ANNUAL ENVIRONMENTAL MANAGEMENT REPORT 2022

DA-293-08-00 MULTIPURPOSE TERMINAL - GENERAL CARGO HANDLING FACILITY, MAYFIELD 4 BERTH

22 AUGUST 2023

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Document	Annual Environmental Management Report 2022 – DA-293-08-00 General Cargo Handling Facility, Mayfield 4 Berth
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PORT of NEWCASTLE

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1. INTRODUCTION

1.1. General

The following document presents the Annual Environmental Management Report (AEMR) for the 2022 operational year of the General Cargo Handling Facility of the Multi Purpose Terminal Development, specifically Mayfield 4 Berth (**M4**), located within the BHP Closure Area.

The report has been prepared by Port of Newcastle (PON) for submission to the Department of Planning and Environment (DPE, or the Department) in accordance with the requirements of the Development Approval (DA, DA-293-08-00). The report is completed as a compliance requirement in the DA *Schedule 2 Section 9.2 – Annual Environmental Management Report.*

The subject site is located off Selwyn Street, Mayfield NSW.

1.2. Scope of the AEMR

Table 1 presents the scope for Port of Newcastle's AEMR.

Table 1: Port of Newcastle's AEMR information

Item	Response
Land in respect of	Land described as the "Closure Area" (previously referred to as being Lot 221 DP 1013964, Industrial Drive, Mayfield in documentation.)
Development consent / Project Approval number(s)	DA-293-08-00 MOD 9
Operational Area(s) in scope of AEMR	Lot 44 of DP1191982, Mayfield General Cargo Handling Facility referred to as Mayfield Berth 4 (Berth M4)
DA Description	Stage 1, being the remediation of the Closure Area, including the demolition and removal of structures (complete); and The development of a Multi-Purpose Terminal comprising a container terminal and a general cargo handling facility and associated road, rail and wharf infrastructure and dredging of the South Arm of the Hunter River.
Holder of development consent	Port of Newcastle (Original application made by Broken Hill Proprietary [BHP] Company Limited)
Operational year	2022 calendar year
Operator / proponent	Port of Newcastle

PON and other users of land within the original DA Consent 293-08-00 parcel hold specific approvals as necessary for certain operational areas. Each of these separate Consents contain development conditions and requirements which supersede those of DA 293-08-00, and are considered outside the scope of this AEMR. These separate Consents are listed below:

- DA 8137 Mayfield Storage Facility issued on 30 June 2017 for land described as Lot 54 DP 1229869, operated by Rex J Andrews.
- Project Approval MP08_0130, Development Consent SSD_6664, Development Consent SSD_7065 and Mayfield Berth No. 7 Complying Development Certificate for land described as Lot 2, DP 1177466 (operational area) Lots 36, 37 and 38, DP 1191723 (expansion area) for the Stolthaven Fuel Terminal, issued between 2012 and 2016.

1.3. Objectives

In accordance with the requirements detailed under Section 9.2 of DA (DA-293-08-00 MOD9) for the site, Port of Newcastle (PON) is required to submit an AEMR for each calendar year to the Director General of DPE and the NSW Environment Protection Authority (EPA) following commencement of operations. At present, of the total DA approved area, only the M4 facility has been completed and is operational.

The reporting requirements as set out in the DA include the following:

a) Identify all standards, performance measures and statutory requirements the development is required to comply with;
b) Review the environmental performance of the development to determine whether it is complying with these standards, performance measures and statutory requirements;
c) Identify all occasions during the previous year when these standards, performance measures and statutory requirements have not been complied with;
d) Include a summary of any complaints made about the development and indicate what actions were taken (are being taken) to address these complaints;
e) Include the detailed reporting from the Environmental Monitoring Program (see Condition 8.1), and identify any trends in the monitoring over the life of the project; and
f) Where non-compliance is occurring, describe what actions will be taken to ensure compliance, who will be responsible for carrying out these actions and when these actions will be implemented.

In addition, the report encompasses a review of the environmental monitoring requirements of the Environmental Protection Licence for Mayfield 4, for requirements that supersede those of the DA Consent.

1.4. Background

The land associated with DA-293-08-00 is the 155-hectare Closure Area of the former BHP Steel Works. The site was under the control of the former Hunter Development Corporation (HDC, now Hunter and Central Coast Development Corporation [HCCDC]) for the entire remediation works period.

Remediation works were completed for Stage 1 and 2 (approximately 90 hectares) on 24 October 2012 and was followed by a 13-week maintenance period. The former Newcastle Port Corporation (NPC) took possession as owners of the site in February 2013.

A further 10 hectares was transferred to NPC (now PON) under the 98-year lease and is known as the '*Intermodal site*'. The Intermodal site was remediated in full by HDC in 2016, involving installation of capping, land forming and stormwater controls. The development of the Multi-Purpose Terminal (MPT) component to date comprises the construction of the General Cargo Handling Facility (GCHF), referred to as Mayfield 4 Berth, the associated hardstand area and road infrastructure. Mayfield 4 Berth is approximately 1.5 hectares in size and was constructed as part of the refurbishment of the former BHP Wharf 5.

Construction works under the existing development approval and as exempt development under *State Environmental Planning Policy (Transport and Infrastructure) 2021*, are currently being undertaken to establish a hardstand area immediately to the south of the berth for the handling and storage of cargo. These works include a new access road (Quayside Place), stormwater infrastructure, security fencing and buildings, and will become operational in 2023.

Two (2) mobile harbour cranes have also been commissioned and are operational at M4 under the exempt development provisions of *State Environmental Planning Policy (Transport and Infrastructure) 2021*.

Operations at Mayfield 4 Berth (M4) commenced in January 2010. This report presents the 2022 assessment of M4 per Section 9.2 of DA-293-08-00, as the only area that is currently operational within the broader development approval.

1.5. Justification

In accordance with Condition 9.3 under Schedule 2 of the Consent, the Department requests the following information be included:

> *"Date of approval expiry as of the end of the reporting period, as determined by Schedule 2 condition 1.1A and 1.1B."*
>
> *1.1A – The approval for the General Cargo Handling Facility under MOD-56-7-2008 shall operate for a maximum period of ten years from the date of this modification, or as otherwise agreed to by the Director-General.*
>
> *1.1B – At five yearly intervals following commencement of operation of the General Cargo Handling Facility, the applicant shall submit a report to the Director–General on the need or otherwise for the General Cargo Handling Facility to be retained on site and to remain operational. The report must include supporting justification.*

The report titled '*General Cargo Handling Facility Condition 1.1B Report 2022*' was provided to DPE in February 2022 to comply with Condition 1.1B of the DA for the development of a MPT, covering the period 1 January 2017 to 1 December 2021.

In respect to the 10 year time frame referenced in Condition 1.1A, PON has lodged an application to modify with DPE to extend this period by a further fifteen years until 2038. At time of writing the application is under assessment.

1.6. Update from 2021 AEMR compliance summary

The 2021 AEMR generally identified no non-compliances with the standards, performance measures and statutory requirements for the development with the exception of three PM_{10} 24 hour exceedances and a PM_{10} annual average above the annual criterion. Most of the PM_{10} 24 hour exceedances were similar to elevated levels recorded in previous years and therefore considered to represent background fine atmospheric particulates in the Newcastle industrial area; however exceedances of three (3) remaining dates in September and December may have been due to dust from vehicle movements onsite.

2. SITE IDENTIFICATION AND LOCATION

2.1. Location

The 155 hectare parcel of land to which DA 293-08-00 MOD9 applies is located on the South Arm of the Lower Hunter River approximately 2.5 km north of the city of Newcastle. The original DA approved area, shown on Figure 1, is located within an existing industrial port area and surrounding land uses include industrial activities and infrastructure.

The Mayfield 4 Berth and associated hardstand forms a 1.5 hectare component of a larger DA approved area and is identified as Lot 44 of DP1191982, shown in Figure 2.

M4 was remediated in accordance with the Voluntary Remediation Agreement for the broader BHP Steel Works Closure Area and is now isolated from the remainder of the site in terms of stormwater and groundwater.

Please also refer to the detailed Site Plan that forms part of the property description in the site's Environmental Protection Licence in Appendix A.

Figure 1: Mayfield 4 Berth Location within the Mayfield Site Development Consent Area

Figure 2: Mayfield 4 Berth Lot and DP

2.2. M4 Operations Overview

M4 is a common user berth that is owned by PON under a 98-year lease agreement with the NSW Government and operated by stevedoring companies under a Stevedore Licence Agreement.

M4 is generally accessible Monday to Friday during standard business hours, and when ships are in berth, M4 can operate 24-hours a day, seven days a week during loading or unloading activities. During loading and unloading activities, mobile equipment such as cranes, forklifts and mobile conveyors are used. Alternatively, the ships cranes may be used to load or unload cargo.

Potential cargos for the berth include project cargos (for example wind turbines, transformers, mining equipment and materials), break bulk (inert materials only), general containerised freight, bulk cargoes such as cement in bulk bags, and ammonium nitrate in containers or bulker bags.

Cargo is usually delivered to or exported from M4 by road and truck. There is no rail access directly to the berth.

2.3. M4 Infrastructure

M4 comprises of an open pile berth and land backed concrete hardstand covered with bituminous material as shown in the Site Plan in Appendix A. A site office and security guard hut are located at the southern end of M4 at the entrance.

Operational buildings on the site are limited to facilities for stevedoring operations, offices, a first aid room, meal room and amenities block also located towards the southern end of the hardstand. The employee car parking is located adjacent to the buildings and caters for up to 60 vehicles.

During vessel loading and unloading activities, mobile equipment such as cranes, forklifts and mobile conveyors are used. At times, shipping containers may be temporarily stored on the bitumen hardstand area.

2.4. M4 Topography and Drainage

The M4 site is predominantly flat with shallow slopes and contouring to direct and facilitate the collection of stormwater runoff. The stormwater catchment is primarily limited to rainfall that falls directly on the property. During particularly heavy rainfall, the site can be affected by runon from adjacent portions of the broader BHP Closure Area.

The runoff from the berth apron is directed into a central drainage line that channels into three separate collection pits identified as Pits 1, 2 and 3 (EPL 13181 Monitoring Points 4, 5 and 6). At the time of construction, the pits were each fitted with HumeCeptor systems intended to act as separation devices to remove suspended solids and other pollutants from the incoming stormwater. The internal structure of the HumeCeptors was removed in 2013 and the pits retrofitted to improve function. The upgrade involved insertion of a baffle and weir system to slow water flow and increase sediment deposition, as well as filter socks and baskets to capture remaining suspended solids.

To minimise the amount of sediment collecting in the central drain several areas were filled in leaving 50 metres of grated drain either side of each collection point. The grated drain areas have been fitted with filter socks to assist in the removal of TSS prior to entering the collection point.

Pit 4 is located upgradient from operations and does not contain a HumeCeptor. This pit can be influenced by run-on water from the neighbouring land. The locations of the pits are detailed in the site plan within the EPL located in Appendix A.

2.5. Surrounding Land Uses

The land to which the Development Consent applies is located within an industrial precinct with surrounding uses predominantly related to operations supported by the port. Development on surrounding properties include large industrial buildings, railway yards and tracks, coal handling and storage and industrial process plants. In this regard, the surrounding industrial landscape is highly visually modified and intensively disturbed.

The port, coal handling and industrial operations of Kooragang Island and Walsh Point are located directly across the Hunter River from the site to the northwest, north and east. Further coal handling operations are located to the south. Bulk fuel operations are to the west.

To the northeast Stolthaven operates bulk storage and distribution terminal, and a marine loading arm and pipeline via Mayfield 7 (M7), a designated bulk liquids berth.

M4 is situated within the BHP Closure Area and much of the surrounding land use in close proximity remains unoccupied remediated land.

To the northwest the Mayfield Storage Facility, approved under DA 8137 on 30 June 2017 for land described as Lot 54 DP 1229869, is operated by Rex J Andrews.

To the southwest the parcel of land immediately adjacent to M4 described as Lot 42 DP 1191982 saw the commencement of hardstand expansion works which are discussed in further detail below.

2.6. Temporary Construction Work

In August 2022 PON procured and commissioned two (2) Mobile Harbour Cranes (MHCs) for use within its existing operations at M4 to load and unload vessels and trucks, however, improvements are required to M4 to allow it to handle the projected increase in cargo throughput and to enable vessels up to 300 LOA to berth.

The scope of works includes:

a) Additional hardstand area for cargo handling and storage;
b) Upgrades to access roads;
c) Services upgrades – fire, water, power and communications; and
d) Security upgrades – fencing and access systems.
e) Temporary relocation of the carpark

The footprint of the new hardstand and proposed staging of construction are shown on the drawings below. PON are currently only constructing Stage 1 (shown in orange shading), with Stages 2 and 3 to be constructed at a future date should demand increase at Mayfield. An EPL variation for the extension of the berth will be performed at the appropriate time.

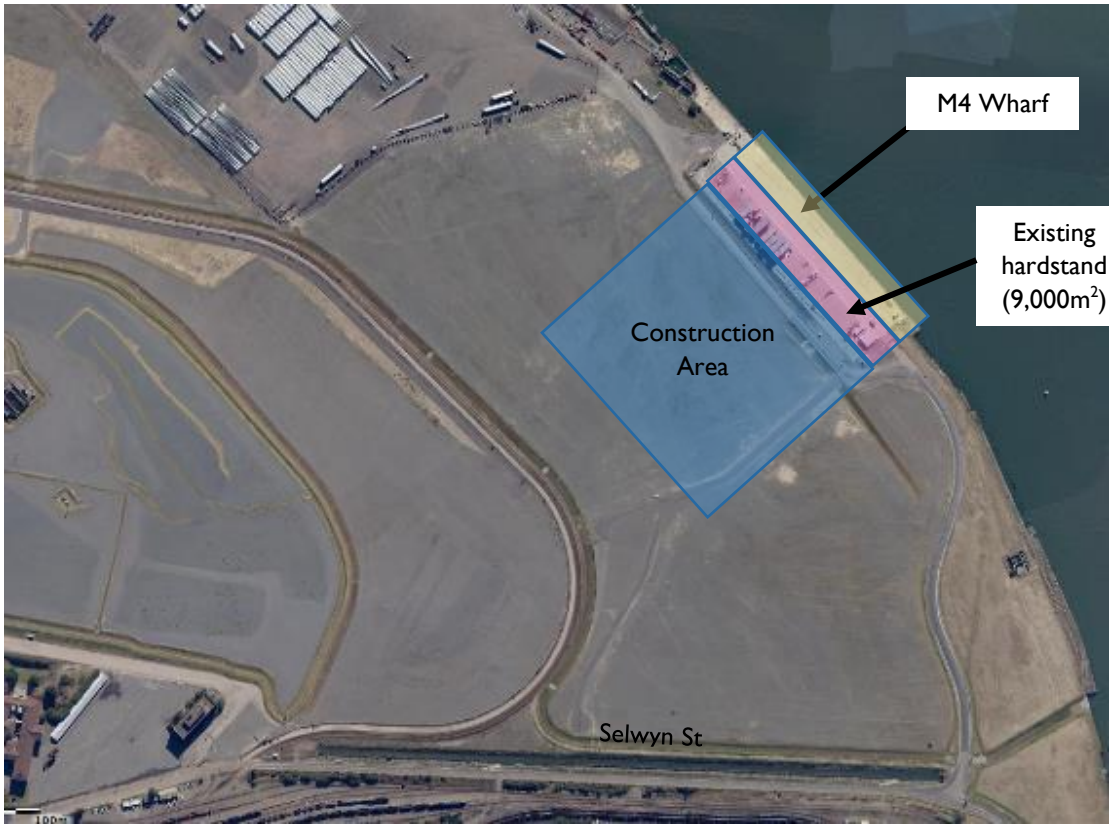

Figure 3: M4 Expansion - Construction area and existing hardstand

Figure 4: M4 Expansion - Construction Staging

PON (as Superintendent) engaged contractors KCE to perform the works under the existing development approval and as exempt development under *State Environmental Planning Policy (Transport and Infrastructure) 2021*. PON require the Contractor to at all times:

a) Comply with the:
    I. Contaminated Site Management Plan (CSMP);
    II. Contaminated Land Management Plan (CLMP), which details the minimum requirements for managing contamination on the Site; and
    III. M4 Operational Environmental Management Plan (OEMP)
b) have in place and comply with a Contract Construction Environmental Management Plan (CEMP) that:
    I. is approved by the Superintendent in writing;
    II. addresses the following issues, as a minimum:
        A. Dust/air quality, which could be substantial as a result of earthworks;
        B. Stormwater;
        C. Erosion Control;
        D. Noise;
        E. Resources (e.g. Sustainable materials procurement);
        F. Hazardous Material management;
        G. Flora and Fauna protection;
        H. Contaminated Land and waste management;
        I. Communication with and the management of Subcontractors;
        J. Refuelling/bunkering; and
        K. De-watering;
    III. complies with the CLMP and CSMP and is otherwise sufficient to ensure the Contractor's compliance with the Contract; and
    IV. have its compliance with the CLMP monitored and audited by a suitably qualified and experienced consultant approved by the Superintendent in writing and submit a Site Validation Report from such consultant to the Superintendent as a condition precedent to Practical Completion that summarises the results of such audit.
c) have in place and comply with a Contract Construction Site Management Plan (CCSMP) that:
    I. is approved by the Superintendent in writing;
    II. addresses the following issues, as a minimum:
        A. Site work area detailing site demarcation, barricading and internal construction traffic management;
        B. Manages interfaces with existing operations at M4 and neighbouring tenants; and
        C. Details a traffic management plan for construction traffic.

Further, PON required the Contractor to:

- provide and install appropriate Environmental controls to prevent air, water or noise pollution emanating from the Works or Site;
- store all Hazardous Materials used in performing the WUC in secure containers during their transport and while on the Site;
- keep SDSs (Safety Data Sheet) for all goods brought onto any PON site;
- collect and lawfully dispose of all waste generated in performing the Contract; and
- on a regular basis and as a condition precedent to Practical Completion, clean up and lawfully dispose of all such waste.

Earthworks commenced on 6 September 2022 and Stage 1 is anticipated to be completed in April 2023. It is known that portions of the drainage and services works will disturb the existing M4 hardstand area.

3. STATUTORY REQUIREMENTS

3.1. Approvals applicable to the development

Table 2 presents the approvals, licences and relevant statutory requirements held by PON in relation to the area covered by the DA. PON holds other relevant approvals as necessary for other operational areas which are not applicable to the scope of the AEMR.

Table 2: Relevant approvals, licences and notices

Type and number	Authority / Regulator	Comment / Note
Development consent DA-293-08-00 6 April 2001 (latest MOD 29 August 2013)	DPE	Stage 1, being the remediation of the Closure Area, including the demolition and removal of structures (complete); and The development of a Multi-Purpose Terminal comprising a container terminal and a general cargo handling facility and associated road, rail and wharf infrastructure and dredging of the South Arm of the Hunter River.
Major Project Application 09_0096 Mayfield Concept Approval 16 July 2012	DPE	Concept Plan (MP09_0096) approved under Section 75M of the EP&A Act to enable development of the former BHP Closure Area or Concept Plan area, a 90 hectare portside portion of land on the South Arm of the Hunter River.
Remediation Notice No 20142802	NSW EPA under Section 28 of the Contaminated Land Management Act 1997	Maintenance of remediation requirements, assessed in PON S28 Annual Review report.
Environmental Protection Licence (EPL) 13181	NSW EPA	Scheduled Activity Shipping in Bulk >100,000 – 500,000 t per year.

The operation of Mayfield 4 Berth is subject to the conditions of consent issued by the Minister for Urban Affairs and Planning to Broken Hill Proprietary Company Limited on 06 April 2001 (DA293-08-00) for land described as the 'Closure Area' being Lot 221 DP 1013964, Industrial Drive, Mayfield, NSW. PON incurred the responsibilities under the DA upon becoming the owner of the site.

Condition 9.2 of the DA requires PON to submit an AEMR to the Director-General of the Department of Planning and to the EPA 12 months after the commencement of operations at the MPT (i.e. Mayfield 4 Berth as the only operational component) and annually thereafter. It should be noted that while the DA applies to the 100ha parcel of land, the Mayfield 4 Berth only consists of approximately 1.5 hectares within this area.

Since the completion of the remediation works by former HDC (now HCCDC) on 24 October 2012, 90 hectares of remediated land and 10 hectares of un-remediated land has been handed over to PON and will be developed under Major Project Application 09_0096, the Concept Approval endorsed by the Minister for Planning and Infrastructure on 16.07.12. As per Section 1.6 of the Concept Plan it does not

apply to berths, berthing or harbour operations. It also does not apply to activities approved or legally operating at the site in accordance with other project approvals at the date of the Concept Plan Approval.

3.2. Roles and responsibilities

The Environmental Manager is the key person responsible for the facilitation of the following items as per Condition 9.1 of the DA:

- preparation of the OEMP;
- considering and advising on matters specified in the conditions of the consent and advising on compliance with such matters;
- responsible for receiving and responding to complaints;
- facilitate an induction and training program for all persons involved with site preparation and construction activities; and
- advise the Site Manager to require reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts and failing the effectiveness of such steps, to stop work immediately if an adverse impact on the environment is likely to occur.

The Site Manager reports to the Environmental Manager regarding berth operations.

The berth is owned by PON under a 98-year lease and is operated by stevedoring companies under a Stevedore Licence Agreement with PON. Stevedores working under the berth report to the Site Manager and PON Wharf Officer(s) regarding operations.

3.3. Monitoring Requirements

Condition 4.4 of DA-293-08-00 requires that PON prepare and implement a detailed Environmental Monitoring Program for the development in consultation with the EPA, and City of Newcastle Council.

The program must:

(a) Identify what environmental issues will be monitored;

(b) Set standards and performance measures for these environmental issues;

(c) Describe in detail how these issues will be monitored, who will conduct the monitoring, how often the monitoring will be conducted, and how the results of this monitoring will be recorded and reported to the Director- General and other relevant authorities;

(d) Include the following:

- Meteorological monitoring (Condition 8.5)
- Air quality monitoring (Conditions 8.6-8.10)
- Noise and vibration monitoring (Conditions 8.11-8.13);
- Groundwater monitoring (Condition 8.14-8.15); and,
- Surface water monitoring (Condition 8.16);

Conditions 7.1 to 7.4 of the Development Consent requires the monitoring of dangerous goods and Condition 9.9 requires the keeping of a complaints register.

Further monitoring requirements are specified in EPL 13181 applicable to the Mayfield 4 Berth:

- Discharges to water (Conditions P1.1, L2.5, M2.2 and M2.3)
- Meteorological monitoring (Conditions P1.2, L5.1, L5.2 and M4.1)
- Vessel movements and cargo (Condition M7.2)

- Annual Return (Condition R1)
- Complaints telephone line

4. OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

An *Operational Environmental Management Plan* (OEMP) was developed for the Mayfield 4 Berth on 26 November 2009 and subsequently updated on 18 January 2012, as a requirement of the DA (Section 4.4). The updated version was approved by the Department on 21 February 2012 (DPE Letter ref 09/00445-1).

A review of the OEMP was undertaken in September 2018 following feedback from the Department on the 2017 AEMR submission. The OEMP was then submitted to the Secretary General for Approval on 3 October 2018 and approved by the Department on 1 February 2018 (DPE Letter ref 18/924302).

The most recent review of the OEMP was performed in September 2021 following the 2020 Independent Environmental Audit, and the revised document was submitted to DPE on 29 September 2021 through the Planning Portal. The OEMP was accepted by DPE on 28 October 2021. Minor administrative alterations were made to the OEMP in November 2021, with the most recent version dated 4 November 2021.

The purpose of the M4 OEMP relevant to the environmental performance of the site is to:

- Describe the proposed operations;
- Identify all the relevant statutory requirements that apply to the operations of the development;
- Set standards and performance measures for each of the relevant environmental issues;
- Describe what actions and measures will be implemented to mitigate the potential impacts of the development, and to ensure that the development meets these standards and performance measures;
- Describe what measures and procedures will be implemented to:
    - Register and respond to complaints
    - Ensure the operational health and safety of the workers; and
    - Respond to potential emergencies such as plant failure
- Describe the role, responsibility, authority and accountability of all the key personnel involved in the operation of the development;
- Incorporate the detailed Environmental Monitoring program (see DA Condition 8.1); and
- Include the following:
    - Stormwater Management Plan (DA Condition 5.30);
    - Capping maintenance Plan (DA Condition 5.20);
    - Contaminated Site Environmental Management Plan (DA Condition 4.1); and
    - Heavy vehicle Route Plan (DA Condition 5.46).

A copy of the OEMP is available on the Port of Newcastle public website at https://www.portofnewcastle.com.au/sustainable-port/environment/.

5. REVIEW OF AIR QUALITY MONITORING AND MANAGEMENT

5.1. Assessment Criteria

The assessment criteria applicable in NSW for the assessment of Particulate Matter <10 micrometres in diameter (PM_{10}) and Total Suspended Particles (TSP) in ambient air are described in Table 1 Schedule 2 of the *National Environmental Protection (Ambient Air Quality) Measure*. The relevant assessment criteria are provided in Table 3.

Table 3: Air Quality Monitoring Requirements

Analyte	Averaging Period	Criteria	Units
Particulate Matter (<10 micrometres in diameter; PM_{10})	24 hours	50	µg/m³
	Annual	25	µg/m³
Total Suspended Particles (TSP)	N/A	N/A	N/A

Conditions 3A and 3D of Section 18 of the National *Environmental Protection (Ambient Air Quality) Measure* identifies that for the purpose of reporting compliance against PM_{10} for 1 day and 1 year average standards, all measured data should be included, including monitoring data that is directly associated with an exceptional event. For the 1 day average standard an exceptional event (as per the definition below) shall be identified and described.

> ***Exceptional event*** *means a fire or dust occurrence that adversely affects air quality at a particular location and causes an exceedance of 1 day average standards in excess of normal historical fluctuations and background levels, and is directly related to: bushfire; jurisdiction authorized hazard reduction burning; or continental scale windblown dust.*

It should be noted that in October 2016 as part of a licence variation for 13181, EPA removed the condition to monitor air quality at the site. The removal of this condition was based on the low-risk nature of the site and PON's contribution to the establishment and ongoing running costs of the EPA's Lower Hunter Air Quality monitoring network. For due diligence PON continues to monitor air quality and provides a comprehensive summary as part of the AEMR.

5.2. Sampling methodology and frequency

High-Volume Air Samplers (HVAS) for PM_{10} and for TSP were operated in accordance with the following required methods:

- PM_{10} - AS/NZS3580.9.6:2003: *Methods for sampling and analysis of ambient air – method 9.6: Determination of suspended particulate matter – PM_{10} Total high-volume sampler with size selective inlet - gravimetric method.*
- TSP - AS/NZS3580.9.3:2003: *Methods for sampling and analysis of ambient air – method 9.3: Determination of suspended particulate matter – Total Suspended Particulate Matter (TSP) - gravimetric method.*

The HVASs were operated in accordance with the required six (6) day run schedule. A total of 61 samples out of a possible 61 samples were collected during the period.

5.3. Quality Assurance and Quality Control

The PM_{10} unit is located in accordance with the general guidelines provided in AS/NZS3580.1.1:2007 *Methods for sampling and analysis of ambient air – Part 1.1: Guide to siting air monitoring equipment.*

Due to restrictions caused by heavy vehicle traffic and the need for safety of the field staff and equipment, the TSP unit was originally installed approximately 600mm from a permanent structure and inside a metal guard rail. The selected location did not meet the following general guidelines in the standard:

- Minimum 1 m distance to a wall or supporting structure
- 120° clear sky angle

The clear sky angle guideline was met for approximately 300 degrees surrounding the unit facing the berth, with only a minor portion of the angle obstructed facing away from the berth. The selected location was considered appropriate for the monitoring equipment.

The TSP unit was subsequently relocated during the reporting period to accommodate construction works. The location was selected to meet the requirements of AS/NZS3580.1.1:2007. The unit was moved on 4 November 2022 to occur between sampling runs and calibration was completed on 8 November 2022. There was no loss of data.

5.4. Results and Discussion

5.4.1. PM_{10}

The rolling annual average for PM_{10} and the 24-hour average results along with relevant limits are shown graphically in the Figure below. The contracted laboratory analytical reports, field sheets and laboratory analysis certificates are retained by PON and are available upon request. A summary of historic air quality results is contained in Appendix C.

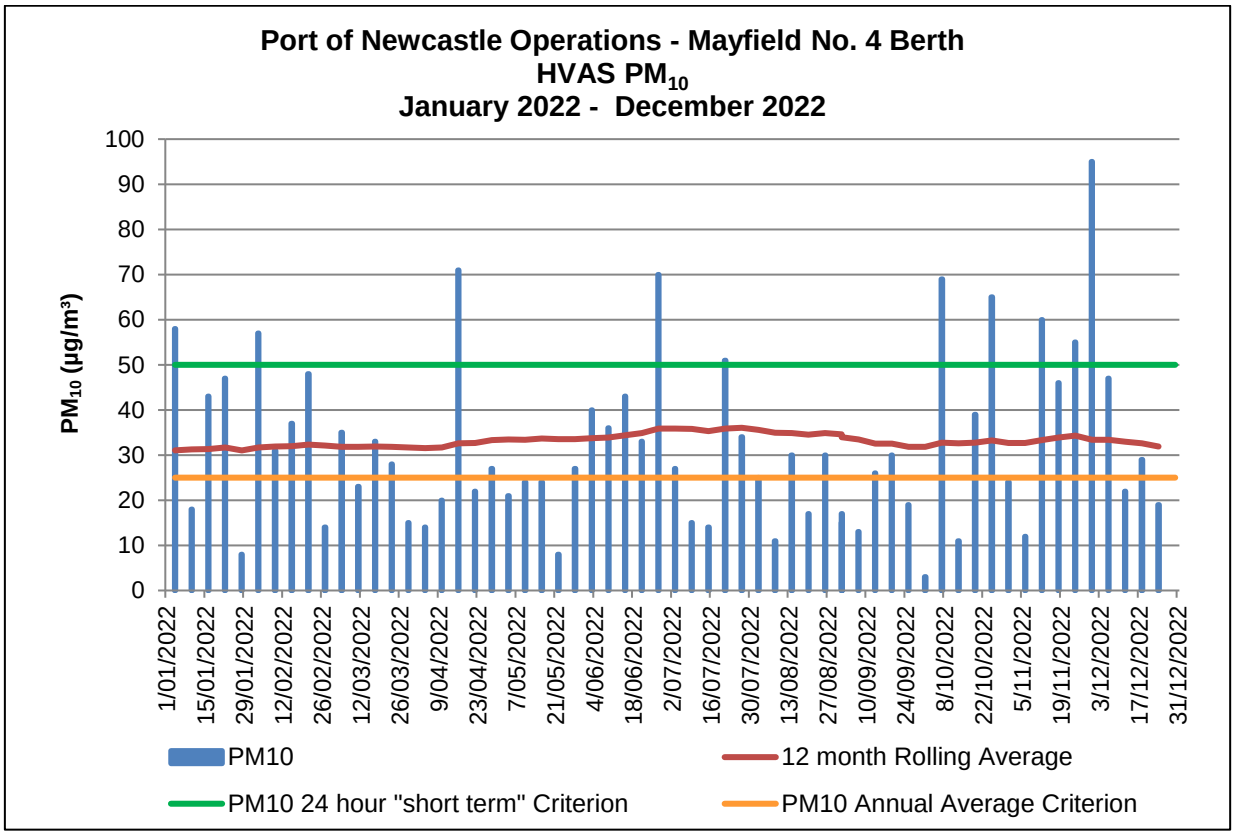

Figure 5: 2022 M4 HVAS PM10 Concentrations

Annual Average PM_{10} Data

The annual rolling average is used as a measure of air quality for long term exposure. It can be seen from the results that during the 12 months to December 2022, the PM_{10} annual rolling average remained generally stable.

This consistently stable pattern has been observed since the commencement of monitoring at the site and following completion of remedial works at the BHP Closure Area. Historical annual averages for the previous decade are presented in Figure 6.

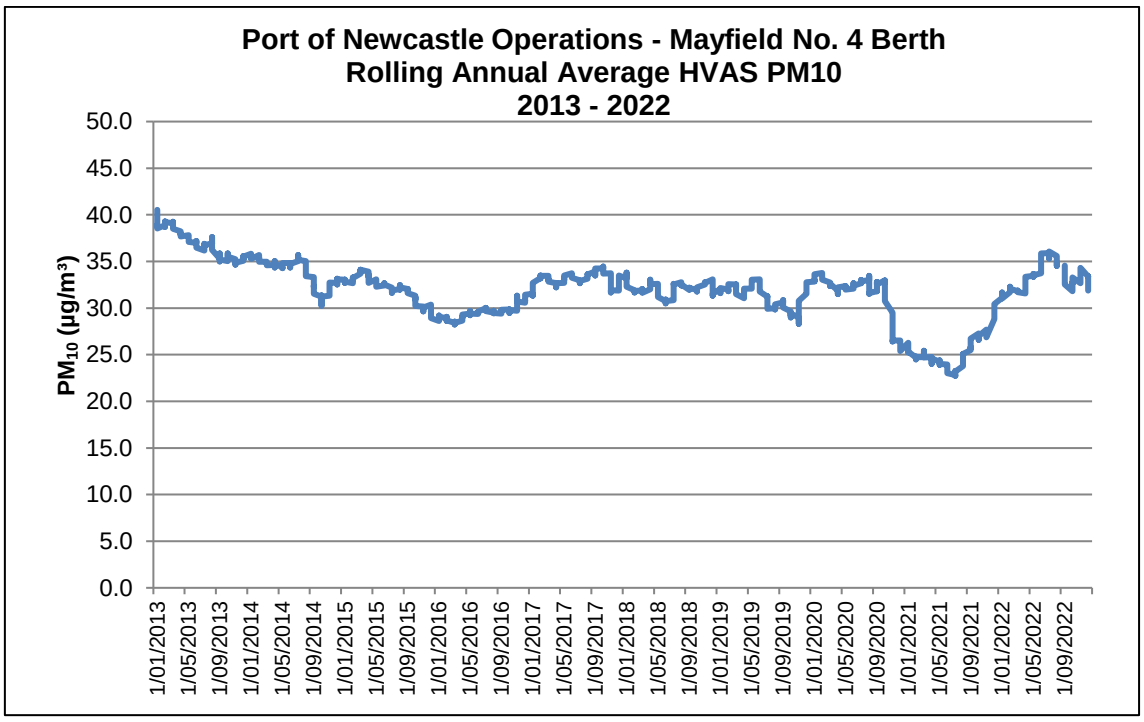

Figure 6: Rolling Annual Average PM_{10} 2013 to 2022

The general trend indicates no long-term increase to PM_{10} air quality resulting from M4 ship loading & unloading operations. The second half of 2020 and 2021 saw a decrease in PM_{10} resulting from the decreased activity and traffic due to the Covid 19 pandemic.

M4 is centrally located within a large industrial area, occurring on both sides of the Hunter River, and this PM_{10} load is considered likely to represent the particulates from combined sources in the industrial area.

Further, the concentration of PM_{10} is known to be influenced by sea salt in marine winds and spray, of which the M4 HVAS units are frequently exposed.

24-hour PM_{10}

The 24-hour PM_{10} is used as a measure of air quality for short term exposure. There were ten (10) occurrences of the 24-hour PM_{10} exceeding the short term criterion of 50 $\mu g/m^3$ during the reporting period. Individual events that exceeded the 24hr criterion are presented in Table 4.

Table 4: PM_{10} HVAS 24hr Exceedances 2022

Date	PM10 Conc. 24-h (µg/m³)	Rainfall (mm)	Predominant Wind Direction	Wind Speed Avg (m/s)	Vessel operating	Cargo type
4/01/2022	58	0	South-south East	9.3	No	-
3/02/2022	57	12.5	South-south west	8.0	No	-
16/04/2022	**71**	**0**	**East south east**	**2.8**	**Yes**	Cement bulk bags
27/06/2022	**70**	**5.5**	**South west**	**9.4**	**Yes**	Iron and steel products
13/10/2022	**69**	**0**	**North east**	**12.6**	**Yes**	Iron and steel scrap
31/10/2022	65	1.0	South west	4.4	No	-
18/11/2022	60	0	West south west	4.8	No	-
30/11/2022	**55**	**0**	**East south east**	**5.6**	**Yes**	Machinery & Equipment
6/12/2022	95	0	South east	5.5	No	-

Four (4) of the ten (10) exceedances occurred when a vessel was berthed at M4 and the facility was operational, i.e. 16 April, 27 June, 13 October and 30 November 2022. The remaining six (6) exceedances occurred at times when M4 was not operational and are attributed to offsite activities and/or climatic conditions.

The prevailing wind conditions during which the PM_{10} HVAS will detect particles from ship loading and unloading operations is in the range of north west to south east, as shown in Figure 7.

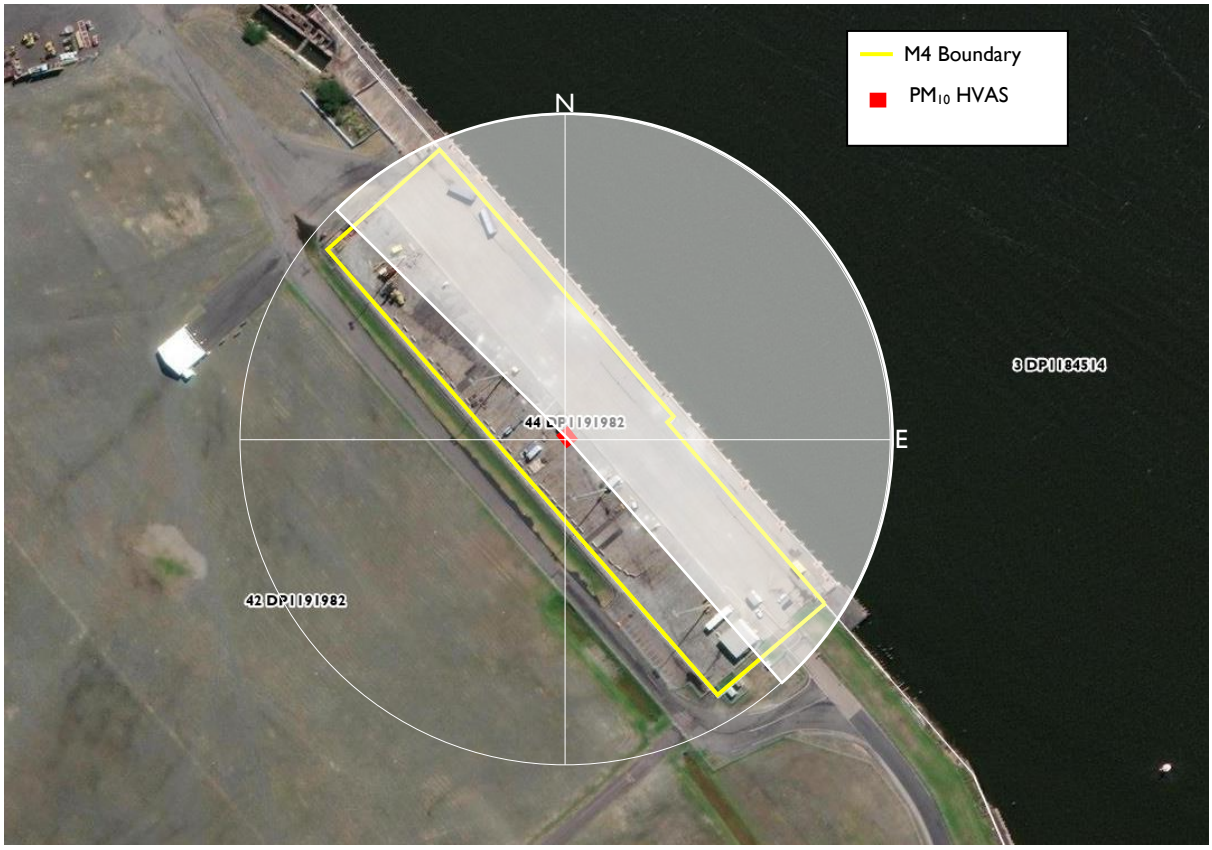

Figure 7: Wind Range for Dust Resulting from Berth Operations

Of the four (4) exceedances that could potentially relate to operations at M4, three (3) occurred during the necessary prevailing wind conditions, i.e. 16 April, 13 October and 30 November 2022.

No exceedances coincided with PON's licensed activity of 'shipping in bulk' (i.e. loose bulk cargo) on the day of the exceedances. A complete list of vessel movements at M4 for 2022 is provided in Appendix D.

Exceedance 16 April 2022

The exceedance of 16 April 2022 occurred during the unloading of cement bags during very low wind conditions. A number of mitigation measures are routinely undertaken to monitor dust conditions including:

- Environmental inspections
- Twenty-four-hour weather monitoring
- Maintenance of a Stevedore Log
- PON shift inspections of each ship in port.

The Stevedore Log shows the vessel at berth at the time of the exceedance was the Tina S, unloading bagged cement from 13/4/22 – 18/4/22. Comments on the Stevedore Logs regarding damaged bags and general poor quality of the bags, with 25 damaged bags recorded for the 24 hour period on 15 April and 28 damaged bags recorded on 16 April 2022.

Typically, bagged cargo can experience between 0-10 damaged bags throughout the duration of a full ship discharge. Some unavoidable causes are damage from the stow or due to hatch configuration. The number of damaged bags recorded on this vessel was unusually high and related to poor bag quality.

