 09:46 | 54 | 58 | 46 | 0.6 | Cloudy | 75 |
| 22-Jun-17 | 09:21 | 55 | 55 | 48 | 0.3 | Sunny | 75 |
| 28-Jun-17 | 09:24 | 56 | 58 | 53 | 0.5 | Sunny | 75 |
| 04-Jul-17 | 08:56 | 59 | 60 | 55 | 0.4 | Cloudy | 75 |
| 10-Jul-17 | 10:18 | 47 | 51 | 45 | 0.4 | Sunny | 75 |
| 20-Jul-17 | 09:38 | 49 | 50 | 46 | 0.4 | Sunny | 75 |
| 26-Jul-17 | 09:12 | 55 | 57 | 55 | 0.4 | Sunny | 75 |

### Station NSR3

| Date | Start Time | Noise Level for 30 min, dB(A) | | | Wind Speed (m/s) | Weather Condition | Limit Level, dB(A) |
|---|---|---|---|---|---|---|---|
| | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | | | |
| 04-May-17 | 09:56 | 54 | 57 | 44 | 0.4 | Cloudy | 75 |
| 09-May-17 | 09:46 | 53 | 56 | 50 | 0.4 | Cloudy | 75 |
| 15-May-17 | 08:46 | 50 | 51 | 49 | 0.4 | Cloudy | 75 |
| 25-May-17 | 08:26 | 49 | 53 | 44 | 0.4 | Cloudy | 75 |
| 31-May-17 | 08:41 | 58 | 60 | 49 | 0.4 | Sunny | 75 |
| 06-Jun-17 | 08:52 | 49 | 54 | 47 | 0.4 | Sunny | 75 |
| 12-Jun-17 | 09:02 | 49 | 58 | 46 | 0.6 | Cloudy | 75 |
| 22-Jun-17 | 08:36 | 54 | 57 | 48 | 0.3 | Sunny | 75 |
| 28-Jun-17 | 08:39 | 57 | 59 | 53 | 0.5 | Sunny | 75 |
| 04-Jul-17 | 09:37 | 57 | 58 | 54 | 0.4 | Cloudy | 75 |
| 10-Jul-17 | 09:31 | 49 | 52 | 46 | 0.4 | Sunny | 75 |
| 20-Jul-17 | 08:51 | 51 | 55 | 47 | 0.4 | Sunny | 75 |
| 26-Jul-17 | 08:26 | 54 | 55 | 52 | 0.4 | Sunny | 75 |

## Noise

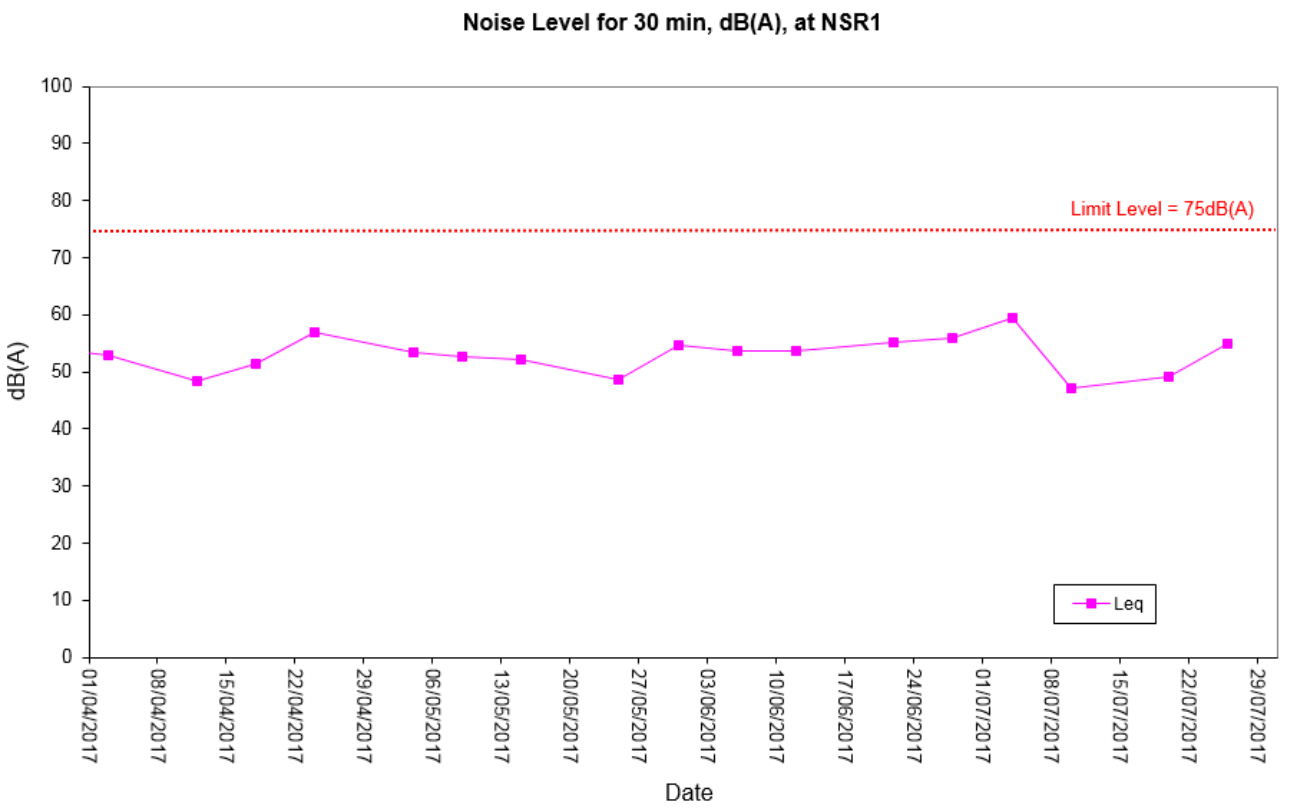
### Station NSR5

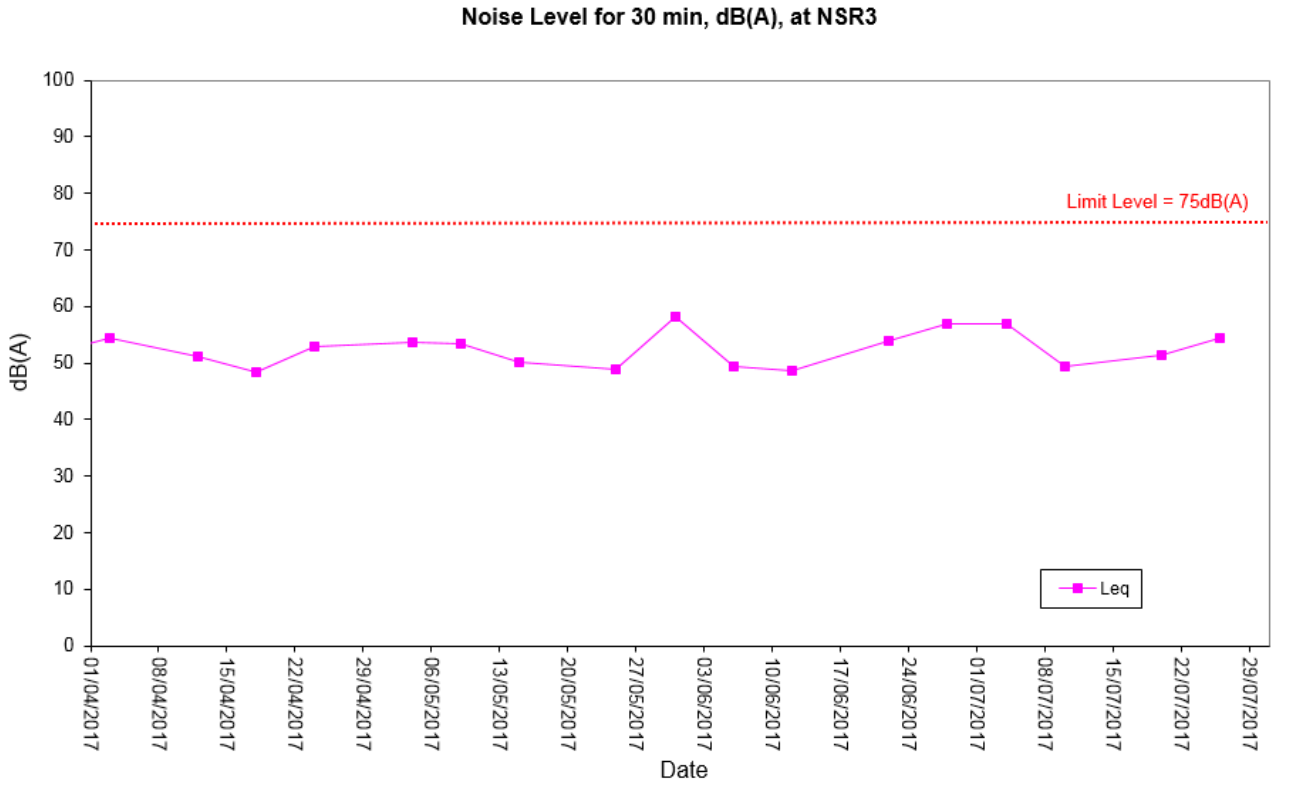
| Date | Start Time | Noise Level for 30 min, dB(A) | | | Wind Speed (m/s) | Weather Condition | Limit Level, dB(A) |
|---|---|---|---|---|---|---|---|
| | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | | | |
| 04-May-17 | 13:04 | 51 | 51 | 46 | 0.4 | Cloudy | 75 |
| 09-May-17 | 13:01 | 55 | 57 | 52 | 0.4 | Cloudy | 75 |
| 15-May-17 | 13:04 | 54 | 58 | 57 | 0.4 | Cloudy | 75 |
| 25-May-17 | 13:10 | 63 | 66 | 59 | 0.4 | Cloudy | 75 |
| 31-May-17 | 13:02 | 59 | 61 | 56 | 0.4 | Sunny | 75 |
| 06-Jun-17 | 13:04 | 65 | 67 | 56 | 0.4 | Sunny | 75 |
| 12-Jun-17 | 13:03 | 61 | 64 | 55 | 0.6 | Cloudy | 75 |
| 22-Jun-17 | 13:04 | 66 | 68 | 64 | 0.2 | Sunny | 75 |
| 28-Jun-17 | 13:01 | 60 | 62 | 57 | 0.5 | Sunny | 75 |
| 04-Jul-17 | 13:04 | 60 | 63 | 55 | 0.4 | Cloudy | 75 |
| 10-Jul-17 | 13:04 | 55 | 57 | 46 | 0.4 | Sunny | 75 |
| 20-Jul-17 | 13:01 | 54 | 56 | 53 | 0.4 | Sunny | 75 |
| 26-Jul-17 | 13:01 | 60 | 63 | 58 | 0.4 | Sunny | 75 |