To mitigate against spillage and dust, when a damaged bag was identified in the hold the bag is lifted and placed into a recovery bag for safe discharge and transportation. Information on the quality of the bags and resulting spill issues were reported to the importer and has been rectified by the customer.

Stevedores working under the stevedore licence at the berth are required to clean the berth thoroughly after each cargo, and the cleaning method depend on cargo type. The clean-up activities are signed off by a PON Wharf Officer prior to the stevedores concluding operations.

Exceedance 27 June 2022

The exceedance of 27 June 2022 coincided with the unloading of iron and steel products. When discharging iron and steel products from the vessel it is placed onto the wharf using ships crane, then picked up from wharf by forklift and moved to the hard stand at the back of berth for storage of a maximum 72 hours. It is then loaded to truck by forklift and exported from the site. This cargo and the handling operation is typically considered low risk for the generation of dust. There were no climatic or exceptional conditions at the time of the exceedance to cause elevated PM_{10}.

Further investigation by way of visual analysis of the PM_{10} filter paper was performed. The photograph below shows this PM_{10} paper compared side by side with the respective TSP paper for the site. The key visual characteristics of the PM_{10} component of TSP is its colour, being distinctly black dust.

Photograph 1: Comparison of TSP and PM_{10} Filter Papers, June 2022

Potential dust emissions from M4 operations include:

- Dust lift off from roads caused by heavy vehicle movements during discrete cargo loading and unloading operations.
- Dust emission from ship to shore transfer of cargo, however low in probability as loose bulk cargo was not handled during the 2022 reporting period.

- Exhaust emissions from vessels, cranes and passing or idling heavy vehicles during discrete cargo loading and unloading operations.

Of these potential dust sources, it is believed that exhaust may result in black colouration of the PM_{10} filter. It is considered that exhaust emissions at the site are not substantial enough to cause such black colouration of the PM_{10} filter and that results may have been impacted by surrounding industrial activities.

Exceedances 13 October and 30 November 2022

A clustering of elevated PM_{10} concentrations can be seen from 7 October 2022 through to the end of December 2022, regardless of the presence of a vessel at berth or otherwise. The elevated results coincide with the commencement of the hardstand expansion works on the adjacent lot. Of particular impact was the excavation of a services trench that for necessary reasons encroached into M4 premises and within 4 metres of the PM_{10} HVAS, shown in the photograph and figure below.

Photograph 2: Trench Excavation in Close Proximity to PM_{10} HVAS

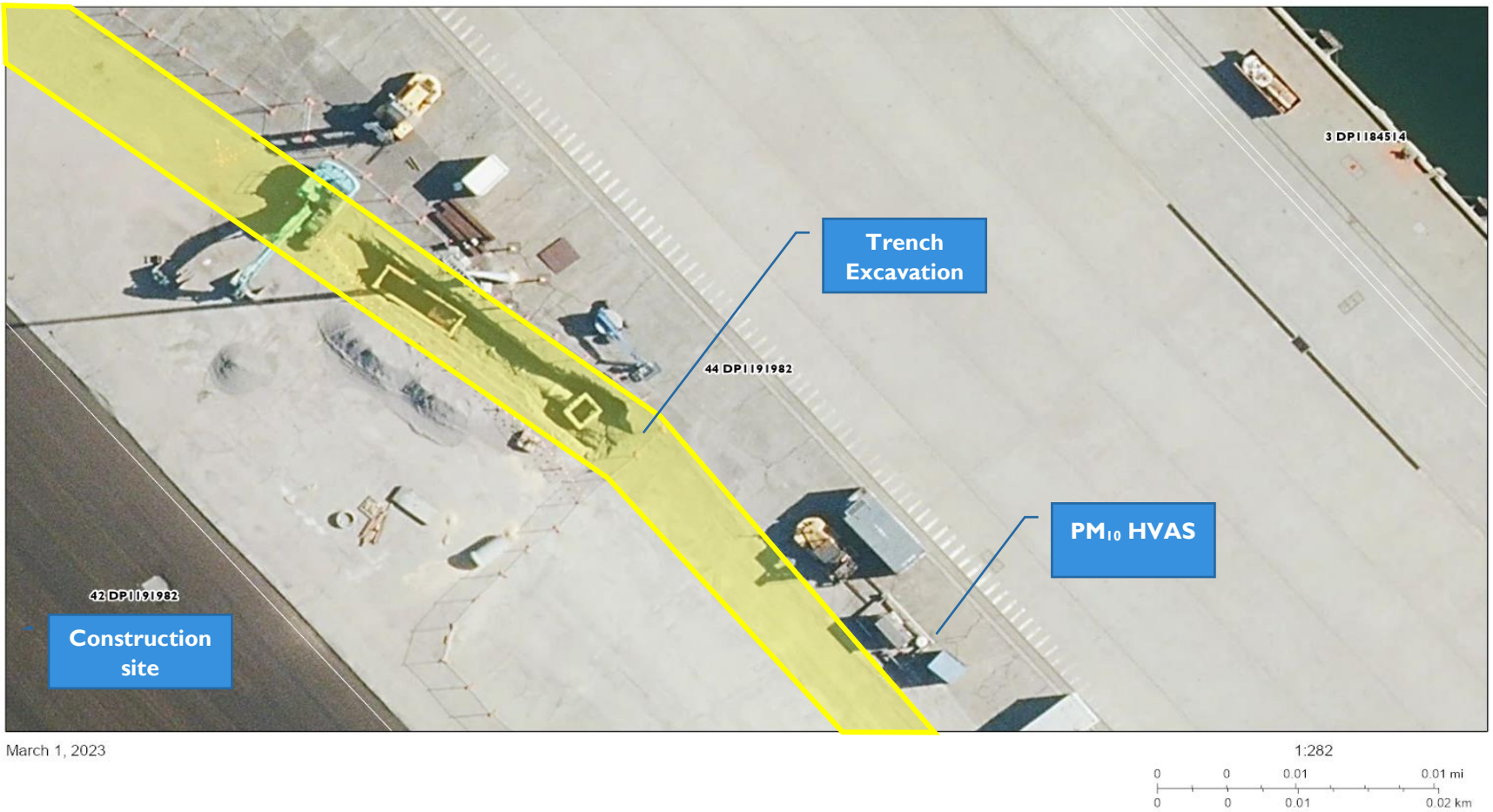

Figure 8: Trench Excavation in Close Proximity to PM_{10} HVAS

The results of 13 October and 30 November 2022 are considered to have been substantially impacted by the construction work and not representative of air quality impacts from the operation of M4.

The berth expansion work is under the control of civil contractors KCE who operate under the requirements of their approved Construction Environmental Management Plan in addition to the Mayfield Contaminated Site Management Plan (CSMP). The following contractor procedures are in place to prevent and control dust emissions:

- Open trucks transporting materials that could generate dust to and from the Site are to be fitted with "made for purpose" covers to enclose that product being transported.
- All vehicles including visitors and trucks are to travel slowly enough along site accesses so to generate minimal dust.
- During construction the total area disturbed/cleared is to be restricted/minimised to the greatest extent possible.
- Disturbed areas are to be strategically watered with the use of an onsite watercart.
- Excavated and/or other material is to prevented from being deposited on roadways.
- Each site access / egress is to be left clean at the end of each working day.
- Once construction is complete, disturbed areas are to be restored/rehabilitated as soon as possible.

When the wind velocity is so great that dust generated, either directly or indirectly by construction activities, cannot be effectively controlled by watering or other control means, then construction activities are to cease. Construction is not to be resumed until the wind velocity has decreased enough that dust generations can be effectively controlled.

Environmental inspections confirm the frequent application of water across the construction site, however the extended periods of low rainfall and high wind experienced from October to December have made controlling general dust lift-off very difficult.

Figure 9: Environmental Inspection Showing Water Cart in Use

5.4.2. Total Suspended Particulates (TSP)

The rolling annual average for TSP and the 24-hour average results along with relevant limits* are shown graphically in the Figure below. The contracted laboratory analytical reports, field sheets and laboratory analysis certificates are retained by PON and are available upon request. A summary of historic air quality results is contained in Appendix C.

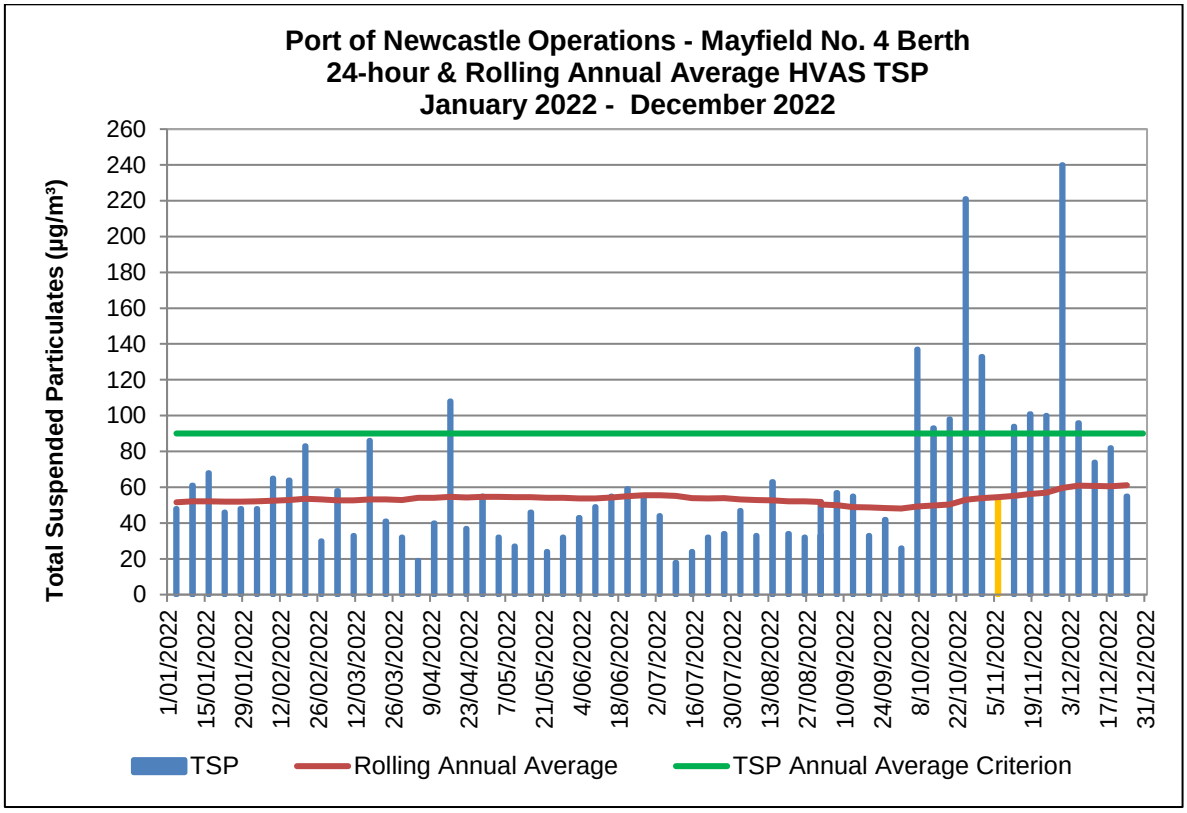

Figure 10: 2022 HVAS TSP Concentrations

* No published limit for 24-hour TSP

The concentrations of TSP during the reporting period were largely found to align with the PM_{10} findings in terms of:

- Generally stable rolling annual average, remaining below the limit criteria of 90 µg/m^3.
- Isolated 24-hour peak associated with the cement shipment on 16 April 2022.
- Cluster of 24-hour peaks associated with the commencement of berth expansion works, also causing an increase to the annual average.

A comparison of TSP concentrations against PM_{10} measured at M4 since monitoring began found that particles under 10 microns make up a significant portion of the total suspended particles, averaging 51% by weight and at times equal 100% of the TSP. The fine black nature of the PM_{10}, and likely offsite source, has implications for the amount of TSP that can reasonably be attributed to M4 operations.

Historical annual averages across the past decade are presented in Figure 11. There is a general trend towards an improvement in the rolling annual average TSP over time, with a recent increase related to construction dust.

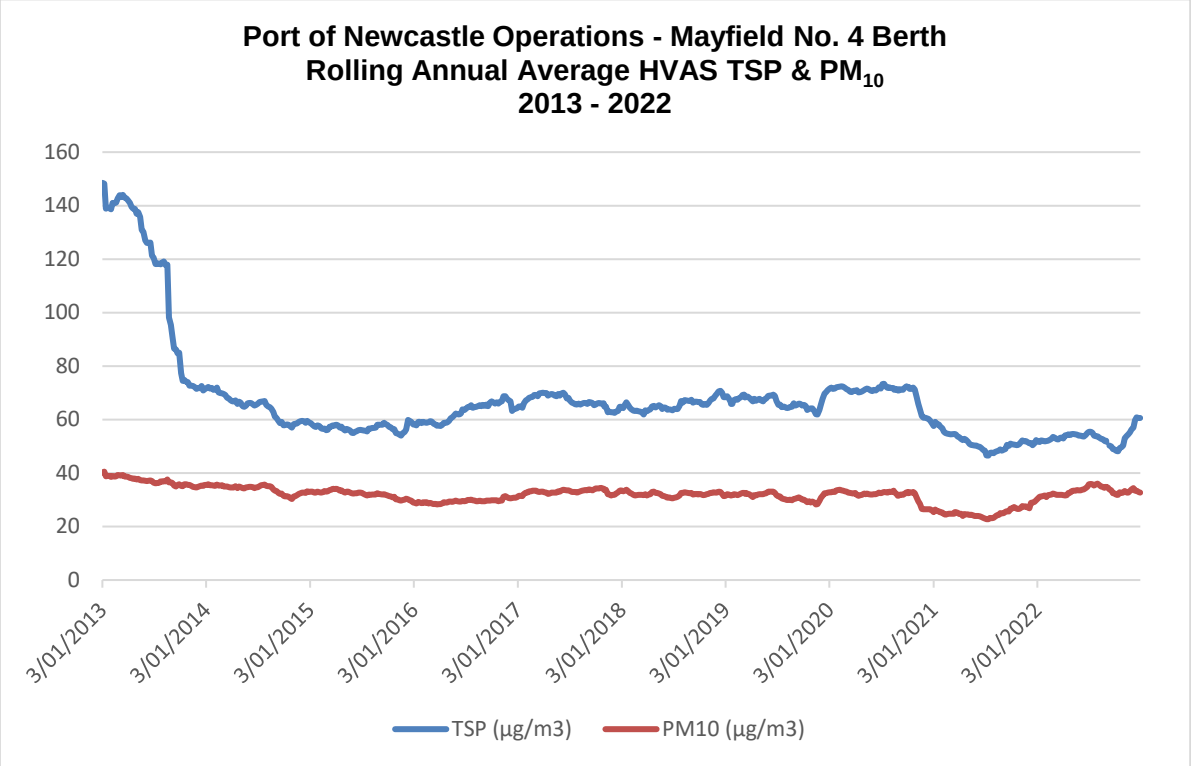

Figure 11: TSP and PM10 Rolling Annual Average Long-Term Trend

6. REVIEW OF NOISE MONITORING & MANAGEMENT

6.1. Assessment Criteria

The recommended noise management levels for each of the identified receivers is provided in condition 5.11 of the Development Application DA 293-08-00, dated 23 August 2013 (MOD-9), Condition 5.11 of the Consent Condition requires that the facility demonstrates compliance with site noise limits at various noise sensitive receivers near the facility. It is not possible to directly measure the impact of noise arising from operations at Mayfield No. 4 Berth due to the influence from extraneous noise sources at nearby receiver locations. The compliance assessment was therefore carried out using SoundPLAN noise modelling software. This method of noise compliance assessment is in accordance with Chapter 11 of the NSW Environment Protection Authority's (EPA) *Industrial Noise Policy* (INP). The INP was repealed in 2017 and replaced by the *Noise Policy for Industry* (2017); however, it is noted that the INP continues to apply where referenced in existing statutory instruments as explained in the describe in the EPA document *Implementation and transitional arrangements for the Noise Policy for Industry (2017)*.

Condition 5.11 of the DA outlines that noise generated by the facility's operations shall not exceed the noise impact assessment criteria specified in the table below for the indicated locations and periods.

Table 5: Noise monitoring locations and criteria

Location	Day [1] $L_{Aeq(15\ minute)}$ dB(A)	Evening [2] $L_{Aeq(15\ minute)}$ dB(A)	Night [3] $L_{Aeq(15\ minute)}$ dB(A)
1. 52 Arthur Street	49	38	38
2. Mayfield East Public School	47	37	37
3. 21 Crebert Street	49	39	39
4. Newcastle TAFE	44	38	38
5. 1 Arthur Street	48	33	33

[1] Day: 7:00am to 6:00pm Monday to Saturday; 8:00am to 6:00pm Sundays and public holidays
[2] Evening: 6:00pm to 10:00pm on any day
[3] Night: 10:00pm to 7:00am Monday to Saturday; 10:00pm to 8:00am Sundays and public holidays

In accordance with Section 11.1.2 (Notes on Noise Monitoring) of the *Industrial Noise Policy* onsite measurements were taken at individual plant items and typical operations at the berth. The plant item sound power levels were determined by attended noise measurements made on site. Based upon the attended measurements, 'reasonable' worst case operational scenarios were established and modelled for the operations during the day, evening and night assessment periods as per the requirements of Condition 5.11. In total three operational scenarios were modelled. The assessment of each scenario considers a 'reasonable' worst case 15-minute operational period. These scenarios can include the following:

- Containers being loaded from ship onto the wharf
- Unloading Ammonium Nitrate Bags from the site
- Unloading of wind turbine components
- Container being loaded/unloaded from trucks prior to and after ship arrival/departure (assumes worst case when ship is at the berth, but no ship-based operations occurring)

Previous operational noise compliance assessments undertaken by AECOM have confirmed consistent compliance from these berth operations over these three years, which were presented in the following assessments:

1) Mayfield no. 4 berth, operational noise compliance assessment, 60223483.rpt02.01, dated 7 October 2011.

2) Mayfield no. 4 berth, operational noise compliance assessment, 60223483.rpt03.02, dated 21 September 2012.

3) Mayfield no. 4 berth, operational noise compliance assessment, 60223483.rpt04.01, dated 17 September 2013.

Newer bulk fuel operations commenced at Mayfield No. 4 Berth in November 2013. Even though consistent compliance has been demonstrated over several years for the other berth operations, the noise impacts from the new bulk fuel operations require assessment and demonstration of consistency in the noise emissions from the new bulk fuel operations.

New operations at M4 include the use of two (2) mobile harbour cranes, which were the subject of a separate noise assessment which showed noise impacts were not expected to be significant.

Eight (8) previous operational noise compliance assessments have been undertaken by AECOM for the bulk fuel operations, which are presented in the following assessments:

1) Mayfield No. 4 Berth, Operational Noise Compliance Assessment, 60333368-RPNV-01_C, dated 24 November 2014.
2) Mayfield No. 4 Berth, Operational Noise Compliance Assessment, 60343794-RPNV-02_B, dated 1 November 2015.
3) Mayfield No. 4 Berth, Operational Noise Compliance Assessment, 60518192-RPNV-02_B, dated 5 December 2016.
4) Mayfield No. 4 Berth, Operational Noise Compliance Assessment, 605533182-RPNV-02_B, dated 18 December 2017.
5) Mayfield No.4 Berth, Operational Noise Compliance Assessment (2018), 60553318-RPNV-03_B, dated 15 February 2019.
6) Mayfield No.4 Berth, Operational Noise Compliance Assessment (2019), 60620239-RPNV-01_0, dated 19 December 2019.
7) Mayfield No.4 Berth, Operational Noise Compliance Assessment (2021), 60620239-RPNV-06_0, dated 02 March 2022.
8) Mayfield No.4 Berth, Operational Noise Compliance Assessment (2022), 60620239-RPNV-08_0, dated 17 January 2023.

6.2. Results and Discussion

Noise compliance monitoring is generally scheduled around November each year. During 2022, construction operations were commenced at the MCHF adjacent to the M4 Berth, which resulted in a temporary increase in non-standard activities at the site and associated construction noise, which affect PON's ability to complete noise monitoring of 'normal' operating conditions. Reasonable attempts were made to arrange a sufficient pause in construction work to enable the monitoring of noise from normal ship operations at the berth. However, at the time berth M4 only received between three (3) and six (6) ship movements per month, therefore during 2022 it was unlikely PON could achieve a suitable window to conduct the noise monitoring in conjunction with a ship in berth and a cease of construction work.

In November 2022 PON therefore requested an Extension of Time from DPE, which was granted in a letter dated 3 February 2023. The Noise Compliance Report is attached in Appendix E, and shows a detailed description of monitoring methodology and results.

Nearfield noise measurements of unloading activities were conducted in the absence of construction activities during the morning stand-down period and during unloading of wind turbine components. This ensure that the specific noise source being measured was the dominant noise source throughout the measurement period.

In summary, the day, evening and night-time noise emissions were predicted at each of the required assessment locations and compared against the site noise limits. In accordance with the requirements of Condition 5.11 all scenarios were modelled using a Pasquill stability class of D for the day period and a Pasquill stability class of F for the evening and night periods, and a worst-case source to receiver wind of 3 m/s for the day, evening and night periods was incorporated into the modelling.

The results of the modelling concluded that full compliance was achieved at the five required assessment locations during all assessment periods.

7. REVIEW OF GROUNDWATER MONITORING & MANAGEMENT

7.1. Assessment Criteria

Conditions 8.14 and 8.15 of DA 293-08-00 state:

> *"A number of Groundwater bores from the existing network must be retained and maintained on the site"*; and
>
> "*The applicant must submit a list of proposed parameters to monitor groundwater contaminants to the EPA for approval prior to any cut and fill operations commencing on the site*."

Upon the completion of remediation work, the EPA replaced the Remediation Site Declaration with a Maintenance of Remediation Notice (S28 of the Contaminated Land Management At 1997) which included a requirement for ongoing groundwater monitoring. An Ongoing Groundwater Monitoring Program was developed by JBS&G in 2014.

The objective of the monitoring program is to measure and monitor whether the barrier wall/capping system continue to operate in accordance with model predictions. In accordance with the Ongoing Groundwater Monitoring Program, PON continuously monitor the water levels in six (6) monitoring wells shown in Figure 12. All wells are located within the barrier wall.

7.2. Methodology and Quality Assurance

Groundwater monitoring is undertaken at the following monitoring well locations:

- Hourly water level monitoring at fill aquifer monitoring wells MW05FA, M13/12F and M14/21F; and
- Hourly water level monitoring at estuarine aquifer monitoring wells MW05SA, M13/12S and M14/21S.

Hourly water level logging is undertaken by way of in-situ water level & barometric pressure sensors with data logging. The water level loggers are inspected and downloaded every three (3) months, followed by a review of data quality, comparison of groundwater levels with previous levels, and identification of any significant changes in hydrology.

The groundwater level data has been monitored and assessed since 12 July 2013. A copy of the 2022 Annual Groundwater Level Monitoring Report is provided in Appendix F.

Figure 12: Long Term Groundwater Level Monitoring Locations

7.3. Results and Discussion

7.3.1. Fieldwork

Inspection and retrieval of the water level logger was attempted from all six (6) monitoring wells on:

- 28th January 2022
- 4th May 2022
- 21st October 2022
- 28 February 2023 (for 22 October to 31 December 2022 data)

The retrieval and download scheduled to occur in July 2022 was not able to be undertaken due to personnel availability issues.

7.3.2. Data Capture

The table below summarises the data capture for each groundwater level logger for 2022.

Table 6: Groundwater Level Data Capture

Monitoring Location	Data Capture Rate
MW05Fa	Data capture 1 January to 4 May 2022
MW05Sa	Data capture 1 January to 4 May 2022
M13-12F	Data capture 21 October to 31 December 2022.
M13-12S	100% data capture
M14-21F	100% data capture
M14-21S	100% data capture
Barometric Pressure	100% data capture

During the October retrieval round, the loggers from MW05sa and MW05fa were found to be missing. A subsequent investigation could not identify the cause or date that the loggers went missing. They are assumed stolen. Consequently, there is no data for these wells post the previous download which occurred on 4 May 2022. An audit is ongoing, and replacements have been planned.

The logger within M13-12F was replaced in February 2022 due to negative/ invalid water readings detected during the January 2022 download. The download in May 2022 failed due to a communication error. The device was reactivated however again in the October 2022 download was found not to communicate. The logger was replaced and has been successfully captured data since this download.

7.3.3. Fill Monitoring Wells

Observations on short term water level trends within the three (3) fill monitoring wells are:

- M14-21F has a full data set for 2022 and presents the most representative trend for groundwater levels in fill. The water level rose to the middle of the year and then decreased to level slightly higher than the commencement of the monitoring period. The trend appears generally consistent with the rainfall.
- The available data from M13-12F is generally consistent with that of M14-12F with a slight decrease from end of October 2022 until end of February 2023.
- The available data from MS05Fa is generally consistent with that of M14-12F with an increase from February 2022 through to May 2022 (end of data capture). It is noted that there is a sharp

increase between January 2022 and February 2022, due to significant rainfall events that occurred at that time.

Long term trends are shown in the Figures below and indicate the water level within the three (3) fill monitoring wells are generally stable and no immediate substantial change in groundwater level response to rainfall events is observed; however, a slight increase/decrease in water level has been observed during periods of sustained increase/decrease in rainfall.

7.3.4. Shallow Estuarine Monitoring Wells

The groundwater levels recorded within the shallow estuarine monitoring wells M13-12S, M05FSa and M14-21S show considerable daily fluctuations which are likely due to the impact of tides from the Hunter River.

Observations on short term water level trends within the three (3) estuarine monitoring wells are:

- M13-12S: Water level shows a slight decreasing trend. There is a sharp increase in October 2022 which doesn't appear to be related to rainfall and may be related to the replacement of the logger after download.
- MW05Sa: Water level shows an overall stable trend within the available extent of data.
- M14-21S: Water level shows a slight increasing trend.

Long term trends are shown in the Figures below and indicate the water level within the three (3) estuarine wells are generally stable with less responsiveness to short term rainfall than observed in the fill bores.

Overall, both the fill and shallow estuarine aquifers are generally observed to exhibit a measurable but minimal response to rainfall events, with the shallow estuarine water levels most affected by tidal response. This supports that conclusion that the integrity of the cap and barrier system has been maintained and continues to be effective in minimising rainwater infiltration and groundwater migration across the barrier.

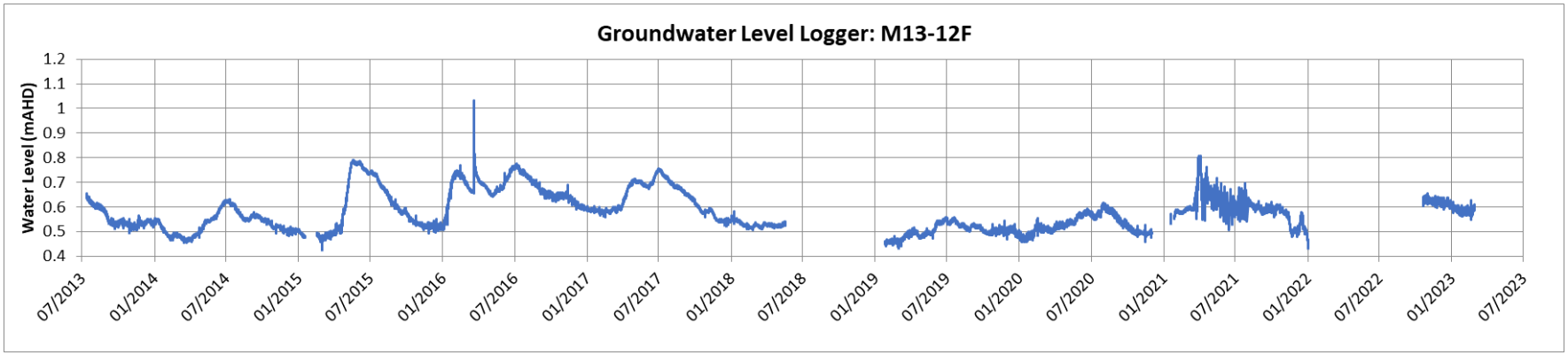

Figure 13: M13-12F Groundwater Level Long-Term Trend

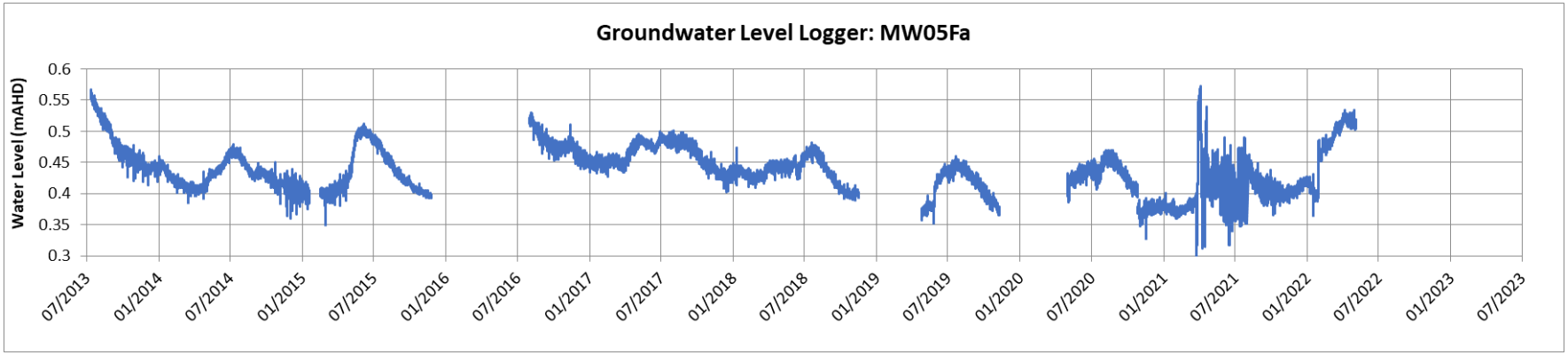

Figure 14: MW05Fa Groundwater Level Long-Term Trend

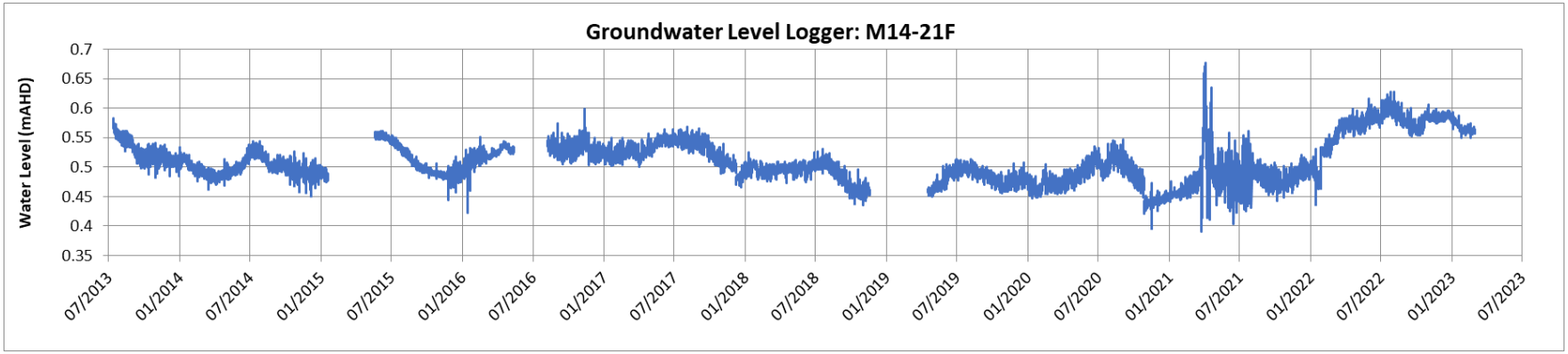

Figure 15: M14-21F Groundwater Level Long-Term Trend

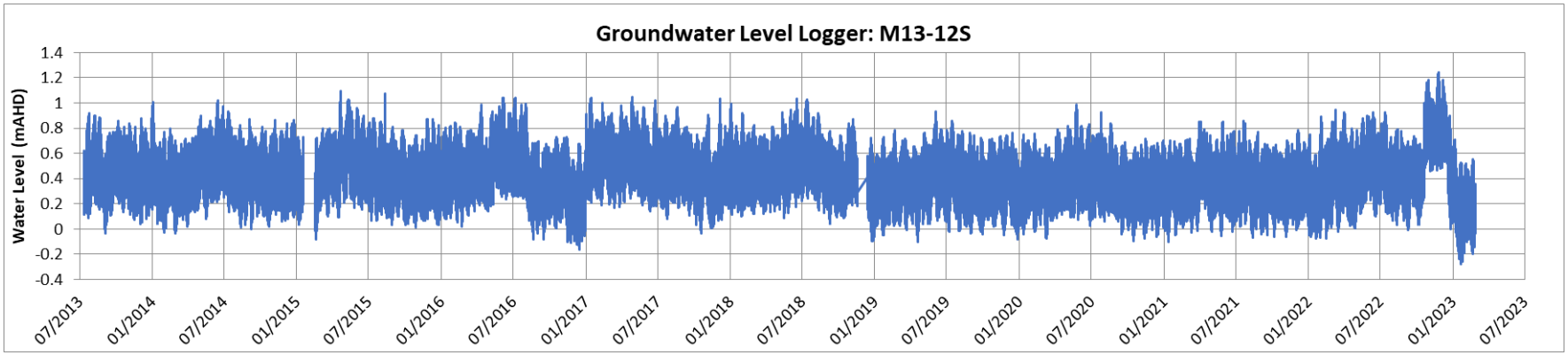

Figure 16: M13-12S Groundwater Level Long-Term Trend

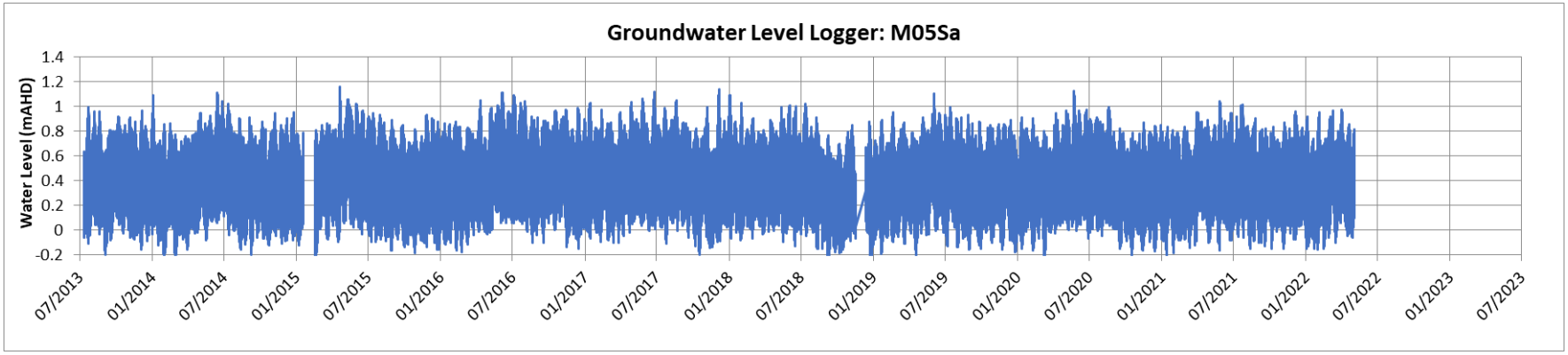

Figure 17: MW05Sa Groundwater Level Long-Term Trend

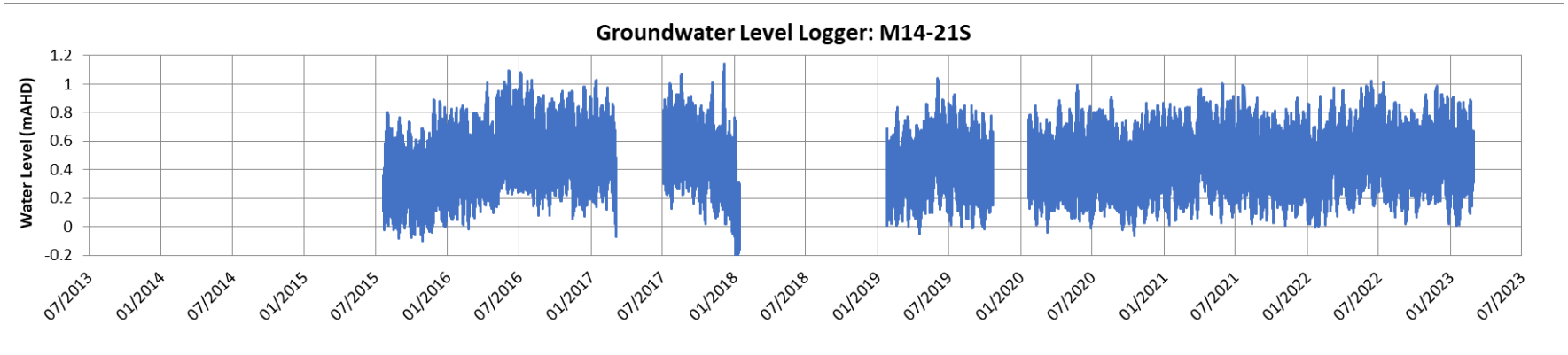

Figure 18: M14-21S Groundwater Level Long-Term Trend

8. REVIEW OF SURFACE WATER QUALITY MONITORING AND MANAGEMENT

Condition 8.16 of DA-293-08-00 specifies that Stormwater from the discharge point of the stormwater detention basin(s) or from stormwater collected in the basin(s) where no discharge is occurring must be monitored in accordance with the criteria set out in the DA conditions, unless otherwise directed or approved by the EPA.

Upon completion of remediation work and the development of M4, the facility commenced operations under an Environment Protection Licence (EPL) 13181 issued by the EPA on 4 November 2009. The EPL included new stormwater monitoring requirements at four locations (Monitoring Points 4, 5, 6, and 9). Please see Section 9 of this report for results and discussion of monitoring required by this EPL.

9. REVIEW OF ENVIRONMENTAL PROTECTION LICENCE MONITORING

Operations at Mayfield 4 Berth are subject to Environment Protection Licence (EPL) 13181 initially issued by the NSW EPA to NPC on 4 November 2009 and provided in Appendix A (current version dated 4 August 2021). The EPL specifies monitoring requirements for:

- Discharges to water (Conditions P1.1, L2, M2.2 and M2.3)
- Meteorological monitoring (Conditions P1.2, L5.1, L5.2 and M4.1)
- Vessel movements & cargo (Condition M7.2)
- Annual Return (Condition R1)

9.1. Discharges to Water

9.1.1. Acceptance Criteria

Stormwater monitoring is conducted in accordance with the criteria stipulated in condition L2 and M2.2-2.3 of the EPL and set out in the Table below.

Table 7: EPL 13181 Monitoring Points 4, 5, and 6 Stormwater Quality Monitoring Requirements

Pollutant	Units	Frequency	100%ile Conc. Limit
Nitrogen (Total)	mg/L	The first discharge event following a loose bulk cargo operation	10
Oil and Grease	mg/L	The first discharge event following a loose bulk cargo operation	10
pH	pH	The first discharge event following a loose bulk cargo operation	6.5 – 8.5
Phosphate	mg/L	The first discharge event following a loose bulk cargo operation	No limit specified
Total Suspended Solids	mg/L	The first discharge event following a loose bulk cargo operation	50

Only one discharge event is required to be sampled each calendar month.

9.1.2. Sampling Methodology and Frequency

Prior to November 2016, stormwater samples were required to be analysed monthly during discharge from four locations. From 3 November 2016 EPL 13181 was varied to amend the sampling frequency to the first discharge event following a loose bulk cargo operation. The licence variation also included the removal of Pit 4. Stormwater samples were originally collected monthly by environmental consultants RCA. The monitoring scope is as follows:

- Collection of surface water samples monthly during discharge, from the sampling points (as per EPL 13181).
- Laboratory analysis of surface water samples, including a field duplicate for quality assurance and quality control (QA/QC). Samples are analysed for pH, oil and grease, phosphate, total suspended solids (TSS), total nitrogen including nitrate plus nitrite as N and total Kjeldahl nitrogen (TKN).
- Inclusion of surface water results in a report.

Prior to each sample collection, the sampling equipment is decontaminated with a phosphate free detergent and then rinsed with water. Surface water samples are collected in accordance with Australian Standard (AS/NZS) 5667.1:1998. Samples are then placed in an ice-filled esky and shipped under strict chain of custody protocol to a National Association of Testing Authorities (NATA) accredited laboratory. Field parameters were also recorded at the time of each sampling event.

Each of the sampling points is fitted with an automated water sampler to enable sample collection during discharge as per EPL 13181. The automated samplers chosen for the site are ISCO GLS type. The sampler was chosen based on physical size allowed to fit inside Pits 1, 2 and 3 on the berth, as due to the operational nature of the site no infrastructure is permitted to protrude above ground. Pit 4 sampler is in a cabinet adjacent to the pit so that the sampling lines are fed into the drain. An example of the automated water sampler is shown in the photograph below.

Photograph 3: Automated Water Sampler on M4 Berth

9.1.3. Results and Discussion

Analytical results have historically been assessed against the limits defined in EPL 13181 where a limit is available. As no loose bulk cargo was handled during the EPL period of 28 January 2022 to 27 January 2023, surface water monitoring was not required to be undertaken and therefore no results are presented.

Information relating to the cargo handled at M4 during the reporting period is presented in the Vessel Register located in Appendix D.

9.1.4. Stormwater System Maintenance

Details of maintenance performed on the stormwater system by PON for the monitoring period can be seen in the Table below. Stevedores working under the stevedore licence at the berth also are required to clean the berth thoroughly after each cargo, and the cleaning method depend on cargo type. The clean-up activities are signed off by a PON Wharf Officer prior to the stevedores concluding operations.

Table 8: Stormwater System Maintenance 2022

Month	Maintenance Performed
31st January 2022	Filters changed
24th February 2022	All pits sucked and washed out clean. All filters changed
31st March 2022	Filters changed
5th April 2022	All pits sucked and washed out clean. All filters changed
26th May 2022	Filters Changed
28th June 2022	Filters Changed
29th July 2022	Filters Changed
23rd August 2022	All pits sucked and washed out clean. All filters changed
27th September 2022	Filters changed.
31st October 2022	Filters Changed
26th November 2022	Filters Changed
15th December 2022	All pits sucked and washed out clean. All filters changed

9.2. Meteorological Monitoring

PON maintains an Automatic Weather Station (AWS) at the Mayfield 4 Berth site in accordance with the requirements of EPL 13181. The weather station provides real time data to berth operators to assist in managing ship loading and unloading operations.

PON are required to monitor certain weather parameters specified by the EPL and show in the table below.

Table 9: EPL 13181 Meteorological Monitoring Requirements

Parameter	Unit of Measure	Frequency
Sigma Theta	degrees	Continuous
Wind speed or run	m/s	Continuous
Wind direction	degrees	Continuous

In addition to the mandatory monitoring parameters, the weather station also records:

- Rainfall
- Temperature
- Humidity
- Barometric pressure
- Solar radiation

9.2.1. Acceptance Criteria

Section L5 of the EPL establishes wind speed limits for loose bulk cargo operations, noting that wind speed limits do not apply for following loose bulk cargoes or other cargo forms:

- Cotton seed pellets;
- Ferro-alloys;
- Magnetite;
- Mineral sands;
- Nut coal;
- Urea granules;
- Wet Silica Sands; and
- Whole soya beans.

The EPL requires that all other loose bulk cargo operations must cease for a period of at least 15 minutes if the average wind speed exceeds seven metres per second (7 m/s) for a five-minute period, or if wind gusts exceed 12 m/s.

Operations must not recommence until the wind speed limits have not been exceeded for a period of 15 minutes.

The AWS is fitted with an alarm and flashing light that activate when the specified wind parameters are exceeded to trigger the management response outlined in the EPL, OEMP and Stevedore Licence.

9.2.1. Wind Results and Discussion

Wind speed and direction are continuously recorded at the Mayfield 4 AWS to assist in day to management of the berth and for interpreting air quality results. A complete set of wind speed and direction data was achieved during the reporting period and is attached in Appendix G.

During the 2022 monitoring period there were no occasions where loose bulk cargo was handled at the berth and hence no instances when the stevedores needed to comply with the EPL wind restrictions.

9.2.1. Rainfall Results and Discussion

Rainfall data is recorded every 5 minutes at M4 AWS. A complete set of data was achieved during the reporting period. A total of 2067mm of rainfall was recorded for the reporting period with the wettest

months being February – March and July. Low rainfall was recorded across the months of spring and early summer. The daily and monthly rainfall totals are shown in the Figures below.

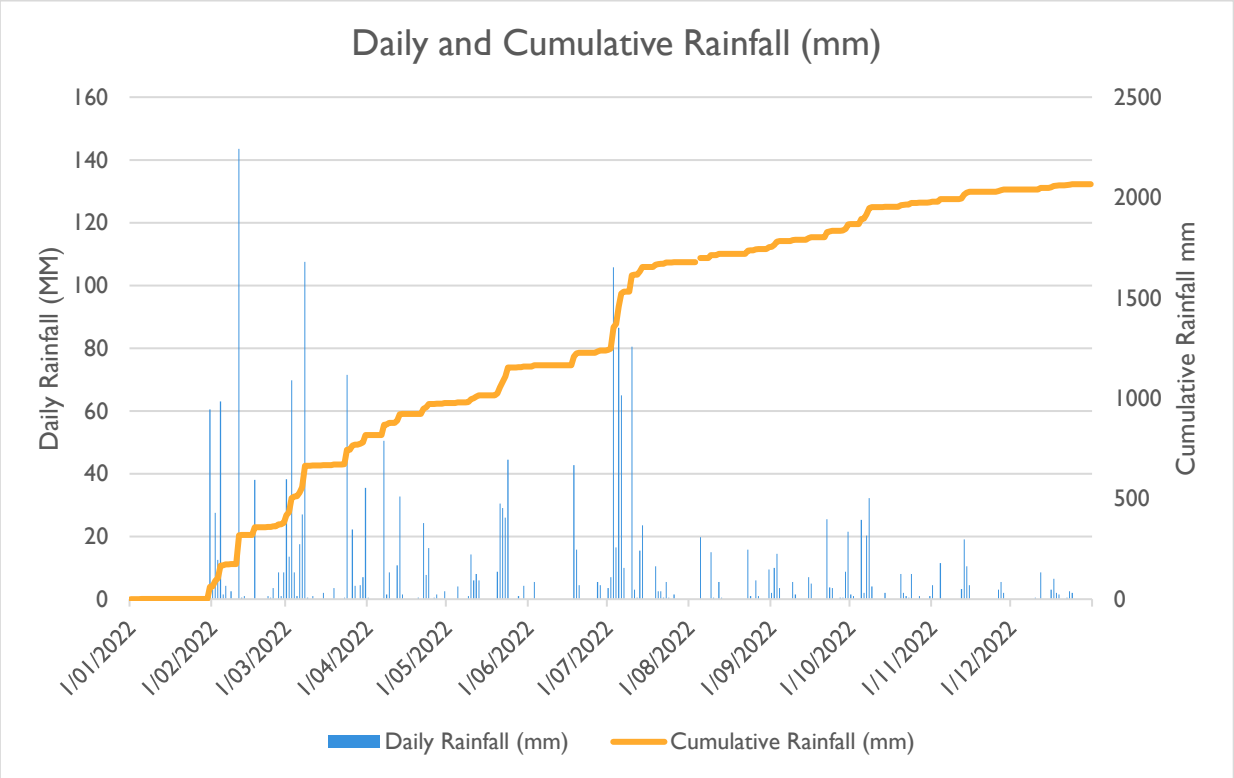

Figure 19: Daily and Cumulative Rainfall at M4 Automated Weather Station

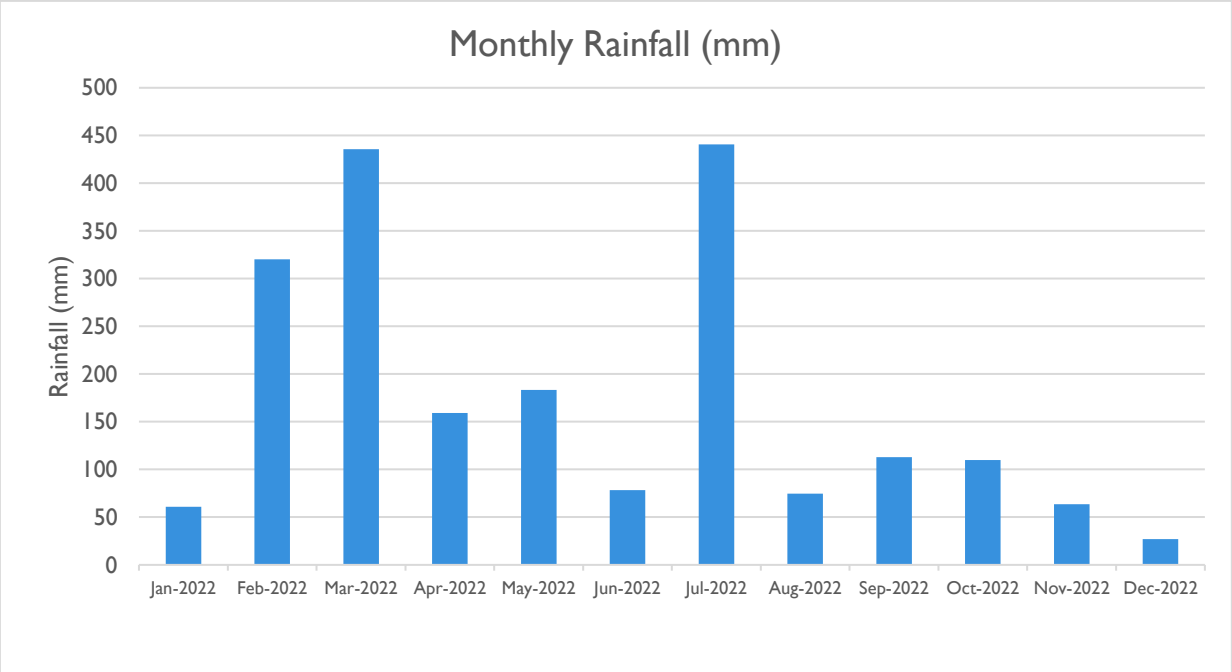

Figure 20: Monthly Rainfall at M4 Automated Weather Station

9.3. Vessel Movements and Cargo

PON maintains a register of vessel movements. Information included in the register includes the name of the vessel, length of time the vessel is berthed, and the material being handled (or if no material is being handled the reason for berthing). A full copy of the 2022 vessel movement register is provided in Appendix D. A summary of vessel operations is shown in the Table below.

Table 10: Summary of Vessel & Cargo Operations

Material	No. Visits 2020	No. Visits 2021	No. Visits 2022	% of Visits 2022
Ammonium nitrate bulk bags	12	15	13	21
Power generation machinery & equipment	9	6	11	17
Iron and steel products	4	14	10	16
Railway vehicle parts	0	3	7	11
Industry machinery & equipment	2	5	6	10
Grinding media	0	6	4	6
Iron and steel scrap	0	0	4	6
Cement bulk bags	0	0	3	5
Aluminium metal – worked	0	0	1	2
Canola meal	0	0	1	2
Construction materials	0	0	1	2
Meat- fresh/frozen	0	0	1	2
Timber products	0	0	1	2
20 x 8 x 8.5FT dry container	0	1	0	0
TOTAL SHIP VISITS	**31**	**52**	**63**	**-**

There were 63 ship visits during the year, which is an increase of 11 visits compared to 2021 and an increase of 32 visits compared to 2020. There was also an increase in the diversity of commodities handled at the berth, however there were no 'loose bulk cargo' shipments as defined by the POEO Act and Regulations and licensed by the EPL.

Operations at M4 were largely consistent with previous reporting years, involving the loading and unloading of vessel at berth and short-term storage of some cargos on the hardstand. There was also an increase in the diversity of commodities handled at the berth. Similar to previous years, the major commodities were Ammonium Nitrate in bulker, Power Generation Machine Equipment and Steel and Iron Products. Similar to previous years, the major commodities handled were Ammonium Nitrate in bulker bags at 21%, Power Generation Machine Equipment at 17% and Steel and Iron Products at 16%.

Infrastructure at M4 was largely consistent with previous reporting years, with the exception of the arrival of two Liebherr LHM 550 mobile harbour cranes in August 2022. The mobile cranes represent a $28.4-million investment in growing diversified trade. The cranes are yet to see significant use but have been used to unload cargo.

9.4. Dangerous Goods

Class 5.1 Ammonium Nitrate was the only Dangerous Good handled during the reporting period. A copy of the dangerous goods register is provided in Appendix H.

In accordance with Conditions 7.1 to 7.4 of the DA Consent, PON confirms that:

- There were no cargos classified as Class 7 Dangerous Goods (radioactive goods) either received or dispatched at the site during the reporting period.
- There has been no usage or storage (temporarily or otherwise) of any Class 1 Dangerous Goods (explosives) at the site during the reporting period.
- All dangerous goods received at the site were dispatched from the site within 72 hours of receiving those goods.

9.5. Annual Return

EPL 13181 requires the submission of an Annual Return within 60 days of the anniversary of the licence (28 January). The annual return requires that a Statement of Compliance and a summary of monitoring required by the licence (including the recording of complaints), be submitted to the EPA.

The 2022 Annual Return was prepared and submitted to the EPA as required for the 28 January 2022 to 27 January 2023 monitoring period. A copy is provided in Appendix B. No non-compliances were recorded for the period.

10. REVIEW OF COMPLAINTS

Both Condition 9.9 of the Development Consent and Condition M6 of the EPL require the keeping of a complaints telephone line and register.

Both a telephone line, email address and an online enquiry form are all prominently available on PON website.

For the 2022 monitoring period there were no complaints of an environmental nature reported to PON related to operational at M4 or the broader BHP Closure Area.

11. INDEPENDENT ENVIRONMENTAL AUDIT 2020

The Independent Environment Audit (IEA) is a statutory requirement by the Department under Conditions 9.4 and 9.5 of DA-293-08-00. In accordance with Condition 9.4, an Independent Environmental Audit is required to be undertaken within 12 months of commissioning the Multi-Purpose Terminal and every three years thereafter. The previous IEA period ended on 27 August 2017. The audit period covered by the Audit is from 28 August 2017 to 4 November 2020 and the IEA was provided to the Department via the client portal in January 2021.

The IEA assessed the development to be generally compliant with the conditions of Development Consent DA-293-08-00. Five (5) non-compliance issues were identified relating to five conditions, which were considered to be of an administrative nature:

- Condition 3.1 – Minor non-compliances with DA 293-08-00 were identified.
- Condition 7.4 – Prior to 2018, no dangerous goods register for the facility was used. This non-compliance includes from August 2017 which is part of the audit period. A dangerous goods register is included as Appendix H to the 2018 and 2019 Annual Environmental Management Reports (AEMRs). The dangerous goods register did not include:
    - details on the time of arrival/dispatch of all dangerous goods to the site

  - quantities of dangerous goods
  - packaging specifications and UN number.
- Condition 9.1 – A formal notification of the name and contact details of the current Environmental Officer was not provided to the Department following change of personnel. The non-compliance was rectified following review of the Draft Audit report by PON with a letter to the Department.
- Condition 9.2 – There is no evidence that the AEMRs have been submitted to the EPA for the audit period. This was completed following review of the Draft Audit report by PON with immediate submission to EPA.
- Condition 9.3 – An update on the previous Independent Environmental Audit was not provided in the 2019 AEMR. PON committed to providing the information in upcoming AEMRs as has been performed in this report.

The IEA report also included a number of recommendations and observations. Upon submission to the Department PON provided an Action Plan with the IEA report, shown in Table 11.

Table 11: IEA Action Plan provided to DPE with IEA 2020 report

Condition	Description	PON 2020 proposed timeline
3.1	Minor non-compliances identified as detailed in report.	Ongoing for future reports
7.4	Dangerous goods register to be revised to ensure inclusion of necessary details.	July 2021
9.3	Update on previous IEA to be included in AEMRs going forward.	March 2021

Following submission of the IEA report, the Department responded with a Request for Further Information (RFI) in February 2022. The RFI asked for the following information:

> *"…provide a response to the audit* 'Opportunities for Improvement'*, including a timeline for implementation."*

PON provided a response letter which included an implementation plan table for the open non-compliances and updated to include the 'Opportunities for Improvement', noting that the non-conformances were previously submitted with the IEA report. In the RFI response letter PON reiterated that the remaining audit non-conformances were rectified and these were noted in the IEA report. The table was updated to include the 'Opportunities for Improvement' as provided in the IEA.

Table 12 shows the implementation plan provided to DPE in February 2021, and the table includes the updated status of each action at the time of writing. From the below Table, it can be seen that all items relating to the 2021 IEA are considered closed.

Table 12: RFI Implementation Plan provided to DPE February 2021 and updated status

Condition	Item provided in IEA	PON comments and proposed timeline	PON actions	Status
Non-conformances				
3.1	*Minor non-compliances identified as detailed in report.*	Ongoing for future reports	Completed as described in 2021 AEMR.	Closed 2021
7.4	*Dangerous goods register to be revised to ensure inclusion of necessary details.*	Completion by 31 July 2022	Completed and accepted by DPE on 9 August 2022 through Planning Portal.	Closed 2022

Condition	Item provided in IEA	PON comments and proposed timeline	PON actions	Status
9.3	*Update on previous IEA to be included in AEMRs going forward.*	Completion by March 2022	Completed and included in 2021 AEMR onwards.	Closed 2021
Opportunities for Improvement				
4.4	*The next update of the OEMP should include a review of references to ensure they are correct.*	OEMP underwent review in September 2022 and was submitted to DPE on 29 September 2022.	Completed and accepted by DPE on 28 October 2022 through Planning Portal.	Closed 2022
4.4	*Update Section 4.5 of the OEMP with the correct web address for complaints handling.*	OEMP underwent review in September 2022 and was submitted to DPE on 29 September 2022.	Completed and accepted by DPE on 28 October 2022 through Planning Portal.	Closed 2022
8.9	*Testing of the TSP should be completed at regular intervals in accordance with AS/3760. A schedule should be maintained on a site database to ensure future testing dates are met.*	Reports are provided monthly from contractor as specified in the report. As of December 2021 a *PON Environmental Compliance Calendar* has been developed and is implemented for use.	Completed and in use.	Closed 2021
8.14	*Include a discussion on the groundwater monitoring in the AEMRs.*	Completion by March 2022.	Completed and included in 2021 AEMR onwards.	Closed 2021

The next IEA will be due for the period 2020 to 2023.

12. INDEPENDENT HAZARD AUDIT 2020

Condition 7.11 of the DA requires that an independent hazard audit is to be undertaken twelve (12) months after the commencement of operations and every three (3) years thereafter.

The Hazard Audit was performed in accordance with the *Hazardous Industry Planning Advisory Paper No.5,* '*Hazard Audit Guidelines*' in November and December 2020, and finalised in February 2021. Following completion the hazard audit report was submitted to DPE through the client portal.

The previous audit period ended on 27 August 2017. The audit period covered by the Audit is from 28 August 2017 to 4 November 2020 and the IEA was provided to the Department via the client portal in January 2022.

The audit assessed the development to be generally compliant with the conditions of Development Consent DA-293-08-00 and no non-compliances were recorded. Fifteen (15) recommendations were made, which PON has actioned and where appropriate implemented.

For further information regarding the Hazard Audit, please refer to the previously submitted Hazard Audit Report and correspondence with the Department.

13. COMPLIANCE STATEMENT AND CONCLUSION

The objective of the AEMR is to identify the standards, performance measures and statutory requirements related to operations at the Mayfield 4 Berth, and to assess actual performance relative to the requirements. Overall, PON compliance with these requirements was of a high standard.

The Table below presents a summary statement of compliance for the period.

Table 13: 2022 Summary of Compliance

Compliance Item	Compliance Status	Comments
Air quality – PM_{10} 24 hour	10 exceedances of criteria, 4 potentially related to M4 operations	Monitoring requirements fulfilled. 10 results in excess of acceptance criteria, but within historic range. Only 4 exceedances occurred when there was a vessel at berth loading or unloading. Impact from neighbouring industry and construction evident.
Air quality – PM_{10} Annual Average	Annual average above criterion	Monitoring requirements fulfilled. Results in excess of acceptance criteria, but within historic range. Impact from neighbouring industry and construction evident.
Air quality – TSP Annual Average	Compliant	Monitoring requirements fulfilled. Rolling average within acceptance criteria.
Noise Monitoring	Compliant	No exceedances against criteria observed.
Groundwater level monitoring - hourly	Compliant	Monitoring requirements fulfilled, noting some data loss due to stolen and faulty instruments.
Meteorological monitoring	Compliant	Monitoring requirements fulfilled.
Stormwater sampling - monthly during loose bulk cargo handling	Compliant	No during loose bulk cargo handling during the reporting period, stormwater monitoring not required.
Stormwater – pH criteria	Compliant	No monitoring required for reporting period
Stormwater – Nitrogen criteria	Compliant	No monitoring required for reporting period
Stormwater – Oil and Grease criteria	Compliant	No monitoring required for reporting period
Stormwater – Total Suspended Solids criteria	Compliant	No monitoring required for reporting period
Vessel & cargo monitoring	Compliant	Monitoring requirements fulfilled.
Dangerous Goods monitoring	Compliant	Monitoring requirements fulfilled. No handling of prohibited Dangerous Goods or exceedances or storage time.
EPL Annual Return	Compliant	Annual Return prepared and submitted to EPA as required with non non-compliances identified.
Complaints	Compliant	Monitoring requirements fulfilled. No complaints of an environmental nature reported.
2020 Independent Environmental Audit outcomes	Ongoing and Compliant	Actions identified have been closed out.
2020 Hazard Audit outcomes	Ongoing and on time	Actions identified have been either closed out or are on schedule.

Air quality non-compliances occurred both when the facility was operational and non-operational. An analysis of the exceedances showed that the measured PM_{10} levels appear to be influenced by external

sources, including surrounding land use activities and the commencement of earthworks associated with the expansion of M4 hardstand. TSP levels were below the annual average criterion of 90 µg/m^3.

Ongoing compliance has been demonstrated for the annual noise monitoring, groundwater level monitoring, meteorological and stormwater monitoring, as well as record keeping for vessel movements and dangerous goods.

No complaints have been received relating to the site during the reporting period.

In 2022 PON recruited the new position of a full-time onsite Superintendent at M4 to enhance oversight of stevedoring operations. PON continue to improve and implement procedures to manage potential environmental impacts from site operations and ensure ongoing compliance, including:

- Continued liaison with neighbouring construction contractors to minimise the impact of dust from those activities.
- Maintenance of the stormwater systems, including regular cleaning of the drains, removal of sediment and filter changes.
- Weekly environmental inspections of the berth.
- Frequent inspections throughout the duration of any bulk shipment.
- Regular sweeper truck operation to clean wharf areas.
- Berth housekeeping inspections after each vessel operation.

PON has recently completed the Sustainability Report for 2022 which outlines environmental performance and initiatives across the port area, available on the PON website.

APPENDIX A – ENVIRONMENTAL PROTECTION LICENCE EPL 13181 & CADASTRAL PLAN

Environment Protection Licence

Licence - 13181

Licence Details	
Number:	13181
Anniversary Date:	28-January

Licensee

PORT OF NEWCASTLE OPERATIONS PTY LIMITED

PO BOX 790

NEWCASTLE NSW 2300

Premises

MAYFIELD NO. 4 BERTH

OFF SELWYN STREET

MAYFIELD NORTH NSW 2304

Scheduled Activity

Shipping in bulk

Fee Based Activity	Scale
Shipping in bulk	> 100000-500000 T of annual capacity to load and unload

Region

Metropolitan North - Newcastle

Ground Floor, NSW Govt Offices, 117 Bull Street
NEWCASTLE WEST NSW 2302

Phone: (02) 4908 6800

Fax: (02) 4908 6810

PO Box 488G

NEWCASTLE NSW 2300

Environment Protection Licence

Licence - 13181

Environment Protection Licence

Licence - 13181

Environment Protection Licence

Licence - 13181

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 13181

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

PORT OF NEWCASTLE OPERATIONS PTY LIMITED
PO BOX 790
NEWCASTLE NSW 2300

subject to the conditions which follow.

Environment Protection Licence

Licence - 13181

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Shipping in bulk	Shipping in bulk	> 100000 - 500000 T of annual capacity to load and unload

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
MAYFIELD NO. 4 BERTH
OFF SELWYN STREET
MAYFIELD NORTH
NSW 2304
PREMISES AS MARKED AND SHOWN WITHIN THE ORANGE DASHED LINE IDENTIFIED AS "SITE BOUNDARY" ON THE PLAN TITLED "EPA LICENSE AREA, MAYFIELD NO. 4 WITHIN LOT 44 DP.1191982", PREPARED BY ADW JOHNSON, VERSION F DATED 20/02/2020 (EPA REF. DOC20/137140), HEREAFTER REFERRED TO IN THE LICENCE AS THE 'PREMISES PLAN'. THE PREMISES ALSO INCLUDES THE AREA MARKED AND SHOWN WITHIN THE GREEN LINE ON THE PREMISES PLAN AS "OVER WATER OPERATIONAL AREA" WHENEVER THE SCHEDULED ACTIVITY OF 'SHIPPING IN BULK' IS CARRIED OUT AS AUTHORISED BY THIS LICENCE.

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and

b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
4	Discharge to waters Discharge quality monitoring	Discharge to waters Discharge quality monitoring	Discharge from the northern Humeceptor to the Hunter River marked and shown as "Drainage Pit No. 1" on the Premises Plan.
5	Discharge to waters Discharge quality monitoring	Discharge to waters Discharge quality monitoring	Discharge from the central Humeceptor to the Hunter River marked and shown as "Drainage Pit No. 2" on the Premises Plan.
6	Discharge to waters Discharge quality monitoring	Discharge to waters Discharge quality monitoring	Discharge from the southern Humeceptor to the Hunter River marked and shown as "Drainage Pit No. 3" on the Premises Plan.

P1.2 The following points referred to in the table below are identified in this licence for the purposes of weather and/or noise monitoring and/or setting limits for the emission of noise from the premises.

Noise/Weather

EPA identification no.	Type of monitoring point	Location description
7	Meteorological Station	Automatic weather station marked and shown as "AWS" on the Premises Plan.

P1.3 For the purposes of the above table(s), the 'Premises Plan' is defined in Condition A2.1.

3 Limit Conditions

Environment Protection Licence

Licence - 13181

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Concentration limits

L2.1 The following concentration limit conditions only apply during for the first discharge event following a loose bulk cargo operation. At all other times condition L1.1 applies.

L2.2 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.3 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.4 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L2.5 Water and/or Land Concentration Limits

POINT 4,5,6

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Nitrogen (total)	milligrams per litre				10
Oil and Grease	milligrams per litre				10
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

L3 Waste

L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L3.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

L4 Potentially offensive odour

L4.1 No condition of this licence identifies a potentially offensive odour for the purposes of Section 129 of the Protection of the Environment Operations Act 1997.

L4.2 The licensee must not cause or permit the emission of offensive odour beyond the boundary of the premises.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

L5 Other limit conditions

Wind speed limits for loose bulk cargo operations

L5.1 Loose bulk cargo operations must cease for a period of at least 15 minutes:
a) if the average wind speed exceeds 7 metres per second for a 5 minute period, or
b) if a wind gust exceeds 12 metres per second.

After loose bulk cargo operations have ceased, they must not recommence until the above wind speed limits are not exceeded in the preceding 15-minute time period.

L5.2 The wind speed and direction limits specified in Condition L5.1 do not apply when the following loose cargoes are loaded or unloaded from the premises:
a) Cottonseed pellets;
b) Ferro-alloys;
c) Magnetite;
d) Mineral sands;
e) Nut coal;
f) Urea granules;
g) Wet silica sands; and
h) Whole soya beans.

Metals Concentrates

L5.3 The licensee must not receive, store, load or unload Copper, Lead, or Zinc concentrates at the premises.

4 Operating Conditions

Environment Protection Licence

Licence - 13181

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

O3.2 All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises.

O3.3 Trucks entering and leaving the premises that are carrying loads of dust generating materials must have their loads covered at all times, except during loading and unloading.

O4 Emergency response

Note: The licensee must maintain, and implement as necessary, a current Pollution Incident Response Management Plan (PIRMP) for the premises. The PIRMP must be developed in accordance with the requirements in Part 5.7A of the Protection of the Environment Operations (POEO) Act 1997 and POEO regulations. The licensee must keep the incident response plan on the premises at all times. The incident response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to cause harm to the environment. The PIRMP must be tested at least annually or following a pollution incident.

O5 Waste management

O5.1 The licensee must ensure that any liquid and/or non liquid waste generated and/or stored at the premises is assessed and classified in accordance with the EPA's Waste Classification Guidelines as in force from time to time.

O5.2 The licensee must ensure that waste identified for recycling is stored separately from other waste.

O5.3 All wastewater generated from the on-site treatment of sewage must be removed from the premises by a licensed waste transporter and taken to a facility that is able to lawfully receive it and reuse or dispose of it.

O5.4 The licensee must not dispose of sewage at the premises.

O6 Other operating conditions

Wharf deck loading and unloading requirements

O6.1 Loose bulk cargo to be unloaded onto or loaded from the wharf deck must be fully contained to prevent dust emissions and pollution of waters.

O6.2 Loose bulk cargo must not be stockpiled on the wharf deck for a period exceeding 24 hours prior to the commencement of loose bulk cargo loading operations or for a period exceeding 24 hours after the completion of loose bulk cargo unloading operations.

Tracking of materials

O6.3 The licensee must ensure that activities are conducted in an environmentally satisfactory manner. So as to minimise and prevent the pollution of air and water the licensee must:
a) Ensure that vehicles or containers prior to leaving the premises are clean and sealed in a manner that will not cause materials or wastes used in conducting the activities at the premises to be tracked, thrown from, blown, fall, or cast from any vehicle or container onto a public road.
b) The licensee must have in place and implement procedures to ensure that vehicles and containers exiting the premises are in a condition to ensure that materials are not tracked, thrown, blown, fall or cast onto a public road.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and

d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Water and/ or Land Monitoring Requirements

POINT 4,5,6

Pollutant	Units of measure	Frequency	Sampling Method
Nitrogen (total)	milligrams per litre	Special Frequency 1	Grab sample
Oil and Grease	milligrams per litre	Special Frequency 1	Grab sample
pH	pH	Special Frequency 1	Grab sample
Phosphate	milligrams per litre	Special Frequency 1	Grab sample
Total suspended solids	milligrams per litre	Special Frequency 1	Grab sample

M2.3 For the purpose of the table(s) above, Special Frequency 1 means the collection of samples during the first discharge event following a loose bulk cargo operation. Only one discharge event is required to be sampled each calendar month.

M3 Testing methods - concentration limits

M3.1 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

M4 Weather monitoring

M4.1 At the point(s) identified below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1 of the table below, using the corresponding sampling method, units of measure, averaging period and sampling frequency, specified opposite in the Columns 2, 3, 4 and 5 respectively.

Environment Protection Licence

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POINT 7

Parameter	Sampling method	Units of measure	Averaging period	Frequency
Wind Speed at 10 metres	AM-2 & AM-4	metres per second	15 minutes	Continuous
Wind Direction at 10 metres	AM-2 & AM-4	Degrees	15 minutes	Continuous

M5 Recording of pollution complaints

M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M5.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

M7 Other monitoring and recording conditions

Requirement to record the transfer of the occupation of the berth

M7.1 The licensee must record details of when (i.e. time and date) the occupation of berth is transferred to another person. The licensee must record details of the name and telephone contact of the person that

the berth is transferred to.

Requirement to record shipping and cargo information

M7.2 For the loading and discharge of cargo from ships carried out under the licence, the licensee must record the following information.

a) The time and date that the ship was berthed.
b) The name of the ship.
c) A description of the cargo and tonnage loaded/discharged.
d) The owner and agent of the cargo.
e) An assessment of the capacity of the cargo to generate dust during loading/discharge activities.
f) Dust control measures for the loading/discharge of the cargo.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is

given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;

c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

G2 Contact number for incidents and responsible employees

G2.1 The licensee must nominate to the EPA a representative of the licensee that is available at all times and is capable of providing immediate assistance or response during emergencies or any other incidents at the premises. The name of the nominated representative and their contact details, including their mobile telephone number, must be current at all times. The nomination and contact details must be provided to the EPA at PO Box 488G, Newcastle NSW 2300 or by email to RegOps.MetroRegulation@epa.nsw.gov.au .

G3 Other general conditions

G3.1 **Completed Programs**

Program	Description	Completed Date
PRP 1 - Stormwater Management Systems Upgrade	The licensee must design , install and commission upgrades to the stormwater management system.	16-December-2011

PRP 2- Investigation of Copper Sources	The licensee must investigate and identify potential sources of copper, report and develop a copper management strategy	22-February-2013

Environment Protection Licence

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

Environment Protection Licence

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Mr Mitchell Bennett

Environment Protection Authority

(By Delegation)

Date of this edition: 04-November-2009

Environment Protection Licence

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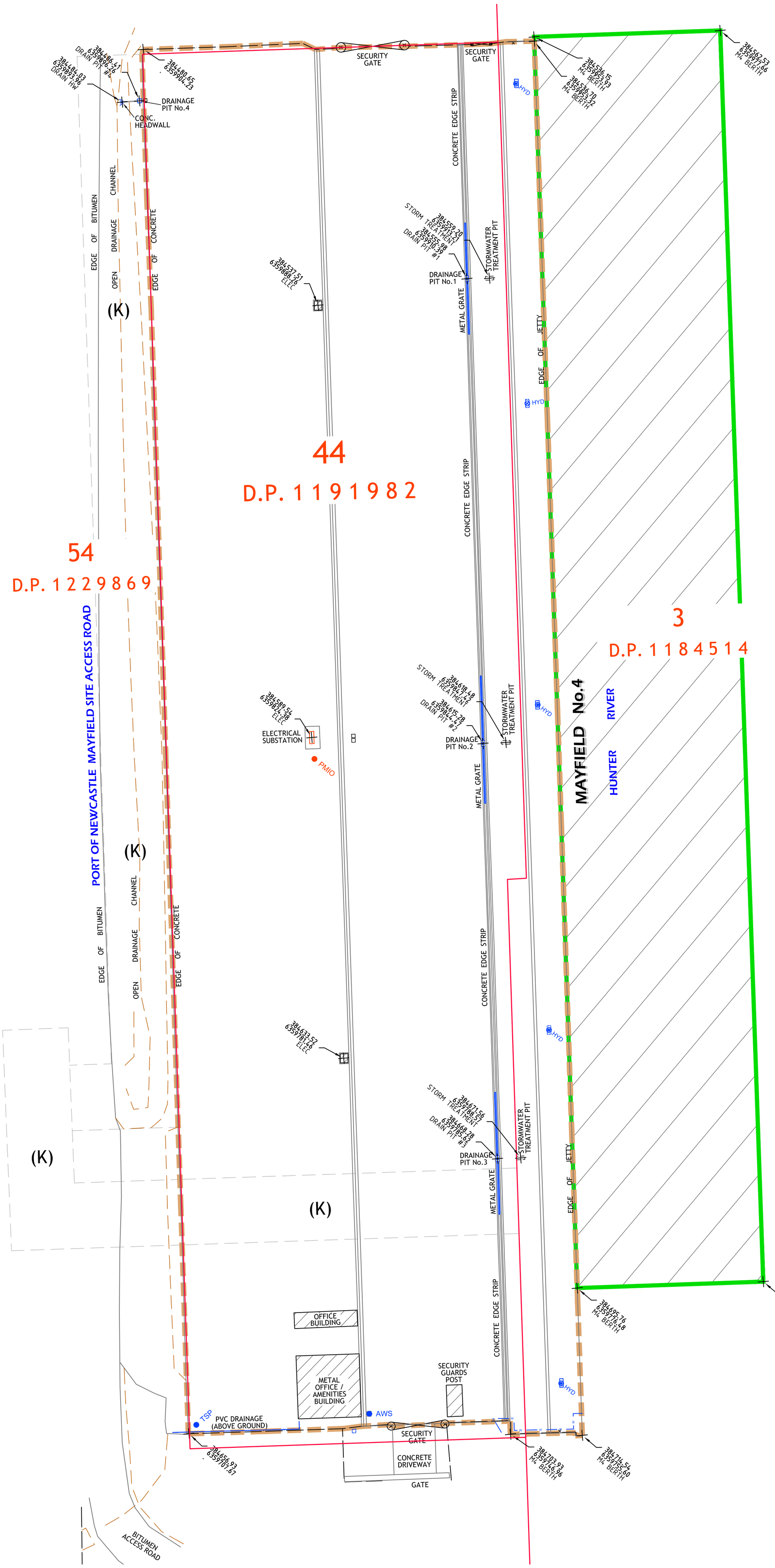
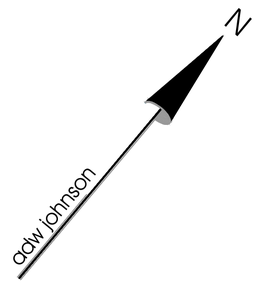
End Notes

1	Licence varied by notice 1109287, issued on 01-Dec-2009, which came into effect on 01-Dec-2009.
2	Licence varied by notice 1111996, issued on 02-Mar-2010, which came into effect on 02-Mar-2010.
3	Licence varied by notice 1128690, issued on 08-Jul-2011, which came into effect on 08-Jul-2011.
4	Licence varied by notice 1501029 issued on 04-Nov-2011
5	Licence varied by notice 1504050 issued on 19-Mar-2012
6	Licence varied by notice 1507488 issued on 04-Mar-2013
7	Licence varied by notice 1515235 issued on 12-Jul-2013
8	Licence varied by notice 1516638 issued on 04-Sep-2013
9	Licence varied by notice 1519040 issued on 20-Dec-2013
10	Licence transferred through application 1520262 approved on 27-Feb-2014 , which came into effect on 28-Feb-2014
11	Licence varied by notice 1521970 issued on 10-Jun-2014
12	Licence varied by notice 1525248 issued on 03-Nov-2014
13	Licence varied by notice 1528564 issued on 18-Feb-2015
14	Licence fee period changed by notice 1531721 on 04-Nov-2015
15	Licence varied by notice 1545383 issued on 03-Nov-2016
16	Licence varied by notice 1591493 issued on 04-Aug-2020

Plan of:	EPA License Area, Mayfield No.4 within Lot 44 DP.1191982	Datum:	n/a	Date:	1/08/2013	Version:	E (19/02/2020)
		Origin:	-	Sheet:	1 of 1	Client:	Port of Newcastle
		Projection:	MGA (GDA2020)	Plan By:	RC	Survey:	12D\238927(1)
Location:	Mayfield	Origin:	-	Project Manager:	TC	AutoCAD:	N:\ . . .\238927(1)-LEASE-002-E
Council:	Newcastle	North Direction:	Grid	Office:	Hunter	Our Ref:	238927 (1)
		Contour Interval:	-	Plan Purpose:	Lease		





adw johnson

0m 5 10 20 40

Bar Scale 1: 400 (A1), 1: 800 (A3)

PORT of NEWCASTLE

LEGEND

- AWS AUTOMATIC WEATHER STATION
- TSP TSP HVAS
- PMIO PMIO HVAS
- STORMWATER TREATMENT PIT (UNDER WHARF)
- SITE BOUNDARY
- BOUNDARY LINE
- EMBANKMENT
- EDGE OF ROAD
- FENCE LINE
- OVER WATER OPERATION AREA

I, TREVOR JAMES CARTER, A SURVEYOR REGISTERED UNDER THE SURVEYING AND SPATIAL INFORMATION ACT 2002, CERTIFY THAT THE TITLE INFORMATION SHOWN ON THIS PLAN IS CORRECT AS OF THE 19/02/2020

. . . . . .

Registered Surveyor
ADW Johnson Pty. Ltd.
Surv. Ref: 238927(1)

(K) EASEMENT FOR DRAINAGE OF WATER 12.5 WIDE (DP.1191982)

Ver.	Date	Comment	By
E	19/02/2020	License Plan	RC

adw johnson pty. ltd.
unit 7, building 2, 335 hillsborough road, warners bay 2282
ph: (02) 49785100 fax: (02) 49785199 hunter@adwjohnson.com.au abn 62 129 445 398

Plotted By: robertc Plot Date: 20/02/20 - 08:57 Cad File: N:\238927\238927(1)\DWG\238927(1)-LEASE-002-E.dwg

APPENDIX B – EPL 13181 ANNUAL RETURN

Annual Return

PORT OF NEWCASTLE OPERATIONS PTY LIMITED

Licence 13181

A. Statement of Compliance - Licence Details

ALL Licence holders must check that the Licence details in Section A are correct.

If there are changes to any of these details, **you must advise Environment Protection Authority (EPA) and apply as soon as possible for a variation to your Licence or for a Licence transfer.**

Licence variation and transfer application forms are available on the EPA website at: http://www.epa.nsw.gov.au/licensing-and-regulation/licensing or from regional offices of the EPA, or by contacting by telephone 02 9995 5700.

If you are applying to vary or transfer your Licence, you must still complete and submit this Annual Return.

A1. Licence holder

Licence number : 13181

Licence holder : PORT OF NEWCASTLE OPERATIONS PTY LIMITED

Trading name *(if applicable)* :

ABN : 13 165 332 990

ACN : 165 332 990

Reporting period : From: 28-1-2022 To: 27-1-2023

A2. Premises to which Licence Applies (if applicable)

Common name (if any) : MAYFIELD NO. 4 BERTH

Premises : OFF SELWYN STREET MAYFIELD NORTH 2304 NSW

A3. Activities to which Licence Applies

Shipping in bulk

A4. Other Activities (if applicable)

A5. Fee-Based Activity Classifications

Note that the fee based activity classification is used to calculate the administrative fee.