### Station NSR7

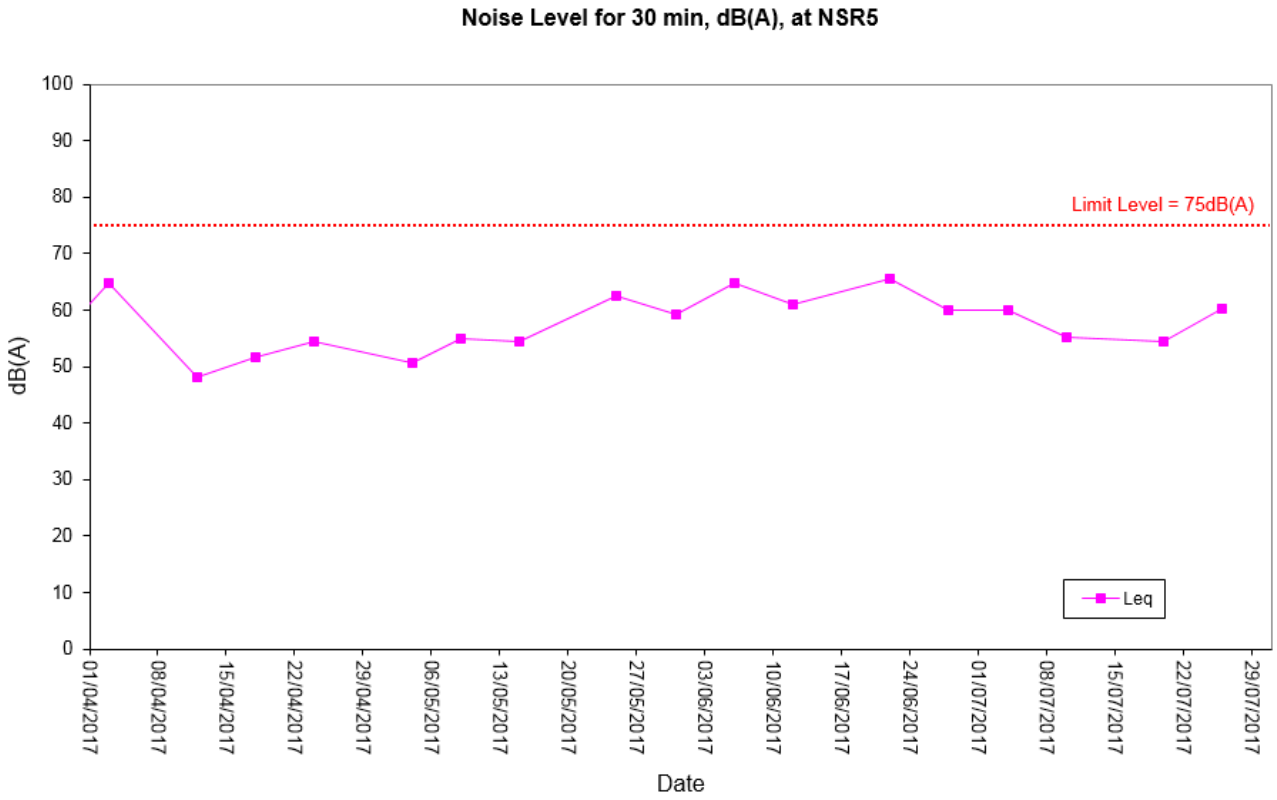
| Date | Start Time | Noise Level for 30 min, dB(A) | | | Wind Speed (m/s) | Weather Condition | Limit Level, dB(A) |
|---|---|---|---|---|---|---|---|
| | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | | | |
| 04-May-17 | 13:44 | 67 | 69 | 65 | 0.4 | Cloudy | 75 |
| 09-May-17 | 13:38 | 67 | 69 | 65 | 0.4 | Cloudy | 75 |
| 15-May-17 | 13:41 | 66 | 69 | 63 | 0.4 | Cloudy | 75 |
| 25-May-17 | 14:00 | 67 | 68 | 65 | 0.4 | Cloudy | 75 |
| 31-May-17 | 13:41 | 66 | 68 | 64 | 0.4 | Sunny | 75 |
| 06-Jun-17 | 13:42 | 69 | 71 | 66 | 0.4 | Sunny | 75 |
| 12-Jun-17 | 13:41 | 70 | 71 | 68 | 0.6 | Cloudy | 75 |
| 22-Jun-17 | 13:42 | 70 | 73 | 66 | 0.3 | Sunny | 75 |
| 28-Jun-17 | 13:38 | 67 | 69 | 65 | 0.4 | Sunny | 75 |
| 04-Jul-17 | 13:44 | 69 | 70 | 67 | 0.4 | Cloudy | 75 |
| 10-Jul-17 | 13:41 | 67 | 69 | 65 | 0.4 | Sunny | 75 |
| 20-Jul-17 | 13:46 | 66 | 68 | 63 | 0.4 | Sunny | 75 |
| 26-Jul-17 | 13:41 | 66 | 67 | 65 | 0.4 | Sunny | 75 |

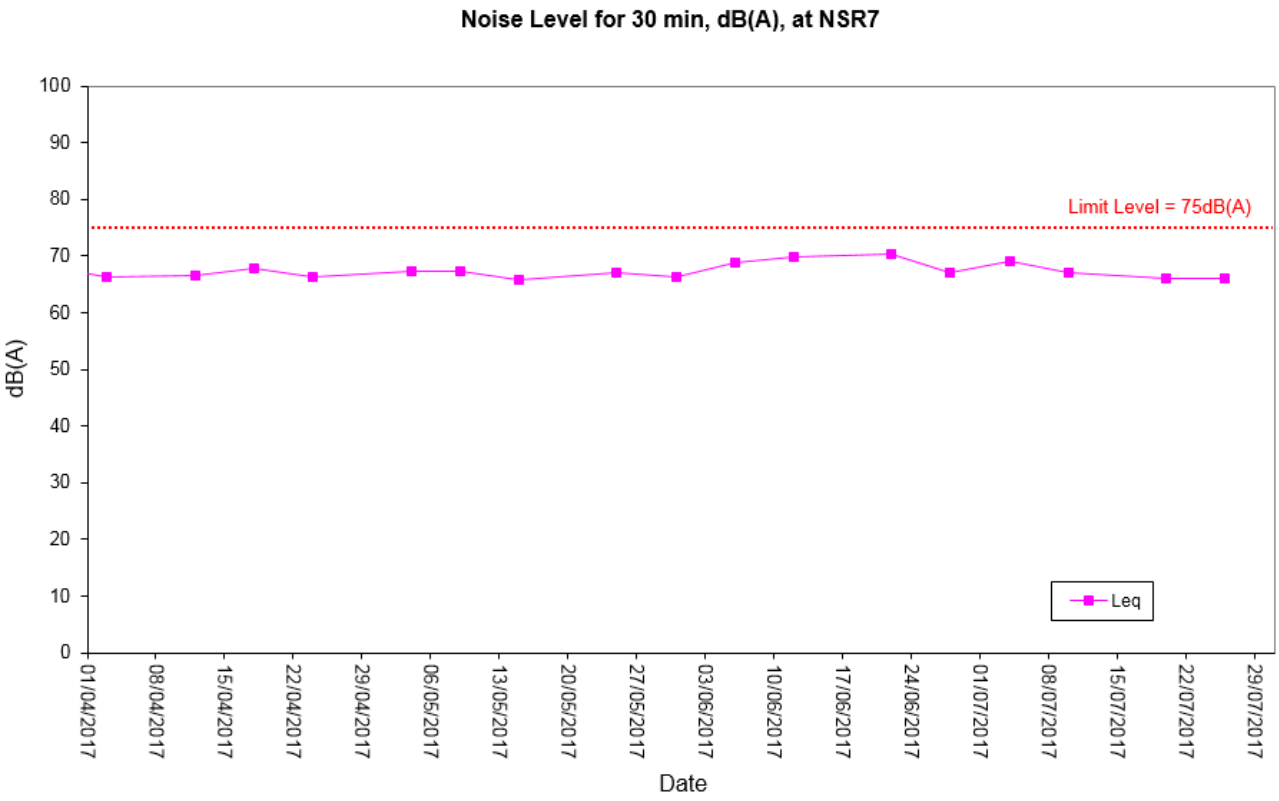
## Noise


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
01/04/2017
08/04/2017
15/04/2017
22/04/2017
29/04/2017
06/05/2017
13/05/2017
20/05/2017
27/05/2017
03/06/2017
10/06/2017
17/06/2017
24/06/2017
01/07/2017
08/07/2017
15/07/2017
22/07/2017
29/07/2017
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
01/04/2017
08/04/2017
15/04/2017
22/04/2017
29/04/2017
06/05/2017
13/05/2017
20/05/2017
27/05/2017
03/06/2017
10/06/2017
17/06/2017
24/06/2017
01/07/2017
08/07/2017
15/07/2017
22/07/2017
29/07/2017
Date

## Noise


Noise Level for 30 min, dB(A), at NSR5
Limit Level = 75dB(A)
Leq
dB(A)
Date
100
90
80
70
60
50
40
30
20
10
0
01/04/2017
08/04/2017
15/04/2017
22/04/2017
29/04/2017
06/05/2017
13/05/2017
20/05/2017
27/05/2017
03/06/2017
10/06/2017
17/06/2017
24/06/2017
01/07/2017
08/07/2017
15/07/2017
22/07/2017
29/07/2017


Noise Level for 30 min, dB(A), at NSR7
Limit Level = 75dB(A)
Leq
dB(A)
Date
100
90
80
70
60
50
40
30
20
10
0
01/04/2017
08/04/2017
15/04/2017
22/04/2017
29/04/2017
06/05/2017
13/05/2017
20/05/2017
27/05/2017
03/06/2017
10/06/2017
17/06/2017
24/06/2017
01/07/2017
08/07/2017
15/07/2017
22/07/2017
29/07/2017

## Water Quality

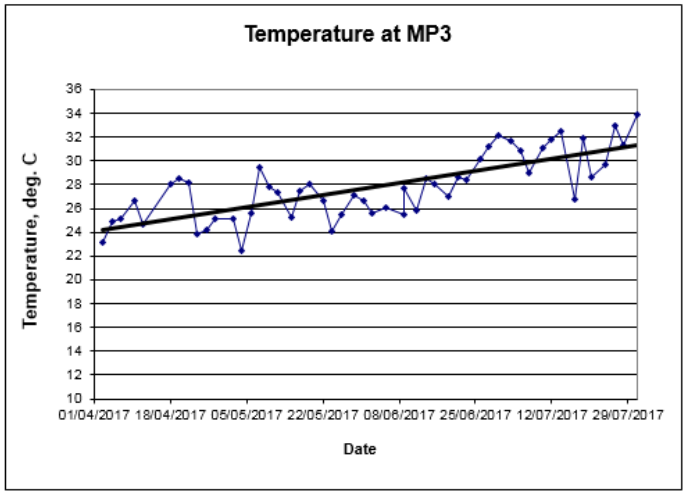
### Monitoring Location MP3

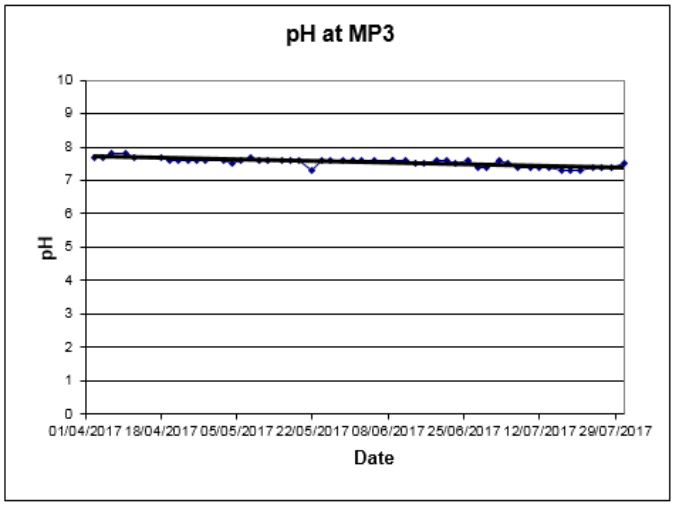
| Monitoring Date | Temp (°C) | pH | Dissolved Oxygen (mg/L) | DO (%) | Turbidity (NT) | BOD (mg/L) | Suspended Solids (mg/L) |
|---|---|---|---|---|---|---|---|
| **MP3** | | | | | | | |
| 02/05/2017 | 25.1 | **7.6** | 7.2 | 87.1 | 47.9 | 4 | 38.5 |
| 04/05/2017 | 22.4 | 7.5 | 8.3 | 95.4 | 28.3 | 6.5 | 26 |
| 06/05/2017 | 25.6 | **7.6** | 7.3 | 87.4 | 19.9 | 6 | 15.5 |
| 08/05/2017 | 29.5 | **7.7** | 7.0 | 91.3 | 28.8 | 9 | 52 |
| 10/05/2017 | 27.8 | **7.6** | 7.0 | 88.2 | 45.4 | 11 | 37.5 |
| 12/05/2017 | 27.3 | **7.6** | 7.4 | 93.4 | 33.3 | 8 | 25 |
| 15/05/2017 | 25.2 | **7.6** | 7.8 | 94.3 | 34.3 | 6 | 25.5 |
| 17/05/2017 | 27.5 | **7.6** | 7.1 | 89.7 | 22.5 | 6.5 | 15 |
| 19/05/2017 | 28.1 | **7.6** | 7.2 | 92.0 | 19.8 | 6 | 13 |
| 22/05/2017 | 26.6 | 7.3 | 7.1 | 88.3 | 29.3 | 4 | 26 |
| 24/05/2017 | 24.1 | **7.6** | 8.4 | 100.8 | 22.3 | 4 | 16.5 |
| 26/05/2017 | 25.5 | **7.6** | 7.9 | 95.8 | 34.3 | 9.5 | 7 |
| 29/05/2017 | 27.1 | **7.6** | 7.1 | 89.2 | 13.4 | 4.5 | 17 |
| 31/05/2017 | 26.6 | **7.6** | 7.5 | 93.3 | 31.4 | 14 | 45.5 |
| 02/06/2017 | 25.6 | **7.6** | 7.4 | 90.2 | 24.5 | 5 | 24.5 |
| 05/06/2017 | 26.1 | **7.6** | 7.3 | 90.6 | 20.0 | 8.5 | 18 |
| 09/06/2017 | 25.5 | **7.6** | 7.2 | 87.9 | 19.1 | 5 | 15.5 |
| 09/06/2017 | 27.7 | **7.6** | 7.8 | 99.4 | 20.5 | 10 | 20.5 |
| 12/06/2017 | 25.8 | **7.6** | **6.7** | 89.9 | 30.6 | 3 | 11 |
| 14/06/2017 | 28.5 | 7.5 | 7.3 | 94.0 | 8.7 | 4.5 | 8 |
| 16/06/2017 | 28.1 | 7.5 | 6.9 | 88.7 | 11.7 | 12 | 10 |
| 19/06/2017 | 27.0 | **7.6** | 7.4 | 93.3 | 6.7 | 4.5 | 2 |
| 21/06/2017 | 28.6 | **7.6** | 7.7 | 99.4 | 13.4 | 4.5 | 13.5 |
| 23/06/2017 | 28.4 | 7.5 | 7.8 | 100.6 | 13.3 | 6 | 20 |
| 26/06/2017 | 30.2 | **7.6** | 7.2 | 95.2 | 17.1 | 6.5 | 14 |
| 28/06/2017 | 31.2 | 7.4 | 6.9 | 93.1 | 11.4 | 7 | 8 |
| 30/06/2017 | 32.1 | 7.4 | 6.9 | 96.0 | 10.3 | 8 | 9.5 |
| 03/07/2017 | 31.7 | **7.6** | 7.0 | 93.9 | 9.6 | 2.5 | 9 |
| 05/07/2017 | 30.8 | 7.5 | 7.1 | 94.9 | 9.7 | 3.5 | 10 |
| 07/07/2017 | 29.0 | 7.4 | 6.9 | 90.0 | 8.0 | 4 | 5 |
| 10/07/2017 | 31.1 | 7.4 | 7.4 | 99.2 | 8.0 | 3.5 | 5 |
| 12/07/2017 | 31.8 | 7.4 | 7.4 | 100.5 | 10.6 | 2 | 8 |
| 14/07/2017 | 32.5 | 7.4 | **6.8** | 93.1 | 8.7 | 2 | 5.5 |
| 17/07/2017 | 26.8 | 7.3 | 6.9 | 86.5 | 8.6 | 3 | 4 |
| 19/07/2017 | 31.9 | 7.3 | **6.8** | 92.9 | 9.4 | 2 | 3.5 |
| 21/07/2017 | 28.6 | 7.3 | 7.3 | 94.6 | 9.1 | 2.5 | 6 |
| 24/07/2017 | 29.7 | 7.4 | 7.5 | 98.0 | 10.3 | <2 | 5 |
| 26/07/2017 | 33.0 | 7.4 | 7.0 | 96.2 | 11.6 | 5 | 18 |
| 28/07/2017 | 31.3 | 7.4 | 7.2 | 96.8 | 11.7 | 4 | 11 |
| 31/07/2017 | 33.9 | 7.5 | 7.0 | 96.3 | 9.6 | 3 | 6.5 |
| Average | 28.4 | 7.5 | 7.3 | 93.4 | 18.6 | 5.7 | 15.8 |
| Action Level | - | <5.5 or >7.5 | <6.85 | - | >64 | - | >65 |
| Limit Level | - | <4.0 or >8.0 | <6.65 | - | >67 | - | >66 |

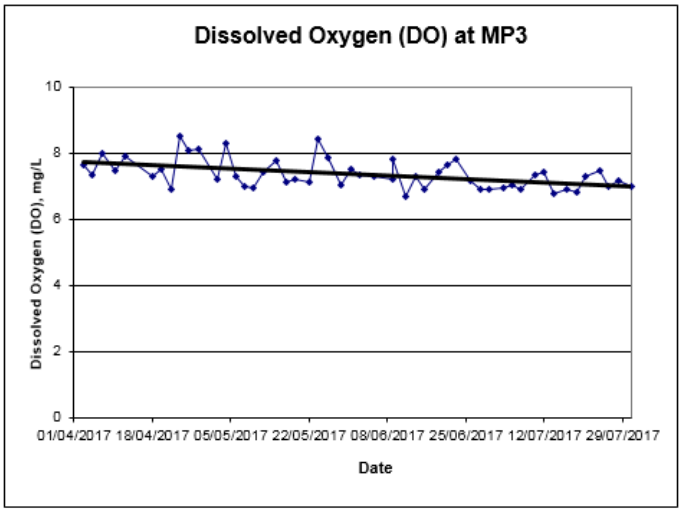
Notes:
(1) <2: Value is too low to indicate (<2mg/L).
(2) Values **Bold** indicate Action Level exceedance.
(3) Values **Underlined and Bold** indicate Limit Level exceedance.