Fee-based activity	Activity scale	Unit of measure
Shipping in bulk	> 100,000.00 - 500,000.00	T of annual capacity to load and unload

A6. Assessable Pollutants (if applicable)

Note that the identification of assessable pollutants is used to calculate the **load-based fee.**
The following assessable pollutants are identified for the fee-based activity classifications in the licence:

B. Monitoring and Complaints Summary

B1. Number of Pollution Complaints

Pollution Complaint Category	Complaints
Air	0
Water	0
Noise	0
Waste	0
Other	0
Total complaints recorded by the licensee during the reporting period	**0**

B2. Concentration Monitoring Summary

For each concentration monitoring point identified in your licence, details are displayed below. If concentration monitoring is not required by your licence, **no data** will appear below.
If data was provided from an uploaded file, the file name will be displayed below instead of any data.
Note that this does not exclude the need to conduct appropriate concentration monitoring of assessable pollutants as required by load-based licensing (if applicable).

Discharge & Monitoring Point 4

Discharge to waters
Discharge quality monitoring, Discharge from the northern Humeceptor to the Hunter River marked and shown as "Drainage Pit No. 1" on the Premises Plan.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Nitrogen (total)	milligrams per litre	0	0	N/A	N/A	N/A
Oil and Grease	milligrams per litre	0	0	N/A	N/A	N/A
pH	pH	0	0	N/A	N/A	N/A
Phosphate	milligrams per litre	0	0	N/A	N/A	N/A
Total suspended solids	milligrams per litre	0	0	N/A	N/A	N/A

Discharge & Monitoring Point 5

Discharge to waters
Discharge quality monitoring, Discharge from the central Humeceptor to the Hunter River marked and shown as "Drainage Pit No. 2" on the Premises Plan.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Nitrogen (total)	milligrams per litre	0	0	N/A	N/A	N/A
Oil and Grease	milligrams per litre	0	0	N/A	N/A	N/A
pH	pH	0	0	N/A	N/A	N/A
Phosphate	milligrams per litre	0	0	N/A	N/A	N/A
Total suspended solids	milligrams per litre	0	0	N/A	N/A	N/A

Discharge & Monitoring Point 6

Discharge to waters
Discharge quality monitoring, Discharge from the southern Humeceptor to the Hunter River marked and shown as "Drainage Pit No. 3" on the Premises Plan.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Nitrogen (total)	milligrams per litre	0	0	N/A	N/A	N/A
Oil and Grease	milligrams per litre	0	0	N/A	N/A	N/A
pH	pH	0	0	N/A	N/A	N/A
Phosphate	milligrams per litre	0	0	N/A	N/A	N/A
Total suspended solids	milligrams per litre	0	0	N/A	N/A	N/A

B2 Concentration Monitoring Comments
Monitoring is required at Points 4, 5 and 6 following a loose bulk cargo operation only. No loose bulk cargo operations occurred during the reporting period.

B3. Volume or Mass Monitoring Summary

For each volume or mass monitoring point identified in your licence, details are displayed below. If volume or mass monitoring is not required by your licence, **no data** will appear below.
If data was provided from an uploaded file, the file name will be displayed below instead of any data.
Note that this does not exclude the need to conduct appropriate volume or mass monitoring of assessable pollutants are required by load-based licensing (if applicable).

C. Statement of Compliance - Licence Conditions

C1. Compliance with Licence Conditions

Were all conditions of the licence complied with (including monitoring and reporting requirements)?	**Yes**

D. Statement of Compliance - Load Based Fee Calculation

If you are not required to monitor assessable pollutants by your licence, **no data** will appear below.

If assessable pollutants have been identified on your licence, the following worksheets for each assessable pollutant will determine your load based fee for the licence fee period to which this Annual Return relates.

Loads of assessable pollutants must be calculated using any of the methods provided in EPA's Load Calculation Protocol for the relevant activity. A Load Calculation Protocol would have been already sent to you with your licence. If you require additional copies, you can download the Protocol from the EPA's website or you can contact us on telephone 02 9995 5700.

You are required to keep all records used to calculate licence fees for four years after the licence fee was paid or became payable, whichever is the later date.

E. Statement of Compliance - Requirement to Prepare PIRMP

Have you prepared a Pollution Incident Response Management Plan (PIRMP) as required under section 153A of the Protection of the Environment Operations (POEO) Act 1997?	**Yes**
Is the PIRMP available at the premises?	**Yes**
Is the PIRMP available in a prominent position on a publicly accessible website?	**Yes**
Address of the web page where the PIRMP can be accessed ▼	
https://portofnewcastle.com.au/wp-content/uploads/2022/07/EPL-13181-PIRMP-M4-13-Jul-2022-Website-Version.pdf	
Has the PIRMP been tested?	**Yes**
The PIRMP was last tested on	**19-7-2022**
Has the PIRMP been updated?	**Yes**

The PIRMP was last updated on	**13-7-2022**
Number of times the PIRMP was activated in this reporting period?	**0**
The PIRMP was activated on	**N/A**

F. Statement of Compliance - Requirement to Publish Pollution Monitoring Data

Are there any conditions attached to your licence that require pollution monitoring to be undertaken as required under section 66(6) of the Protection of the Environment Operations (POEO) Act 1997?	**Yes**

Do you operate a website?	**Yes**
Is the pollution monitoring data published on your website in accordance with the EPA's written requirements for publishing pollution monitoring data?	**Yes**
Address of the web page where the pollution monitoring data can be accessed ▼	
https://www.portofnewcastle.com.au/sustainable-port/environment	

G. Statement of Compliance - Environment Management System and Practices

Do you have an ISO 14001 certified Environmental Management System (EMS) OR any other system that EPA considers is equivalent to the accountability, procedures, documentation and record keeping requirements of an ISO 14001 certified EMS?	**Yes**

When was the last check (As per ISO 14001) of the EMS completed?	**20-8-2018**
Were there any non-conformances related to environmental issues identified in the last check of the EMS?	**No**
If there were non-conformances identified, were these non-conformances rectified?	

H. Signature and Certification

Annual Return

PORT OF NEWCASTLE OPERATIONS PTY LIMITED

Licence 13181

This Annual Return may only be signed by person(s) with legal authority to sign it as set out in following categories: an Individual, a Company, a Public authority or a Local council.

It is an offence under section 66 of the Protection of the Environment Operations Act 1997 to supply any information in this form that is false or misleading in a material respect, or to certify a statement that is false or misleading in a material respect. There is a maximum penalty of $250,000 for a corporation and $120,000 for an individual.

I/We

- declare that the information in the Monitoring and Complaints Summary in Section B of this Annual Return application is correct and not false or misleading in a material respect, and
- certify that the information in the Statement and Compliance in sections A, C, D, E, F, G and H and any other pages attached to Section C is correct and not false or misleading in a material respect.

Signature	Craig Carmody (Mar 17, 2023 15:06 GMT+11)	**Signature**	
Name	Craig Carmody	**Name**	Ashley Cooper
Position	Chief Executive Officer	**Position**	General Counsel
Date	17-Mar-2023	**Date**	17-Mar-2023
Declaration **I declare that the information in the Monitoring and Complaints Summary in section B of this Annual Return is correct and not false or misleading in a material respect, and** **I certify that the information in the Statement of Compliance in section A,C,D,E,F and G and any pages attached to Section C is correct and not false or misleading in a material respect.**		**Declaration** **I declare that the information in the Monitoring and Complaints Summary in section B of this Annual Return is correct and not false or misleading in a material respect, and** **I certify that the information in the Statement of Compliance in section A,C,D,E,F and G and any pages attached to Section C is correct and not false or misleading in a material respect.**	

APPENDIX C – HISTORICAL AIR QUALITY DATA

Date	24 Hour TSP Concentration (µg/m^3)	24 Hour PM10 Concentration (µg/m^3)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
26/11/2009		60		NA		Baseline			90	50	25
2/12/2009		87.4*		SSE		Baseline			90	50	25
8/12/2009		N/A		SSW		Baseline			90	50	25
14/12/2009		16		ESE		Baseline			90	50	25
20/12/2009		33		ENE-SE (clockwise)		Baseline			90	50	25
26/12/2009		7		SSW		Baseline			90	50	25
1/01/2010		26		NW		Yes			90	50	25
7/01/2010		28		SE		No			90	50	25
13/01/2010		54		SSW		No			90	50	25
19/01/2010		33		SW		No			90	50	25
25/01/2010		45		ESE		No			90	50	25
31/01/2010		44		E		No			90	50	25
6/02/2010		30		ESE		No			90	50	25
12/02/2010		52		WNW		No			90	50	25
18/02/2010		36		SSE		No			90	50	25
24/02/2010		32		ESE		No			90	50	25
2/03/2010		18		SE		No			90	50	25
8/03/2010		41		NNE		Yes			90	50	25
14/03/2010		6		ESE		No			90	50	25
20/03/2010		43		NW		No			90	50	25
26/03/2010		70		NNW		No			90	50	25
1/04/2010		41		SW		No			90	50	25
7/04/2010		19		N		No			90	50	25
13/04/2010		36		NW		No			90	50	25
19/04/2010		45		ESE		Yes			90	50	25
25/04/2010		16		SW		No			90	50	25
1/05/2010		15		WSW		No			90	50	25
7/05/2010		33		NW		No			90	50	25
13/05/2010		39		SW		No			90	50	25
19/05/2010		13		SW		No			90	50	25
25/05/2010		NO DATA							90	50	25
31/05/2010		NO DATA							90	50	25
6/06/2010		8		SW		No			90	50	25
12/06/2010		10		SW		Yes			90	50	25
18/06/2010		23		WNW		No			90	50	25
24/06/2010		26		NE		Yes			90	50	25
30/06/2010		41		WNW		Yes			90	50	25
9/07/2010		7		NW		No			90	50	25
12/07/2010		21		N		No			90	50	25
18/07/2010		35		NW		No			90	50	25
24/07/2010		17		SW		No			90	50	25
30/07/2010		<0.1		NW		No			90	50	25
5/08/2010		47		WNW		No			90	50	25
11/08/2010		72		NW		No			90	50	25
17/08/2010		35		ESE		No			90	50	25
23/08/2010		32		WNW		No			90	50	25

Date	24 Hour TSP Concentration (µg/m^3)	24 Hour PM10 Concentration (µg/m^3)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
29/08/2010		31		SE		No			90	50	25
4/09/2010		33		NW		No			90	50	25
10/09/2010		52		W		Yes			90	50	25
16/09/2010		101		WNW		No			90	50	25
22/09/2010		22		E		No			90	50	25
28/09/2010		36		SW		No			90	50	25
4/10/2010		22		E		No			90	50	25
10/10/2010		37		ENE		No			90	50	25
16/10/2010		26		WNW		No			90	50	25
22/10/2010		49		NNW		Yes			90	50	25
28/10/2010		19		SE		No			90	50	25
3/11/2010		28		E,SE,SWS		No			90	50	25
9/11/2010		33		NE		No		33.3	90	50	25
15/11/2010		40		WSW,SWS		No		33.2	90	50	25
21/11/2010		29		E		No		33.9	90	50	25
27/11/2010		74		NE		No		33.4	90	50	25
3/12/2010		31		ESE		No		33.8	90	50	25
9/12/2010		57		SW,WNW		Yes		33.3	90	50	25
15/12/2010		3		SSE		No		33.9	90	50	25
21/12/2010		53		SSW		No		33.8	90	50	25
27/12/2010		24		S		No		34.3	90	50	25
2/01/2011		*		S		No		34.3	90	50	25
8/01/2011		26		ENE		Yes		34.8	90	50	25
14/01/2011		57		NE		No		34.5	90	50	25
20/01/2011		40		ENE		No		34.8	90	50	25
26/01/2011		50		S AND E		No		36.9	90	50	25
1/02/2011		168		West Northwest		No		36.7	90	50	25
7/02/2011		32		South east		No		36.6	90	50	25
13/02/2011		20		South		No		36.4	90	50	25
19/02/2011		44		North and North East		No		36.7	90	50	25
25/02/2011		51		East		No		36.9	90	50	25
3/02/2011		46		W,E AND SE		No		37.5	90	50	25
9/02/2011		48		NNW		No		37.3	90	50	25
15/02/2011		31		SW	225	No		37.7	90	50	25
21/02/2011		28		NE	45	No		37.2	90	50	25
27/02/2011		15		SE	135	No		36.5	90	50	25
2/04/2011		31		South South East	157.5	No		36.4	90	50	25
8/04/2011		no result		N/A	N/A	N/A		42.0	90	50	25
14/04/2011		339		West South West	292.5	No		42.2	90	50	25
20/04/2011		47		North West	315	No		41.7	90	50	25
26/04/2011		16		East	90	No		42.0	90	50	25
2/05/2011		30	0.0	South West	225	Yes		42.2	90	50	25
8/05/2011		30	0.0	South	180	No		41.9	90	50	25
14/05/2011		16	0.0	South West	225	Yes		41.9	90	50	25

Date	24 Hour TSP Concentration (µg/m^3)	24 Hour PM10 Concentration (µg/m^3)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
20/05/2011		39	0.0	East North east	67.5	Yes		42.4	90	50	25
26/05/2011		no result	1.6	South West	225	No		41.9	90	50	25
29/05/2011		14	0.2	South west	225	No		41.8	90	50	25
1/06/2011		34	0.8	East	90	Yes		42.2	90	50	25
7/06/2011		32	0.0	West north West	292.5	No		42.8	90	50	25
13/06/2011		no result	0.4	East South East	112.5	No		42.9	90	50	25
19/06/2011		30	0.0	West Nort west	292.5	Yes		43.1	90	50	25
25/06/2011		39	0.0	North West	270	Yes	31.0	42.7	90	50	25
1/07/2011	31	13	1.6	South Southwest	202.5	Yes	57.8	43.2	90	50	25
7/07/2011	85	38	0.0	West Northwest	292.5	No	82.2	44.0	90	50	25
13/07/2011	131	67	0.0	West Northwest	292.5	Yes	74.5	43.9	90	50	25
19/07/2011	51	27	11.0	West	270	No	72.5	44.9	90	50	25
31/07/2011	65	79	0.0	North West	270	Yes	84.2	45.3	90	50	25
2/08/2011	143	67			315		98.3	45.8	90	50	25
6/08/2011	183	76	0.0	North West	315	Yes	102.8	44.9	90	50	25
12/08/2011	134	20	2.6	South Southeast	157.5	No	100.1	44.8	90	50	25
18/08/2011	78	25	4.8	West Northwest	292.5	Yes	105.1	45.0	90	50	25
24/08/2011	150	43	0.0	East Northeast	67.5	Yes	109.4	45.0	90	50	25
30/08/2011	153	35	0.0	South Southwest	202.5	Yes	117.6	45.1	90	50	25
5/09/2011	207	39	0.0	East Northeast	67.5	Yes	114.6	44.7	90	50	25
11/09/2011	79	28	0.0	North West	315	Yes	113.5	43.8	90	50	25
17/09/2011	100	48	0.0	North West	315	No	132.9	46.2	90	50	25
23/09/2011	405	161	0.0	North West	315	Yes	132.7	46.5	90	50	25
29/09/2011	129	55	30.0	North West	315	No	128.1	46.7	90	50	25
5/10/2011	55	31	0.0	South East	135	Yes	128.6	47.1	90	50	25
11/10/2011	136	57	0.0	South East	135	No	127.9	47.2	90	50	25
17/10/2011	115	35	2.0	South to Southeast	146.25	Yes	125.5	47.0	90	50	25
23/10/2011	82	39	0.0	North East	45	No	126.3	47.4	90	50	25
29/10/2011	141	37	0.0	North Northwest	337.5	No	125.4	47.6	90	50	25
4/11/2011	106	43	0.0	South East	135	Yes	133.5	48.5	90	50	25
10/11/2011	312	83	0.0	NorthWest	315	No	135.9	48.8	90	50	25
16/11/2011	192	56	20.5	South West	225	Yes	132.3	48.7	90	50	25
22/11/2011	45	27	41.8	South West	225	Yes	130.0	48.0	90	50	25
28/11/2011	72	29	0.0	East	90	Yes	129.8	48.1	90	50	25
4/12/2011	126	43	4.0	South Southwest	202.5	Yes	128.4	47.8	90	50	25
10/12/2011	89	36	0.0	South East	135	Yes	126.6	48.2	90	50	25
16/12/2011	77	30	0.0	South Southeast	157.5	No	123.9	47.8	90	50	25
22/12/2011	46	27	1.0	South East	135	Yes	122.3	47.9	90	50	25
28/12/2011	74	28	0.0	South Southwest	202.5	No	122.0	47.7	90	50	25
3/01/2012	112	35	0.0	East Northeast	67.5	No	137.3	49.6	90	50	25
11/01/2012	628	142	0.0	West Northwest	292.5	No	135.0	49.1	90	50	25
15/01/2012	61	27	19.0	East	90	No	132.9	48.9	90	50	25
21/01/2012	61	30	0.0	South Southeast	157.5	No	131.0	48.8	90	50	25
27/01/2012	65	40	2.5	East Southeast	112.5	Yes	128.7	46.4	90	50	25
2/02/2012	44	30	77.0	South Southwest	202.5	Yes	127.3	46.5	90	50	25
8/02/2012	76	34	4.0	South Southeast	157.5	Yes	125.0	46.4	90	50	25

Date	24 Hour TSP Concentration ($\mu g/m^3$)	24 Hour PM10 Concentration ($\mu g/m^3$)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
14/02/2012	39	16	0.5	South Southeast	157.5	Yes	123.1	46.1	90	50	25
20/02/2012	48	24	18.5	South	180	Yes	121.9	45.7	90	50	25
26/02/2012	74	30	0.0	East Northeast	67.5	No	123.0	45.8	90	50	25
3/03/2012	165	50	5.0	East Northeast	67.5	No	122.3	45.4	90	50	25
9/03/2012	93	27	0.0	North West	315	No	123.1	46.2	90	50	25
15/03/2012	161	77	0.0	East Northeast	67.5	Yes	122.1	46.3	90	50	25
21/03/2012	77	33	0.0	East Northeast	67.5	Yes	121.5	46.6	90	50	25
27/03/2012	94	34	0.0	East Northeast/ East SouthEast	112.5	No	121.4	46.8	90	50	25
2/04/2012	115	40	0.0	North West/ South East	135	No	122.8	47.0	90	50	25
8/04/2012	193	64	22.0	East	90	No	121.9	41.9	90	50	25
14/04/2012	78	31	0.0	East Northeast	67.5	No	121.2	41.6	90	50	25
20/04/2012	84	31	0.0	North West	315	Yes	123.5	42.3	90	50	25
26/04/2012	242	56	0.0	North West	315	Yes	122.4	42.2	90	50	25
2/05/2012	64	26	0.0	North Northwest	337.5	No	123.2	42.6	90	50	25
8/05/2012	165	51	0.0	NorthWest	315	No	127.0	43.0	90	50	25
14/05/2012	330	44	0.0	West	270	Yes	125.9	42.8	90	50	25
20/05/2012	67	27	0.0	NorthWest	315	Yes	127.8	42.6	90	50	25
26/05/2012	230	28	0.0	NorthWest	315	No	127.0	42.8	90	50	25
1/06/2012	80	29	3.0	East Southeast	112.5	Yes	125.8	42.6	90	50	25
7/06/2012	62	22	15.0	West Southwest	247.5	No	124.4	42.3	90	50	25
13/06/2012	42	10	21.0	South West	225	No	127.6	42.2	90	50	25
19/06/2012	313	36	0.0	Northwest	315	Yes	126.7	42.6	90	50	25
25/06/2012	78	56	0.0	Northwest	315	Yes	127.4	42.6	90	50	25
1/07/2012	165	40	0.0	Northwest	315	Yes	127.9	42.7	90	50	25
7/07/2012	67	22	11.0	Northwest	315	Yes	127.1	42.4	90	50	25
13/07/2012	35	14	16.0	North Northwest	337.5	No	125.9	41.5	90	50	25
19/07/2012	56	14	2.5	West Southwest	247.5	No	126.4	41.6	90	50	25
25/07/2012	78	35	0.0	North Northwest	337.5	No	126.1	40.6	90	50	25
31/07/2012	46	13	3.8	South West	225	No	126.2	40.1	90	50	25
6/08/2012	150	38	0.0	West Northwest	292.5	Yes	124.3	39.2	90	50	25
12/08/2012	65	21	1.0	Southwest	225	Yes	142.1	41.1	90	50	25
18/08/2012	1240	134	0.0	Northwest	315	No	145.7	41.3	90	50	25
24/08/2012	301	40	0.0	Northwest	315	Yes	148.8	41.8	90	50	25
30/08/2012	342	72	0.0	Northwest	315	No	151.9	42.9	90	50	25
5/09/2012	342	105	0.0	North Northwest	337.5	Yes	150.3	43.0	90	50	25
11/09/2012	110	48	0.0	South	180	No	151.1	43.3	90	50	25
17/09/2012	129	46	0.5	South	180	Yes	151.4	43.2	90	50	25
23/09/2012	120	38	0.0	Northwest	315	No	153.6	41.7	90	50	25
29/09/2012	539	74	0.0	Northwest	315	Yes	155.5	41.9	90	50	25
5/10/2012	246	64	0.0	NorthWest	315	No	155.7	41.8	90	50	25
11/10/2012	71	24	4.0	North West	315	Yes	156.1	41.8	90	50	25
17/10/2012	158	62	0.0	South East	145	Yes	156.0	41.9	90	50	25
23/10/2012	108	38	0.0	South	180	Yes	156.9	41.8	90	50	25
29/10/2012	137	34	0.0	East	90	Yes	155.5	41.8	90	50	25

Date	24 Hour TSP Concentration ($\mu g/m^3$)	24 Hour PM10 Concentration ($\mu g/m^3$)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
4/11/2012	58	34	0.0	East	93	No	154.6	41.6	90	50	25
10/11/2012	50	32	1.0	South	173	Yes	150.5	40.7	90	50	25
16/11/2012	53	31	9.5	South Southeast	167	Yes	148.8	40.4	90	50	25
22/11/2012	90	36	0.0	South	182	Yes	148.7	40.3	90	50	25
28/11/2012	37	17	5.5	South Southeast	161	Yes	148.6	40.3	90	50	25
4/12/2012	67	29	0.0	South East	145	No	147.1	39.7	90	50	25
10/12/2012	33	11	68.5	South Southwest	202.5	No	148.1	40.1	90	50	25
16/12/2012	150	57	0.0	East	90	Yes	148.2	40.1	90	50	25
22/12/2012	83	31	0.5	South East	145	No	148.7	40.3	90	50	25
28/12/2012	77	40	0.5	South Southwest	202.5	No	148.5	40.3	90	50	25
3/01/2013	64	25	0.0	South	183	No	148.2	40.5	90	50	25
9/01/2013	90	52	0.0	South	175	Yes	138.9	38.8	90	50	25
15/01/2013	51	32	0.0	South	127	No	139.2	38.9	90	50	25
21/01/2013	81	39	9.0	South East	138	No	138.9	38.9	90	50	25
27/01/2013	46	29	2.5	North East	50	No	138.7	38.5	90	50	25
2/02/2013	47	15	41.0	South West	217	Yes	141.0	38.9	90	50	25
8/02/2013	190	52	0.0	East Northeast	59	Yes	140.9	38.7	90	50	25
14/02/2013	67	23	0.0	South East	133	No	141.2	38.9	90	50	25
20/02/2013	59	25	0.0	South East	143	Yes	142.7	39.3	90	50	25
26/02/2013	ND	50	0.0	East	87	Yes	143.8	39.2	90	50	25
4/03/2013	ND	26	0.0	South East	129.5	Yes	143.2	39.1	90	50	25
10/03/2013	125	42	0.0	East Northeast	75.9	Yes	144.0	39.2	90	50	25
16/03/2013	ND	37	3.6	North	0	Yes	143.0	38.7	90	50	25
22/03/2013	98	46	0.0	North West	311.9	No	142.7	38.7	90	50	25
28/03/2013	63	28	11.3	East Northeast	58.2	No	142.0	38.5	90	50	25
3/04/2013	50	24	25.0	South	169.6	No	141.0	38.2	90	50	25
9/04/2013	59	23	15.0	West Southwest	238.1	No	139.6	38.1	90	50	25
15/04/2013	110	56	0.5	North Northwest	341.9	No	138.9	37.9	90	50	25
21/04/2013	37	15	0.0	West Southwest	249.9	No	138.8	38.0	90	50	25
27/04/2013	75	39	0.0	North West	324.4	Yes	137.0	37.7	90	50	25
3/05/2013	94	36	0.0	North West	320.2	No	137.5	37.8	90	50	25
9/05/2013	64	36	0.0	North West	312	No	135.8	37.4	90	50	25
15/05/2013	43	23	0.0	North West	315.5	No	130.8	37.3	90	50	25
21/05/2013	31	39	0.0	North West	315.8	Yes	130.2	37.3	90	50	25
27/05/2013	42	26	6.5	North West	316.9	No	127.0	37.1	90	50	25
2/06/2013	29	16	16.5	West Southwest	251.9	Yes	126.1	37.0	90	50	25
8/06/2013	62	24	6.0	South West	236.1	Yes	126.1	37.2	90	50	25
14/06/2013	50	32	0.0	North West	313.8	Yes	126.2	37.2	90	50	25
20/06/2013	24	13	3.5	West Southwest	255.2	No	121.2	37.0	90	50	25
26/06/2013	38	24	4.0	South	169.1	Yes	120.6	36.5	90	50	25
2/07/2013	24	21	0.0	South West	236	Yes	118.1	36.2	90	50	25
8/07/2013	69	21	0.0	North West	316	Yes	118.2	36.2	90	50	25
14/07/2013	46	26	0.0	North North West	334	No	118.4	36.3	90	50	25
20/07/2013	36	16	0.0	North West	317	No	118.0	36.9	90	50	25
26/07/2013	120	53	0.0	North West	320	No	118.7	36.7	90	50	25
1/08/2013	66	25	0.0	West Southwest	241	No	119.1	37.0	90	50	25

Date	24 Hour TSP Concentration ($\mu g/m^3$)	24 Hour PM10 Concentration ($\mu g/m^3$)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
7/08/2013	72	28	11.3	South Southeast	161	Yes	117.7	36.9	90	50	25
13/08/2013	74	33	0.0	North West	306	Yes	117.9	37.6	90	50	25
19/08/2013	98	67	0.0	North West	311	Yes	98.2	36.5	90	50	25
25/08/2013	140	63	0.0	North North-West	342	Yes	95.4	36.5	90	50	25
31/08/2013	80	42	0.0	North West	318	Yes	90.9	36.2	90	50	25
6/09/2013	90	55	0.0	North West	316	No	86.5	35.3	90	50	25
12/09/2013	92	47	0.0	North North-West	333	Yes	86.2	35.0	90	50	25
18/09/2013	46	29	0.0	North West	321	Yes	84.8	35.5	90	50	25
24/09/2013	130	78	0.0	North	0	No	85.0	35.8	90	50	25
30/09/2013	97	58	0.0	North North-West	339	No	77.4	35.2	90	50	25
6/10/2013	76	34	0.0	North West	315	Yes	74.4	35.0	90	50	25
12/10/2013	93	53	0.0	East	90	No	74.8	35.8	90	50	25
18/10/2013	120	72	0.0	South East	134	No	74.2	35.9	90	50	25
24/10/2013	98	65	0.0	West North West	292	Yes	74.0	35.6	90	50	25
30/10/2013	58	22	0.0	South South West	202	No	72.6	35.5	90	50	25
5/11/2013	60	29	0.0	South	177	No	72.7	35.3	90	50	25
11/11/2013	46	18	27.5	South Southwest	204	Yes	72.6	34.9	90	50	25
17/11/2013	28	8	126.3	West Southwest	245	No	72.2	34.8	90	50	25
23/11/2013	54	25	18.0	North East	35	No	71.5	34.6	90	50	25
29/11/2013	55	28	55.0	South Southwest	194	No	71.8	34.9	90	50	25
5/12/2013	57	30	2.0	West North West	293	No	71.7	35.1	90	50	25
11/12/2013	83	42	0.0	East South East	118	Yes	72.5	35.3	90	50	25
17/12/2013	52	25	0.0	East	90	No	70.8	35.3	90	50	25
23/12/2013	110	55	0.0	North East	45	No	71.3	35.6	90	50	25
29/12/2013	110	52	0.0	South South West	206	No	71.9	35.5	90	50	25
4/01/2014	83	43	0.0	South West	219	Yes	72.2	35.8	90	50	25
10/01/2014	58	27	0.0	East	84	No	71.7	35.4	90	50	25
16/01/2014	59	35	0.0	East	92	No	71.8	35.5	90	50	25
22/01/2014	42	28	0.0	South South East	161	No	71.1	35.3	90	50	25
28/01/2014	51	28	0.0	North East	51	No	71.2	35.3	90	50	25
3/02/2014	93	40	0.0	East	86	Yes	72.0	35.7	90	50	25
9/02/2014	82	29	0.0	East	87	No	70.1	35.3	90	50	25
15/02/2014	53	24	2.0	North-north east	15	No	69.9	35.3	90	50	25
21/02/2014	56	31	0.0	South	173	Yes	69.8	35.4	90	50	25
27/02/2014	53	23	126.3	South	185	No	69.6	35.0	90	50	25
5/03/2014	45	25	18.0	East	99	No	69.2	35.0	90	50	25
11/03/2014	65	41	0.0	East-north-east	76	No	68.2	34.9	90	50	25
17/03/2014	51	26	0.0	West-north-west	283	Yes	67.9	34.8	90	50	25
23/03/2014	62	41	4.5	south-west	227	No	67.3	34.7	90	50	25
29/03/2014	38	23	23.2	West-north-west	302	No	66.9	34.6	90	50	25
4/04/2014	43	26	51.8	South West	225	Yes	66.8	34.6	90	50	25
10/04/2014	84	49	0.0	East North East	68	No	67.2	35.0	90	50	25
16/04/2014	30	14	16.8	West South West	242	Yes	65.9	34.4	90	50	25
22/04/2014	85	50	0.0	North West	309	No	66.6	34.9	90	50	25
28/04/2014	53	30	4.3	North East	45	Yes	66.3	34.8	90	50	25
4/05/2014	20	9	6.5	North west	303	Yes	65.1	34.3	90	50	25

Date	24 Hour TSP Concentration ($\mu g/m^3$)	24 Hour PM10 Concentration ($\mu g/m^3$)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating
10/05/2014	49	33	0.0	North-north-west	232	Yes
16/05/2014	63	40	0.0	North-north-west	327	No
22/05/2014	88	52	0.0	North-north-west	320	No
28/05/2014	53	28	0.0	North west	322	No
3/06/2014	29	17	0.0	North west	314	No
9/06/2014	28	19	8.8	North west	312	Yes
15/06/2014	19	7	0.0	North west	312	Yes
21/06/2014	45	29	0.0	North west	323	No
27/06/2014	64	31	0.0	North west	305	No
3/07/2014	63	41	0.0	North North West	334	Yes
9/07/2014	77	47	0.0	North North West	311	No
15/07/2014	51	35	2.0	North North West	0	No
21/07/2014	41	20	0.0	West South West	248	Yes
27/07/2014	33	21	0.0	North West	304	Yes
2/08/2014	34	17	3.0	south-west	214	Yes
8/08/2014	53	29	0.0	North-north-west	324	Yes
14/08/2014	37	21	0.0	South	187	No
20/08/2014	24	12	26.5	South-west	230	No
26/08/2014	30	31	16.5	South-east	199	Yes
1/09/2014	55	36	0.0	North-North-West	338	No
7/09/2014	26	12	9.5	South-South-East	158	No
13/09/2014	41	24	0.0	East-north-east	68	Yes
19/09/2014	72	38	0.0	North-west	315	Yes
25/09/2014	49	26	2.5	South-west	225	Yes
1/10/2014	105	39	0.0	South	180	No
7/10/2014	93	43	0.0	North-North-West & Sou	337.5	No
13/10/2014	83	40	6.0	North-North-West	337.5	Yes
19/10/2014	87	45	0.0	East	90	No
25/10/2014	64	37	0.5	South	180	No
31/10/2014	140	81	0.0	North-North-West	337.5	Yes
6/11/2014	68	35	36.5	South	180	Yes
12/11/2014	56	40	0.0	East	90	Yes
18/11/2014	63	37	0.0	South-South-East	158	No
24/11/2014	65	45	1.5	South-South-East	158	Yes
30/11/2014	65	43	0.1	East	90	No
6/12/2014	47	28	0.5	South-East	135	Yes
12/12/2014	50	31	0.5	South	180	Yes
18/12/2014	95	64	0.0	East	90	Yes
24/12/2014	73	43	0.5	South-South-West	203	No
30/12/2014	97	58	0.0	South-East	135	No
5/01/2015	47	42	0.0	South	180	No
11/01/2015	18	9	13.5	South-South-West	203	No
17/01/2015	47	32	0.0	North West	315	No
23/01/2015	79	48	0.0	East	90	Yes
29/01/2015	33	17	0.0	South West	225	No
4/02/2015	45	29	0.5	South South East	158	Yes

12 month Rolling Average		Guideline Criteria		
TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
64.8	34.3	90	50	25
65.1	34.6	90	50	25
66.1	34.8	90	50	25
66.3	34.8	90	50	25
66.3	34.8	90	50	25
65.7	34.8	90	50	25
65.2	34.3	90	50	25
65.5	34.6	90	50	25
66.0	34.7	90	50	25
66.6	35.0	90	50	25
66.7	35.5	90	50	25
66.8	35.6	90	50	25
66.9	35.7	90	50	25
65.5	35.2	90	50	25
65.0	35.0	90	50	25
64.6	35.0	90	50	25
64.0	34.9	90	50	25
62.8	34.0	90	50	25
61.0	33.4	90	50	25
60.6	33.3	90	50	25
59.6	32.6	90	50	25
58.7	32.2	90	50	25
59.1	32.4	90	50	25
57.8	31.5	90	50	25
58.0	31.2	90	50	25
58.2	31.4	90	50	25
58.1	31.2	90	50	25
57.5	30.7	90	50	25
57.0	30.3	90	50	25
58.3	31.2	90	50	25
58.4	31.3	90	50	25
58.6	31.7	90	50	25
59.2	32.2	90	50	25
59.4	32.5	90	50	25
59.5	32.7	90	50	25
59.4	32.7	90	50	25
58.8	32.5	90	50	25
59.5	33.2	90	50	25
58.9	33.0	90	50	25
58.7	33.1	90	50	25
58.1	33.0	90	50	25
57.5	32.8	90	50	25
57.3	32.7	90	50	25
57.9	33.0	90	50	25
57.6	32.9	90	50	25
56.8	32.7	90	50	25

Date	24 Hour TSP Concentration ($\mu g/m^3$)	24 Hour PM10 Concentration ($\mu g/m^3$)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
10/02/2015	63	36	1.0	East	90	Yes	56.5	32.8	90	50	25
16/02/2015	61	54	4.0	East	90	Yes	56.6	33.3	90	50	25
22/02/2015	22	14	ND	ND	ND	Yes	56.0	33.0	90	50	25
28/02/2015	62	36	ND	ND	ND	No	56.2	33.2	90	50	25
6/03/2015	115	54	0.0	West South West	248	No	57.3	33.7	90	50	25
12/03/2015	65	43	0.0	South South East	158	Yes	57.3	33.7	90	50	25
18/03/2015	78	49	0.0	North	0	Yes	57.8	34.1	90	50	25
24/03/2015	59	33	46.5	South	180	No	57.7	34.0	90	50	25
30/03/2015	60	31	13.3	North North East	23	No	58.1	34.1	90	50	25
5/04/2015	27	15	1.0	South	180	No	57.8	33.9	90	50	25
11/04/2015	35	15	0.0	South South West	158	No	57.0	33.4	90	50	25
17/04/2015	47	26	0.0	South	180	No	57.3	33.6	90	50	25
23/04/2015	36	17	0.0	West South West	248	Yes	56.5	33.0	90	50	25
29/04/2015	20	11	0.0	South	180	No	56.0	32.7	90	50	25
5/05/2015	51	32	0.2	West	270	No	56.5	33.1	90	50	25
11/05/2015	38	32	0.0	South West	225	Yes	56.3	33.1	90	50	25
17/05/2015	43	21	26.2	West South West	248	Yes	56.0	32.8	90	50	25
23/05/2015	35	31	22.6	South	180	Yes	55.1	32.4	90	50	25
29/05/2015	45	21	0.0	North West	315	No	55.0	32.3	90	50	25
4/06/2015	59	26	0.5	West South West	248	Yes	55.5	32.4	90	50	25
10/06/2015	41	18	0.0	South	180	No	55.7	32.4	90	50	25
16/06/2015	44	21	0.0	North North West	338	Yes	56.1	32.7	90	50	25
22/06/2015	53	29	0.0	South West	225	Yes	56.2	32.7	90	50	25
28/06/2015	57	24	2.0	West South West	248	Yes	56.1	32.5	90	50	25
4/07/2015	50	20	0.0	West South West	248	No	55.9	32.2	90	50	25
10/07/2015	71	30	0.5	North West	304	Yes	55.8	31.9	90	50	25
16/07/2015	36	18	0.5	South West	225	No	55.5	31.6	90	50	25
22/07/2015	110	39	0.0	West	270	Yes	56.7	32.0	90	50	25
28/07/2015	34	16	0.5	West South West	248	Yes	56.7	31.9	90	50	25
3/08/2015	49	27	0.0	West South West	248	No	56.9	32.0	90	50	25
9/08/2015	49	28	0.0	West South West	248	No	56.9	32.0	90	50	25
15/08/2015	48	19	0.0	West South West	248	No	57.0	32.0	90	50	25
21/08/2015	88	42	0.0	North West	315	Yes	58.1	32.5	90	50	25
27/08/2015	27	15	0.0	West North West	293	No	58.0	32.2	90	50	25
2/09/2015	60	27	0	West North West	293	No	58.1	32.1	90	50	25
8/09/2015	26	8	0	West	270	Yes	58.1	32.0	90	50	25
14/09/2015	81	27	0	North East	45	No	58.8	32.0	90	50	25
20/09/2015	46	27	28.6	East North East	68	Yes	58.4	31.9	90	50	25
26/09/2015	24	9	5.4	South West	225	No	58.0	31.6	90	50	25
2/10/2015	60	23	0.0	East South East	113	No	57.2	31.3	90	50	25
8/10/2015	85	37	0.0	East North East	68	No	57.1	31.2	90	50	25
14/10/2015	43	21	0.4	East North East	68	No	56.4	30.9	90	50	25
20/10/2015	85	61	0.0	East North East	68	Yes	56.4	31.2	90	50	25
26/10/2015	65	30	0.0	North West	315	Yes	55.0	30.2	90	50	25
1/11/2015	48	30	0.0	East North East	68	No	54.7	30.2	90	50	25

Date	24 Hour TSP Concentration ($\mu g/m^3$)	24 Hour PM10 Concentration ($\mu g/m^3$)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
7/11/2015	39	24	2.0	East South East & South South East	113	Yes	54.4	29.9	90	50	25
13/11/2015	39	23	3.0	North West	315	No	54.0	29.7	90	50	25
19/11/2015	120	64	0.0	East & East South East	90	Yes	54.9	30.0	90	50	25
25/11/2015	87	48	0.0	East North East	68	No	55.3	30.1	90	50	25
1/12/2015	105	47	0.0	North West	0	No	56.3	30.4	90	50	25
7/12/2015	270	20	0.0	East	90	No	59.9	30.2	90	50	25
13/12/2015	73	43	0.0	East North East	68	Yes	59.6	29.8	90	50	25
19/12/2015	51	36	0.0	East North East	68	No	59.2	29.7	90	50	25
25/12/2015	37	14	0.0	East South East	113	Yes	58.2	29.0	90	50	25
31/12/2015	50	25	0.0	East	90	No	58.0	28.9	90	50	25
6/01/2016	36	24	216.3	South	180	Yes	57.9	28.6	90	50	25
12/01/2016	94	45	1.5	South	180	No	59.1	29.2	90	50	25
18/01/2016	49	21	4.2	South East	135	Yes	59.1	29.0	90	50	25
24/01/2016	50	32	0.6	South South East	158	No	58.7	28.8	90	50	25
30/01/2016	59	36	0.0	East South East	113	Yes	59.1	29.1	90	50	25
5/02/2016	34	17	2.0	South South East	158	Yes	58.9	28.9	90	50	25
11/02/2016	58	46	0.0	East North East	68	Yes	58.8	29.0	90	50	25
17/02/2016	71	28	6.0	South	180	Yes	59.0	28.6	90	50	25
23/02/2016	44	26	0.0	North East	45	No	59.4	28.8	90	50	25
29/02/2016	56	27	0.0	South East	135	No	59.3	28.7	90	50	25
6/03/2016	63	38	0.0	East North East	68	Yes	58.4	28.4	90	50	25
12/03/2016	49	51	0.0	East North East	68	Yes	58.1	28.5	90	50	25
18/03/2016	52	31	0.0	North West	315	Yes	57.7	28.2	90	50	25
24/03/2016	65	40	0.0	North West	315	No	57.8	28.4	90	50	25
30/03/2016	44	33	3.4	West North West	293	No	57.6	28.4	90	50	25
5/04/2016	53	31	0.0	North East	45	Yes	58.0	28.7	90	50	25
11/04/2016	87	41	0.0	South East	135	Yes	58.8	29.1	90	50	25
17/04/2016	44	20	22.0	South West	225	Yes	58.8	29.0	90	50	25
23/04/2016	46	19	0.0	South South East	158	No	59.0	29.0	90	50	25
29/04/2016	51	28	0.0	North North East	23	No	59.5	29.3	90	50	25
5/05/2016	110	38	0.0	North West	315	No	60.4	29.4	90	50	25
11/05/2016	62	22	0.0	West North West	293	No	60.8	29.2	90	50	25
17/05/2016	86	39	0.0	North West	315	Yes	61.5	29.5	90	50	25
23/05/2016	83	40	0.0	North West	315	No	62.3	29.7	90	50	25
29/05/2016	27	5	0.2	West North West	293	No	62.0	29.4	90	50	25
4/06/2016	52	23	40.0	North East	45	No	61.9	29.4	90	50	25
10/06/2016	61	18	0.0	West North West	293	Yes	62.2	29.4	90	50	25
16/06/2016	140	35	0.0	North West	315	Yes	63.8	29.6	90	50	25
22/06/2016	40	25	0.0	West North West	293	No	63.6	29.5	90	50	25
28/06/2016	85	30	0.0	West	270	Yes	64.0	29.6	90	50	25
4/07/2016	89	42	0.0	North West	315	No	64.7	30.0	90	50	25
10/07/2016	78	27	0.0	West North West	292.5	Yes	64.8	29.9	90	50	25
16/07/2016	72	24	4.0	North West	315	Yes	65.4	30.0	90	50	25
22/07/2016	48	23	0.0	North West	315	No	64.4	29.8	90	50	25
28/07/2016	54	11	0.0	West North West	292.5	Yes	64.7	29.7	90	50	25