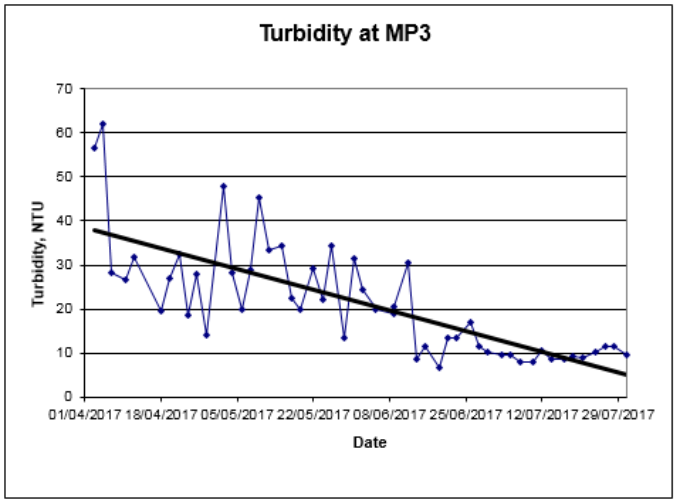
## Water Quality

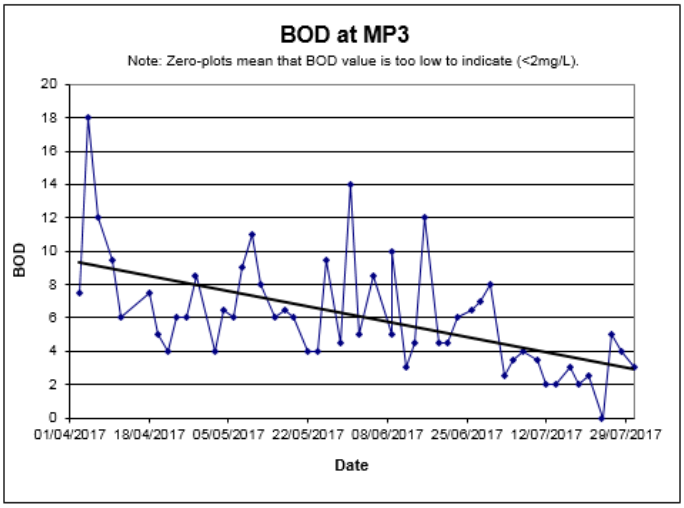
### Monitoring Location MP3

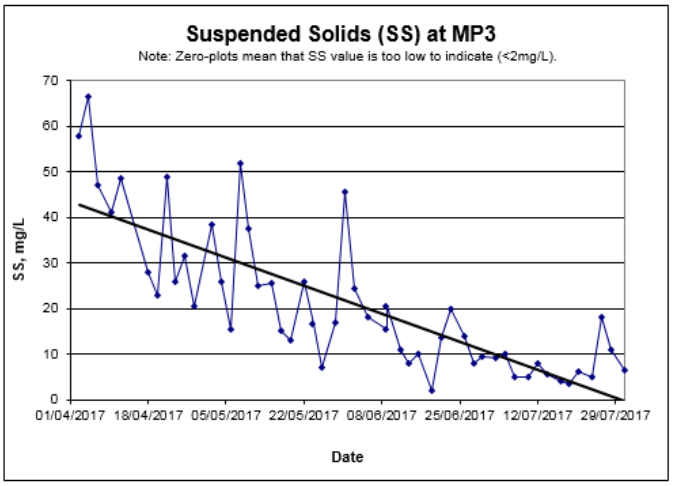


## Water Quality

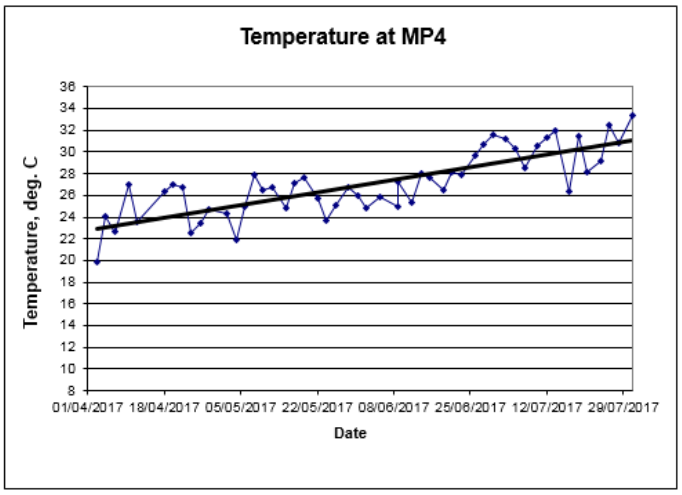
### Monitoring Location MP4

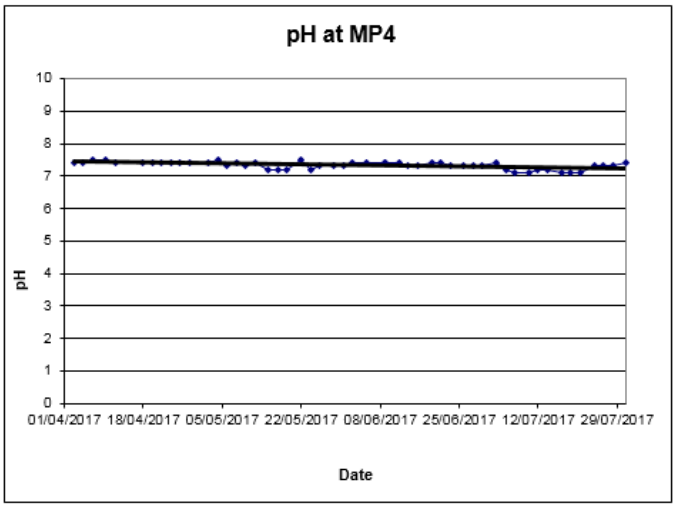
| Monitoring Date | Temp (°C) | pH | Dissolved Oxygen (mg/L) | DO (%) | Turbidity (NT) | BOD (mg/L) | Suspended Solids (mg/L) |
|---|---|---|---|---|---|---|---|
| **MP4** | | | | | | | |
| 02/05/2017 | 24.3 | 7.4 | 7.2 | 86.4 | 12.7 | 2 | 13 |
| 04/05/2017 | 21.9 | 7.5 | 7.7 | 88.1 | 41.4 | 5.5 | 7 |
| 06/05/2017 | 25.0 | 7.3 | 6.8 | 82.3 | 37.5 | 2.5 | 4.5 |
| 08/05/2017 | 27.9 | 7.4 | 7.1 | 90.6 | 21.4 | 5 | 28.5 |
| 10/05/2017 | 26.5 | 7.3 | 6.8 | 85.2 | 25.4 | 6 | 20 |
| 12/05/2017 | 26.7 | 7.4 | 6.9 | 86.1 | 25.2 | 5 | 12 |
| 15/05/2017 | 24.8 | 7.2 | 6.8 | 82.0 | 45.4 | 8 | 35.5 |
| 17/05/2017 | 27.1 | 7.2 | 6.8 | 85.2 | 40.3 | 3.5 | 18.5 |
| 19/05/2017 | 27.6 | 7.2 | 7.0 | 88.5 | 14.0 | 2.5 | 8.5 |
| 22/05/2017 | 25.7 | 7.5 | 7.6 | 92.8 | 19.4 | 3 | 3.5 |
| 24/05/2017 | 23.7 | 7.2 | 7.0 | 83.0 | 31.9 | 4.5 | 25 |
| 26/05/2017 | 25.1 | 7.3 | 6.8 | 82.3 | 44.5 | 4 | 23.5 |
| 29/05/2017 | 26.7 | 7.3 | 7.2 | 89.2 | 16.6 | 3 | 9.5 |
| 31/05/2017 | 26.0 | 7.3 | 6.9 | 85.2 | 15.4 | 3 | 21 |
| 02/06/2017 | 24.8 | 7.4 | 7.8 | 93.8 | 11.6 | 3 | 4 |
| 05/06/2017 | 25.8 | 7.4 | 7.7 | 94.3 | 14.6 | 10.5 | 13.5 |
| 09/06/2017 | 25.0 | 7.4 | 6.8 | 82.1 | 37.2 | 9 | 48 |
| 09/06/2017 | 27.2 | 7.4 | 6.7 | 84.4 | 25.7 | 8 | 26.5 |
| 12/06/2017 | 25.3 | 7.4 | 6.9 | 90.9 | 13.9 | 5.5 | 27.5 |
| 14/06/2017 | 28.0 | 7.3 | 6.6 | 84.0 | 25.3 | 4 | 20 |
| 16/06/2017 | 27.6 | 7.3 | 6.9 | 87.4 | 16.7 | 3 | 22.5 |
| 19/06/2017 | 26.5 | 7.4 | 6.6 | 82.2 | 18.9 | 11 | 2 |
| 21/06/2017 | 28.1 | 7.4 | 6.5 | 83.7 | 19.6 | 2 | 8.5 |
| 23/06/2017 | 27.9 | 7.3 | 7.0 | 89.0 | 12.9 | 4 | 4 |
| 26/06/2017 | 29.7 | 7.3 | 6.3 | 82.5 | 27.6 | 6 | 19 |
| 28/06/2017 | 30.7 | 7.3 | 6.9 | 92.4 | 23.3 | 3.5 | 16 |
| 30/06/2017 | 31.6 | 7.3 | 6.9 | 94.0 | 18.7 | 7 | 14.5 |
| 03/07/2017 | 31.2 | 7.4 | 6.5 | 87.4 | 38.4 | 3 | 36.5 |
| 05/07/2017 | 30.3 | 7.2 | 6.5 | 86.6 | 14.6 | 3 | 12.5 |
| 07/07/2017 | 28.5 | 7.1 | 7.4 | 95.3 | 26.7 | 2.5 | 22.5 |
| 10/07/2017 | 30.6 | 7.1 | 6.5 | 86.7 | 37.5 | 17 | 40 |
| 12/07/2017 | 31.3 | 7.2 | 7.0 | 95.4 | 24.5 | 3.5 | 20 |
| 14/07/2017 | 32.0 | 7.2 | 6.7 | 92.6 | 17.5 | 2 | 16.5 |
| 17/07/2017 | 26.3 | 7.1 | 7.5 | 92.4 | 15.6 | 4 | 8.5 |
| 19/07/2017 | 31.4 | 7.1 | 6.2 | 84.1 | 46.4 | 4 | 33 |
| 21/07/2017 | 28.1 | 7.1 | 7.1 | 90.2 | 21.6 | 3.5 | 15.5 |
| 24/07/2017 | 29.2 | 7.3 | 7.1 | 92.2 | 31.5 | 4 | 16 |
| 26/07/2017 | 32.5 | 7.3 | 6.3 | 87.1 | 21.6 | 5 | 20.5 |
| 28/07/2017 | 30.8 | 7.3 | 7.0 | 93.8 | 13.6 | 4 | 16 |
| 31/07/2017 | 33.4 | 7.4 | 6.2 | 86.6 | 25.7 | 9 | 14.5 |
| Average | 27.8 | 7.3 | 6.9 | 87.9 | 24.8 | 5.0 | 18.2 |
| Action Level | - | <5.5 or >7.5 | <3.91 | - | >60 | - | >50 |
| Limit Level | - | <4.0 or >8.0 | <3.82 | - | >64 | - | >53 |

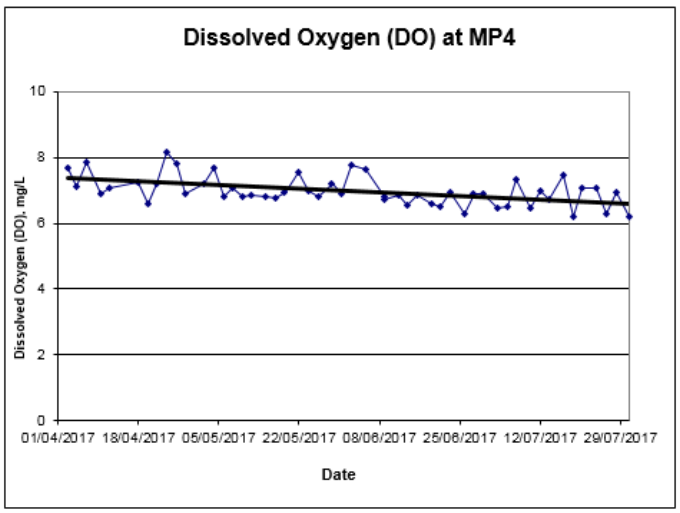
Notes:
(1) <2: Value is too low to indicate (<2mg/L).
(2) Values **Bold** indicate Action Level exceedance.
(3) Values **Underlined and Bold** indicate Limit Level exceedance.

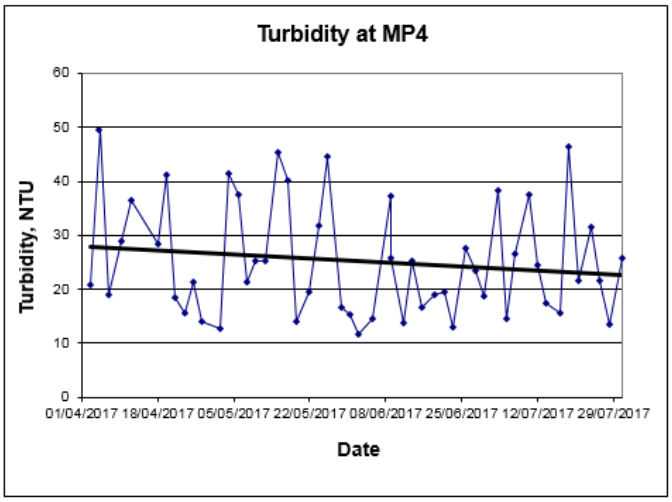
## Water Quality

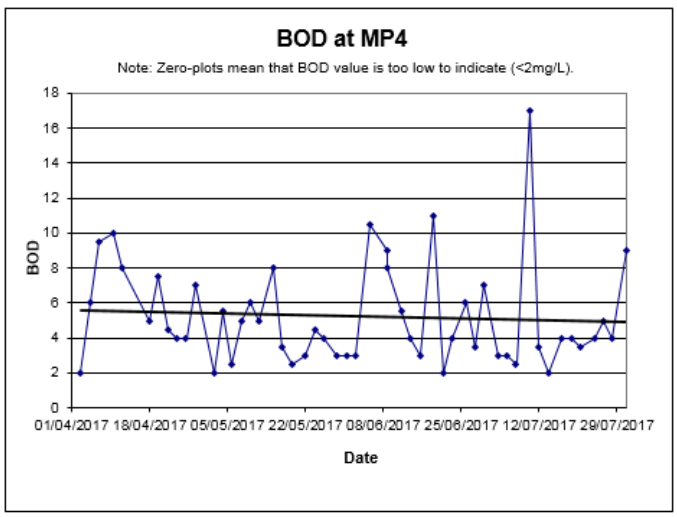
### Monitoring Location MP4

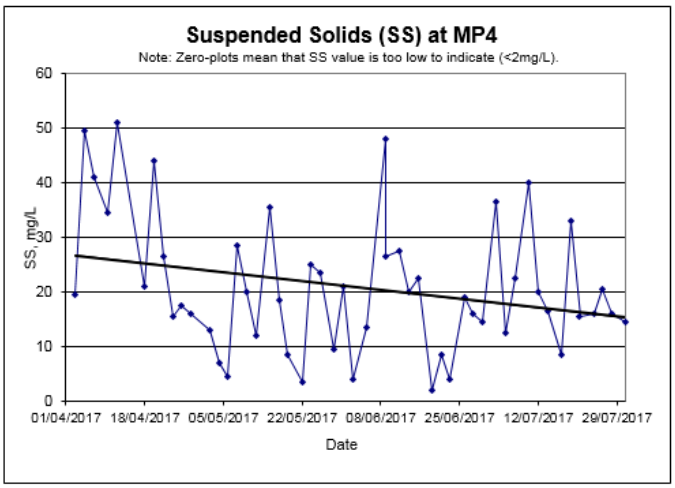


## Water Quality

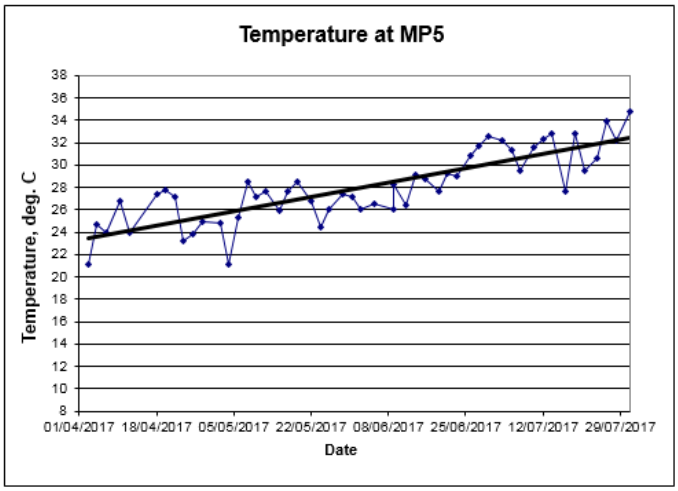
### Monitoring Location MP5

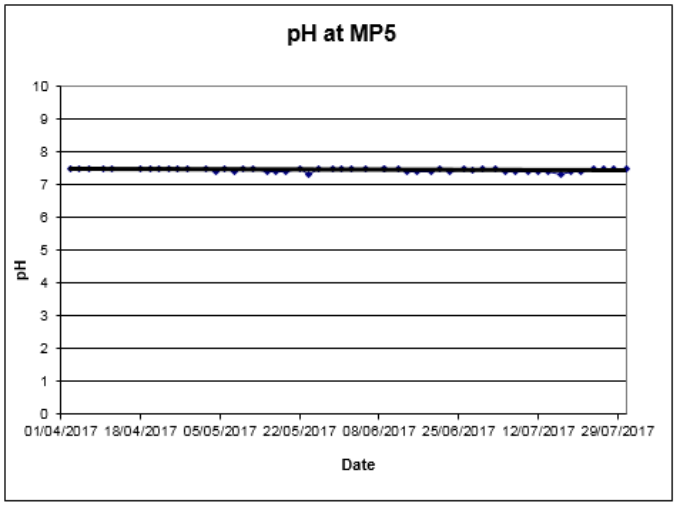
| Monitoring Date | Temp (°C) | pH | Dissolved Oxygen (mg/L) | DO (%) | Turbidity (NT) | BOD (mg/L) | Suspended Solids (mg/L) |
|---|---|---|---|---|---|---|---|
| **MP5** | | | | | | | |
| 02/05/2017 | 24.8 | 7.5 | 7.7 | 92.9 | 27.8 | 3 | 22 |
| 04/05/2017 | 21.1 | 7.4 | 7.6 | 86.1 | 33.8 | 5.5 | 20.5 |
| 06/05/2017 | 25.3 | 7.5 | 7.0 | 85.5 | 34.3 | 4.5 | 12 |
| 08/05/2017 | 28.5 | 7.4 | 7.0 | 91.2 | 23.4 | 6.5 | 32 |
| 10/05/2017 | 27.2 | 7.5 | 7.3 | 92.4 | 34.2 | 9.5 | 33.5 |
| 12/05/2017 | 27.7 | 7.5 | 6.7 | 84.8 | 28.9 | 6 | 16 |
| 15/05/2017 | 25.9 | 7.4 | 7.6 | 93.8 | 38.3 | 6 | 29.5 |
| 17/05/2017 | 27.7 | 7.4 | 6.6 | 84.5 | 27.4 | 9 | 21.5 |
| 19/05/2017 | 28.5 | 7.4 | 6.5 | 84.3 | 14.3 | 3.5 | 11 |
| 22/05/2017 | 26.8 | 7.5 | 7.3 | 92.0 | 24.8 | 4.5 | 12 |
| 24/05/2017 | 24.4 | 7.3 | 7.3 | 88.2 | 29.6 | 4.5 | 23.5 |
| 26/05/2017 | 26.0 | 7.5 | 7.4 | 91.9 | 37.8 | 8 | 13.5 |
| 29/05/2017 | 27.4 | 7.5 | 6.9 | 88.1 | 13.4 | 4 | 12.5 |
| 31/05/2017 | 27.1 | 7.5 | 6.9 | 87.3 | 21.4 | 6.5 | 28.5 |
| 02/06/2017 | 26.1 | 7.5 | 6.7 | 83.7 | 14.6 | 3 | 10.5 |
| 05/06/2017 | 26.6 | 7.5 | 7.0 | 88.5 | 22.3 | 8.5 | 22.5 |
| 09/06/2017 | 26.1 | 7.5 | 7.6 | 94.0 | 34.6 | 11 | 47.5 |
| 09/06/2017 | 28.3 | 7.5 | 7.1 | 90.7 | 23.1 | 8.5 | 23.5 |
| 12/06/2017 | 26.4 | 7.5 | 7.2 | 96.5 | 16.6 | 3 | 17.5 |
| 14/06/2017 | 29.1 | 7.4 | 6.6 | 86.8 | 14.6 | <2 | 8 |
| 16/06/2017 | 28.7 | 7.4 | 6.4 | 82.3 | 9.7 | <2 | 8 |
| 19/06/2017 | 27.6 | 7.4 | 6.8 | 86.5 | 8.3 | 4 | 2 |
| 21/06/2017 | 29.2 | 7.5 | 6.6 | 86.3 | 15.3 | 4 | 12 |
| 23/06/2017 | 29.0 | 7.4 | 7.0 | 91.6 | 10.8 | 4 | 6 |
| 26/06/2017 | 30.8 | 7.5 | 6.4 | 86.7 | 24.7 | 5 | 17.5 |
| 28/06/2017 | 31.7 | 7.5 | 6.6 | 90.1 | 26.3 | 5 | 19 |
| 30/06/2017 | 32.6 | 7.5 | 6.8 | 95.0 | 15.7 | 4.5 | 10.5 |
| 03/07/2017 | 32.2 | 7.5 | 6.6 | 91.3 | 44.4 | 3 | 46.5 |
| 05/07/2017 | 31.3 | 7.4 | 7.0 | 95.0 | 10.5 | 3 | 11 |
| 07/07/2017 | 29.5 | 7.4 | 7.0 | 92.2 | 24.6 | 3.5 | 17 |
| 10/07/2017 | 31.6 | 7.4 | 6.2 | 84.8 | 30.7 | 8 | 24 |
| 12/07/2017 | 32.3 | 7.4 | 6.5 | 90.2 | 20.6 | 3 | 17 |
| 14/07/2017 | 32.8 | 7.4 | 6.5 | 91.3 | 11.7 | <2 | 15.5 |
| 17/07/2017 | 27.7 | 7.3 | 6.6 | 83.5 | 28.7 | 2.5 | 59.5 |
| 19/07/2017 | 32.8 | 7.4 | 6.8 | 94.0 | 34.5 | 2.5 | 21.5 |
| 21/07/2017 | 29.5 | 7.4 | 7.0 | 92.0 | 26.4 | 5 | 22 |
| 24/07/2017 | 30.6 | 7.5 | 6.7 | 90.2 | 19.7 | 4 | 14 |
| 26/07/2017 | 33.9 | 7.5 | 6.1 | 86.0 | 20.5 | 3 | 9 |
| 28/07/2017 | 32.2 | 7.5 | 6.6 | 91.2 | 15.3 | 3.5 | 18 |
| 31/07/2017 | 34.8 | 7.5 | 6.5 | 93.7 | 29.1 | 7.5 | 13.5 |
| Average | 28.8 | 7.4 | 6.8 | 89.4 | 23.5 | 5.1 | 19.5 |
| Action Level | - | <5.5 or >7.5 | <4.13 | - | >81 | - | >66 |
| Limit Level | - | <4.0 or >8.0 | <3.87 | - | >84 | - | >69 |

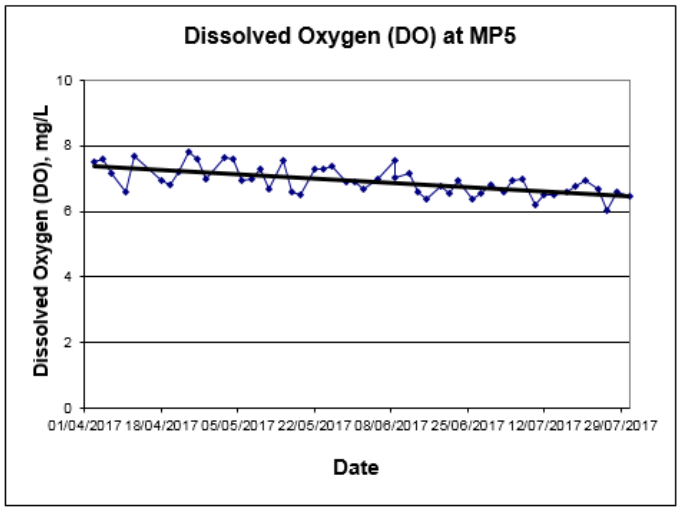
Notes:
(1) <2: Value is too low to indicate (<2mg/L).
(2) Values **Bold** indicate Action Level exceedance.
(3) Values **Underlined and Bold** indicate Limit Level exceedance.