Date	24 Hour TSP Concentration (µg/m^3)	24 Hour PM10 Concentration (µg/m^3)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating
3/08/2016	50	17	3.0	South South East	158	No
9/08/2016	67	26	0.0	North West	315	Yes
15/08/2016	71	32	0.0	North West	315	No
21/08/2016	67	25	0.0	West North West	293	Yes
27/08/2016	53	18	1.0	South West	225	No
2/09/2016	40	23	29.8	North East	45	Yes
8/09/2016	58	26	0.0	North North East	23	No
14/09/2016	43	29	17.5	North West	315	No
20/09/2016	125	24	0.0	West North West	293	No
26/09/2016	52	16	0.0	West North West	293	No
2/10/2016	40	27	0.0	West North West	293	Yes
8/10/2016	57	34	1.0	South South East	158	No
14/10/2016	72	23	2.5	West	270	Yes
20/10/2016	53	38	0.0	East North East	68	Yes
26/10/2016	110	49	0.0	North West	315	No
1/11/2016	58	25	0.0	South West	225	Yes
7/11/2016	150	115	0.0	North West	315	No
13/11/2016	41	31	0.0	West	270	Yes
19/11/2016	60	45	0.0	South	180	Yes
25/11/2016	61	29	0.0	South East	135	No
1/12/2016	72	40	0.0	East North East	68	No
7/12/2016	51	22	15.0	North East	45	No
13/12/2016	120	55	0.0	North West	315	Yes
19/12/2016	60	33	0.0	East	90	Yes
25/12/2016	48	28	0.5	East North East	68	No
31/12/2016	88	52	0.0	South	180	Yes
6/01/2017	33	30	0.0	East South East	113	Yes
12/01/2017	66	33	0.0	East North East	68	No
18/01/2017	150	71	0.0	South South East	158	Yes
24/01/2017	120	62	55.5	South	180	Yes
30/01/2017	78	39	0.0	East North East	68	No
5/02/2017	74	48	0.0	East North East	68	No
11/02/2017	74	44	0.0	South South West	203	No
17/02/2017	76	46	11.3	North North East	23	Yes
23/02/2017	86	25	0.0	East North East	68	Yes
1/03/2017	53	26	1.0	East South East	113	Yes
7/03/2017	35	15	20.8	South West	225	No
13/03/2017	115	45	0.0	North East	45	No
19/03/2017	63	33	3.5	East North East	68	No
25/03/2017	68	47	0.0	East North East	68	Yes
31/03/2017	42	16	11.5	South South West	202.5	Yes
6/04/2017	50	20	5.5	South East	135	No
12/04/2017	28	15	52.0	South West	225	Yes
18/04/2017	64	28	0.0	South East	135	No
24/04/2017	64	40	0.0	North West	315	Yes
30/04/2017	46	26	0.0	North West	315	No

12 month Rolling Average		Guideline Criteria		
TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
64.7	29.5	90	50	25
65.0	29.5	90	50	25
65.4	29.7	90	50	25
65.0	29.4	90	50	25
65.5	29.5	90	50	25
65.1	29.4	90	50	25
65.7	29.7	90	50	25
65.0	29.7	90	50	25
66.3	29.7	90	50	25
66.8	29.8	90	50	25
66.5	29.9	90	50	25
66.0	29.8	90	50	25
66.5	29.9	90	50	25
66.0	29.5	90	50	25
66.7	29.8	90	50	25
66.9	29.7	90	50	25
68.7	31.2	90	50	25
68.7	31.3	90	50	25
67.7	31.0	90	50	25
67.3	30.7	90	50	25
66.8	30.6	90	50	25
63.2	30.6	90	50	25
64.0	30.8	90	50	25
64.1	30.8	90	50	25
64.3	31.0	90	50	25
64.9	31.4	90	50	25
64.9	31.5	90	50	25
64.4	31.3	90	50	25
66.0	32.2	90	50	25
67.2	32.7	90	50	25
67.5	32.7	90	50	25
68.2	33.2	90	50	25
68.4	33.2	90	50	25
68.5	33.5	90	50	25
69.2	33.5	90	50	25
69.1	33.4	90	50	25
68.7	33.1	90	50	25
69.8	33.0	90	50	25
70.0	33.0	90	50	25
70.0	33.1	90	50	25
70.0	32.8	90	50	25
69.9	32.7	90	50	25
69.0	32.2	90	50	25
69.3	32.4	90	50	25
69.6	32.7	90	50	25
69.5	32.7	90	50	25

Date	24 Hour TSP Concentration (µg/m^3)	24 Hour PM10 Concentration (µg/m^3)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
6/05/2017	75	39	0.0	North West	315	No	68.9	32.7	90	50	25
12/05/2017	52	25	1.0	South West	225	No	68.8	32.7	90	50	25
18/05/2017	135	66	0.0	East North East	68	Yes	69.6	33.2	90	50	25
24/05/2017	49	30	1.5	North West	315	Yes	69.0	33.0	90	50	25
30/05/2017	76	35	0.0	West North West	293	Yes	69.8	33.5	90	50	25
5/06/2017	66	36	0.0	North West	315	Yes	70.0	33.7	90	50	25
11/06/2017	27	14	0.0	South West	225	Yes	69.5	33.7	90	50	25
17/06/2017	41	25	1.0	South West	225	Yes	67.9	33.5	90	50	25
23/06/2017	54	29	0.0	North West	315	No	68.1	33.6	90	50	25
29/06/2017	20	11	2.5	West	270	No	67.0	33.2	90	50	25
5/07/2017	51	25	0.0	West North West	293	Yes	66.4	33.0	90	50	25
11/07/2017	58	23	20.5	West North West	293	No	66.1	32.9	90	50	25
17/07/2017	53	23	0.0	North West	315	No	65.8	32.9	90	50	25
23/07/2017	38	10	0.0	West North West	293	Yes	65.6	32.7	90	50	25
29/07/2017	79	26	0.0	West North West	293	Yes	66.0	32.9	90	50	25
4/08/2017	28	30	0.5	West North West	293	No	65.6	33.1	90	50	25
10/08/2017	91	41	0.0	North West	315	Yes	66.0	33.4	90	50	25
16/08/2017	83	41	0.0	West North West	293	Yes	66.2	33.5	90	50	25
22/08/2017	63	32	0.0	South East	135	Yes	66.2	33.6	90	50	25
28/08/2017	37	15	0.0	South West	225	No	65.9	33.6	90	50	25
3/09/2017	84	44	0.0	North West	315	No	66.6	33.9	90	50	25
9/09/2017	45	14	0.0	West	270	Yes	66.4	33.7	90	50	25
15/09/2017	33	15	0.0	West North West	293	Yes	66.2	33.5	90	50	25
21/09/2017	70	46	0.0	North West	315	Yes	65.3	33.9	90	50	25
27/09/2017	69	38	0.0	North East	45	Yes	65.6	34.2	90	50	25
3/10/2017	69	28	0.5	North East	45	Yes	66.1	34.2	90	50	25
9/10/2017	65	36	1.5	North West	315	No	66.2	34.3	90	50	25
15/10/2017	54	33	14.8	East	90	Yes	65.9	34.4	90	50	25
21/10/2017	61	21	1.0	South	180	Yes	66.1	34.2	90	50	25
31/10/2017	38	21	0.5	South West	225	No	64.9	33.7	90	50	25
2/11/2017	57	27	0.0	East	68	No	64.9	33.7	90	50	25
8/11/2017	23	16	42.0	East North East	113	Yes	62.8	32.1	90	50	25
14/11/2017	53	24	0.0	South West	225	Yes	63.0	32.0	90	50	25
20/11/2017	47	25	1.0	East South East	113	Yes	62.8	31.7	90	50	25
26/11/2017	56	43	0.0	East North East	68	Yes	62.7	31.9	90	50	25
2/12/2017	64	38	15.5	East	270	Yes	62.6	31.9	90	50	25
8/12/2017	75	49	0	South east	68	Yes	63.0	32.3	90	50	25
14/12/2017	135	83	0	East north east	68	Yes	63.2	32.8	90	50	25
20/12/2017	160	73	2	North west	315	Yes	64.8	33.4	90	50	25
26/12/2017	45	32	0	East south east	293	Yes	64.8	33.5	90	50	25
1/01/2018	57	33	0	South east	135	Yes	64.3	33.2	90	50	25
7/01/2018	110	47	0	North west	315	Yes	65.5	33.5	90	50	25
13/01/2018	120	54	6.5	South south east	158	Yes	66.4	33.8	90	50	25
19/01/2018	83	31	0	East north east	68	Yes	65.3	33.1	90	50	25
25/01/2018	65	26	0	East north east	68	Yes	64.4	32.6	90	50	25
31/01/2018	39	23	1.5	South	180	No	63.8	32.3	90	50	25

Date	24 Hour TSP Concentration (µg/m^3)	24 Hour PM10 Concentration (µg/m^3)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating
6/02/2018	49	24	0	North East	45	Yes
12/02/2018	63	29	0	East	90	Yes
18/02/2018	86	48	0	East North East	68	Yes
24/02/2018	71	35	0	East North East	68	Yes
2/03/2018	45	27	2.0	South East	45	Yes
8/03/2018	19	15	0.0	South East	135	Yes
14/03/2018	66	35	0.0	East North East	23	Yes
20/03/2018	155	54	0.0	South	180	Yes
26/03/2018	51	22	6.0	West North West	225	Yes
1/04/2018	68	39	0.0	North West	315	No
7/04/2018	62	25	0.0	North West	315	No
13/04/2018	97	65	0.0	North West	315	Yes
19/04/2018	80	36	31.5	North West	315	Yes
25/04/2018	25	11	4.5	South West	225	Yes
1/05/2018	71	28	0.0	North West	315	Yes
7/05/2018	105	26	0.0	North West	315	Yes
13/05/2018	29	9	1.0	South West	225	No
19/05/2018	69	28	1.0	West North West	293	No
25/05/2018	81	25	1.0	South	180	No
31/05/2018	74	20	0.0	West North West	292.5	No
6/06/2018	20	10	9.5	South West	225	Yes
12/06/2018	33	24	0.5	North West	315	Yes
18/06/2018	33	8	34.5	West North West	293	Yes
24/06/2018	38	20	0.0	South West	225	Yes
30/06/2018	59	27	0.0	West North West	292.5	No
6/07/2018	46	31	0.0	North West	315	No
12/07/2018	53	40	0.0	North West	315	Yes
18/07/2018	130	55	0.0	North West	315	No
24/07/2018	150	68	0.0	North West	315	Yes
30/07/2018	41	21	0.0	West North West	293	No
5/08/2018	87	46	0.0	North West	315	No
11/08/2018	84	36	0.0	North West	315	Yes
17/08/2018	76	33	0.0	West North West	293	No
23/08/2018	52	22	0.0	South East	135	No
29/08/2018	67	23	0.0	West North West	293	Yes
4/09/2018	20	7	0.5	East South East	113	No
10/09/2018	63	23	0.0	North West	315	No
16/09/2018	35	21	0.0	South South East	158	No
22/09/2018	65	35	0.0	North West	315	Yes
28/09/2018	66	48	0.0	North West	315	Yes
4/10/2018	21	15	12.0	South	180	Yes
10/10/2018	49	25	44.8	South South East	158	No
16/10/2018	73	42	0.0	North East	45	Yes
22/10/2018	39	29	0.5	East North East	68	No
28/10/2018	80	32	3.0	South East	135	No
3/11/2018	120	45	0.0	South South East	158	No

12 month Rolling Average		Guideline Criteria		
TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
63.4	31.9	90	50	25
63.2	31.7	90	50	25
63.4	31.7	90	50	25
63.1	31.9	90	50	25
63.0	31.9	90	50	25
62.7	31.9	90	50	25
61.9	31.7	90	50	25
63.4	32.0	90	50	25
63.1	31.6	90	50	25
63.6	32.0	90	50	25
63.8	32.1	90	50	25
64.9	32.9	90	50	25
65.2	33.0	90	50	25
64.5	32.6	90	50	25
64.9	32.6	90	50	25
65.4	32.4	90	50	25
65.0	32.1	90	50	25
64.0	31.5	90	50	25
64.5	31.4	90	50	25
64.5	31.2	90	50	25
63.7	30.8	90	50	25
63.8	30.9	90	50	25
63.7	30.6	90	50	25
63.4	30.5	90	50	25
64.0	30.8	90	50	25
64.0	30.9	90	50	25
63.9	31.1	90	50	25
65.1	31.7	90	50	25
67.0	32.6	90	50	25
66.4	32.5	90	50	25
67.3	32.8	90	50	25
67.2	32.7	90	50	25
67.1	32.6	90	50	25
66.9	32.4	90	50	25
67.4	32.5	90	50	25
66.4	31.9	90	50	25
66.7	32.1	90	50	25
66.7	32.2	90	50	25
66.6	32.0	90	50	25
66.6	32.2	90	50	25
65.8	32.0	90	50	25
65.5	31.8	90	50	25
65.8	31.9	90	50	25
65.5	32.0	90	50	25
66.1	32.2	90	50	25
67.2	32.5	90	50	25

Date	24 Hour TSP Concentration ($\mu g/m^3$)	24 Hour PM10 Concentration ($\mu g/m^3$)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating
9/11/2018	60	21	0.0	East North East	68	Yes
15/11/2018	60	34	2.0	South South East	158	No
21/11/2018	110	21	0.0	North West	315	No
27/11/2018	100	42	6.5	East North East	68	Yes
3/12/2018	120	61	0.0	North West	315	Yes
9/12/2018	87	41	0.0	East North East	68	No
15/12/2018	89	39	0.2	North East	45	No
21/12/2018	63	20	0.0	South	180	No
27/12/2018	43	43	0.0	East North East	68	Yes
2/01/2019	74	65	0.0	East North East	68	No
8/01/2019	59	42	0.0	East North East	68	No
14/01/2019	43	31	0.0	East North East	45	No
20/01/2019	41		0.0	South	158	No
22/01/2019		31	0.0	East North East	68	No
26/01/2019	105		0.0	North North West	180	Yes
30/01/2019		42	0.0	East North East	68	Yes
1/02/2019	80	19	7.0	South	180	Yes
7/02/2019	77	38	0.0	East North East	68	Yes
13/02/2019	105	45	0.0	South East	135	No
19/02/2019	68	46	1.5	South	180	No
25/02/2019	63	32	0.0	East South East	113	Yes
3/03/2019	74		0.0	East North East	68	No
9/03/2019	92	36	6.8	South	18	No
12/03/2019		40	0.0	East South East	113	No
15/03/2019	70	21	0.0	South	180	Yes
21/03/2019	36	16	2.8	South South East	158	Yes
27/03/2019	55	32	0.0	East South East	113	Yes
2/04/2019	45	11	4.5	South West	225	Yes
8/04/2019		46	0.0	North West	315	No
9/04/2019	87		1.5	North West	315	No
14/04/2019	63	21	2.0	South West	225	Yes
20/04/2019	56	27	0.0	North East	45	Yes
26/04/2019	84	35	0.0	North West	315	No
2/05/2019	48	24	0.0	North East	45	Yes
8/05/2019	53	20	0.0	West North West	293	No
14/05/2019	64	26	0.0	North West	315	Yes
20/05/2019	51	32	0.0	North West	315	No
26/05/2019	82	39	0.0	North West	315	Yes
1/06/2019	50	23	36.0	North West	293	No
7/06/2019	58	26	0.0	North West	315	No
13/06/2019	69	31	0.0	West North West	293	No
19/06/2019	22	12	0.0	South West	225	No
25/06/2019	19	10	4.0	South West	225	Yes
1/07/2019	67	36	0.0	West-north west	315	Yes
7/07/2019	54	22	1.5	North West	293	No
13/07/2019	30	6	0.0	West	293	No

12 month Rolling Average		Guideline Criteria		
TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
67.8	32.6	90	50	25
67.9	32.8	90	50	25
68.9	32.7	90	50	25
69.7	32.7	90	50	25
70.6	33.1	90	50	25
70.8	32.9	90	50	25
70.0	32.2	90	50	25
68.4	31.3	90	50	25
68.4	31.5	90	50	25
68.7	32.0	90	50	25
67.8	32.0	90	50	25
66.6	31.6	90	50	25
65.9	31.6	90	50	25
65.9	31.7	90	50	25
67.0	31.8	90	50	25
67.3	32.1	90	50	25
67.6	32.0	90	50	25
67.4	31.8	90	50	25
68.0	32.0	90	50	25
68.4	32.3	90	50	25
69.2	32.6	90	50	25
69.3	32.5	90	50	25
68.2	32.2	90	50	25
68.5	32.5	90	50	25
68.6	32.2	90	50	25
68.1	32.1	90	50	25
67.4	31.5	90	50	25
66.8	31.1	90	50	25
67.5	31.7	90	50	25
67.8	31.7	90	50	25
67.1	31.6	90	50	25
67.5	32.0	90	50	25
67.8	32.1	90	50	25
67.2	32.1	90	50	25
66.8	32.1	90	50	25
67.6	32.4	90	50	25
67.9	32.5	90	50	25
68.8	33.0	90	50	25
69.0	33.1	90	50	25
69.0	33.1	90	50	25
69.4	33.1	90	50	25
68.8	32.6	90	50	25
66.9	31.8	90	50	25
65.4	31.2	90	50	25
65.7	31.2	90	50	25
64.7	30.5	90	50	25

Date	24 Hour TSP Concentration ($\mu g/m^3$)	24 Hour PM10 Concentration ($\mu g/m^3$)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating
19/07/2019	97	23	0.0	West-north west	315	Yes
25/07/2019	64	27	0.0	North west	315	No
31/07/2019	31	5	5.5	South West	225	No
6/08/2019	71	28	0.0	North-west		Yes
12/08/2019	44	13	0.0	West-North West		No
18/08/2019	58	8	0.0	North-North East		No
24/08/2019	110	48	0.0	North West		No
30/08/2019	19	39	110.0	South West		No
5/09/2019	84	61	0.0	East-north east		Yes
11/09/2019	47	28	0.5	West-north west		Yes
17/09/2019	42	11	17.0	South-south east		No
23/09/2019	38	15	0.0	South west		No
29/09/2019	54	25	0.0	East-north east		No
5/10/2019	58	8	8.3	South east		No
11/10/2019	31	18	10.5	East south east		Yes
17/10/2019	86	39	0.0	West-south West		Yes
23/10/2019	66	7	0.0	East-north east		Yes
29/10/2019	110	44	0.0	North-north East		No
4/11/2019	50	19	5.5	East south east		No
10/11/2019	47	21	0.0	South East		No
16/11/2019	84	47	0.0	East south east		No
22/11/2019	180	105	1.0	South		No
28/11/2019	190	90	0.0	East north east		Yes
4/12/2019	160	85	0.0	West North West		No
10/12/2019	180	120	0.0	South		No
16/12/2019	93	43	0.0	South South East		No
22/12/2019	88	45	0.0	South		Yes
28/12/2019	74	33	0.0	East North East	68	No
3/01/2020	90	36	0.0	East North East	68	No
9/01/2020	80	43	0.0	South	180	No
15/01/2020	74	35	0.0	South East	135	Yes
21/01/2020	110	59	0.0	North West	315	No
27/01/2020	83	42	0.0	South	180	No
2/02/2020	115	**53**	0.5	South	180	Yes
8/02/2020	75	33	5.0	East South East	113	No
14/02/2020	54	23	0.0	South	180	No
20/02/2020	45	18	0.0	South East	135	No
26/02/2020	64	29	7.5	North West	315	No
3/03/2020	61	23	0.0	South	180	No
9/03/2020	27	10	0.5	South East	135	No
15/03/2020	28	13	0.5	South South East	158	Yes
21/03/2020	79	22	0.0	East South East	113	No
27/03/2020	45	26	4.0	East South East	113	Yes
2/04/2020	85	2	6.0	North East	45	No
8/04/2020	41	9	0.0	South East	135	Yes
14/04/2020	69	35	0.0	North West	315	Yes

12 month Rolling Average		Guideline Criteria		
TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
64.9	30.3	90	50	25
64.7	30.2	90	50	25
64.3	29.9	90	50	25
64.4	30.0	90	50	25
64.8	30.1	90	50	25
64.7	29.8	90	50	25
66.0	30.3	90	50	25
65.2	30.4	90	50	25
65.5	30.6	90	50	25
66.0	30.8	90	50	25
65.9	30.6	90	50	25
65.3	30.1	90	50	25
65.5	30.1	90	50	25
65.1	29.6	90	50	25
63.6	29.2	90	50	25
64.0	29.5	90	50	25
64.1	29.0	90	50	25
64.1	29.4	90	50	25
63.3	29.0	90	50	25
62.0	28.3	90	50	25
61.9	28.4	90	50	25
63.5	29.6	90	50	25
65.8	30.8	90	50	25
67.8	31.5	90	50	25
69.7	32.5	90	50	25
70.3	32.5	90	50	25
71.1	32.8	90	50	25
71.6	32.8	90	50	25
71.9	32.8	90	50	25
71.5	33.0	90	50	25
71.6	32.9	90	50	25
72.1	33.6	90	50	25
72.2	33.6	90	50	25
72.3	33.8	90	50	25
72.5	33.6	90	50	25
72.3	33.4	90	50	25
71.8	33.2	90	50	25
71.3	33.0	90	50	25
71.2	32.8	90	50	25
70.5	32.6	90	50	25
70.3	32.5	90	50	25
70.7	32.4	90	50	25
70.7	32.6	90	50	25
71.0	31.9	90	50	25
70.2	31.5	90	50	25
70.3	31.7	90	50	25

Date	24 Hour TSP Concentration ($\mu g/m^3$)	24 Hour PM10 Concentration ($\mu g/m^3$)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating
20/04/2020	73	38	0.0	West North West	293	No
26/04/2020	105	55	0.0	North West	315	No
2/05/2020	58		0.0	West North West	293	No
5/05/2020		7	2.5	South West	225	No
8/05/2020	74	38	0.0	North West	315	No
14/05/2020	40	18	14.0	South West	225	No
20/05/2020	54	34	0.0	North West	315	Yes
26/05/2020	33	20	8.3	South South East	158	Yes
1/06/2020	87	32	0.0	North West	315	Yes
7/06/2020	56	31	0.0	West North West	293	No
13/06/2020	50	26	0.0	North West	315	Yes
19/06/2020	63	31	0.5	North West	315	No
25/06/2020	39	20	0.0	West North West	293	Yes
1/07/2020	150	39	0.0	North West	315	No
7/07/2020	44	23	3.0	West North West	293	No
13/07/2020	26	14	0.5	West North West	293	No
19/07/2020	39	21	0.0	North West	315	No
25/07/2020	48	22	2.0	North North East	23	No
31/07/2020	49	21	0.0	South	180	No
6/08/2020	47	21	0.0	West North West	293	No
12/08/2020	52		0.0	North West	315	No
15/08/2020		8	0.5	West North west	293	Yes
18/08/2020	46	12	0.0	West North West	293	Yes
24/08/2020	44	16	0.0	West	270	No
30/08/2020	47		0.0	North West	315	No
3/09/2020		23	0.0	North West	315	No
5/09/2020	35	24	4.0	West	270	No
11/09/2020	45	16	0.0	East south East	113	No
17/09/2020	100	34	0.0	North West	315	No
23/09/2020	66	49	0.0	West North West	293	Yes
29/09/2020	61	23	0.0	East South East	113	No
5/10/2020	74		0.0	North West	315	No
7/10/2020		30	0.0	East south east	113	Yes
11/10/2020	45	21	0.0	North West	315	No
17/10/2020	76	32	0.0	North East	45	No
23/10/2020	43	19	0.0	North East	45	No
29/10/2020	21	8	0.5	South West	225	No
4/11/2020	45	19	0.0	East North East	68	No
10/11/2020	42	28	0.0	North East	45	Yes
16/11/2020	40	14	20.0	North West	315	No
22/11/2020	55	30	0.0	North West	315	No
28/11/2020	89	50	0.0	North West	315	No
4/12/2020	63	33	0.0	South East	135	No
10/12/2020	77	37	0.5	South South East	158	No
16/12/2020	42	37	0.0	East North East	68	Yes
22/12/2020	12	8	6.5	West North West	293	No

12 month Rolling Average		Guideline Criteria		
TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
70.6	31.9	90	50	25
70.9	32.2	90	50	25
71.1	32.4	90	50	25
71.4	32.2	90	50	25
71.6	32.4	90	50	25
71.4	32.1	90	50	25
70.9	32.0	90	50	25
70.6	32.0	90	50	25
71.1	32.1	90	50	25
70.9	32.1	90	50	25
71.4	32.3	90	50	25
72.1	32.7	90	50	25
71.6	32.4	90	50	25
73.2	32.7	90	50	25
73.5	33.0	90	50	25
72.3	32.8	90	50	25
71.9	32.7	90	50	25
72.1	33.0	90	50	25
71.8	32.9	90	50	25
71.8	33.0	90	50	25
71.7	33.4	90	50	25
71.1	32.8	90	50	25
71.5	32.3	90	50	25
70.8	31.5	90	50	25
70.8	31.6	90	50	25
71.3	31.8	90	50	25
71.3	32.0	90	50	25
71.1	31.8	90	50	25
71.9	32.3	90	50	25
72.5	32.8	90	50	25
72.0	32.5	90	50	25
72.2	33.0	90	50	25
71.5	32.7	90	50	25
71.4	32.8	90	50	25
71.9	32.9	90	50	25
71.2	32.5	90	50	25
68.4	30.8	90	50	25
65.9	29.5	90	50	25
63.8	28.5	90	50	25
61.4	26.6	90	50	25
60.7	26.4	90	50	25
60.7	26.5	90	50	25
60.5	26.5	90	50	25
60.3	26.5	90	50	25
59.6	26.4	90	50	25
58.5	25.9	90	50	25

Date	24 Hour TSP Concentration (µg/m^3)	24 Hour PM10 Concentration (µg/m^3)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating
28/12/2020	55	28	15.5	North North West	338	Yes
3/01/2021	64	19	11.3	North east	45	No
9/01/2021	23	8	9.5	South east	135	Yes
15/01/2021	70	36	0.0	South south west	203	No
21/01/2021	63	29	0.0	East north east	68	No
27/01/2021	44	46	20.5	South	180	No
2/02/2021	37	16	11.5	South South East	158	Yes
8/02/2021	43	20	0.0	South	180	No
14/02/2021	43	31	0.0	South	180	Yes
20/02/2021	38	29	1.5	East South East	113	Yes
26/02/2021	55	26	0.0	East South East	113	No
4/03/2021	68	22	7.5	East North East	68	Yes
16/03/2021	23	12	3.5	South West	225	Yes
18/03/2021	24	11	12.0	East South East	113	Yes
22/03/2021	29	17	0.0	North East	45	Yes
28/03/2021	30	15	0.0	South East	135	Yes
3/04/2021	33	18	0.0	North North East	23	Yes
9/04/2021	46	21	0.5	West North West	293	Yes
15/04/2021	79	46	0.0	South West	225	Yes
21/04/2021	52	29	0.0	West North West	293	Yes
27/04/2021	38	21	0.0	North West	315	Yes
3/05/2021	31	15	0.0	North West	315	No
9/05/2021	34	29	0.0	West North West	293	Yes
15/05/2021	50	6	0.0	West	270	No
21/05/2021	46	17	18.5	North West	315	Yes
27/05/2021	32	25	0.0	West North West	293	No
2/06/2021	63	29	0.0	North West	315	No
8/06/2021	52	27	8.8	North West	315	Yes
14/06/2021	20	10	0.0	West North West	293	No
20/06/2021	18	6	15.0	South West	225	No
26/06/2021	22	8	0.0	West North West	293	No
2/07/2021	42	26	3.0	North west	315	No
8/07/2021	43	19	1.5	North west	315	No
14/07/2021	90	46	3.0	North west	315	Yes
20/07/2021	44	16	0.0	West	270	No
26/07/2021	32	23	0.0	West north West	293	No
1/08/2021	82	53	1.0	North west	315	Yes
7/08/2021	59	48	0.0	West	270	Yes
13/08/2021	69	36	0.0	North west	315	No

12 month Rolling Average		Guideline Criteria		
TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
57.6	25.4	90	50	25
59.16	26.30	90	50	25
58.23	25.72	90	50	25
58.16	25.74	90	50	25
57.39	25.25	90	50	25
56.75	25.31	90	50	25
55.48	24.70	90	50	25
54.95	24.49	90	50	25
54.77	24.62	90	50	25
54.66	24.80	90	50	25
54.51	24.75	90	50	25
54.62	24.74	90	50	25
54.56	25.40	90	50	25
54.49	25.44	90	50	25
53.67	25.12	90	50	25
53.43	24.72	90	50	25
52.77	24.74	90	50	25
52.38	24.02	90	50	25
52.82	24.69	90	50	25
52.48	24.53	90	50	25
51.67	24.59	90	50	25
50.93	24.26	90	50	25
50.52	24.39	90	50	25
50.44	24.20	90	50	25
50.31	23.92	90	50	25
50.30	24.00	90	50	25
49.90	23.95	90	50	25
49.84	23.89	90	50	25
49.34	23.62	90	50	25
48.61	23.21	90	50	25
48.33	23.02	90	50	25
46.56	22.80	90	50	25
46.54	22.74	90	50	25
47.59	23.26	90	50	25
47.67	23.18	90	50	25
47.41	23.20	90	50	25
47.95	23.77	90	50	25
48.15	24.16	90	50	25
48.43	24.35	90	50	25

Date	24 Hour TSP Concentration (µg/m^3)	24 Hour PM10 Concentration (µg/m^3)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating	12 month Rolling Average		Guideline Criteria		
							TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
19/08/2021	75	40	0.0	North west	315	No	48.90	25.08	90	50	25
25/08/2021	15	5	27.0	West	270	No	48.43	24.90	90	50	25
31/08/2021	67	36	0.0	North west	315	No	48.75	25.08	90	50	25
6/09/2021	51	37	0.0	West North West	293	Yes	49.02	25.48	90	50	25
12/09/2021	140	53	0.0	North West	315	Yes	50.57	25.80	90	50	25
18/09/2021	78	40	1.5	West North West	293	No	50.21	25.65	90	50	25
24/09/2021	115	84	0.0	West North West	293	Yes	51.02	26.67	90	50	25
30/09/2021	43	30	0.5	East North East	68	No	50.72	26.72	90	50	25
6/10/2021	73	61	0.0	West North West	293	No	50.70	27.27	90	50	25
12/10/2021	38	2	10.4	East South East	113	Yes	50.59	26.92	90	50	25
18/10/2021	63	13	0.0	North West	315	No	50.38	26.61	90	50	25
24/10/2021	67	20	0.2	West North West	293	Yes	50.77	26.62	90	50	25
30/10/2021	67	31	0.0	North East	45	No	51.52	27.00	90	50	25
5/11/2021	84	62	3.4	East North East	68	Yes	52.16	27.70	90	50	25
11/11/2021	20	12	0.0	East North East	68	No	51.80	27.44	90	50	25
17/11/2021	49	19	0.0	South East	135	No	51.95	27.52	90	50	25
23/11/2021	32	11	7.6	South South East	158	No	51.57	27.21	90	50	25
29/11/2021	60	29	0.0	South West	225	No	51.10	26.87	90	50	25
5/12/2021	72	152	0.2	East South East	113	Yes	51.25	28.82	90	50	25
11/12/2021	28	46	0.0	South West	225	No	50.44	28.97	90	50	25
17/12/2021	87	50	0.2	South South East	158	Yes	51.18	29.18	90	50	25
23/12/2021	84	48	0.0	East North East	68	Yes	52.36	29.84	90	50	25
29/12/2021	22	65	1.2	East South East	113	Yes	51.82	30.44	90	50	25
4/01/2022	48	58	0.0	South South East	158	No	51.56	31.08	90	50	25
10/01/2022	61	18	0.2	East North East	68	No	52.18	31.25	90	50	25
16/01/2022	68	43	9.0	South	180	No	52.15	31.36	90	50	25
22/01/2022	46	47	0.4	South East	135	No	51.87	31.66	90	50	25
28/01/2022	48	8	0.0	North East	45	No	51.93	31.03	90	50	25
3/02/2022	48	57	54.5	South South West	203	No	52.11	31.70	90	50	25
9/02/2022	65	31	0.0	North West	315	No	52.48	31.89	90	50	25
15/02/2022	64	37	0.0	East North East	68	No	52.82	31.98	90	50	25
21/02/2022	83	48	0.0	South South West	203	No	53.56	32.30	90	50	25
27/02/2022	30	14	1.0	East North East	68	No	53.15	32.10	90	50	25
5/03/2022	58	35	16.0	North East	45	Yes	52.71	31.80	90	50	25
11/03/2022	33	23	0.0	East South East	113	Yes	52.56	31.85	90	50	25
17/03/2022	86	33	0.0	South West	23	Yes	53.21	31.88	90	50	25
23/03/2022	41	28	37.8	North West	113	No	53.26	31.86	90	50	25
29/03/2022	32	15	0.0	North North East	145	No	52.91	31.70	90	50	25
4/04/2022	19	14	0.0	West North West	303	No	54.16	31.58	90	50	25
10/04/2022	40	20	0.0	South East	203	No	54.07	31.70	90	50	25
16/04/2022	108	71	0.0	East South East	0	Yes	54.54	32.61	90	50	25
22/04/2022	37	22	24.3	East South East	113	No	54.30	32.68	90	50	25
28/04/2022	55	27	128.7	North West	293	Yes	54.57	33.34	90	50	25
4/05/2022	32	21	0.0	North West	293	No	54.59	33.44	90	50	25
10/05/2022	27	24	14.3	East	90	No	54.48	33.36	90	50	25
16/05/2022	46	24	0.0	West North West	293	Yes	54.41	33.66	90	50	25

Date	24 Hour TSP Concentration (µg/m^3)	24 Hour PM10 Concentration (µg/m^3)	Rainfall (mm)	Predominant Wind Direction		Vessel Operating		12 month Rolling Average		Guideline Criteria		
								TSP	PM10	TSP Annual Average Criterion	PM10 24 hour "short term" Criterion	PM10 Annual Average Criterion
22/05/2022	24	8	29.0	South West	225	No		54.05	33.51	90	50	25
28/05/2022	32	27	1.0	West North West	293	No		54.05	33.54	90	50	25
3/06/2022	43	40	5.5	North West	315	No		53.72	33.72	90	50	25
9/06/2022	49	36	0.0	West North West	303	No		53.67	33.87	90	50	25
15/06/2022	55	43	0.0	West North West	303	No		54.25	34.41	90	50	25
21/06/2022	59	33	0.0	North West	315	Yes		54.92	34.85	90	50	25
27/06/2022	54	70	5.5	South West	23	Yes		55.44	35.87	90	50	25
3/07/2022	44	27	31.4	South South East	158	No		55.48	35.89	90	50	25
9/07/2022	18	15	0.0	West North West	293	No		55.07	35.82	90	50	25
15/07/2022	24	14	0.0	West North West	293	Yes		53.98	35.30	90	50	25
21/07/2022	32	51	0.0	East	90	Yes		53.79	35.87	90	50	25
27/07/2022	34	34	0.4	West North West	293	Yes		53.82	36.05	90	50	25
2/08/2022	47	25	0.0	North West	315	No		53.25	35.59	90	50	25
8/08/2022	33	11	1.4	South West	225	No		52.82	34.98	90	50	25
14/08/2022	63	30	0.0	North East	45	unknown		52.72	34.89	90	50	25
20/08/2022	34	17	1.5	West North West	292.5	unknown		52.05	34.51	90	50	25
26/08/2022	32	30	7.0	North East	45	unknown		52.08	34.90	90	50	25
1/09/2022	33		2.0	East North East	67.5	No		51.78		90	50	25
1/09/2022		17	1.0	North North East	22.5	Yes			34.57	90	50	25
7/09/2022	52	15	0.0	North West	315	No		50.32	33.93	90	50	25
13/09/2022	57	13	0.0	South East	135	Yes		49.97	33.48	90	50	25
19/09/2022	55	26	0.0	West North West	292.5	Yes		48.97	32.52	90	50	25
25/09/2022	33	30	0.0	North West	315	Yes		48.80	32.52	90	50	25
1/10/2022	42	19	1.5	South East	135	No		48.28	31.82	90	50	25
7/10/2022	26	3	20.3	North North East	22.5	No		48.08	31.83	90	50	25
13/10/2022	137	69	0.0	North East	45	Yes		49.32	32.77	90	50	25
19/10/2022	93	11	0.0	East South East	112.5	Yes		49.75	32.62	90	50	25
25/10/2022	98	39	0.0	North West	315	Yes		50.27	32.75	90	50	25
31/10/2022	221	65	1.0	North North West	337.5	No		53.07	33.28	90	50	25
6/11/2022	133	24	0.0	North East	45	No		53.87	32.66	90	50	25
12/11/2022	54	12	3.3	North West	315	Yes		54.43	32.66	90	50	25
18/11/2022	94	60	0	West South West	247.5	No		55.16	33.33	90	50	25
24/11/2022	101	46	0	East North East	67.5	Yes		56.30	33.90	90	50	25
30/11/2022	100	55	0	East South East	112.5	Yes		56.95	34.33	90	50	25
6/12/2022	240	95	0.0	South East	135	No		59.70	33.39	90	50	25
12/12/2022	96	47	8.5	North West	315	Yes		60.82	33.41	90	50	25
18/12/2022	74	22	2	South West	225	Yes		60.61	32.95	90	50	25
24/12/2022	82	29	2	North West	315	No		60.57	32.64	90	50	25
30/12/2022	55	19	0	East South East	112.5	No		61.11	31.89	90	50	25