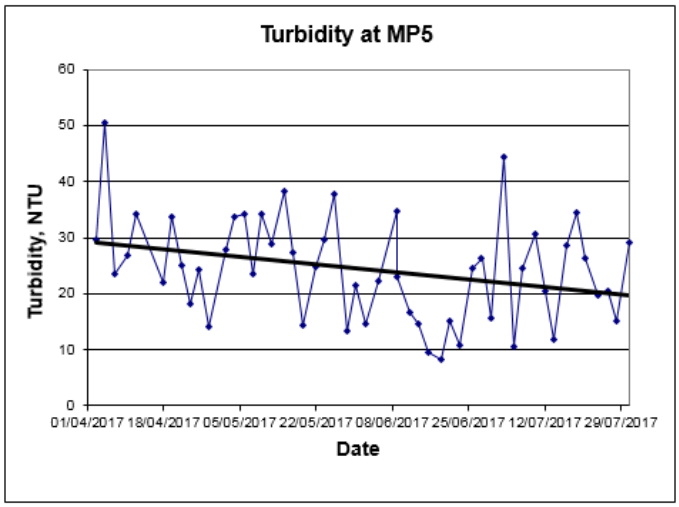
## Water Quality

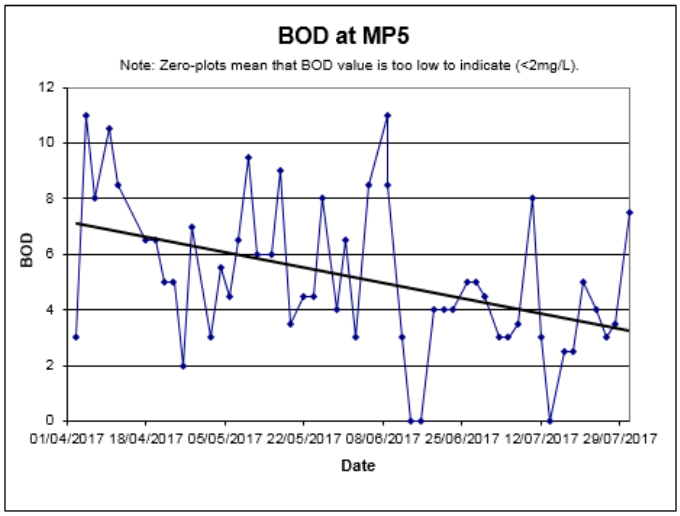
### Monitoring Location MP5

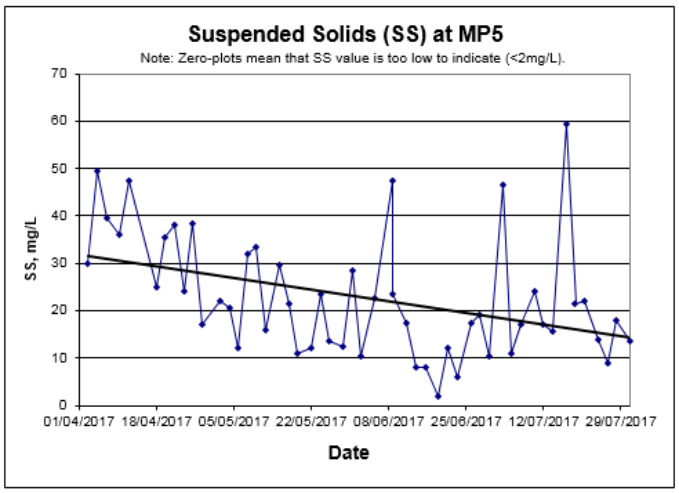


## Water Quality

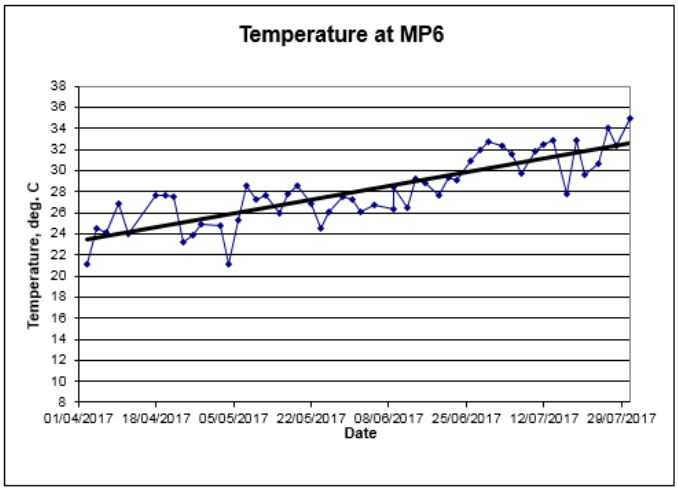
### Monitoring Location MP6

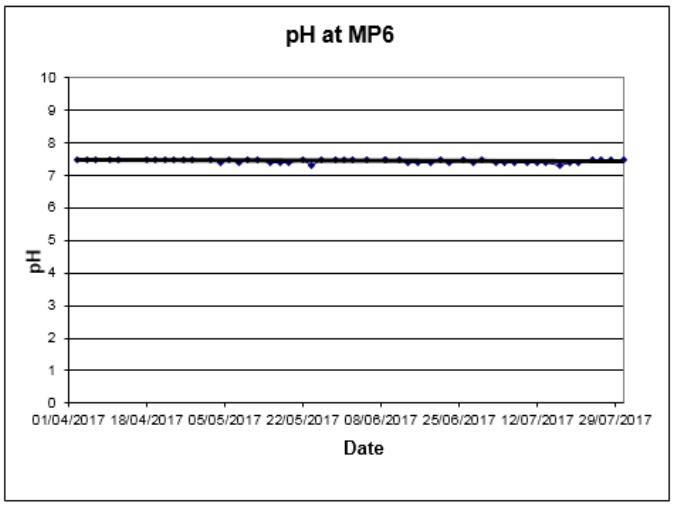
| Monitoring Date | Temp (°C) | pH | Dissolved Oxygen (mg/L) | DO (%) | Turbidity (NT) | BOD (mg/L) | Suspended Solids (mg/L) |
|---|---|---|---|---|---|---|---|
| **MP6** | | | | | | | |
| 02/05/2017 | 24.8 | 7.5 | 7.2 | 87.0 | 28.4 | 3 | 21 |
| 04/05/2017 | 21.1 | 7.4 | 8.2 | 92.4 | 34.2 | 5 | 16 |
| 06/05/2017 | 25.3 | 7.5 | 6.8 | 83.2 | 34.6 | 4 | 9 |
| 08/05/2017 | 28.5 | 7.4 | 6.6 | 85.0 | 24.6 | 7 | 31 |
| 10/05/2017 | 27.2 | 7.5 | 6.5 | 81.6 | 35.1 | 8 | 27 |
| 12/05/2017 | 27.6 | 7.5 | 6.3 | 80.3 | 29.2 | 7 | 23 |
| 15/05/2017 | 26.0 | 7.4 | 6.9 | 85.5 | 38.9 | 6 | 32.5 |
| 17/05/2017 | 27.8 | 7.4 | 6.6 | 83.6 | 31.2 | 7.5 | 20 |
| 19/05/2017 | 28.6 | 7.4 | 6.8 | 88.5 | 16.6 | 4.5 | 14.5 |
| 22/05/2017 | 26.9 | 7.5 | 6.4 | 81.2 | 24.2 | 4 | 18 |
| 24/05/2017 | 24.5 | 7.3 | 7.1 | 86.1 | 29.0 | 4 | 27.5 |
| 26/05/2017 | 26.1 | 7.5 | 6.8 | 83.8 | 38.3 | 7.5 | 14.5 |
| 29/05/2017 | 27.5 | 7.5 | 6.6 | 84.1 | 13.6 | 4 | 15 |
| 31/05/2017 | 27.3 | 7.5 | 6.3 | 80.5 | 17.7 | 5 | 24 |
| 02/06/2017 | 26.1 | 7.5 | 6.6 | 82.2 | 16.7 | 4 | 13.5 |
| 05/06/2017 | 26.7 | 7.5 | 6.8 | 85.2 | 23.3 | 8.5 | 23.5 |
| 09/06/2017 | 26.3 | 7.5 | 6.6 | 82.9 | 34.8 | 11 | 46.5 |
| 09/06/2017 | 28.4 | 7.5 | 6.6 | 84.9 | 27.7 | 7.5 | 28 |
| 12/06/2017 | 26.5 | 7.5 | 6.2 | 83.2 | 20.5 | 3.5 | 22 |
| 14/06/2017 | 29.2 | 7.4 | 6.3 | 82.8 | 18.0 | 4 | 12 |
| 16/06/2017 | 28.8 | 7.4 | 6.9 | 89.1 | 10.5 | 8.5 | 14.5 |
| 19/06/2017 | 27.7 | 7.4 | 6.3 | 81.1 | 9.0 | 8 | 3.5 |
| 21/06/2017 | 29.3 | 7.5 | 6.9 | 90.7 | 15.5 | 3.5 | 11.5 |
| 23/06/2017 | 29.1 | 7.4 | 6.5 | 84.8 | 14.3 | 6 | 14 |
| 26/06/2017 | 30.9 | 7.5 | 6.0 | 81.4 | 29.4 | 7.5 | 23.5 |
| 28/06/2017 | 31.9 | 7.4 | 6.1 | 84.6 | 30.3 | 7.5 | 27 |
| 30/06/2017 | 32.8 | 7.5 | 5.9 | 81.8 | 15.9 | 7 | 14 |
| 03/07/2017 | 32.4 | 7.4 | 6.6 | 91.5 | 45.3 | 4 | 63 |
| 05/07/2017 | 31.5 | 7.4 | 6.4 | 87.6 | 13.5 | 3 | 13.5 |
| 07/07/2017 | 29.7 | 7.4 | 6.1 | 80.6 | 24.0 | 3 | 15 |
| 10/07/2017 | 31.8 | 7.4 | 6.2 | 84.8 | 33.7 | 10 | 31 |
| 12/07/2017 | 32.5 | 7.4 | 6.1 | 85.4 | 21.3 | 3 | 13 |
| 14/07/2017 | 32.9 | 7.4 | 5.9 | 82.4 | 13.6 | 3 | 16 |
| 17/07/2017 | 27.8 | 7.3 | 6.5 | 82.8 | 27.4 | 3 | 12 |
| 19/07/2017 | 32.9 | 7.4 | 6.2 | 86.0 | 35.4 | 2 | 20.5 |
| 21/07/2017 | 29.6 | 7.4 | 6.8 | 89.0 | 26.7 | 3.5 | 22.5 |
| 24/07/2017 | 30.7 | 7.5 | 6.0 | 81.1 | 20.3 | 4 | 16.5 |
| 26/07/2017 | 34.0 | 7.5 | 6.0 | 86.0 | 20.7 | 6 | 18.5 |
| 28/07/2017 | 32.3 | 7.5 | 6.6 | 91.7 | 16.3 | 3.5 | 18.5 |
| 31/07/2017 | 34.9 | 7.5 | 6.2 | 89.7 | 30.4 | 7 | 14 |
| Average | 28.9 | 7.4 | 6.5 | 84.9 | 24.7 | 5.5 | 20.5 |
| Action Level | - | <5.5 or >7.5 | <4.61 | - | >94 | - | >75 |
| Limit Level | - | <4.0 or >8.0 | <4.52 | - | >96 | - | >75 |

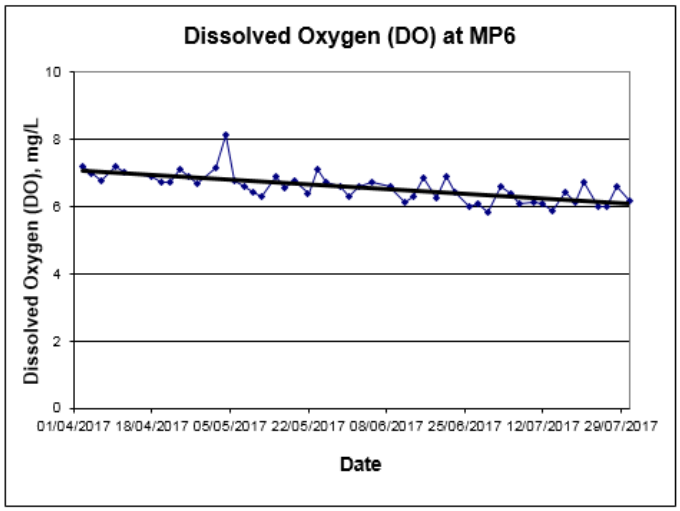
Notes:
(1) <2: Value is too low to indicate (<2mg/L).
(2) Values **Bold** indicate Action Level exceedance.
(3) Values **Underlined and Bold** indicate Limit Level exceedance.

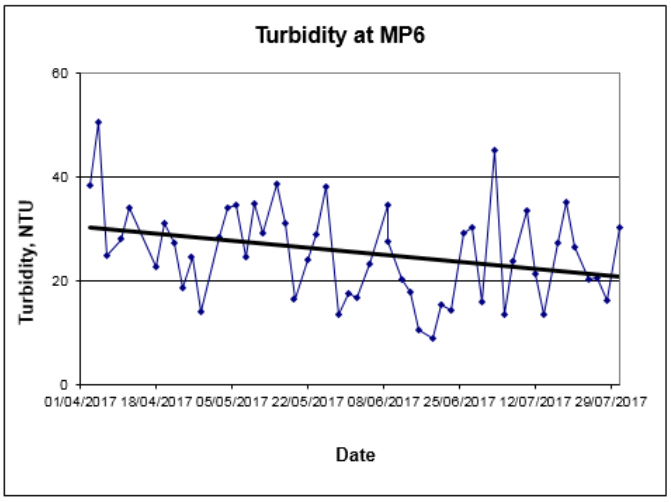
## Water Quality

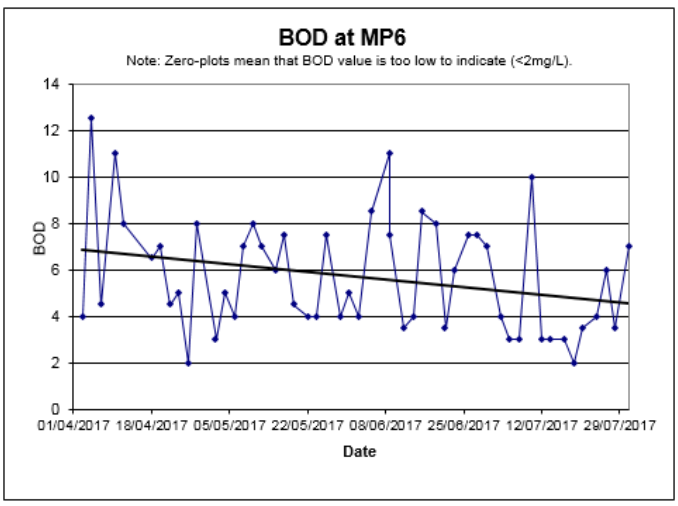
### Monitoring Location MP6

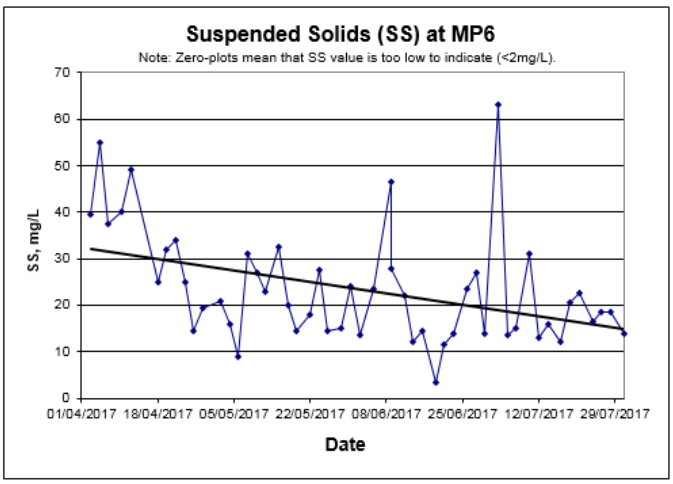


# E. Summary of Ecological Monitoring Results

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

| Species Name[4] | Scientific Name[4] | Wetland Dependence | Conservation Status[1] | May 2017 | | Records outside survey |
|---|---|---|---|---|---|---|
| | | | | Occurrence[2] | Mean[3] | |
| Little Grebe | *Tachybaptus ruficollis* | Y | LC | 5 | 5.2 | ✓ |
| Great Egret | *Ardea alba* | Y | PRC, (RC) | 5 | 2.2 | ✓ |
| Little Egret | *Egretta garzetta* | Y | PRC, (RC) | 5 | 12.4 | ✓ |
| Eastern Cattle Egret | *Bubulcus coromandus* | Y | LC | 3 | 8.2 | ✓ |
| Chinese Pond Heron | *Ardeola bacchus* | Y | PRC, (RC) | 5 | 5.4 | ✓ |
| Black-crowned Night Heron | *Nycticorax nycticorax* | Y | (LC) | 1 | 0.4 | ✓ |
| Yellow Bittern | *Ixobrychus sinensis* | Y | LC | 1 | 0.2 | |
| Black Kite | *Milvus migrans* | Y | RC | 1 | 0.2 | |
| White-breasted Waterhen | *Amaurornis phoenicurus* | Y | - | 2 | 0.4 | ✓ |
| Green Sandpiper | *Tringa ochropus* | Y | - | 1 | 0.8 | |
| Common Sandpiper | *Actitis hypoleucos* | Y | - | 2 | 0.4 | ✓ |
| Whiskered Tern | *Chlidonias hybrida* | Y | LC | 3 | 1.4 | |
| Common Kingfisher | *Alcedo atthis* | Y | - | - | - | ✓ |
| Eastern Yellow Wagtail | *Motacilla tschutschensis* | Y | - | 1 | 0.2 | |
| Grey Wagtail | *Motacilla cinerea* | Y | - | - | - | ✓ |
| White Wagtail | *Motacilla alba* | Y | - | 2 | 1.0 | ✓ |
| White-cheeked Starling | *Spodiopsar cineraceus* | N | PRC | - | - | ✓ |
| White-shouldered Starling | *Sturnia sinensis* | N | (LC) | 4 | 2.8 | ✓ |
| Collared Crow | *Corvus torquatus* | Y | LC | 2 | 0.4 | ✓ |
| | | | **No. of Species Recorded** | | | **19** |
| **Species Name[4]** | **Scientific Name[4]** | **Wetland Dependence** | **Conservation Status[1]** | **Jun 2017** | | **Records outside survey** |
| | | | | **Occurrence[2]** | **Mean[3]** | |
| Little Grebe | *Tachybaptus ruficollis* | Y | LC | 4 | 2.4 | ✓ |
| Great Egret | *Ardea alba* | Y | PRC, (RC) | 5 | 8.6 | ✓ |
| Little Egret | *Egretta garzetta* | Y | PRC, (RC) | 4 | 4.6 | ✓ |
| Chinese Pond Heron | *Ardeola bacchus* | Y | PRC, (RC) | 5 | 5.8 | ✓ |