APPENDIX D – VESSEL MOVEMENT REGISTER

VESSEL MOVEMENTS M4

Vessel Name	Material	Entry date	Time	Departure Date	Time	Load/Unload
ACACIA	IRON AND STEEL PRODUCTS	6/01/2022	18:20	12/01/2022	11:00	Unload
TBC PRIME	IRON AND STEEL PRODUCTS	12/01/2022	11:17	25/01/2022	5:12	Unload
BBC DELAWARE	AMMONIUM NITRATE	29/01/2022	8:32	1/02/2022	14:34	Unload
BBC DIAMOND	RAILWAY VEH'SPARTS ETC	16/02/2022	19:46	19/02/2022	8:21	Unload
BBC DELAWARE	AMMONIUM NITRATE	4/03/2022	16:30	6/03/2022	21:29	Unload
WONDERFUL WORLD	CEMENT	7/03/2022	14:45	20/03/2022	5:47	Unload
BBC KWIATKOWSKI	IRON AND STEEL PRODUCTS	15/03/2022	2:10	18/03/2022	3:02	Load
BBC KWIATKOWSKI	GRINDING MEDIA	15/03/2022	2:10	18/03/2022	3:02	Load
BBC CHALLENGER	RAILWAY VEH'SPARTS ETC	5/04/2022	15:10	8/04/2022	19:30	Unload
TINA S	CEMENT	12/04/2022	7:35	18/04/2022	18:36	Unloead
KANDA LOGGER	IRON AND STEEL SCRAP	23/04/2022	16:15	1/05/2022	3:56	Load
IVS MERLION	AMMONIUM NITRATE	12/05/2022	7:18	15/05/2022	12:38	Unload
BBC CAROLINA	IRON AND STEEL PRODUCTS	15/05/2022	13:15	19/05/2022	15:24	Load
BBC CAROLINA	GRINDING MEDIA	15/05/2022	13:15	19/05/2022	15:24	Load
BBC CAROLINA	INDUST.MACH. EQUIP. NES.	15/05/2022	13:15	19/05/2022	15:24	Unload
BBC CAROLINA	RAILWAY VEH'SPARTS ETC	15/05/2022	13:15	19/05/2022	15:24	Unload
UNISPIRIT	CONSTRUCTION MATERIALS	4/06/2022	10:36	6/06/2022	15:30	Unload
POWAN	IRON AND STEEL SCRAP	21/06/2022	11:06	25/06/2022	15:12	Load
MISSY ENTERPRISE	IRON AND STEEL PRODUCTS	25/06/2022	15:25	27/06/2022	15:33	Load
PIA	INDUST.MACH. EQUIP. NES.	12/07/2022	1:35	15/07/2022	8:24	Unload
PIA	RAILWAY VEH'SPARTS ETC	12/07/2022	1:35	15/07/2022	8:24	Unload
SHANGHAI SPIRIT	AMMONIUM NITRATE	15/07/2022	9:00	17/07/2022	8:36	Unload
ASIA SPIRIT	AMMONIUM NITRATE	18/07/2022	6:49	21/07/2022	21:23	Unload
AAL MELBOURNE	IRON AND STEEL PRODUCTS	23/07/2022	1:07	24/07/2022	11:50	Unload
AAL MELBOURNE	POWER GEN.MACH. EQUIP.	23/07/2022	1:07	24/07/2022	11:50	Unload
MAGPIE SW	CEMENT	27/07/2022	10:23	6/08/2022	22:21	Unload
AAL SHANGHAI	POWER GEN.MACH. EQUIP.	5/08/2022	15:44	6/08/2022	17:58	Unload
AAL SHANGHAI	INDUST.MACH. EQUIP. NES.	5/08/2022	15:44	6/08/2022	17:58	Unload
AAL SHANGHAI	RAILWAY VEH'SPARTS ETC	5/08/2022	15:44	6/08/2022	17:58	Unload
DYNAMOGRACHT	AMMONIUM NITRATE	27/08/2022	12:09	29/08/2022	17:12	Unload
HEEMSKERKGRACHT	AMMONIUM NITRATE	31/08/2022	14:05	5/09/2022	16:56	Unload
HEEMSKERKGRACHT	GRINDING MEDIA	31/08/2022	14:05	5/09/2022	16:56	Load
DA JI	POWER GEN.MACH. EQUIP.	8/09/2022	7:00	13/09/2022	13:55	Unload
BBC NYHAVN	RAILWAY VEH'SPARTS ETC	18/09/2022	2:42	24/09/2022	16:23	Unload
AAL HONG KONG	IRON AND STEEL PRODUCTS	20/09/2022	22:45	23/09/2022	10:41	Unload
AAL HONG KONG	POWER GEN.MACH. EQUIP.	20/09/2022	22:45	23/09/2022	10:41	Unload
AAL HONG KONG	INDUST.MACH. EQUIP. NES.	20/09/2022	22:45	23/09/2022	10:41	Unload
FLORIJNGRACHT	AMMONIUM NITRATE	24/09/2022	14:50	27/09/2022	19:51	Unload
IRIS HARMONY	IRON AND STEEL SCRAP	10/10/2022	14:17	13/10/2022	21:15	Load
DA ZHI	POWER GEN.MACH. EQUIP.	14/10/2022	6:10	22/10/2022	19:55	Unload
DA ZHI	POWER GEN.MACH. EQUIP.	14/10/2022	6:10	22/10/2022	19:55	Unload
AAL SHANGHAI	IRON AND STEEL PRODUCTS	22/10/2022	20:14	26/10/2022	20:41	Unload
AAL SHANGHAI	POWER GEN.MACH. EQUIP.	22/10/2022	20:14	26/10/2022	20:41	Unload
AAL SHANGHAI	INDUST.MACH. EQUIP. NES.	22/10/2022	20:14	26/10/2022	20:41	Unload
ORIENTAL SPIRIT	AMMONIUM NITRATE	26/10/2022	21:03	29/10/2022	12:17	Unload
ANL DHAMBI	MEAT- FRESH/FROZEN NES.	10/11/2022	5:22	11/11/2022	11:42	Unload
ANL DHAMBI	TIMBER TIMBER PRODUCTS	10/11/2022	5:22	11/11/2022	11:42	Load
ANL DHAMBI	IRON AND STEEL SCRAP	10/11/2022	5:22	11/11/2022	11:42	Unload
ANL DHAMBI	CANOLA MEAL	10/11/2022	5:22	11/11/2022	11:42	Unload
ANL DHAMBI	ALUMINIUM METALWORKED	10/11/2022	5:22	11/11/2022	11:42	Unload
DANZIGERGRACHT	AMMONIUM NITRATE	11/11/2022	12:02	16/11/2022	12:40	Unload
ADMIRALTY SPIRIT	AMMONIUM NITRATE	19/11/2022	1:48	23/11/2022	0:22	Unload
BBC NYHAVN	POWER GEN.MACH. EQUIP.	22/11/2022	4:05	25/11/2022	18:23	Unload
MAASGRACHT	INDUST.MACH. EQUIP. NES.	23/11/2022	13:00	24/11/2022	22:16	Unload
DA JI	POWER GEN.MACH. EQUIP.	25/11/2022	0:40	30/11/2022	22:30	Unload
CHARLIE	POWER GEN.MACH. EQUIP.	10/12/2022	13:45	12/12/2022	14:50	Unload
BBC EMSLAND	GRINDING MEDIA	12/12/2022	15:06	15/12/2022	12:44	Load
BBC EMSLAND	RAILWAY VEH'SPARTS ETC	12/12/2022	15:06	15/12/2022	12:44	Unload
AAL FREMANTLE	IRON AND STEEL PRODUCTS	15/12/2022	13:01	16/12/2022	17:24	Unload

VESSEL MOVEMENTS M4

Vessel Name	Material	Entry date	Time	Departure Date	Time	Load/Unload
AAL FREMANTLE	POWER GEN.MACH. EQUIP.	15/12/2022	13:01	16/12/2022	17:24	Unload
MARSGRACHT	AMMONIUM NITRATE	17/12/2022	12:53	20/12/2022	16:52	Unload
YANGTZE GRACE	IRON AND STEEL PRODUCTS	23/12/2022	10:06	23/12/2022	23:20	Unload
MUNTGRACHT	AMMONIUM NITRATE	26/12/2022	8:10	28/12/2022	12:20	Load

APPENDIX E – NOISE COMPLIANCE REPORT

Prepared for
Port of Newcastle Operations Pty Ltd
ABN: 97 539 122 070

Mayfield No. 4 Berth

Operational Noise Compliance Assessment (2022)

22-Mar-2023
Doc No. 60620229-RPNV-14_0
Commercial-in-Confidence

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Delivering a better world

Mayfield No. 4 Berth

Operational Noise Compliance Assessment (2022)

Client: Port of Newcastle Operations Pty Ltd

ABN: 97 539 122 070

Prepared by

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22-Mar-2023

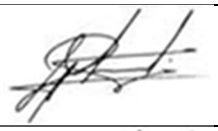
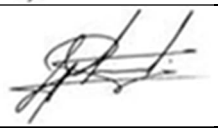
Job No.: 60620229

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Quality Information

Document	Mayfield No. 4 Berth
Ref	60620229-RPNV-14_0
Date	22-Mar-2023
Originator	Abhinav Konchery
Checker/s	Patrick Martinez
Verifier/s	

Revision History

Rev	Revision Date	Details	Approved	
			Name/Position	Signature
A	20-Mar-2023	Draft for client's comments	Patrick Martinez Technical Director - Acoustics	
0	22-Mar-2023	Final	Patrick Martinez Technical Director - Acoustics	

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1.0 Introduction

Port of Newcastle Operations Pty Ltd (PON) commissioned AECOM Australia Pty Ltd (AECOM) to carry out noise compliance measurements of associated operations at Mayfield No. 4 Berth in Newcastle, NSW.

The operations at Mayfield No. 4 Berth are one part of the overall Multi-Purpose Terminal operations at the former BHP Steelworks Main Site.

Condition 5.11 of the Consent Condition DA-293-08-00 MOD 9, dated 29 August 2013, requires that the facility demonstrates compliance with site noise limits at various noise sensitive receivers near the facility.

Note that due to temporary construction works adjacent to Mayfield No. 4 Berth, the 2022 noise compliance measurements were not able to be completed prior to the end of the reporting year, generally aimed to be completed in November each year. PON requested for an extension of time from the Department of Planning and Environment (DPE) to undertake the 2022 annual noise compliance monitoring as required under the conditions of DA 293-08-00, DA 8137 and CA 09-0096. The request was granted by the Planning Secretary as documented in DPE letter dated 3 February 2023.

The Mayfield No. 4 Berth provides for the loading and unloading of a range of freight and cargo, including but not limited to, project cargo such as wind turbine, railway vehicle parts, tunnel boring machine components, large industrial components, luxury boats, electrical transformers and machinery, general cargo such as farm machinery, excavators, and construction machinery, breakbulk such as ammonium nitrate bulk bags, steel and timber products, and containerised cargo. Refer to Section 2.0 for detailed berth operations and a summary of vessel and cargo operations during 2020 to 2022 period.

Previous operational noise compliance assessments undertaken by AECOM (2011 to 2013 and 2019 to 2021) have confirmed consistent compliance from these berth operations over these years.

Bulk fuel operations commenced in 2014 and were ceased in 2018 following commissioning of Mayfield No. 7 Berth (i.e. the measurements presented in this report were undertaken after the ceasing of bulk fuel operations). Bulk fuel operations also consistently achieved compliance as documented in four previous operational noise compliance assessments undertaken by AECOM:

1. Mayfield No. 4 Berth, Operational Noise Compliance Assessment, 60333368-RPNV-01_C, dated 24 November 2014.
2. Mayfield No. 4 Berth, Operational Noise Compliance Assessment, 60437494-RPNV-02_B, dated 11 November 2015.
3. Mayfield No. 4 Berth, Operational Noise Compliance Assessment, 60518192-RPNV-02_B, dated 5 December 2016.
4. Mayfield No.4 Berth, Operational Noise Compliance Assessment, 60553318-RPNV-02_B, dated 18 December 2017.

Due to adverse weather conditions, the 2018 operational noise compliance assessment was undertaken based on previous years' noise measurements. The 2018 noise compliance assessment is presented in the following AECOM document:

1. Mayfield No.4 Berth, Operational Noise Compliance Assessment (2018), 60553318-RPNV-03_B, dated 15 February 2019.

As presented in previous years' operational noise compliance assessments, it is not possible to directly measure the impact of noise at nearby receiver locations arising from operations at Mayfield No. 4 Berth due to the influence from extraneous noise sources. This evaluation was confirmed as still valid during night-time measurements undertaken during the 2022 noise monitoring period. The compliance assessment was therefore carried out using SoundPLAN noise modelling software.

This method of noise compliance assessment is in accordance with Chapter 11 of the NSW Environment protection Authority's (EPA) Industrial Noise Policy (INP). In order to determine compliance of the site operational noise emissions with the required noise limits, the assumptions of a

'reasonable' worst case operational scenario are presented, along with the predicted noise levels at the required assessment locations.

Attended noise measurements were undertaken on 28 and 29 November 2022, at the assessment receiver locations in accordance with Development Consent (DA 293-08-00). However, due to temporary construction activities being undertaken adjacent to Mayfield No. 4 Berth, daytime noise compliance measurements were not able to be completed during this time.

Nearfield measurements of the vessel *DA XIN– IMO NO. 9608427* and activities associated with the unloading of wind turbine components onto trucks were carried out on 6 March 2023. The noise measurements of unloading activities were conducted in the absence of construction activities, during the morning stand-down period. The results of the nearfield measurements were used as inputs for the noise model.

1.1 EPA Noise Policy for Industry

The *NSW Industrial Noise Policy* (EPA 2000) was withdrawn in November 2017 and replaced by the *Noise Policy for Industry* (EPA 2017) except as describe in the EPA document *Implementation and transitional arrangements for the Noise Policy for Industry (2017),* point 8, as presented below:

> *8. The NSW Industrial Noise Policy (2000) will continue to apply where it is referenced in existing statutory instruments (such as consents and licences), except for the NSW Industrial Noise Policy Section 4 modifying factors, which will be transitioned to the Noise Policy for Industry (2017) Fact Sheet C through a NSW Industrial Noise Policy application note. This approach has been taken because the Noise Policy for Industry (2017) modification factor approach reflects more recent understanding of the impact of tonal and low-frequency noise on the community.*

Acoustic terminology used in this report is included in Appendix A.

2.0 Site Operations

Mayfield No. 4 Berth is a common user berth that is owned by PON under a 98-year lease agreement with the NSW Government and operated by stevedoring companies under a Stevedore Licence Agreement.

Mayfield No. 4 Berth is generally accessible Monday to Friday during standard business hours, and when ships are in berth, Mayfield No. 4 Berth can operate 24-hours a day, seven days a week during loading or unloading activities.

During loading and unloading activities, mobile equipment such as cranes, forklifts and mobile conveyors are used. Alternatively, the ships cranes may be used to load or unload cargo.

Potential cargos for the berth include project cargos (for example wind turbines, transformers, mining equipment and materials), break bulk (inert materials only), general containerised freight, bulk cargoes such as cement in bulk bags, and ammonium nitrate in containers or bulker bags.

Cargo is usually delivered to or exported from Mayfield No. 4 Berth by road and truck. There is no rail access directly to the berth.

There was an increase of 11 vessel visits compared to the previous year, and an increase of 32 vessel visits when compared to 2020. There was also an increase in the diversity of commodities handled at the berth. Similar to previous years, the major commodities were Ammonium Nitrate in bulker, Power Generation Machine Equipment and Steel and Iron Products.

Infrastructure at Mayfield No. 4 Berth was largely consistent with previous reporting years, with the exception of the arrival of two Liebherr LHM 550 mobile harbour cranes (MHCs) in August 2022. The MHCs represent a $28.4 million investment in growing diversified trade. The cranes are yet to see significant use. Table 1 presents a summary of Mayfield No. 4 Berth vessel and cargo operations during 2020 to 2022 period.

Table 1 Summary of vessel and cargo operations

Material	No. Visits 2020	No. Visits 2021	No. Visits 2022	% of Visits 2022
Ammonium nitrate bulk bags	12	15	13	21%
Power generation machinery & equipment	9	6	11	17%
Iron and steel products	4	14	10	16%
Railway vehicle parts	0	3	7	11%
Industry machinery & equipment	2	5	6	10%
Grinding media	0	6	4	6%
Iron and steel scrap	0	0	4	6%
Cement bulk bags	0	0	3	5%
Aluminium metal - worked	0	0	1	2%
Canola meal	0	0	1	2%
Construction materials	0	0	1	2%
Meat- fresh/frozen	0	0	1	2%
Timber products	0	0	1	2%
20 x 8 x 8.5FT dry container	0	1	0	0%
Total Ship Visits	**31**	**52**	**63**	**-**

3.0 Assessment Noise Limits

3.1 Development Application Consent Condition noise limits

The required noise limits for each of the identified receivers is provided in Condition 5.11 of the Development Application DA 293-08-00 MOD 9, dated 29 August 2013.

Table 2 provides a summary of the applicable noise limits.

Table 2 Operational noise limits

Location	Day	Evening	Night
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$
1. 52 Arthur Street	49	38	38
2. Mayfield East Public School	47	37	37
3. 21 Crebert Street	49	39	39
4. Newcastle TAFE	44	38	38
5. 1 Arthur Street	48	33	33

Notes:

1. In accordance with the INP time of day is defined as follows:

   Day – the period from 7:00 am to 6:00 pm Mondays to Saturdays or 8:00 am to 6:00 pm on Sundays and public holidays

   Evening – the period from 6:00 pm to 10:00 pm

   Night – the period from 10:00 pm to 7:00 am Mondays to Saturdays or 10:00 pm to 8:00 am on Sundays and public holidays

2. The noise limits apply during all assessment periods under winds up to 3 metres per second (measured at 10 metres above ground level) and Pasquil stability classes from A to F.

Accordingly, AECOM assessed operational noise emissions from Mayfield No. 4 Berth based on 'reasonable' worst case operational scenarios to determine the predicted noise levels at the assessment locations as presented in Figure 1.

3.2 Environmental Protection Licence

Mayfield No. 4 Berth currently operates under NSW EPA Environment Protection Licence No. 13181 (EPL 13181), License version date 4 August 2020, however, there are no noise limits specified in EPL 13181.

3.3 Site location

The location of Mayfield No. 4 Berth and noise assessment locations identified in Condition 5.11, are shown in Figure 1.

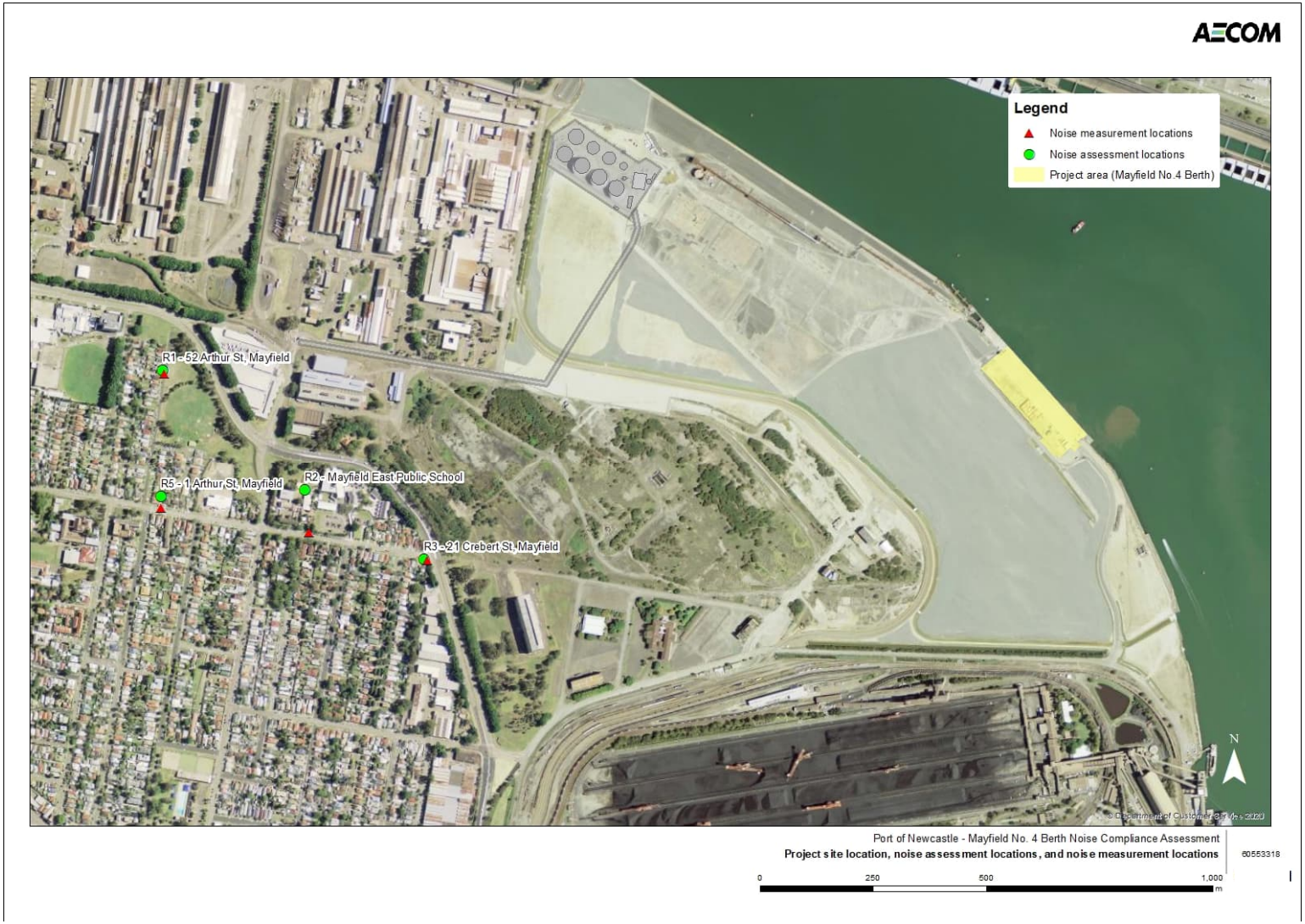


Figure 1 Site location and noise assessment locations

4.0 Measurement Methodology and Results

4.1 Compliance measurements methodology and discussion

As presented in previous years' operational noise compliance assessments for Mayfield No. 4 Berth, it is not possible to directly measure the impact of noise arising from operations at Mayfield No. 4 Berth due to the influence from extraneous noise sources at nearby receiver locations. This evaluation was confirmed as still valid during measurements undertaken during the 2022 noise monitoring period. The compliance assessment was therefore carried out using SoundPLAN noise modelling software.

This method of noise compliance assessment is in accordance with Chapter 11 of the INP.

Attended noise measurements were undertaken at all the Condition 5.11 assessment receiver locations between 28 and 29 November 2022. It was found that noise from road traffic on Industrial Drive was dominant at the receiver locations and therefore demonstrating compliance with the Mayfield No. 4 Berth relevant noise criteria for the Development Application Consent was not possible. These measurements are presented in Table 4.

Thus, it was not possible to determine the noise contribution from Mayfield No. 4 Berth by direct measurement. The INP provides guidance in Chapter 11 as to how to review the noise emissions of a site where the existing noise levels are already high.

4.2 Instrumentation

Attended noise measurements were conducted using the equipment presented in Table 3.

Table 3 Measurement instrumentation

Equipment	Serial number
Brüel and Kjaer Type 2250	3009330

All equipment presented in Table 3 are designated as Class 1 instruments. All instruments were calibrated before and after the measurements using a Rion NC-74 calibrator (Serial Number 34667836) with a drift in calibration not exceeding ±0.5 dB.

All the acoustic instrumentation employed during the noise measurements comply with the requirements of Australian/New Zealand Standard AS/NZS IEC 61672.1-2019 *Electroacoustics - Sound level meters – Part 1: Specifications*.

All equipment used for this compliance assessment have valid calibration certificates.

Table 4 Attended measurements at assessment receiver locations on 28 and 29 November 2022

Location	Time of measurement	Measured noise level			Comments
		L_{Aeq} dB(A)	L_{A1} dB(A)	L_{A90}, dB(A)	
R1 - 52 Arthur Street	29/11/2022 1:11	37	44	31	INDUSTRIAL CONTRIBUTION: Background constant broadband industrial hum audible. No distinguishable noise sources in the direction of the Mayfield No. 4 Berth facility. TRAFFIC CONTRIBUTION: distant road traffic on Industrial Drive was the main noise source. Local car pass by 43 dB(A). OTHER: insects audible throughout measurement. Weather – Minimal breeze, Some cloud cover.
R2 - Mayfield East Public School		-	-	-	Noise measurements were not possible at this location due to adverse weather conditions, high wind.
R3 - 21 Crebert Street	28/11/2022 22:56	58	72	42	INDUSTRIAL CONTRIBUTION: Background constant broadband industrial hum audible. No distinguishable noise sources in the direction of the Mayfield No. 4 Berth facility. TRAFFIC CONTRIBUTION: Road traffic on Industrial Drive was the main noise source. Truck pass by 80 dB(A) and car pass by 65 dB(A) on Industrial Drive. OTHER: insects audible throughout measurement. Weather – Minimal breeze, Some cloud cover.
R5 - 1 Arthur Street	29/11/2022 0:53	35	43	32	INDUSTRIAL CONTRIBUTION: Background constant broadband industrial hum audible. No distinguishable noise sources in the direction of the Mayfield No. 4 Berth facility. TRAFFIC CONTRIBUTION: distant road traffic on Industrial Drive was the main noise source. Local car pass by 43 dB(A). OTHER: insects audible throughout measurement. Weather – Minimal breeze, Some cloud cover.

4.3 Direct measurement results and discussion

Section 11.1.2 Notes on noise monitoring of the INP states:

Where existing noise levels are high

When compliance is being measured it may be found that, in many cases, existing noise levels are higher than noise level from the source, making it difficult to separate out the source noise level. When this happens, it may not be feasible to measure compliance at the specified location, and other methods will be needed. In these cases, measurements may be taken closer to the source and then calculated back to the specified location."

As mentioned in Section 1.0, nearfield measurements of the vessel *DA XIN– IMO NO. 9608427* were carried out and the measurement results have been used in this assessment as inputs for the compliance noise model.

Nearfield noise measurements of unloading activities were conducted in the absence of construction activities, during the morning stand-down period. This ensure that the specific noise source being measured was the dominant noise source throughout the measurement period. It is understood that the unloading operations were occurring all through the daytime and night-time periods.

The measurements were not impacted by the prevailing wind during the measurement periods.

A sample of on-site construction and unloading activities photos are presented in Table 5.

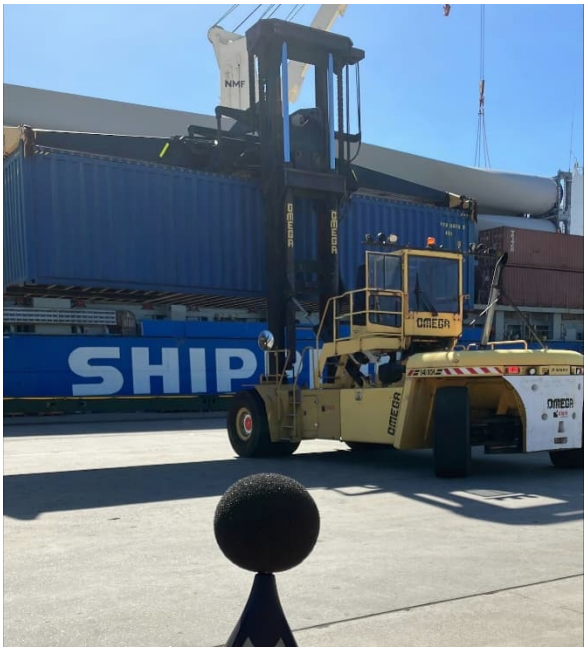
Table 5 Sample photos of on-site construction and unloading activities (6 March 2023)

 Nearby temporary construction activities	 Truck pass by measurement

Measurement of vessel engine noise

Measurement of crane operations during unloading of wind turbine blade

Measurement loaded truck reversing



Measurement of container handler lifting and moving container

4.4 Modelled high activity operational scenarios

4.4.1 Noise modelling methodology

Noise impacts from the operation of the vessel *DA XIN* and the unloading of wind turbine components onto trucks at Mayfield No. 4 Berth are based upon the calculated operational source sound power levels presented in Table 6. Noise emission from the vessel's operations were predicted at the assessment receiver locations using SoundPLAN (version 8.2) noise modelling software. SoundPLAN implements a number of different calculation algorithms. The CONCAWE algorithm was used as it is

especially suited to predicting noise propagation over large distances as it accounts for a range of atmospheric conditions that can significantly influence the propagation of noise over large distances.

The noise modelling includes:

- Ground topography;
- Buildings and structures;
- Noise sources as point sources or industrial buildings (to simulate the ship hull noise emission); and
- Ground absorption.

The noise model outputs were compared with attended noise measurement results presented in Table 4.

Based upon the attended measurements, site observations and discussion with PON personnel, 'reasonable' worst case operational scenarios were established and modelled for the operations during the day, evening and night assessment periods, as per the requirements of Condition 5.11.

The sound power level inputs presented in Table 6 were used in the model and adjusted for duration and frequency of operations in accordance with Table 7. The plant item sound power levels were determined from the attended noise measurements of typical operations made on site. In order to determine compliance with the recommended noise limits, the predicted noise levels for each operational scenario were determined at each of the assessment locations. The results are presented in Section 4.5.

Modelling was undertaken using SoundPLAN noise modelling software. The assessment of each scenario considers a 'reasonable' worst case 15-minute operational period. The assumptions made for modelling purposes with regards to the equipment operating and the duration and frequency of operation during each 15-minute assessment period are presented in Table 7.

All assessment scenarios were modelled using a Pasquill stability class of D for the day-time assessment period and a Pasquill stability class of F for the evening and night-time assessment periods. A worst-case source to receiver wind of 3 m/s for day, evening and night periods was assessed as per the Condition 5.11 requirements. The worst case predicted noise levels from either worst-case wind or from worst case temperature inversion scenario are presented in Table 8.

Table 6 Mayfield No. 4 Berth plant items sound power levels

Plant item/operation	Sound power level, dB(A)
Forklift in operation	102
Ship in dock – Main exhaust	97
Ship crane in operation	110
Truck Idle	96
Truck take-off	99
Container handler	103

Table 7 Unloading of wind turbine components onto trucks assessment scenario

Plant item/operation	Number of plant	Total duration (minutes)
Wind turbine blade being lowered by crane onto truck	1	10
Forklift in operation	1	15
Ship in dock - Bow	1	15
Ship crane in operation	1	15
Truck idle	2	15
Truck accelerating	1	15 second acceleration period when on No. 4 Berth

4.5 Predicted operational noise levels

Table 8 presents the predicted noise levels at each of the assessment locations during the loading of CAT 785C trucks onto a ship and loading of steel billets onto trucks operational scenario and determine compliance with the noise limits presented in Section 1.1.

Table 8 Loading of CAT 785C trucks onto ship and loading of steel billets onto trucks

Location	Predicted noise level, $L_{Aeq\ (15\ min)}$, dB(A)	Criteria, $L_{Aeq\ (15\ min)}$, dB(A)	Compliance with noise criteria,	Predicted noise level, $L_{Aeq\ (15\ min)}$, dB(A)	Criteria, $L_{Aeq\ (15\ min)}$, dB(A)	Compliance with noise criteria	Predicted noise level, $L_{Aeq\ (15\ min)}$, dB(A)	Criteria, $L_{Aeq\ (15\ min)}$, dB(A)	Compliance with noise criteria
	Day			Evening			Night		
1. 52 Arthur Street	32	49	Yes	33	38	Yes	33	38	Yes
2. Mayfield East Public School	29	47	Yes	30	37	Yes	30	37	Yes
3. 21 Crebert Street	34	49	Yes	35	39	Yes	35	39	Yes
4. Newcastle TAFE	27	44	Yes	28	38	Yes	28	38	Yes
5. 1 Arthur Street	22	48	Yes	22	33	Yes	22	33	Yes

The results presented in Table 8 indicate that the predicted noise impact at each of the five sensitive receiver locations complies with the required noise limits for all time periods.

5.0 Conclusion

Port of Newcastle Operations Pty Ltd (PON) commissioned AECOM Australia Pty Ltd (AECOM) to carry out noise compliance assessment measurements of associated operations at the Mayfield No. 4 Berth in Newcastle, NSW.

Condition 5.11 of the Consent Condition DA-293-08-00 MOD 9, dated 29 August 2013, requires that the facility demonstrates compliance with site noise limits at various noise sensitive receivers near the facility.

Due to temporary construction works adjacent to Mayfield No. 4 Berth, the 2022 noise compliance measurements were not able to be completed prior to the end of the reporting year. PON requested for an extension of time from the Department of Planning and Environment (DPE) to undertake the 2022 annual noise compliance monitoring, which was granted by the Planning Secretary.

The Mayfield No. 4 Berth provides for the loading and unloading of a range of freight and cargo, including but not limited to, project cargo such as wind turbine, railway vehicle parts, tunnel boring machine components, large industrial components, luxury boats, electrical transformers and machinery, general cargo such as farm machinery, excavators, and construction machinery, breakbulk such as ammonium nitrate bulk bags, steel and timber products, and containerised cargo.

The noise impacts from ‘reasonable’ worst case operations of Mayfield No. 4 Berth were assessed at the five receiver locations specified in Condition 5.11 of the Consent Condition DA-293-08-00 MOD 9, dated 29 August 2013 which are representative of noise sensitive receiver locations in the surrounding area.

Attended measurements on 28 and 29 November 2022 established that it is not possible to determine the noise contribution from Mayfield No. 4 Berth by direct measurement at the assessment receiver locations. As direct measurement of noise from the premises was shown to be impractical, noise modelling using SoundPLAN software was used to determine compliance. This is in accordance with Chapter 11 of the NSW Industrial Noise Policy.

During the site visit, nearfield measurements of the vessel *DA XIN– IMO NO. 9608427* and activities associated with the unloading of wind turbine components onto trucks were carried out on 6 March 2023. The results of the nearfield measurements were used as inputs for the noise modelling in order to demonstrate compliance with the facility’s noise limits.

Day, evening and night-time noise emissions were predicted at each of the required assessment locations and compared against the site noise limits. In accordance with the requirements of Condition 5.11 all scenarios were modelled using a Pasquill stability class of D for the day period and a Pasquill stability class of F for the evening and night periods, and a worst-case source to receiver wind of 3 m/s for the day, evening and night periods was incorporated into the modelling.

The results of the modelling concluded that compliance is achieved at the five required assessment locations during all assessment periods.

Appendix A

Acoustic Terminology

Appendix A Acoustic Terminology

The following is a brief description of acoustic terminology that may have been used in this report.

Sound power level	The total sound emitted by a source
Sound pressure level	The amount of sound at a specified point
Decibel [dB]	The measurement unit of sound
A Weighted decibels [dB(A])	The A weighting is a frequency filter applied to measured noise levels to represent how humans hear sounds. The A-weighting filter emphasises frequencies in the speech range (between 1kHz and 4 kHz) which the human ear is most sensitive to, and places less emphasis on low frequencies at which the human ear is not so sensitive. When an overall sound level is A-weighted it is expressed in units of dB(A).
Decibel scale	The decibel scale is logarithmic in order to produce a better representation of the response of the human ear. A 3 dB increase in the sound pressure level corresponds to a doubling in the sound energy. A 10 dB increase in the sound pressure level corresponds to a perceived doubling in volume. Examples of decibel levels of common sounds are as follows:

0dB(A)	Threshold of human hearing
30dB(A)	A quiet country park
40dB(A)	Whisper in a library
50dB(A)	Open office space
70dB(A)	Inside a car on a freeway
80dB(A)	Outboard motor
90dB(A)	Heavy truck pass-by
100dB(A)	Jackhammer/Subway train
110 dB(A)	Rock Concert
115dB(A)	Limit of sound permitted in industry
120dB(A)	747 take off at 250 metres

Frequency [f]	The repetition rate of the cycle measured in Hertz (Hz). The frequency corresponds to the pitch of the sound. A high frequency corresponds to a high-pitched sound and a low frequency to a low-pitched sound.
Equivalent continuous sound level [L_{eq}]	The constant sound level which, when occurring over the same period of time, would result in the receiver experiencing the same amount of sound energy.
L_{max}	The maximum sound pressure level measured over the measurement period
L_{min}	The minimum sound pressure level measured over the measurement period
L_{10}	The sound pressure level exceeded for 10% of the measurement period. For 10% of the measurement period it was louder than the L_{10}.

L_{90}	The sound pressure level exceeded for 90% of the measurement period. For 90% of the measurement period it was louder than the L_{90}.
Ambient noise	The all-encompassing noise at a point composed of sound from all sources near and far.
Background noise	The underlying level of noise present in the ambient noise when extraneous noise (such as transient traffic and dogs barking) is removed. The L_{90} sound pressure level is used to quantify background noise.
Traffic noise	The total noise resulting from road traffic. The L_{eq} sound pressure level is used to quantify traffic noise.
Day	The period from 0700 to 1800 h Monday to Saturday and 0800 to 1800 h Sundays and Public Holidays.
Evening	The period from 1800 to 2200 h Monday to Sunday and Public Holidays.
Night	The period from 2200 to 0700 h Monday to Saturday and 2200 to 0800 h Sundays and Public Holidays.
Assessment background level [ABL]	The overall background level for each day, evening and night period for **each day** of the noise monitoring.
Rating background level [RBL]	The overall background level for each day, evening and night period for the **entire length** of noise monitoring.
Weighted sound reduction index [R_w]	A single figure representation of the air-borne sound insulation of a partition based upon the R values for each frequency measured in a laboratory environment.

*Definitions of a number of terms have been adapted from Australian Standard AS1633:1985 *"Acoustics – Glossary of terms and related symbols"*, the EPA's Noise Policy for Industry and the EPA's NSW Road Noise Policy.

APPENDIX F – GROUNDWATER LEVEL MONITORING REPORT

2022 GROUNDWATER LEVEL MONITORING ANNUAL REPORT
MAYFIELD, NSW

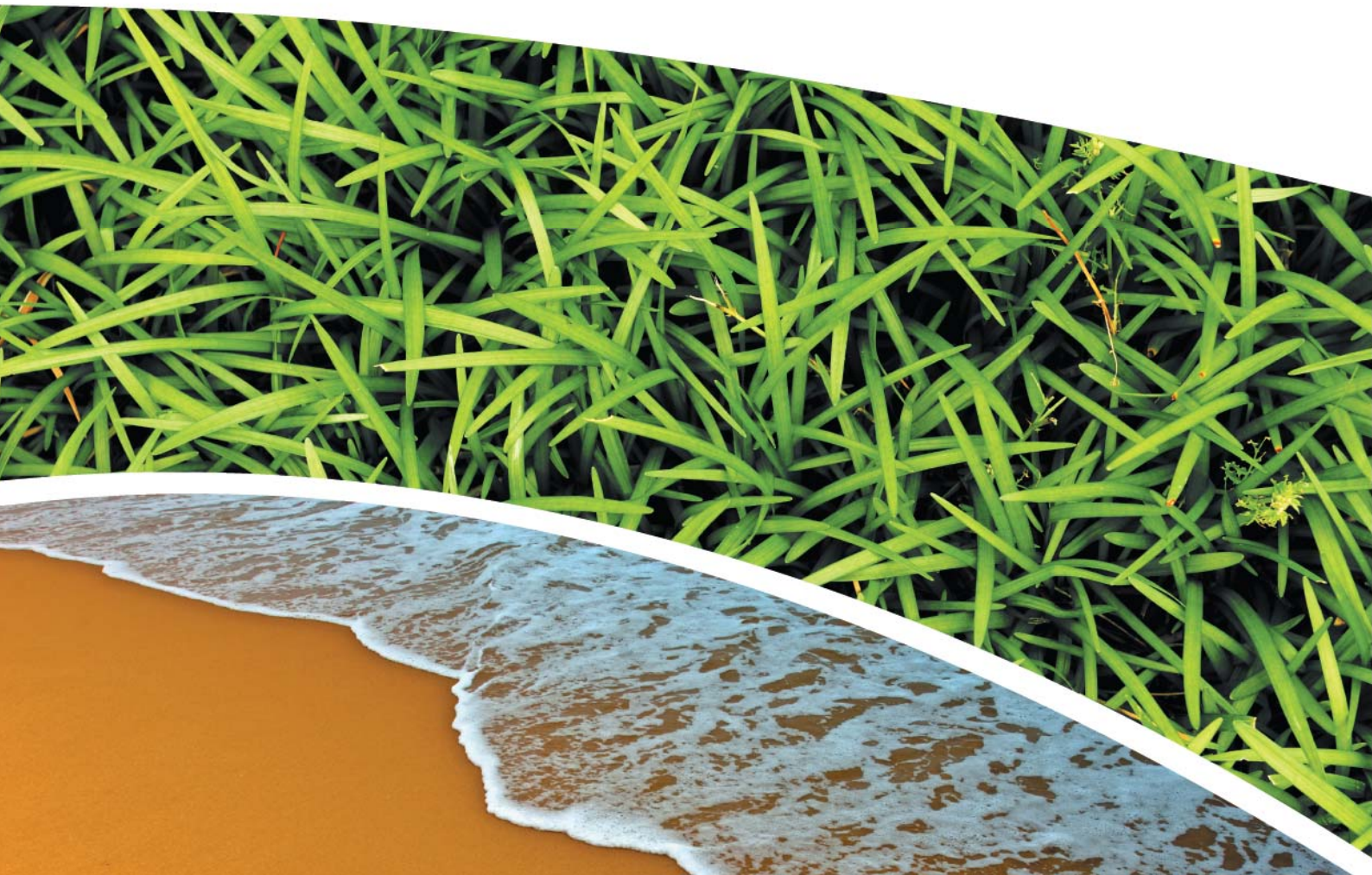
Prepared for PORT OF NEWCASTLE OPERATIONS PTY LTD

Prepared by RCA Australia

RCA ref 10728-725/0

MARCH 2023

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL



RCA ref 10728-725/0

14 March 2023

Port of Newcastle Operations Pty Ltd
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Attention: Brigid Kelly
CC: Emma McCauley

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

Geotechnical Engineering
Engineering Geology
Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Noise & Vibration
Occupational Hygiene

2022 GROUNDWATER LEVEL MONITORING FORMER STEELWORKS SITE, MAYFIELD

1 INTRODUCTION

RCA Australia (RCA) was engaged by the Port of Newcastle Operations Pty Ltd (PoN) to undertake quarterly monitoring of groundwater levels at the former Steelworks Site, Mayfield NSW, herein referred to as the site. This report presents groundwater level data for 2022, including a review of data quality, comparison of groundwater levels with previous levels and identification of any significant changes in hydrology. Historical data for the period 12 July 2013 – December 2021 have also been included for completeness.

1.1 SCOPE OF SERVICES

This report includes works in accordance with the services outlined in 'Request for Quotation number MGW2014-01 Six Monthly Monitoring of Groundwater Levels'. The scope of services includes:

- Download of existing groundwater loggers (and barometric pressure logger) on a quarterly basis.
- Manual measurement of groundwater levels during each download.
- Level logger data processing (manipulation and conversions) and issue to PoN.
- Compilation of Groundwater Level Report once in a twelve (12) month period.

2 DATA QUALITY REVIEW

2.1 FIELDWORK

Data loggers from a total of six (6) groundwater wells (three (3) fill wells (MW13-12F, MW05Fa and M14-21F) and three (3) shallow estuarine wells (MW13-12S, MW05Sa and M14-21S)) were attempted to be downloaded three (3) times since the previous annual period:

- 4th May 2022.
- 21st October 2022.
- 28th February 2023.

The second intended download in July was not able to be undertaken due to personnel availability issues.

It is further noted that the loggers which were meant to be in the MW05 wells were not located in October 2022. Neither RCA nor relevant PoN personnel are aware of the reason for the loggers being removed from the wells. Loggers were reinstated into the MW05 wells on the 13th March 2023 following a site wide audit of all groundwater monitoring wells at the site. Further details of the audit are presented separately to PoN.

The groundwater monitoring well location map is shown in **Appendix A**.

Field sheets are attached in **Appendix B**.

2.2 DATA AVAILABILITY

A summary of the data availability for each groundwater level logger since 1 January 2022 is presented in **Table 1**.

Table 1 *Level and Barometric Pressure Data Availability*

Logger Well	Logger Type	Comments
MW05Fa	Level	No data capture since 4th May 2022
MW05Sa	Level	No data capture since 4th May 2022
M13-12F	Level	No data capture between 1st January 2022 and 21st October 2022.
M13-12S	Level	100% data capture
M14-21F	Level	100% data capture
M14-21S	Level	100% data capture
Barometric Logger	Barometric logger	100% data capture

2.3 DATA VALIDITY

The logger within M13-12F in the early part of the monitoring period was a replacement installed in February 2022 due to what was perceived to be a failed device following negative water readings in January 2022. The attempted download in May 2022 also failed due to a communications error however the issue was considered to be an activation issue. The device was reactivated however again in the October 2022 download was found not to communicate. The logger was replaced and has captured data since this download.

3 STANDING WATER LEVEL MEASUREMENTS

The results of the manual field water level depth measurements are presented in **Table 2** and **Table 3**. The groundwater level measurement taken in July 2013 are from the groundwater level data provided by Golder Associates (Ref [1]).

The level logger data were processed to convert to groundwater levels in reference to the Australian height datum (AHD). The following data calculations were undertaken:

- The level logger data represents absolute pressure above the logger transducer. The influence of barometric pressure on these level data was compensated by subtracting the barometric pressure data. This compensation was performed within the level logger software.
    - The manual measured standing water levels were used as a reference point for the relative water level logger readings.
- Groundwater levels were then converted to levels in AHD with the provided top of well casing heights.
- Hydrographs of each location were produced using these converted data.
- Rainfall data from the Bureau of Meteorology Nobbys Weather Station has been used in periods the M4 rain gauge was out of service.

The hydrographs for the period 2013 to 2023 are presented in **Appendix C**.

Table 2 *Groundwater Levels (Manual Measurement): July 2013 – July 2019*

Well ID	Aquifer	Water Level (m AHD)												
	Date	12/07/13	7/05/14	20/11/14	8/05/15	24/11/15	12/05/16	22/11/16	12/05/17	8/12/17	4/06/18	13/12/18	18/04/19	9/07/19
M13-12F	Fill	0.54	0.52	0.52	0.70	0.53	0.66	0.64	0.7	0.55	0.53	0.48	0.49	0.53
M13-12S	Shallow	0.13	0.56	0.6	0.68	0.7	0.54	0.11	0.3	0.35	0.37	0.49	0.39	0.19
MW05Fa	Fill	0.53	0.43	0.41	0.45	0.41	0.48	0.48	0.48	0.44	0.45	0.38	0.38^	0.43
MW05Sa	Shallow	0.34	0.51	0.26	0.61	0.13	0.54	0.26	0.58	0.67	0.37	0.55	0.45	0.53
M14-21F	Fill	0.53	ND	ND	0.54^	0.5	0.53	0.56	0.54	0.51	0.50	0.45	0.47	0.51
M14-21S	Shallow	0.15	ND	ND	0.52^	0.26	0.61	0.36	0.6	0.68	0.51	0.68	0.61	0.53

^ Level measurement taken on the 20/5/2015

ND – No data. Groundwater bore could not be located.

Table 3 *Groundwater Levels (Manual Measurement): July 2019 – February 2023*

Well ID	Aquifer	Water Level (m AHD)												
	Date	23/10/19	21/01/20	24/04/20	7/07/20	27/10/20	27/01/21	21/04/21	4/08/21	13/10/21	28/01/22*	4/05/22	21/10/22	28/02/23
M13-12F	Fill	0.48	0.48	0.52	0.54	0.51	0.5	0.64	0.6	0.57	0.56	0.64	NA	0.587
M13-12S	Shallow	0.14	0.16	0.28	0.22	0.32	0.53	0.51	0.21	0.03	0.58	0.53	0.49	0.31
MW05Fa	Fill	0.41	0.41	0.41	0.44	0.41	0.42	0.5	0.48	0.46	0.47	0.51	NA	NA
MW05Sa	Shallow	0.11	0.17	0.55	0.26	0.44	0.74	0.47	0.33	0.35	0.47	0.41	NA	NA
M14-21F	Fill	0.48	0.47	0.5	0.5	0.49	0.5	0.58	0.55	0.53	0.54	0.58	0.57	0.56
M14-21S	Shallow	0.29	0.34	0.56	0.37	0.53	0.73	0.63	0.41	0.38	0.63	0.49	0.56	0.34

^ Level measurement taken on the 28/05/2019.

* Level measurement taken on the 02/02/2022.

NA: data not available.

4 GROUNDWATER LEVEL DISCUSSION

4.1 FILL MONITORING WELLS

The following observations of the groundwater levels within the fill monitoring wells in 2022 were made with reference to the hydrographs (refer **Appendix C**):

- Only one well, M14-21F, has a full data set for 2022. The water level rose to the middle of the year and has then decreased to level slightly higher than the commencement of the monitoring period. The trend appears generally consistent with the rainfall.
- The available data from M13-12F is generally consistent with that of M14-12F with a slight decrease from end of October 2022 until end of February 2023.
- The available data from MS05Fa is generally consistent with that of M14-12F with an increase from February 2022 through to May 2022 when the loggers presumably were removed from the wells. It is noted that there is a sharp increase between January 2022 and February 2022; there were significant rainfall events at that time.

Long term trends indicate the water level within these three (3) wells are generally stable and no immediate substantial change in groundwater level response to rainfall events is observed; however, a slight increase/decrease in water level has been observed during periods of sustained decreased rainfall or sustained increased rainfall.

4.2 SHALLOW ESTUARINE MONITORING WELLS

The following observations of the groundwater level within the shallow estuarine monitoring wells in 2022 were made (refer **Appendix C**):

- All three (3) wells show considerable daily fluctuations which are considered likely due to the impact of tides within the adjacent Hunter River.
- M13-12S: Water level shows a slight decreasing trend. There is a sharp increase in October 2022 which doesn't appear to be related to rainfall and may be related to the replacement of the logger after download.
- MW05Sa: Water level shows an overall stable trend within the available extent of data.
- M14-21S: Water level shows a slight increasing trend.

Long term trends indicate the water level within these three (3) wells are generally stable with less variation to short term rainfall than observed in the fill bores.

5 LIMITATIONS

This report has been prepared for Port of Newcastle Operations in accordance with an agreement with RCA Australia (RCA). The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the sole use of Port of Newcastle Operations. The report may not contain sufficient information for purposes of other uses or for parties other than Port of Newcastle Operations. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA Australia.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. Conditions can vary across any site that cannot be explicitly defined by investigation.

Environmental conditions can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue.

Yours faithfully

RCA AUSTRALIA

Fiona Brooker
Manager of Environmental Services
BEng(Env)

REFERENCES

[1] Golder Associates, *Report on Groundwater Level Monitoring, Period 1 January – 30 June 2013, Stage 2 Remediation, Mayfield Closure Site*, 107623175-013-L-Rev0, August 2013.

Appendix A

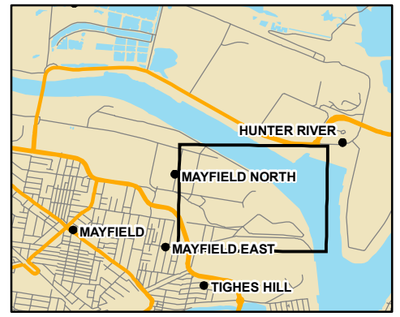
Groundwater Bore Location Map

MAYFIELD CLOSURE SITE GROUNDWATER LEVEL MONITORING

HUNTER DEVELOPMENT CORPORATION

GROUNDWATER LEVELS

DRAFT



LEGEND

- Fill Aquifer Water Levels
- Shallow Aquifer Water Levels
- Location of Cutoff Wall
- Infiltration Area

NOTES

Water levels taken on the 12th of July 2013.

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1. Aerial Photography Copyright NearMap Pty Ltd.
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   Sourced with permission from Nearmap on 2013.07.29.
   Image intended for indicative purposes only.
   More information can be found here:
   http://www.nearmap.com/

2. Base map data copyright MapInfo Australia Pty Ltd

0 25 50 100 150 200 250 metres

SCALE (at A3) 1:6,000

Coordinate System: GDA 1994 MGA Zone 56

PROJECT: **107623175**
DATE: **29/07/2013**
DRAWN: **AJW/FA**
CHECKED: **IW**

FIGURE 1

Golder Associates

File Location: J:\GIS\Jobs\107623175_HDC_Groundwater Monitoring_Mayfield\Workspaces\107623175_R_F0012.mxd

Appendix B

Field Sheets

Ground Water Logger Download Field Sheet

Client: Port of Newcastle Job Number: 10728

Sampler: SB/RM. Date downloaded: 04.05.2022.

Bore ID	Time Sampled	Depth to Aquifer (m)	Monument Height (m)	Depth to Aquifer from Surface (m)	Bore depth	Battery %	Check
M14-21S	3.09pm.	3.94m.	0.57		11.26	100%	Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger
M13-12F	2.53pm	3.98pm	0.77		5.81	100%	✓ Dip water level ✓ Download + save data in XLE + CSV ✓ Stop logger + synchronise time ✓ start logger
M13-12S	2:59pm	3.52m.	Road Plate		11.23	100%	✓ Dip water level ✓ Download + save data in XLE + CSV ✓ Stop logger + synchronise time ✓ start logger
MW05Fa	2:10pm	4.11pm	0.82	4.11m.	4.95	100%	✓ Dip water level ✓ Download + save data in XLE + CSV ✓ Stop logger + synchronise time ✓ start logger
MW05Sa	2:20pm	4:16pm	0.74		13.32	100%	✓ Dip water level ✓ Download + save data in XLE + CSV ✓ Stop logger + synchronise time ✓ start logger
M14-21F	3:00pm	3.84m	0.56		4.67	100%.	✓ Dip water level ✓ Download + save data in XLE + CSV ✓ Stop logger + synchronise time ✓ start logger
Barologger	3:09pm	N/A	—	—	—	96%.	✓ Dip water level ✓ Download + save data in XLE + CSV ✓ Stop logger + synchronise time ✓ start logger

Ground Water Logger Download Field Sheet

Client: Port of Newcastle Job Number: 10728

Sampler: RM SN Date downloaded: 21/10/22

Bore ID	Time Sampled	Depth to Aquifer (m)	Monument Height (m)	Depth to Aquifer from Surface (m)	Bore depth	Battery %	Check
M14-21S	9:42	3.87	0.57	3.30	11.26	100%	Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger
logger changed **M13-12F**	9:16	3.68	0.77	2.91	5.81	98%	Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger
M13-12S	9:12	3.56	Road Plate	3.56	11.23	100%	Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger
MW05Fa	loggers	missing?	0.82		4.95		Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger
MW05Sa	loggers	missing?	0.74		13.32		Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger
M14-21F	9:38	3.85	0.56	3.29	4.67	100%	Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger
Barologger	10:08	3.87	N/A	3.30	N/A	95%	Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger

Ground Water Logger Download Field Sheet

Client: Port of Newcastle Job Number: 10728

Sampler: KY/SK Date downloaded: 28.02.2023

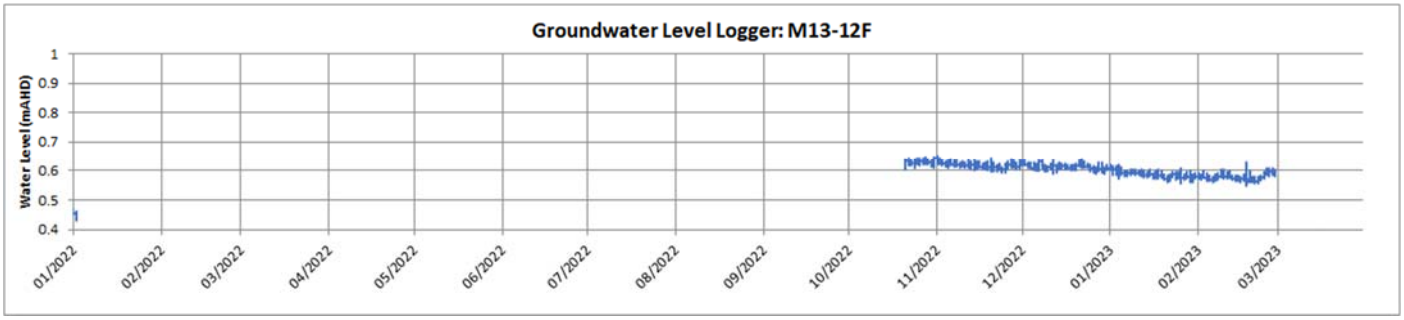
Bore ID	Time Sampled	Depth to Aquifer (m)	Monument Height (m)	Depth to Aquifer from Surface (m)	Bore depth	Battery %	Check
M14-21S	13:50	4.09	0.57	3.53	11.26	100%	✓Dip water level ✓Download + save data in XLE + CSV ✓Stop logger + synchronise time ✓start logger ☆Water: clear, no odour. ☆No hose sampling.
M13-12F	12:37	4.03	0.77	3.26	5.81	98%	✓Dip water level ✓Download + save data in XLE + CSV ✓Stop logger + synchronise time ✓start logger ☆Water: clear or slight turbid, very light odour. ☆No sampling hose.
M13-12S	12:54	3.74	Road Plate	3.74	~~11.23~~ 10.68	100%	✓Dip water level ✓Download + save data in XLE + CSV ✓Stop logger + synchronise time ✓start logger ☆Pipe was bended, bailer can't access to water. ☆No sampling pipe
MW05Fa	11:29	3.74	~~0.82~~ 0.90	2.84	~~4.95~~ 3.80	No logger, dry.	Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger ☆Same as above, No sampling pipe.
MW05Sa	11:30	3.95	0.74	3.13	~~13.32~~ 15.84	No logger, d	Dip water level Download + save data in XLE + CSV Stop logger + synchronise time start logger ☆Bended pipe, bailer can't access. ☆No sampling pipe.
M14-21F	13:50	3.86	0.56	3.30	4.67	100%	✓Dip water level ✓Download + save data in XLE + CSV ✓Stop logger + synchronise time ✓start logger ☆~~Dry~~ Not enough water for bailer. ☆No sampling pipe.
Barologger	13:50	On top of the wet pipe.	—	—	—	85%	✓Dip water level ✓Download + save data in XLE + CSV ✓Stop logger + synchronise time ✓start logger —

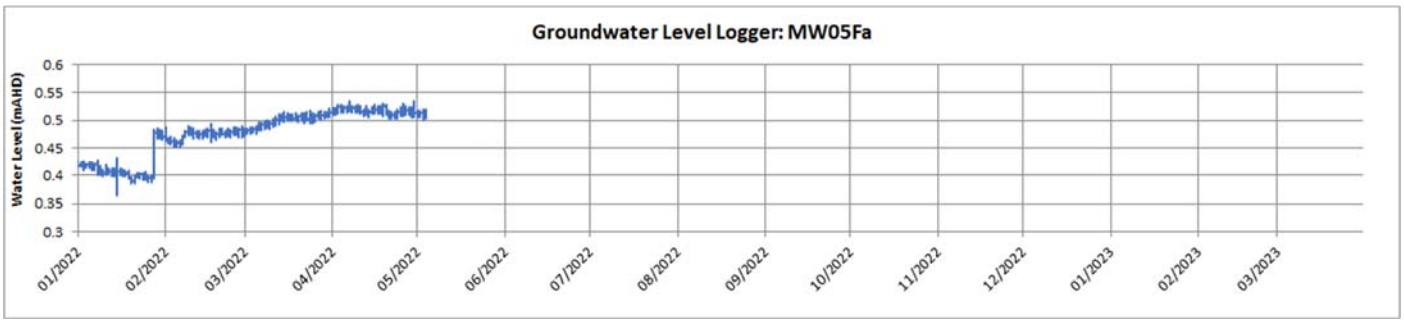
Appendix C

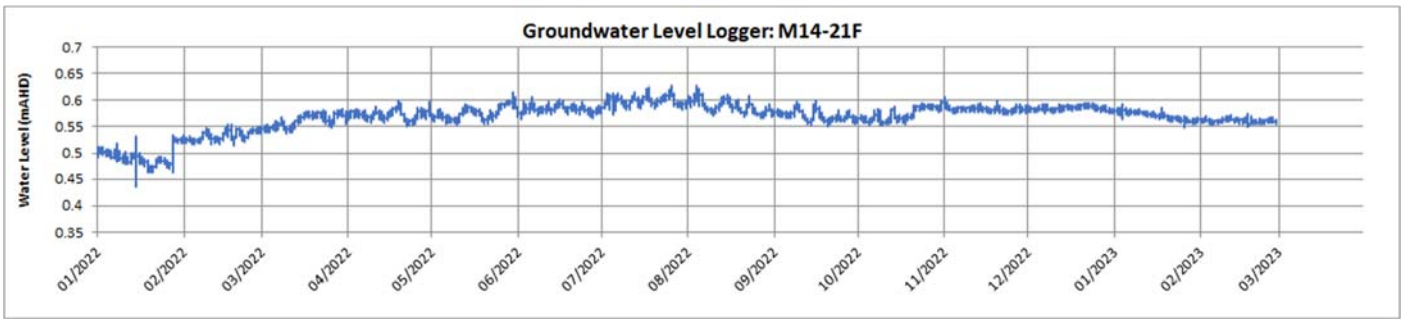
Groundwater Hydrographs

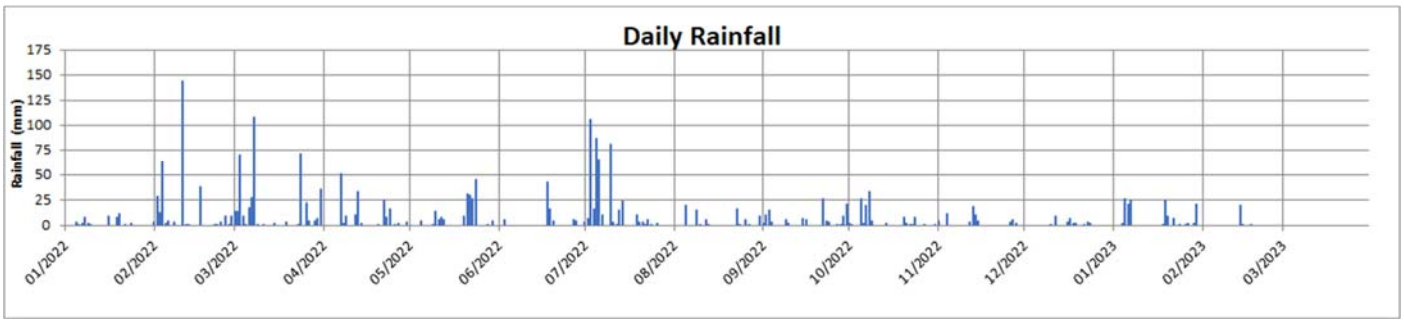
GROUNDWATER LEVELS AND RAINFALL 2022

Fill Aquifer



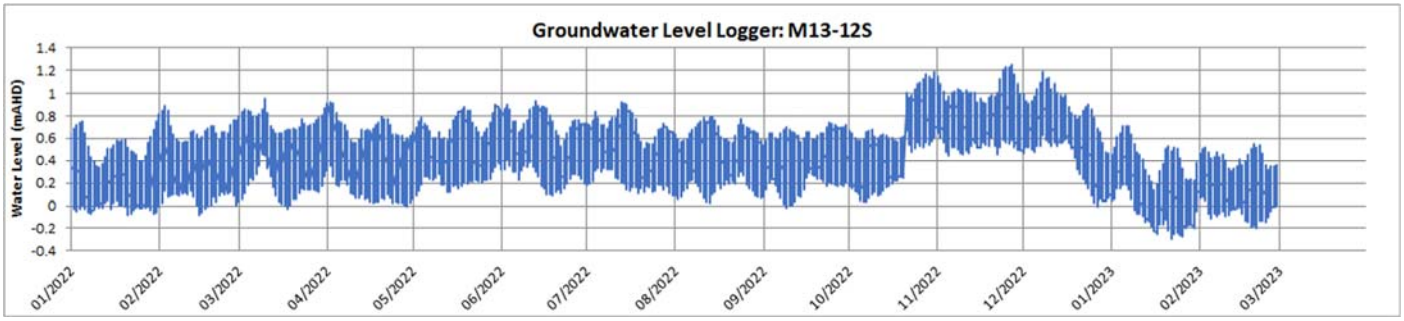


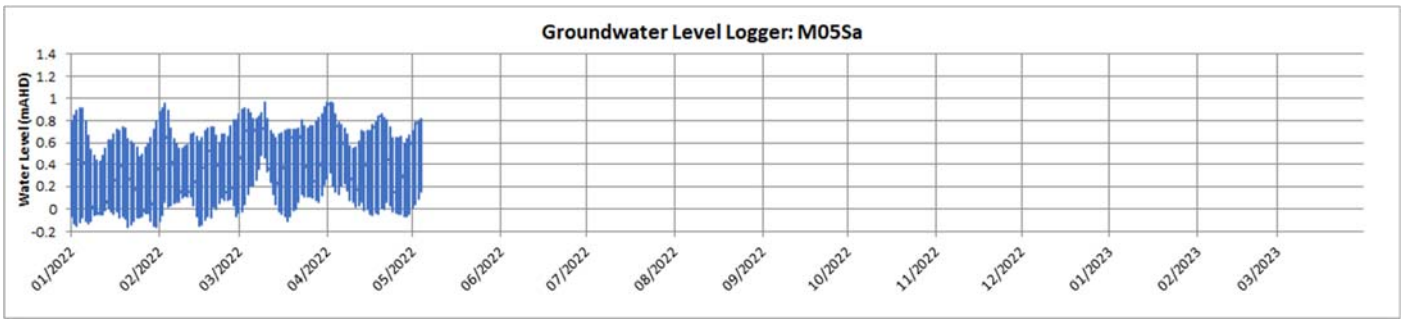


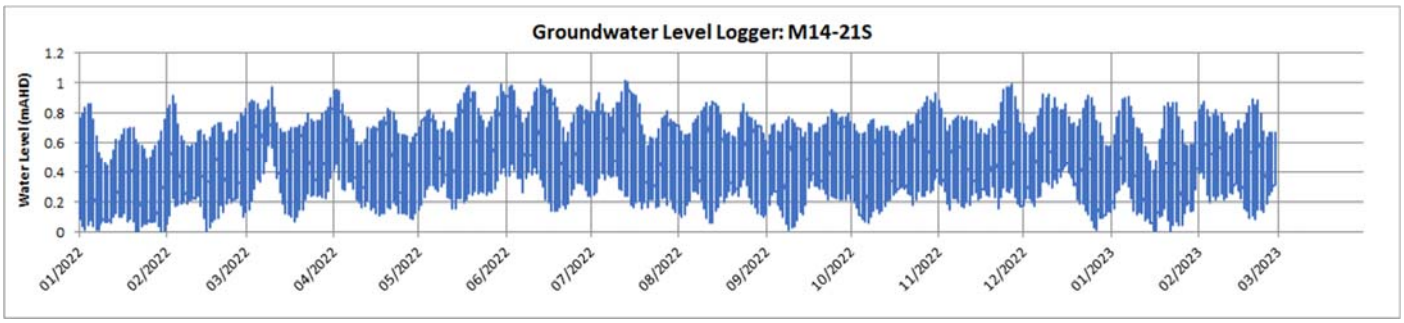


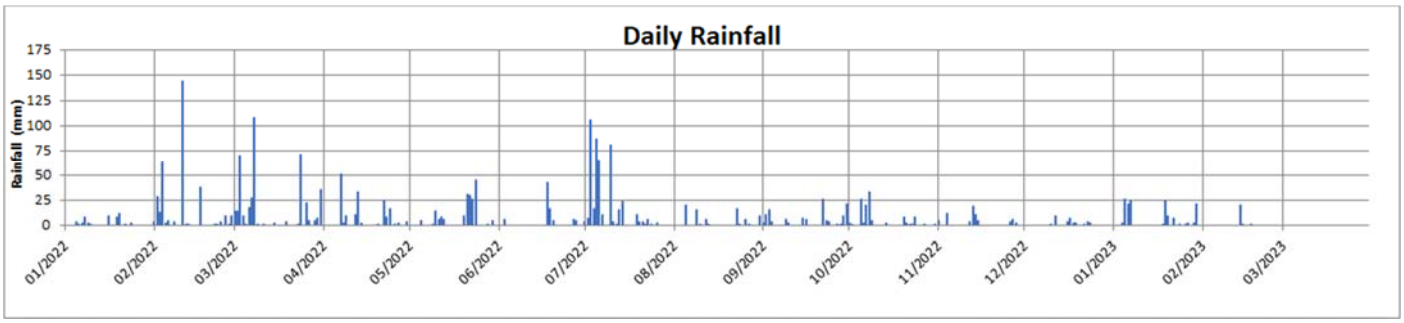
GROUNDWATER LEVELS AND RAINFALL 2022

Estuarine Aquifer



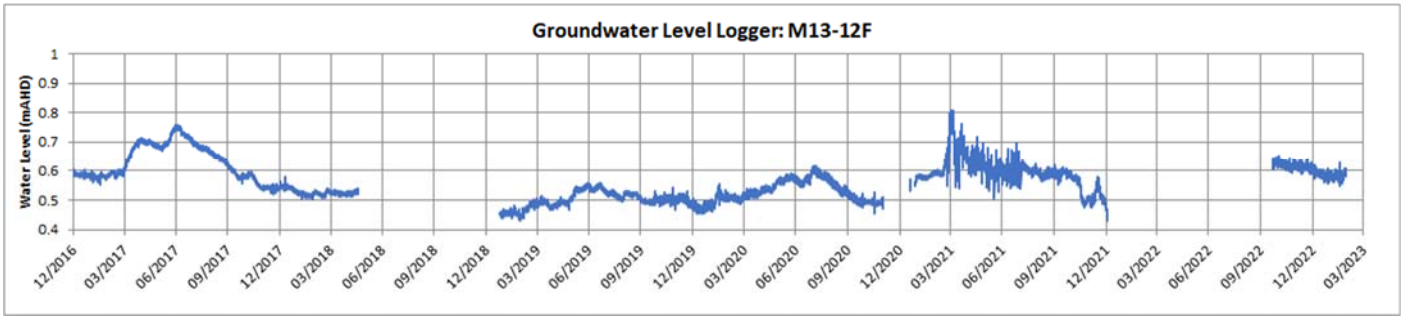


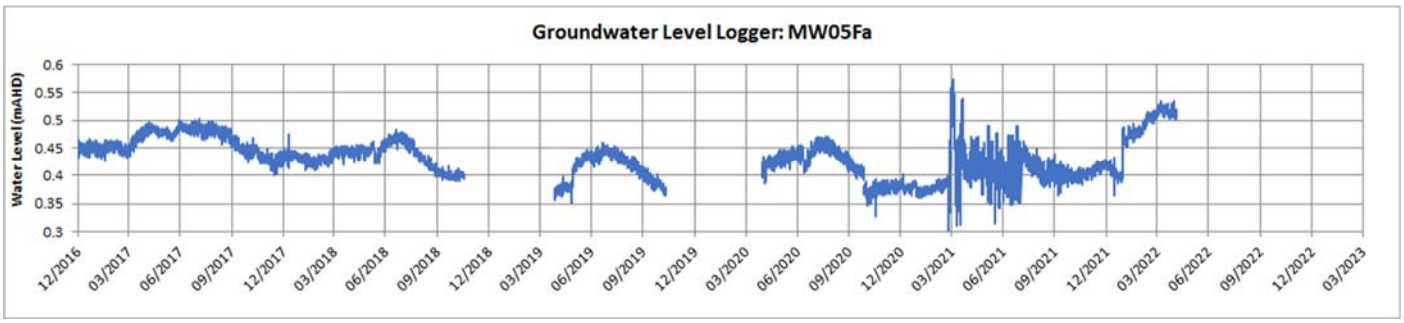


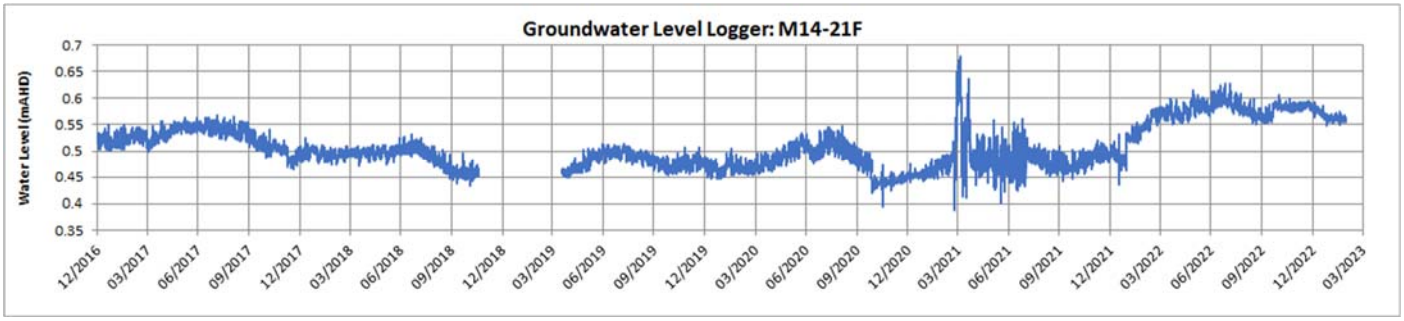


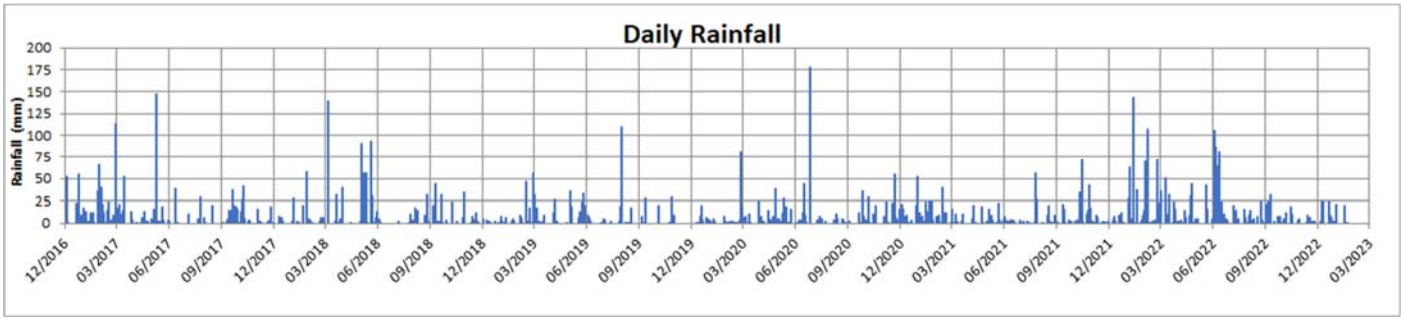
GROUNDWATER LEVELS AND RAINFALL 2013-2023

Fill Aquifer



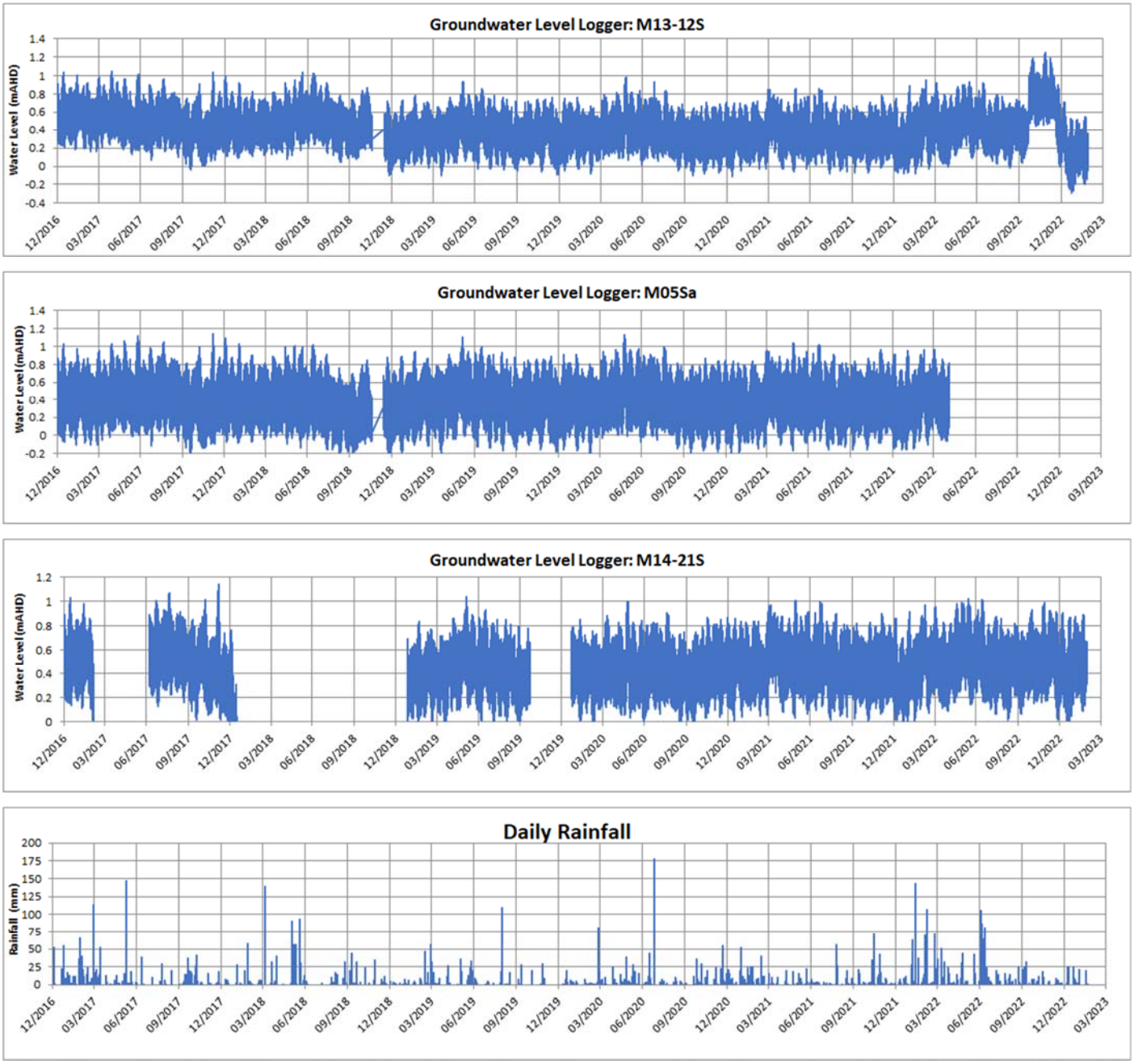






GROUNDWATER LEVELS AND RAINFALL 2013-2023

Estuarine Aquifer



APPENDIX G – METEROLOGICAL DATA

Meterological Data -Daily Rainfall (mm)

Date	Max	Time	Min	Time	Daily Rainfall (mm)	Cumulative Rainfall (mm)
1/01/2022	0	0:00:00	0	0:00:00	0	0
2/01/2022	0	0:00:00	0	0:00:00	0	0
3/01/2022	0	0:00:00	0	0:00:00	0	0
4/01/2022	0	0:00:00	0	0:00:00	0	0
5/01/2022	0.5	11:00:00	0	0:00:00	0.5	0.5
6/01/2022	0	0:00:00	0	0:00:00	0	0.5
7/01/2022	0	0:00:00	0	0:00:00	0	0.5
8/01/2022	0	0:00:00	0	0:00:00	0	0.5
9/01/2022	0	0:00:00	0	0:00:00	0	0.5
10/01/2022	0	0:00:00	0	0:00:00	0	0.5
11/01/2022	0	0:00:00	0	0:00:00	0	0.5
12/01/2022	0	0:00:00	0	0:00:00	0	0.5
13/01/2022	0	0:00:00	0	0:00:00	0	0.5
14/01/2022	0	0:00:00	0	0:00:00	0	0.5
15/01/2022	0	0:00:00	0	0:00:00	0	0.5
16/01/2022	0	0:00:00	0	0:00:00	0	0.5
17/01/2022	0	0:00:00	0	0:00:00	0	0.5
18/01/2022	0	0:00:00	0	0:00:00	0	0.5
19/01/2022	0	0:00:00	0	0:00:00	0	0.5
20/01/2022	0	0:00:00	0	0:00:00	0	0.5
21/01/2022	0	0:00:00	0	0:00:00	0	0.5
22/01/2022	0	0:00:00	0	0:00:00	0	0.5
23/01/2022	0	0:00:00	0	0:00:00	0	0.5
24/01/2022	0	0:00:00	0	0:00:00	0	0.5
25/01/2022	0	0:00:00	0	0:00:00	0	0.5
26/01/2022	0	0:00:00	0	0:00:00	0	0.5
27/01/2022	0	0:00:00	0	0:00:00	0	0.5
28/01/2022	0	0:00:00	0	0:00:00	0	0.5
29/01/2022	0	0:00:00	0	0:00:00	0	0.5
30/01/2022	0	0:00:00	0	0:00:00	0	0.5
31/01/2022	36.5	9:45:00	0	0:00:00	60.5	61
1/02/2022	1	15:00:00	0	0:00:00	3	64
2/02/2022	2.25	10:10:00	0	0:00:00	27.5	91.5
3/02/2022	1.5	21:45:00	0	0:00:00	12.5	104
4/02/2022	5.25	12:50:00	0	0:00:00	63	167
5/02/2022	0.5	17:30:00	0	0:00:00	1.5	168.5
6/02/2022	2.25	18:20:00	0	0:00:00	4.25	172.75
7/02/2022	0	0:00:00	0	0:00:00	0	172.75
8/02/2022	0.5	2:55:00	0	0:00:00	2.5	175.25
9/02/2022	0	0:00:00	0	0:00:00	0	175.25
10/02/2022	0	0:00:00	0	0:00:00	0	175.25
11/02/2022	13.75	14:45:00	0	0:00:00	143.5	318.75
12/02/2022	0.5	14:00:00	0	0:00:00	0.5	319.25
13/02/2022	0.5	1:00:00	0	0:00:00	1	320.25
14/02/2022	0	0:00:00	0	0:00:00	0	320.25
15/02/2022	0	0:00:00	0	0:00:00	0	320.25

Date	Max	Time	Min	Time	Daily Rainfall (mm)	Cumulative Rainfall (mm)
16/02/2022	0	0:00:00	0	0:00:00	0	320.25
17/02/2022	8.25	20:40:00	0	0:00:00	38	358.25
18/02/2022	0	0:00:00	0	0:00:00	0	358.25
19/02/2022	0	0:00:00	0	0:00:00	0	358.25
20/02/2022	0	0:00:00	0	0:00:00	0	358.25
21/02/2022	0	0:00:00	0	0:00:00	0	358.25
22/02/2022	0.5	13:20:00	0	0:00:00	1	359.25
23/02/2022	0.5	7:45:00	0	0:00:00	0.5	359.75
24/02/2022	0.5	1:55:00	0	0:00:00	3.5	363.25
25/02/2022	0	0:00:00	0	0:00:00	0	363.25
26/02/2022	2.25	0:55:00	0	0:00:00	8.5	371.75
27/02/2022	0.5	9:00:00	0	0:00:00	1	372.75
28/02/2022	2.75	23:05:00	0	0:00:00	8.5	381.25
1/03/2022	2.75	5:20:00	0	0:00:00	38.25	419.5
2/03/2022	0.5	0:00:00	0	0:05:00	13.5	433
3/03/2022	4.5	10:45:00	0	0:00:00	69.75	502.75
4/03/2022	2.25	7:00:00	0	0:00:00	8.5	511.25
5/03/2022	0.5	1:25:00	0	0:00:00	1	512.25
6/03/2022	2.75	5:45:00	0	0:00:00	17.5	529.75
7/03/2022	4.5	5:40:00	0	0:00:00	27	556.75
8/03/2022	9.5	15:35:00	0	0:00:00	107.5	664.25
9/03/2022	0.5	9:00:00	0	0:00:00	0.5	664.75
10/03/2022	0	0:00:00	0	0:00:00	0	664.75
11/03/2022	0.5	3:40:00	0	0:00:00	1	665.75
12/03/2022	0	0:00:00	0	0:00:00	0	665.75
13/03/2022	0	0:00:00	0	0:00:00	0	665.75
14/03/2022	0	0:00:00	0	0:00:00	0	665.75
15/03/2022	0.5	0:30:00	0	0:00:00	2	667.75
16/03/2022	0	0:00:00	0	0:00:00	0	667.75
17/03/2022	0	0:00:00	0	0:00:00	0	667.75
18/03/2022	0	0:00:00	0	0:00:00	0	667.75
19/03/2022	1	7:40:00	0	0:00:00	3.5	671.25
20/03/2022	0	0:00:00	0	0:00:00	0	671.25
21/03/2022	0	0:00:00	0	0:00:00	0	671.25
22/03/2022	0	0:00:00	0	0:00:00	0	671.25
23/03/2022	0.5	20:45:00	0	0:00:00	0.5	671.75
24/03/2022	3.25	9:05:00	0	0:00:00	71.5	743.25
25/03/2022	0	0:00:00	0	0:00:00	0	743.25
26/03/2022	5.75	3:45:00	0	0:00:00	22.25	765.5
27/03/2022	1.75	11:30:00	0	0:00:00	4.25	769.75
28/03/2022	0	0:00:00	0	0:00:00	0	769.75
29/03/2022	0.5	3:35:00	0	0:00:00	4.5	774.25
30/03/2022	1.5	4:40:00	0	0:00:00	7	781.25
31/03/2022	3.5	11:35:00	0	0:00:00	35.5	816.75
1/04/2022	0.5	9:25:00	0	0:00:00	0.5	817.25
2/04/2022	0	0:00:00	0	0:00:00	0	817.25
3/04/2022	0	0:00:00	0	0:00:00	0	817.25