| | | | | | | |
|---|---|---|---|---|---|---|
| Black-crowned Night Heron | *Nycticorax nycticorax* | Y | (LC) | 1 | 0.2 | ✓ |
| Yellow Bittern | *Ixobrychus sinensis* | Y | LC | 2 | 0.4 | ✓ |
| Black Kite | *Milvus migrans* | Y | RC | 0 | 0.0 | ✓ |
| White-breasted Waterhen | *Amaurornis phoenicurus* | Y | - | 3 | 0.8 | ✓ |
| Pied Kingfisher | *Ceryle rudis* | Y | (LC) | - | - | ✓ |
| Common Kingfisher | *Alcedo atthis* | Y | - | - | - | ✓ |
| White Wagtail | *Motacilla alba* | Y | - | 2 | 0.8 | |
| White-cheeked Starling | *Spodiopsar cineraceus* | N | PRC | - | - | ✓ |
| White-shouldered Starling | *Sturnia sinensis* | N | (LC) | 2 | 1.2 | ✓ |
| Collared Crow | *Corvus torquatus* | Y | LC | - | - | ✓ |
| | | | **No. of Species Recorded** | | | **14** |

| Species Name[4] | Scientific Name[4] | Wetland Dependence | Conservation Status[1] | Jul 2017 | | Records outside survey |
|---|---|---|---|---|---|---|
| | | | | Occurrence[2] | Mean[3] | |
| Little Grebe | *Tachybaptus ruficollis* | Y | LC | 3 | 3.5 | ✓ |
| Great Egret | *Ardea alba* | Y | PRC, (RC) | 4 | 10.5 | ✓ |
| Little Egret | *Egretta garzetta* | Y | PRC, (RC) | 4 | 13.3 | ✓ |
| Chinese Pond Heron | *Ardeola bacchus* | Y | PRC, (RC) | 4 | 9.8 | ✓ |
| Black-crowned Night Heron | *Nycticorax nycticorax* | Y | (LC) | - | - | ✓ |
| Black Kite | *Milvus migrans* | Y | (RC) | 1 | 0.3 | |
| White-breasted Waterhen | *Amaurornis phoenicurus* | Y | - | 3 | 1.3 | ✓ |
| Green Sandpiper | *Tringa ochropus* | Y | - | 1 | 0.3 | |
| Common Sandpiper | *Actitis hypoleucos* | Y | - | 1 | 0.3 | |
| White-throated Kingfisher | *Halcyon smyrnensis* | Y | (LC) | 2 | 0.5 | ✓ |
| Common Kingfisher | *Alcedo atthis* | Y | - | - | - | ✓ |
| White Wagtail | *Motacilla alba* | Y | - | 2 | 0.5 | ✓ |
| White-shouldered Starling | *Sturnia sinensis* | N | (LC) | 2 | 1.8 | ✓ |
| Collared Crow | *Corvus torquatus* | Y | LC, NT | 1 | 0.3 | |
| | | | **No. of Species Recorded** | | | **14** |

(1) 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)
(2) Indicates number of surveys recorded within each month of the reporting period.
(3) Refers to the mean number of individuals recorded in each survey in the Survey Area (excluding the WRA).
(4) Follows HK bird list (dated 2017-01-26).

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

| Species Name[4] | Scientific Name[4] | Wetland Dependence | Conservation Status[1] | May 2017 | | Records outside surveys |
|---|---|---|---|---|---|---|
| | | | | Occurrence[2] | Mean[3] | |
| Little Grebe | *Tachybaptus ruficollis* | Y | LC | 2 | 0.4 | ✓ |
| Great Egret | *Ardea alba* | Y | PRC, (RC) | 4 | 2.2 | ✓ |
| Little Egret | *Egretta garzetta* | Y | PRC, (RC) | 5 | 19.4 | ✓ |
| Chinese Pond Heron | *Ardeola bacchus* | Y | PRC, (RC) | 2 | 2.0 | ✓ |
| Black-crowned Night Heron | *Nycticorax nycticorax* | Y | (LC) | 1 | 0.4 | |
| Yellow Bittern | *Ixobrychus sinensis* | Y | LC | 2 | 0.8 | ✓ |
| Cinnamon Bittern | *Ixobrychus cinnamomeus* | Y | LC | 1 | 0.2 | ✓ |
| White-breasted Waterhen | *Amaurornis phoenicurus* | Y | - | 2 | 0.6 | ✓ |
| White-throated Kingfisher | *Halcyon smyrnensis* | Y | LC | 1 | 0.2 | ✓ |
| Common Kingfisher | *Alcedo atthis* | Y | - | 3 | 1.0 | ✓ |
| Eastern Yellow Wagtail | *Motacilla tschutschensis* | Y | - | 2 | 0.4 | |
| White Wagtail | *Motacilla alba* | Y | - | 2 | 0.6 | ✓ |
| White-cheeked Starling | *Spodiopsar cineraceus* | N | PRC | - | - | ✓ |
| White-shouldered Starling | *Sturnia sinensis* | N | (LC) | 3 | 1.2 | ✓ |
| | | **No. of Species Recorded** | | | | **14** |

| Species Name[4] | Scientific Name[4] | Wetland Dependence | Conservation Status[1] | Jun 2017 | | Records outside surveys |
|---|---|---|---|---|---|---|
| | | | | Occurrence[2] | Mean[3] | |
| Little Grebe | *Tachybaptus ruficollis* | Y | LC | 2 | 0.6 | ✓ |
| Great Egret | *Ardea alba* | Y | PRC, (RC) | 2 | 0.8 | ✓ |
| Little Egret | *Egretta garzetta* | Y | PRC, (RC) | 5 | 2.4 | ✓ |
| Chinese Pond Heron | *Ardeola bacchus* | Y | PRC, (RC) | 3 | 0.8 | ✓ |
| Black-crowned Night Heron | *Nycticorax nycticorax* | Y | (LC) | - | - | ✓ |
| Yellow Bittern | *Ixobrychus sinensis* | Y | LC | 5 | 2.0 | ✓ |
| White-breasted Waterhen | *Amaurornis phoenicurus* | Y | - | 1 | 0.2 | ✓ |
| Black-winged Stilt | *Himantopus himantopus* | Y | (RC) | - | - | ✓ |
| Little Ringed Plover | *Charadrius dubius* | Y | (LC) | - | - | ✓ |
| White-throated Kingfisher | *Halcyon smyrnensis* | Y | LC | 1 | 0.2 | ✓ |
| Common Kingfisher | *Alcedo atthis* | Y | - | 1 | 0.2 | ✓ |
| White Wagtail | *Motacilla alba* | Y | - | 1 | 0.4 | ✓ |
| White-shouldered Starling | *Sturnia sinensis* | N | (LC) | 4 | 1.8 | ✓ |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | **No. of Species Recorded** | | | | **13** |
| **Species Name[4]** | **Scientific Name[4]** | **Wetland Dependence** | **Conservation Status[1]** | **Jul 2017 Occurrence[2]** | **Jul 2017 Mean[3]** | **Records outside surveys** |
| Little Grebe | *Tachybaptus ruficollis* | Y | LC | - | - | |
| Great Egret | *Ardea alba* | Y | PRC, (RC) | 1 | 0.8 | ✓ |
| Little Egret | *Egretta garzetta* | Y | PRC, (RC) | 1 | 0.3 | ✓ |
| Chinese Pond Heron | *Ardeola bacchus* | Y | PRC, (RC) | 3 | 1.5 | ✓ |
| Black-crowned Night Heron | *Nycticorax nycticorax* | Y | (LC) | - | - | ✓ |
| Yellow Bittern | *Ixobrychus sinensis* | Y | LC | 1 | 0.5 | ✓ |
| Black Kite | *Milvus migrans* | Y | (RC) | - | - | ✓ |
| White-breasted Waterhen | *Amaurornis phoenicurus* | Y | - | 1 | 0.5 | ✓ |
| Green Sandpiper | *Tringa ochropus* | Y | - | - | - | ✓ |
| Wood Sandpiper | *Tringa glareola* | Y | (LC) | - | - | ✓ |
| Common Sandpiper | *Actitis hypoleucos* | Y | - | - | - | ✓ |
| White-throated Kingfisher | *Halcyon smyrnensis* | Y | (LC) | 1 | 0.3 | ✓ |
| Common Kingfisher | *Alcedo atthis* | Y | - | 2 | 0.8 | ✓ |
| White Wagtail | *Motacilla alba* | Y | - | - | - | ✓ |
| Red-billed Starling | *Spodiopsar sericeus* | N | (GC) | - | - | ✓ |
| | | **No. of Species Recorded** | | | | **15** |

(1) 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).
(2) Indicates number of surveys recorded within each month of the reporting period.
(3) Refers to the mean number of individuals recorded in each survey in the WRA.
(4) Follows HK bird list (dated 2017-01-26).

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

| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **May 2017 Occurrence[2]** | **May 2017 Mean[3]** | **Records outside surveys** |
|---|---|---|---|---|---|
| **Amphibian** | **No. of Species Recorded** | | **0** | | |
| (No Records in May 2017) | | - | - | - | - |
| | | | **Occurrence[2]** | **Mean[3]** | |
| **Reptiles** | **No. of Species Recorded** | | **0** | | |
| (No Records in May 2017) | | - | - | - | - |

| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jun 2017 Occurrence[2]** | **Jun 2017 Mean[3]** | **Records outside surveys** |
|---|---|---|---|---|---|
| **Amphibian** | **No. of Species Recorded** | | **1** | | |
| Gunther's Frog | *Hylarana guentheri* | - | 1 | 2.0 | - |
| | | | **Occurrence[2]** | **Mean[3]** | |
| **Reptiles** | **No. of Species Recorded** | | **0** | | |
| (No Records in June 2017) | | - | - | - | - |

| Species Name | Scientific Name | Conservation Status[1] | Jul 2017 | | Records outside surveys |
|---|---|---|---|---|---|
| | | | Occurrence[2] | Mean[3] | |
| **Amphibian** | **No. of Species Recorded** | | **2** | | |
| Gunther's Frog | *Hylarana guentheri* | - | 1 | 1.0 | |
| Asian Common Toad | *Duttaphrynus melanostictus* | - | 1 | 1.0 | |
| | | | Occurrence[2] | Mean[3] | |
| **Reptiles** | **No. of Species Recorded** | | **0** | | |
| (No Records in July 2017) | | - | - | - | - |

(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)

## Table E4. Summary of herpetofauna monitoring in the WRA

| Species Name | Scientific Name | Conservation Status[1] | May 2017 | | Records outside surveys |
|---|---|---|---|---|---|
| | | | Occurrence[2] | Mean[3] | |
| **Amphibian** | **No. of Species Recorded** | | **0** | | |
| (No Records in May 2017) | | - | - | | - |
| | | | Occurrence[2] | Mean[3] | |
| **Reptiles** | **No. of Species Recorded** | | **0** | | |
| (No Records in May 2017) | | - | - | | - |
| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jun 2017** | | **Records outside surveys** |
| | | | Occurrence[2] | Mean[3] | |
| **Amphibian** | **No. of Species Recorded** | | **1** | | |
| Gunther's Frog | *Hylarana guentheri* | - | 1 | | 2.0 |
| | | | Occurrence[2] | Mean[3] | |
| **Reptiles** | **No. of Species Recorded** | | **0** | | |
| (No Records in June 2017) | | - | - | | - - |
| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jul 2017** | | **Records outside surveys** |
| | | | Occurrence[2] | Mean[3] | |
| **Amphibian** | **No. of Species Recorded** | | **1** | | |
| Gunther's Frog | *Hylarana guentheri* | - | 1 | | 1.0 - |
| | | | Occurrence[2] | Mean[3] | |
| **Reptiles** | **No. of Species Recorded** | | **0** | | |
| (No Records in July 2017) | | - | - | - | - |

(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

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

| Species Name | Scientific Name | Conservation Status[1] | May 2017 | | Records outside surveys |
|---|---|---|---|---|---|
| | | | Occurrence[2] | Max [3] | |
| **Mammal** | **No. of Species Recorded** | | **0** | | |
| (No Records in May 2017) | | - | - | - | - |
| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jun 2017** | | **Records outside surveys** |
| | | | **Occurrence[2]** | **Max[3]** | |
| **Mammal** | **No. of Species Recorded** | | **0** | | |
| (No Records in June 2017) | | - | - | - | - |
| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jul 2017** | | **Records outside surveys** |
| | | | **Occurrence[2]** | **Max[3]** | |
| **Mammal** | **No. of Species Recorded** | | **0** | | |
| (No Records in July 2017) | | - | - | - | - |

(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).

## Table E6. Summary of mammal monitoring in the WRA

| Species Name | Scientific Name | Conservation Status[1] | May 2017 | | Records outside surveys |
|---|---|---|---|---|---|
| | | | Occurrence[2] | Max[3] | |
| **Mammal** | **No. of Species Recorded** | | **1** | | |
| Leopard Cat | *Prionailurus bengalensis* | - | - | - | ✓ |
| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jun 2017** | | **Records outside surveys** |
| | | | **Occurrence[2]** | **Max[3]** | |
| **Mammal** | **No. of Species Recorded** | | **2** | | |
| Bat | *indet. sp.* | - | - | - | ✓ |
| Leopard Cat | *Prionailurus bengalensis* | - | - | - | ✓ |
| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jul 2017** | | **Records outside surveys** |
| | | | **Occurrence[2]** | **Max[3]** | |
| **Mammal** | **No. of Species Recorded** | | **3** | | |
| Bat | *Indet. Sp.* | - | - | - | ✓ |
| Leopard Cat | *Prionailurus bengalensis* | | - | - | ✓ |
| Small Indian Civet | *Viverriculaindica* | | - | - | ✓ |

(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.

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

| Species Name | Scientific Name | Conservation Status[1] | May 2017 | |
|---|---|---|---|---|
| | | | Occurrence[2] | Mean[3] |
| **Odonate** | | **No. of Species Recorded** | **2** | |
| Pied Skimmer | *Pseudothemis zonata* | | 1 | 0.7 |
| Variegated Flutterer | *Rhyothemis variegata arria* | | 1 | 1.3 |
| | | | Occurrence[2] | Mean[3] |
| **Butterfly** | | **No. of Species Recorded** | **0** | |
| (No Records in May 2017) | | - | - | - |
| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jun 2017** | |
| | | | Occurrence[2] | Mean[3] |
| **Odonate** | | **No. of Species Recorded** | **1** | |
| Variegated Flutterer | *Rhyothemis variegata arria* | | 1 | 10.7 |
| | | | Occurrence[2] | Mean[3] |
| **Butterfly** | | **No. of Species Recorded** | **1** | |
| Pale Grass Blue | *Pseudozizeeria maha serica* | | 1 | 6.0 |
| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jul 2017** | |
| | | | Occurrence[2] | Mean[3] |
| **Odonate** | | **No. of Species Recorded** | **4** | |
| Common Flangetail | *Ictinogomphus pertinax* | - | 1 | 0.5 |
| Green Skimmer | *Orthetrum Sabina sabina* | - | 1 | 0.5 |
| Variegated Flutterer | *Rhyothemis variegata arria* | - | 1 | 3.5 |
| Wandering Glider | *Pantala flavescens* | - | 1 | 3.5 |
| | | | Occurrence[2] | Mean[3] |
| **Butterfly** | | **No. of Species Recorded** | **0** | |
| (No Records in July 2017) | | - | - | - |

(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)

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

| Species Name | Scientific Name | Conservation Status[1] | May 2017 | |
|---|---|---|---|---|
| | | | Occurrence[2] | Mean[3] |
| **Odonate** | | **No. of Species Recorded** | **6** | |
| Common Bluetail | *Ischnura senegalensis* | - | 1 | 0.7 |
| Blue Dasher | *Brachydiplax chalybea flavovittata* | - | 2 | 2.0 |
| Green Skimmer | *Orthetrum sabina Sabina* | - | 2 | 1.7 |

| | | | | |
|---|---|---|---|---|
| Saddlebag Glider | *Tramea virginia* | - | 1 | 0.3 |
| Variegated Flutterer | *Rhyothemis variegata arria* | - | 3 | 6.7 |
| Wandering Glider | *Pantala flavescens* | - | 2 | 1.0 |
| | | | **Occurrence[2]** | **Mean[3]** |
| **Butterfly** | | **No. of Species Recorded** | **4** | |
| Common Bluebottle | *Graphium sarpedon sarpedon* | - | 1 | 0.3 |
| Common Mapwing | *Cyrestis thyodamas chinensis* | - | 1 | 0.3 |
| Indian Cabbage White | *Pieris canidia canidia* | - | 1 | 0.7 |
| Red-base Jezebel | *Delias pasithoe pasithoe* | - | 1 | 0.3 |

| **Species Name** | **Scientific Name** | **Conservation Status[1]** | **Jun 2017** | |
|---|---|---|---|---|
| | | | **Occurrence[2]** | **Mean[3]** |
| **Odonate** | | **No. of Species Recorded** | **9** | |
| Common Flangetail | *Ictinogomphus pertinax* | - | 1 | 1.3 |
| Blue Dasher | *Brachydiplax chalybea flavovittata* | - | 1 | 0.3 |
| Crimson Dropwing | *Trithemis aurora* | - | 1 | 0.3 |
| Eastern Lilysquatter | *Paracercion melanotum* | - | 1 | 0.3 |
| Green Skimmer | *Orthetrum sabina Sabina* | - | 1 | 0.3 |
| Saddlebag Glider | *Tramea virginia* | - | 2 | 1.3 |
| Sapphire Flutterer | *Rhyothemis triangularis* | - | 1 | 1.0 |
| Variegated Flutterer | *Rhyothemis variegata arria* | - | 3 | 31.3 |
| Wandering Glider | *Pantala flavescens* | - | 1 | 0.3 |
| | | | **Occurrence[2]** | **Mean[3]** |
| **Butterfly** | | **No. of Species Recorded** | **6** | |
| Chestnut Angle | *Odontoptilum angulatum angulatum* | - | 1 | 0.3 |
| Common Grass Yellow | *Eurema hecabe hecabe* | - | 1 | 2.7 |
| Common Sailer | *Neptis hylas hylas* | - | 1 | 0.3 |
| Great Egg-fly | *Hypolimnas bolina kezia* | - | 1 | 0.3 |
| Indian Cabbage White | *Pieris canidia canidia* | - | 1 | 0.7 |
| Rustic | *Cupha erymanthis erymanthis* | - | 1 | 0.3 |

| Species Name | Scientific Name | Conservation Status[1] | Jul 2017 | |
|---|---|---|---|---|
| | | | Occurrence[2] | Mean[3] |
| **Odonate** | | **No. of Species Recorded** | **7** | |
| Blue Dasher | *Brachydiplax chalybea flavovittata* | - | 1 | 0.5 |
| Common Bluetail | *Ischnura senegalensis* | - | 1 | 4.0 |
| Common Flangetail | *Ictinogomphus pertinax* | - | 2 | 3.0 |
| Green Skimmer | *Orthetrum sabina sabina* | - | 2 | 2.5 |
| Pied Percher | *Neurothemis tullia* | - | 2 | 2.5 |
| Saddlebag Glider | *Tramea virginia* | - | 2 | 1.5 |
| Variegated Flutterer | *Rhyothemis variegata arria* | - | 2 | 6.5 |
| | | | Occurrence[2] | Mean[3] |
| **Butterfly** | | **No. of Species Recorded** | **6** | |
| Ceylon Blue Glassy Tiger | *Ideopsis similis similis* | - | 1 | 0.5 |
| Common Indian Crow | *Euploea core amymone* | - | 1 | 1.0 |
| Common Palmfly | *Elymnias hypermnestra hainana* | - | 1 | 0.5 |
| Common Sailer | *Neptis hylas* | - | 1 | 1.0 |
| Great Eggfly | *Hypolimnas bolina* | - | 2 | 1.0 |
| Red Ring Skirt | *Hestina assimilis assimilis* | - | 1 | 1.0 |

(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.

# 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; and | ✓ |
| • 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*<br>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*<br>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. | P |
| • Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. | ✓ |
| • Stockpiles to be covered by tarpaulin to avoid spreading of materials during rainstorms; | N/A |
| • 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; | ✓ |

| Water Quality Mitigation Measures during construction | Implementation Status |
|---|---|
| • Regular clearance of domestic waste generated in the temporary sanitary facilities to avoid waste water spillage. | ✓ |
| • 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. | ✓ |
| • 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*<br>• 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*<br>The intention is to maximize the reuse of the excavated materials on-site as fill materials. | ✓ |
| *Imported Filling Material*<br>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*<br>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*<br>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. | N/A |
| 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 have 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; | ✓ |
| • 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 | ✓ |

| Waste Management Mitigation Measures during construction | Implementation Status |
|---|---|
| • be arranged so that incompatible materials are adequately separated. | ✓ |
| 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*<br>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. | ✓ |
| **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<br>(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. | ✓ |

| Ecology Mitigation Measures during construction | Implementation Status |
|---|---|
| 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.<br>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<br>(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*<br>The WRA will be operational within 2.5 yrs 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. | ✓<br>(see Appendix G Photo 1 & 2 *) |
| 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 | ✓<br>(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 are being established, with the ponds being seasonally filled with rain water (CM2)

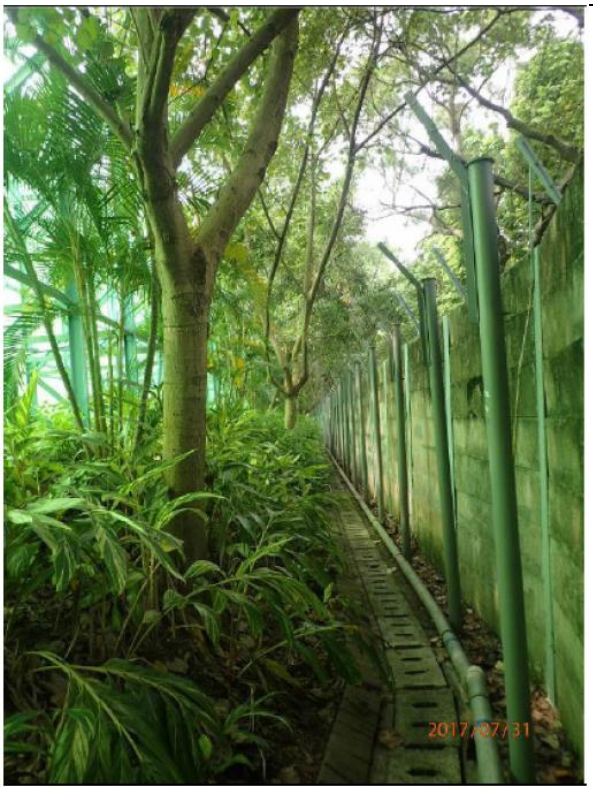


Photo 3: Advance screen planting of noise barrier has been undertaken (CM6)