Date	Max	Time	Min	Time	Daily Rainfall (mm)	Cumulative Rainfall (mm)
4/04/2022	0	0:00:00	0	0:00:00	0	817.25
5/04/2022	0	0:00:00	0	0:00:00	0	817.25
6/04/2022	0	0:00:00	0	0:00:00	0	817.25
7/04/2022	3.5	23:55:00	0	0:00:00	50.5	867.75
8/04/2022	0.5	0:00:00	0	0:05:00	1.5	869.25
9/04/2022	1.5	9:45:00	0	0:00:00	8.5	877.75
10/04/2022	0	0:00:00	0	0:00:00	0	877.75
11/04/2022	0	0:00:00	0	0:00:00	0	877.75
12/04/2022	2.25	12:55:00	0	0:00:00	10.75	888.5
13/04/2022	4.5	16:55:00	0	0:00:00	32.75	921.25
14/04/2022	0.5	6:35:00	0	0:00:00	1.5	922.75
15/04/2022	0	0:00:00	0	0:00:00	0	922.75
16/04/2022	0	0:00:00	0	0:00:00	0	922.75
17/04/2022	0	0:00:00	0	0:00:00	0	922.75
18/04/2022	0	0:00:00	0	0:00:00	0	922.75
19/04/2022	0	0:00:00	0	0:00:00	0	922.75
20/04/2022	0.5	0:25:00	0	0:00:00	0.5	923.25
21/04/2022	0	0:00:00	0	0:00:00	0	923.25
22/04/2022	4.5	2:15:00	0	0:00:00	24.25	947.5
23/04/2022	2.25	10:45:00	0	0:00:00	7.75	955.25
24/04/2022	4.5	4:45:00	0	0:00:00	16.25	971.5
25/04/2022	0	0:00:00	0	0:00:00	0	971.5
26/04/2022	0.5	19:55:00	0	0:00:00	0.5	972
27/04/2022	0.5	14:50:00	0	0:00:00	1.5	973.5
28/04/2022	0	0:00:00	0	0:00:00	0	973.5
29/04/2022	0	0:00:00	0	0:00:00	0	973.5
30/04/2022	0.5	14:15:00	0	0:00:00	2.5	976
1/05/2022	0	0:00:00	0	0:00:00	0	976
2/05/2022	0	0:00:00	0	0:00:00	0	976
3/05/2022	0	0:00:00	0	0:00:00	0	976
4/05/2022	0	0:00:00	0	0:00:00	0	976
5/05/2022	0.5	3:10:00	0	0:00:00	4	980
6/05/2022	0	0:00:00	0	0:00:00	0	980
7/05/2022	0	0:00:00	0	0:00:00	0	980
8/05/2022	0	0:00:00	0	0:00:00	0	980
9/05/2022	0.5	7:25:00	0	0:00:00	1	981
10/05/2022	3.5	17:15:00	0	0:00:00	14.25	995.25
11/05/2022	1	17:35:00	0	0:00:00	6	1001.25
12/05/2022	0.5	0:35:00	0	0:00:00	8	1009.25
13/05/2022	0.5	1:55:00	0	0:00:00	6	1015.25
14/05/2022	0	0:00:00	0	0:00:00	0	1015.25
15/05/2022	0	0:00:00	0	0:00:00	0	1015.25
16/05/2022	0	0:00:00	0	0:00:00	0	1015.25
17/05/2022	0	0:00:00	0	0:00:00	0	1015.25
18/05/2022	0	0:00:00	0	0:00:00	0	1015.25
19/05/2022	0	0:00:00	0	0:00:00	0	1015.25
20/05/2022	2.25	15:55:00	0	0:00:00	8.75	1024

Date	Max	Time	Min	Time	Daily Rainfall (mm)	Cumulative Rainfall (mm)
21/05/2022	1.5	4:30:00	0	0:00:00	30.5	1054.5
22/05/2022	2.75	10:50:00	0	0:00:00	29	1083.5
23/05/2022	1.5	7:15:00	0	0:00:00	26	1109.5
24/05/2022	3.5	10:20:00	0	0:00:00	44.5	1154
25/05/2022	0	0:00:00	0	0:00:00	0	1154
26/05/2022	0	0:00:00	0	0:00:00	0	1154
27/05/2022	0	0:00:00	0	0:00:00	0	1154
28/05/2022	0.5	19:55:00	0	0:00:00	1	1155
29/05/2022	0	0:00:00	0	0:00:00	0	1155
30/05/2022	2.25	17:55:00	0	0:00:00	4.25	1159.25
31/05/2022	0	0:00:00	0	0:00:00	0	1159.25
1/06/2022	0	0:00:00	0	0:00:00	0	1159.25
2/06/2022	0	0:00:00	0	0:00:00	0	1159.25
3/06/2022	0.5	15:45:00	0	0:00:00	5.5	1164.75
4/06/2022	0	0:00:00	0	0:00:00	0	1164.75
5/06/2022	0	0:00:00	0	0:00:00	0	1164.75
6/06/2022	0	0:00:00	0	0:00:00	0	1164.75
7/06/2022	0	0:00:00	0	0:00:00	0	1164.75
8/06/2022	0	0:00:00	0	0:00:00	0	1164.75
9/06/2022	0	0:00:00	0	0:00:00	0	1164.75
10/06/2022	0	0:00:00	0	0:00:00	0	1164.75
11/06/2022	0	0:00:00	0	0:00:00	0	1164.75
12/06/2022	0	0:00:00	0	0:00:00	0	1164.75
13/06/2022	0	0:00:00	0	0:00:00	0	1164.75
14/06/2022	0	0:00:00	0	0:00:00	0	1164.75
15/06/2022	0	0:00:00	0	0:00:00	0	1164.75
16/06/2022	0	0:00:00	0	0:00:00	0	1164.75
17/06/2022	0	0:00:00	0	0:00:00	0	1164.75
18/06/2022	6.5	15:50:00	0	0:00:00	42.75	1207.5
19/06/2022	2.75	17:55:00	0	0:00:00	15.75	1223.25
20/06/2022	1.5	4:35:00	0	0:00:00	4.5	1227.75
21/06/2022	0	0:00:00	0	0:00:00	0	1227.75
22/06/2022	0	0:00:00	0	0:00:00	0	1227.75
23/06/2022	0	0:00:00	0	0:00:00	0	1227.75
24/06/2022	0	0:00:00	0	0:00:00	0	1227.75
25/06/2022	0	0:00:00	0	0:00:00	0	1227.75
26/06/2022	0	0:00:00	0	0:00:00	0	1227.75
27/06/2022	0.5	19:40:00	0	0:00:00	5.5	1233.25
28/06/2022	0.5	0:25:00	0	0:00:00	4.5	1237.75
29/06/2022	0	0:00:00	0	0:00:00	0	1237.75
30/06/2022	0	0:00:00	0	0:00:00	0	1237.75
1/07/2022	1	12:20:00	0	0:00:00	3.5	1241.25
2/07/2022	0.5	1:20:00	0	0:00:00	7	1248.25
3/07/2022	4.5	7:10:00	0	0:05:00	105.75	1354
4/07/2022	4	20:10:00	0	0:00:00	16.5	1370.5
5/07/2022	4	16:40:00	0	0:00:00	86.5	1457
6/07/2022	4.5	4:40:00	0	0:00:00	65	1522

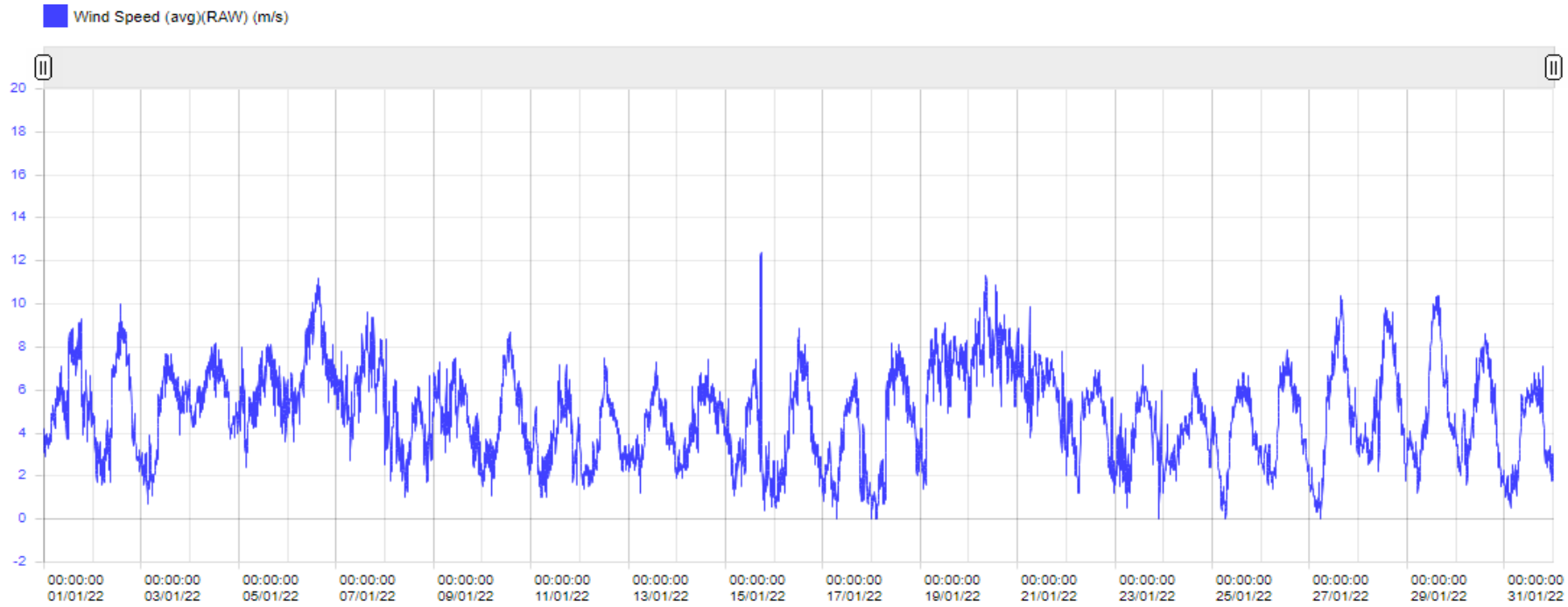
Date	Max	Time	Min	Time	Daily Rainfall (mm)	Cumulative Rainfall (mm)
7/07/2022	1.5	3:10:00	0	0:05:00	10	1532
8/07/2022	0	0:00:00	0	0:00:00	0	1532
9/07/2022	0	0:00:00	0	0:00:00	0	1532
10/07/2022	7	13:35:00	0	0:00:00	80.5	1612.5
11/07/2022	0.5	0:20:00	0	0:00:00	3	1615.5
12/07/2022	0.5	21:40:00	0	0:00:00	0.5	1616
13/07/2022	1	21:35:00	0	0:00:00	15.5	1631.5
14/07/2022	2.25	12:25:00	0	0:00:00	23.5	1655
15/07/2022	0	0:00:00	0	0:00:00	0	1655
16/07/2022	0	0:00:00	0	0:00:00	0	1655
17/07/2022	0	0:00:00	0	0:00:00	0	1655
18/07/2022	0	0:00:00	0	0:00:00	0	1655
19/07/2022	1	14:55:00	0	0:00:00	10.5	1665.5
20/07/2022	0.5	4:15:00	0	0:00:00	2.5	1668
21/07/2022	0.5	8:45:00	0	0:00:00	2.5	1670.5
22/07/2022	0.5	8:10:00	0	0:00:00	0.5	1671
23/07/2022	2.25	16:00:00	0	0:00:00	5.5	1676.5
24/07/2022	0.5	13:00:00	0	0:00:00	0.5	1677
25/07/2022	0	0:00:00	0	0:00:00	0	1677
26/07/2022	0.5	7:40:00	0	0:00:00	1.5	1678.5
27/07/2022	0	0:00:00	0	0:00:00	0	1678.5
28/07/2022	0	0:00:00	0	0:00:00	0	1678.5
29/07/2022	0	0:00:00	0	0:00:00	0	1678.5
30/07/2022	0	0:00:00	0	0:00:00	0	1678.5
31/07/2022	0	0:00:00	0	0:00:00	0	1678.5
1/08/2022	0	0:00:00	0	0:00:00	0	1678.5
2/08/2022	0	0:00:00	0	0:00:00	0	1678.5
3/08/2022	0	0:00:00	0	0:00:00	0	1678.5
4/08/2022						
5/08/2022	19.75	12:05:00	0	12:10:00	19.75	1698.25
6/08/2022	0	0:00:00	0	0:00:00	0	1698.25
7/08/2022	0	0:00:00	0	0:00:00	0	1698.25
8/08/2022	0	0:00:00	0	0:00:00	0	1698.25
9/08/2022	1	9:55:00	0	0:00:00	15	1713.25
10/08/2022	0.5	3:20:00	0	0:00:00	0.5	1713.75
11/08/2022	0	0:00:00	0	0:00:00	0	1713.75
12/08/2022	0.5	9:50:00	0	0:00:00	5.5	1719.25
13/08/2022	0.5	0:00:00	0	0:05:00	0.5	1719.75
14/08/2022	0	0:00:00	0	0:00:00	0	1719.75
15/08/2022	0	0:00:00	0	0:00:00	0	1719.75
16/08/2022	0	0:00:00	0	0:00:00	0	1719.75
17/08/2022	0	0:00:00	0	0:00:00	0	1719.75
18/08/2022	0	0:00:00	0	0:00:00	0	1719.75
19/08/2022	0	0:00:00	0	0:00:00	0	1719.75
20/08/2022	0	0:00:00	0	0:00:00	0	1719.75
21/08/2022	0	0:00:00	0	0:00:00	0	1719.75
22/08/2022	0	0:00:00	0	0:00:00	0	1719.75

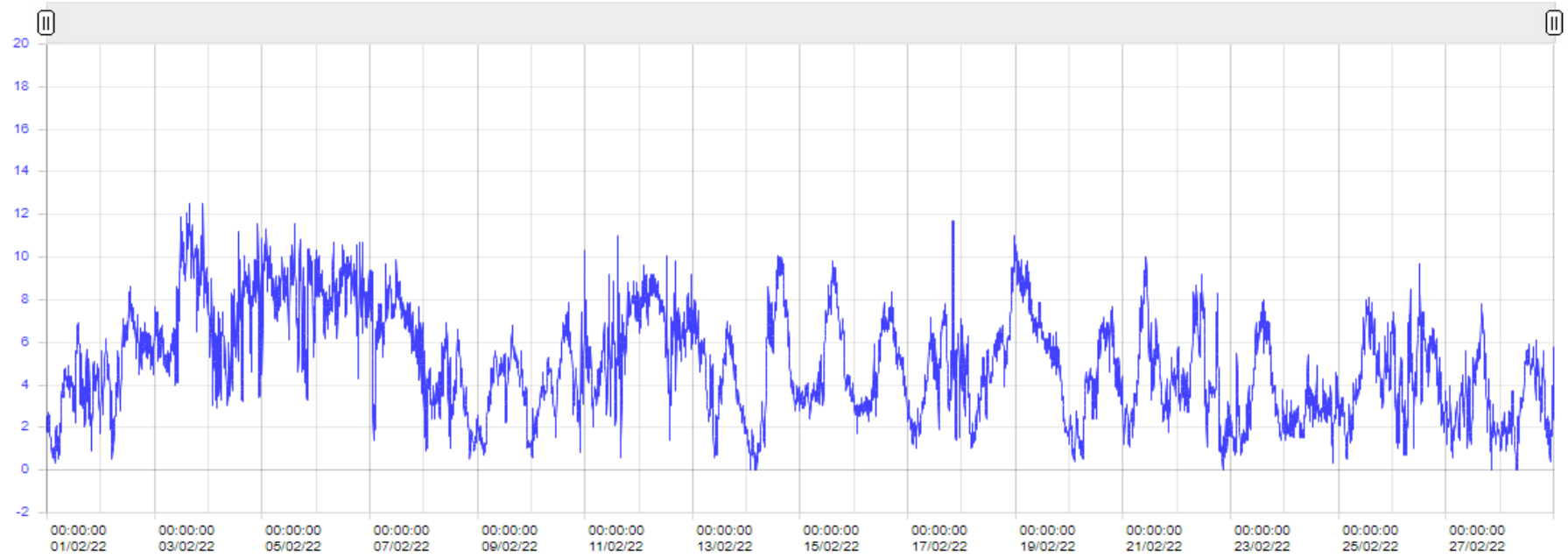
Date	Max	Time	Min	Time	Daily Rainfall (mm)	Cumulative Rainfall (mm)
23/08/2022	5.25	14:45:00	0	0:00:00	15.75	1735.5
24/08/2022	0.5	0:25:00	0	0:00:00	1	1736.5
25/08/2022	0	0:00:00	0	0:00:00	0	1736.5
26/08/2022	1	13:40:00	0	0:00:00	6	1742.5
27/08/2022	0.5	0:30:00	0	0:00:00	1	1743.5
28/08/2022	0	0:00:00	0	0:00:00	0	1743.5
29/08/2022	0	0:00:00	0	0:00:00	0	1743.5
30/08/2022	0	0:00:00	0	0:00:00	0	1743.5
31/08/2022	1	16:20:00	0	0:00:00	9.5	1753
1/09/2022	0.5	1:10:00	0	0:00:00	2	1755
2/09/2022	1	22:15:00	0	0:00:00	10	1765
3/09/2022	1	4:30:00	0	0:00:00	14.5	1779.5
4/09/2022	1.5	7:00:00	0	0:00:00	3.5	1783
5/09/2022	0	0:00:00	0	0:00:00	0	1783
6/09/2022	0	0:00:00	0	0:00:00	0	1783
7/09/2022	0	0:00:00	0	0:00:00	0	1783
8/09/2022	0	0:00:00	0	0:00:00	0	1783
9/09/2022	0.5	6:10:00	0	0:00:00	5.5	1788.5
10/09/2022	1	14:00:00	0	0:00:00	1.5	1790
11/09/2022	0	0:00:00	0	0:00:00	0	1790
12/09/2022	0	0:00:00	0	0:00:00	0	1790
13/09/2022	0	0:00:00	0	0:00:00	0	1790
14/09/2022	0	0:00:00	0	0:00:00	0	1790
15/09/2022	0.5	15:25:00	0	0:00:00	7	1797
16/09/2022	0.5	0:10:00	0	0:00:00	5	1802
17/09/2022	0	0:00:00	0	0:00:00	0	1802
18/09/2022	0	0:00:00	0	0:00:00	0	1802
19/09/2022	0	0:00:00	0	0:00:00	0	1802
20/09/2022	0	0:00:00	0	0:00:00	0	1802
21/09/2022	0	0:00:00	0	0:00:00	0	1802
22/09/2022	1	4:05:00	0	0:00:00	25.5	1827.5
23/09/2022	1.75	3:45:00	0	0:00:00	3.75	1831.25
24/09/2022	1	14:45:00	0	0:00:00	3.5	1834.75
25/09/2022	0	0:00:00	0	0:00:00	0	1834.75
26/09/2022	0	0:00:00	0	0:00:00	0	1834.75
27/09/2022	0.5	10:05:00	0	0:00:00	0.5	1835.25
28/09/2022	0.5	6:35:00	0	0:00:00	0.5	1835.75
29/09/2022	1.75	20:05:00	0	0:00:00	8.75	1844.5
30/09/2022	2.25	8:25:00	0	0:00:00	21.5	1866
1/10/2022	1	17:10:00	0	0:00:00	1.5	1867.5
2/10/2022	0.5	2:00:00	0	0:00:00	1	1868.5
3/10/2022	0	0:00:00	0	0:00:00	0	1868.5
4/10/2022	0	0:00:00	0	0:00:00	0	1868.5
5/10/2022	2.25	18:35:00	0	0:00:00	25.25	1893.75
6/10/2022	0.5	0:05:00	0	0:00:00	2	1895.75
7/10/2022	2.25	19:50:00	0	0:00:00	20.25	1916
8/10/2022	1.75	15:00:00	0	0:00:00	32.25	1948.25

Date	Max	Time	Min	Time	Daily Rainfall (mm)	Cumulative Rainfall (mm)
9/10/2022	0.5	1:15:00	0	0:00:00	4	1952.25
10/10/2022	0	0:00:00	0	0:00:00	0	1952.25
11/10/2022	0	0:00:00	0	0:00:00	0	1952.25
12/10/2022	0	0:00:00	0	0:00:00	0	1952.25
13/10/2022	0	0:00:00	0	0:00:00	0	1952.25
14/10/2022	1	10:15:00	0	0:00:00	2	1954.25
15/10/2022	0	0:00:00	0	0:00:00	0	1954.25
16/10/2022	0	0:00:00	0	0:00:00	0	1954.25
17/10/2022	0	0:00:00	0	0:00:00	0	1954.25
18/10/2022	0	0:00:00	0	0:00:00	0	1954.25
19/10/2022	0	0:00:00	0	0:00:00	0	1954.25
20/10/2022	0.5	4:50:00	0	0:00:00	8	1962.25
21/10/2022	0.5	8:55:00	0	0:00:00	2	1964.25
22/10/2022	0.5	17:20:00	0	0:00:00	1	1965.25
23/10/2022	0.5	0:35:00	0	0:00:00	0.5	1965.75
24/10/2022	1	4:20:00	0	0:00:00	8	1973.75
25/10/2022	0	0:00:00	0	0:00:00	0	1973.75
26/10/2022	0	0:00:00	0	0:00:00	0	1973.75
27/10/2022	0.5	15:40:00	0	0:00:00	1	1974.75
28/10/2022	0	0:00:00	0	0:00:00	0	1974.75
29/10/2022	0	0:00:00	0	0:00:00	0	1974.75
30/10/2022	0	0:00:00	0	0:00:00	0	1974.75
31/10/2022	0.5	19:30:00	0	0:00:00	1	1975.75
1/11/2022	0.5	0:05:00	0	0:00:00	4.5	1980.25
2/11/2022	0	0:00:00	0	0:00:00	0	1980.25
3/11/2022	0	0:00:00	0	0:00:00	0	1980.25
4/11/2022	2.25	7:30:00	0	0:00:00	11.5	1991.75
5/11/2022	0	0:00:00	0	0:00:00	0	1991.75
6/11/2022	0	0:00:00	0	0:00:00	0	1991.75
7/11/2022	0	0:00:00	0	0:00:00	0	1991.75
8/11/2022	0	0:00:00	0	0:00:00	0	1991.75
9/11/2022	0	0:00:00	0	0:00:00	0	1991.75
10/11/2022	0	0:00:00	0	0:00:00	0	1991.75
11/11/2022	0	0:00:00	0	0:00:00	0	1991.75
12/11/2022	1.75	20:05:00	0	0:00:00	3.25	1995
13/11/2022	1	14:05:00	0	0:00:00	19	2014
14/11/2022	1	5:25:00	0	0:00:00	10.5	2024.5
15/11/2022	4	14:05:00	0	0:00:00	4.5	2029
16/11/2022	0	0:00:00	0	0:00:00	0	2029
17/11/2022	0	0:00:00	0	0:00:00	0	2029
18/11/2022	0	0:00:00	0	0:00:00	0	2029
19/11/2022	0	0:00:00	0	0:00:00	0	2029
20/11/2022	0	0:00:00	0	0:00:00	0	2029
21/11/2022	0	0:00:00	0	0:00:00	0	2029
22/11/2022	0	0:00:00	0	0:00:00	0	2029
23/11/2022	0	0:00:00	0	0:00:00	0	2029
24/11/2022	0	0:00:00	0	0:00:00	0	2029

Date	Max	Time	Min	Time	Daily Rainfall (mm)	Cumulative Rainfall (mm)
25/11/2022	0	0:00:00	0	0:00:00	0	2029
26/11/2022	1.5	6:15:00	0	0:00:00	3	2032
27/11/2022	1.5	19:40:00	0	0:00:00	5.5	2037.5
28/11/2022	0.5	3:00:00	0	0:00:00	2	2039.5
29/11/2022	0	0:00:00	0	0:00:00	0	2039.5
30/11/2022	0	0:00:00	0	0:00:00	0	2039.5
1/12/2022	0	0:00:00	0	0:00:00	0	2039.5
2/12/2022	0	0:00:00	0	0:00:00	0	2039.5
3/12/2022	0	0:00:00	0	0:00:00	0	2039.5
4/12/2022	0	0:00:00	0	0:00:00	0	2039.5
5/12/2022	0	0:00:00	0	0:00:00	0	2039.5
6/12/2022	0	0:00:00	0	0:00:00	0	2039.5
7/12/2022	0	0:00:00	0	0:00:00	0	2039.5
8/12/2022	0	0:00:00	0	0:00:00	0	2039.5
9/12/2022	0	0:00:00	0	0:00:00	0	2039.5
10/12/2022	0.5	3:50:00	0	0:00:00	0.5	2040
11/12/2022	0	0:00:00	0	0:00:00	0	2040
12/12/2022	4.5	12:20:00	0	0:00:00	8.5	2048.5
13/12/2022	0	0:00:00	0	0:00:00	0	2048.5
14/12/2022	0	0:00:00	0	0:00:00	0	2048.5
15/12/2022	0	0:00:00	0	0:00:00	0	2048.5
16/12/2022	0.5	7:05:00	0	0:00:00	3	2051.5
17/12/2022	0.5	3:55:00	0	0:00:00	6.5	2058
18/12/2022	0.5	0:40:00	0	0:00:00	2	2060
19/12/2022	0.5	0:15:00	0	0:00:00	1.5	2061.5
20/12/2022	0	0:00:00	0	0:00:00	0	2061.5
21/12/2022	0	0:00:00	0	0:00:00	0	2061.5
22/12/2022	0.5	17:05:00	0	0:00:00	0.5	2062
23/12/2022	0.5	18:55:00	0	0:00:00	2.5	2064.5
24/12/2022	1	12:40:00	0	0:00:00	2	2066.5
25/12/2022	0	0:00:00	0	0:00:00	0	2066.5
26/12/2022	0	0:00:00	0	0:00:00	0	2066.5
27/12/2022	0	0:00:00	0	0:00:00	0	2066.5
28/12/2022	0	0:00:00	0	0:00:00	0	2066.5
29/12/2022	0	0:00:00	0	0:00:00	0	2066.5
30/12/2022	0	0:00:00	0	0:00:00	0	2066.5
31/12/2022	0	0:00:00	0	0:00:00	0	2066.5
TOTAL					2066.5	

M4 Meteorological Data – Wind Speed – January to December 2022




20
18
16
14
12
10
8
6
4
2
0
-2
00:00:00 01/02/22
00:00:00 03/02/22
00:00:00 05/02/22
00:00:00 07/02/22
00:00:00 09/02/22
00:00:00 11/02/22
00:00:00 13/02/22
00:00:00 15/02/22
00:00:00 17/02/22
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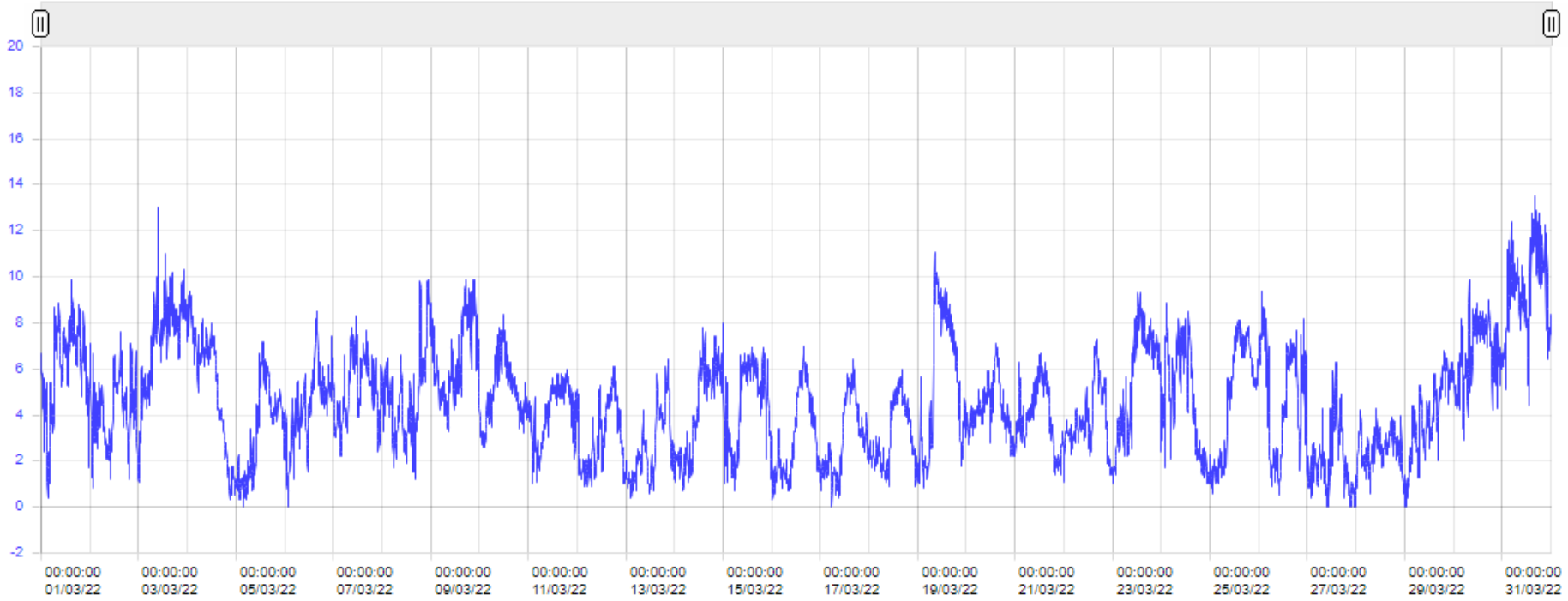
00:00:00 25/02/22
00:00:00 27/02/22


20
18
16
14
12
10
8
6
4
2
0
-2
00:00:00 01/03/22
00:00:00 03/03/22
00:00:00 05/03/22
00:00:00 07/03/22
00:00:00 09/03/22
00:00:00 11/03/22
00:00:00 13/03/22
00:00:00 15/03/22
00:00:00 17/03/22
00:00:00 19/03/22
00:00:00 21/03/22
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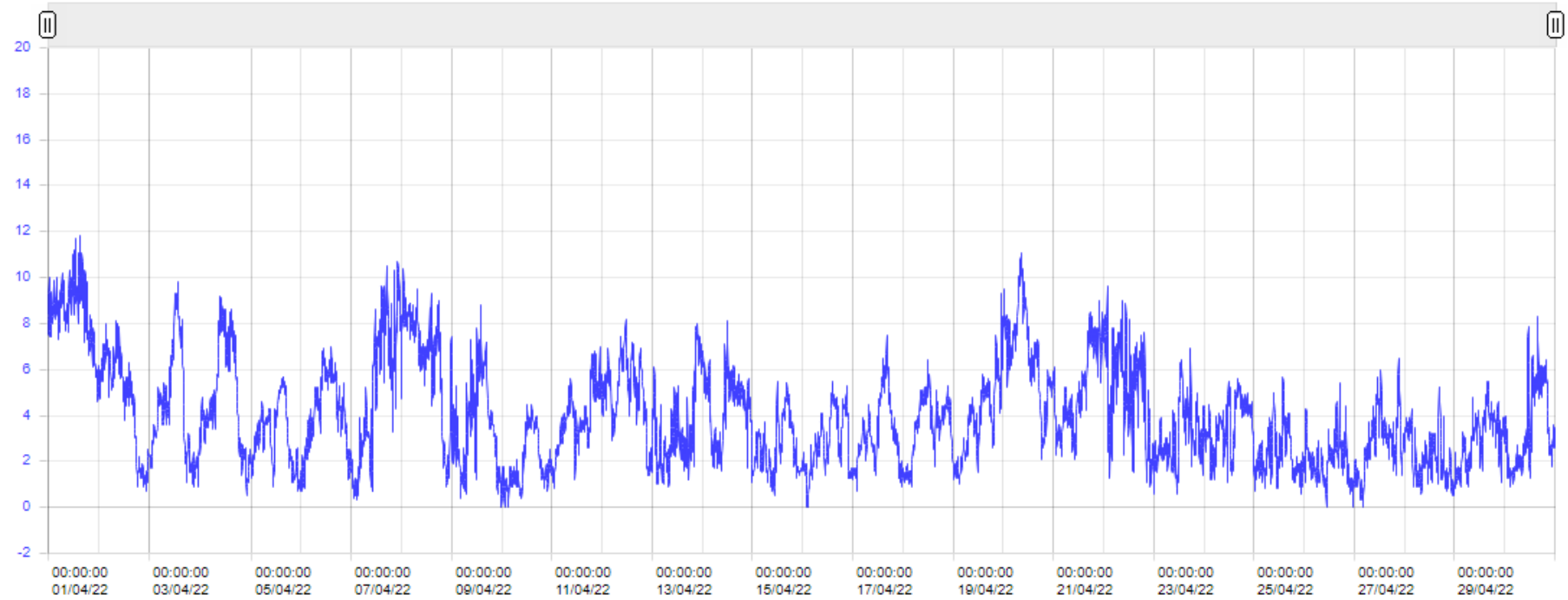
00:00:00 29/03/22
00:00:00 31/03/22


20
18
16
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10
8
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4
2
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-2
00:00:00 01/04/22
00:00:00 03/04/22
00:00:00 05/04/22
00:00:00 07/04/22
00:00:00 09/04/22
00:00:00 11/04/22
00:00:00 13/04/22
00:00:00 15/04/22
00:00:00 17/04/22
00:00:00 19/04/22
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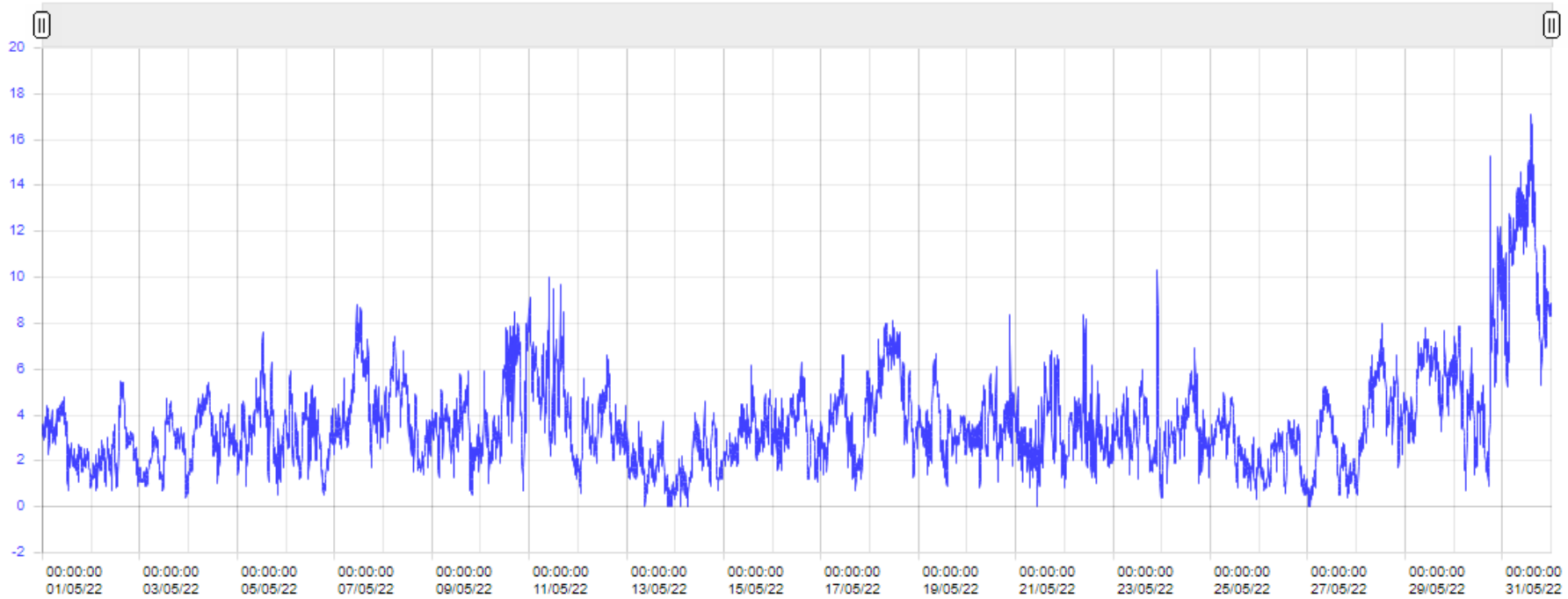
00:00:00 27/04/22
00:00:00 29/04/22


20
18
16
14
12
10
8
6
4
2
0
-2
00:00:00 01/05/22
00:00:00 03/05/22
00:00:00 05/05/22
00:00:00 07/05/22
00:00:00 09/05/22
00:00:00 11/05/22
00:00:00 13/05/22
00:00:00 15/05/22
00:00:00 17/05/22
00:00:00 19/05/22
00:00:00 21/05/22
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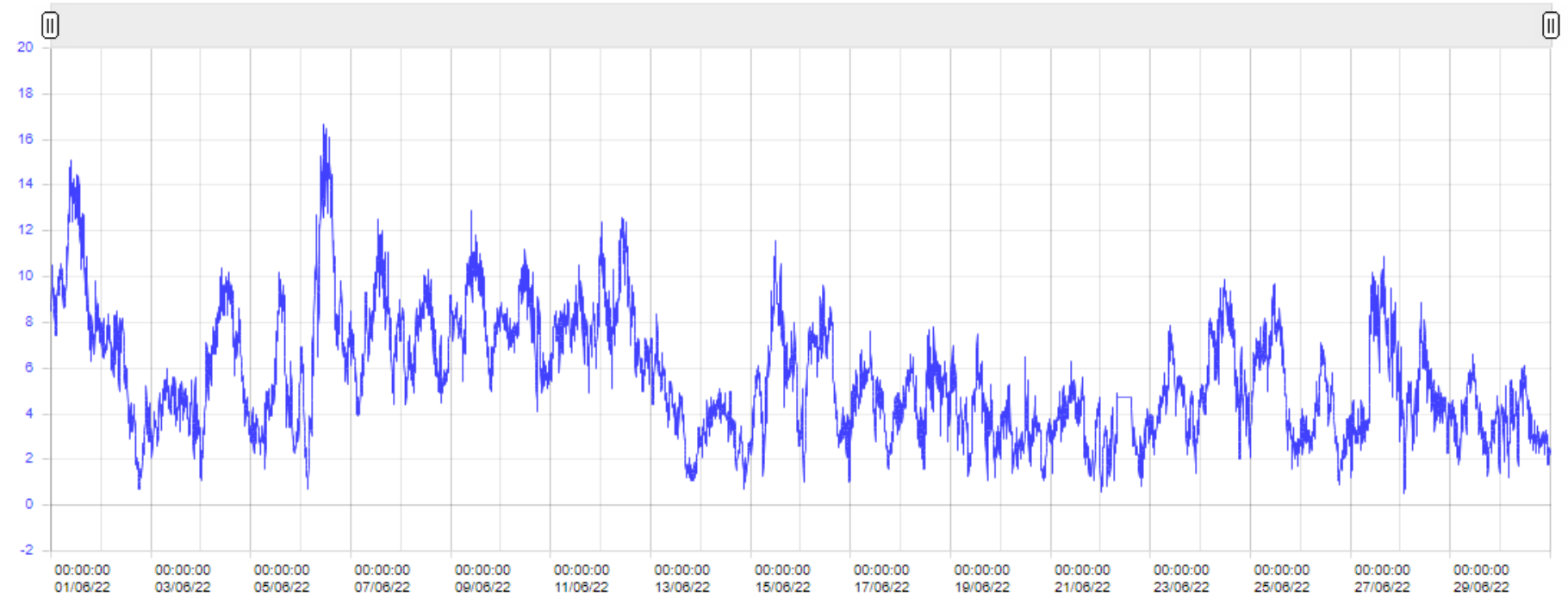
00:00:00 29/05/22
00:00:00 31/05/22


20
18
16
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12
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8
6
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2
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-2
00:00:00 01/06/22
00:00:00 03/06/22
00:00:00 05/06/22
00:00:00 07/06/22
00:00:00 09/06/22
00:00:00 11/06/22
00:00:00 13/06/22
00:00:00 15/06/22
00:00:00 17/06/22
00:00:00 19/06/22
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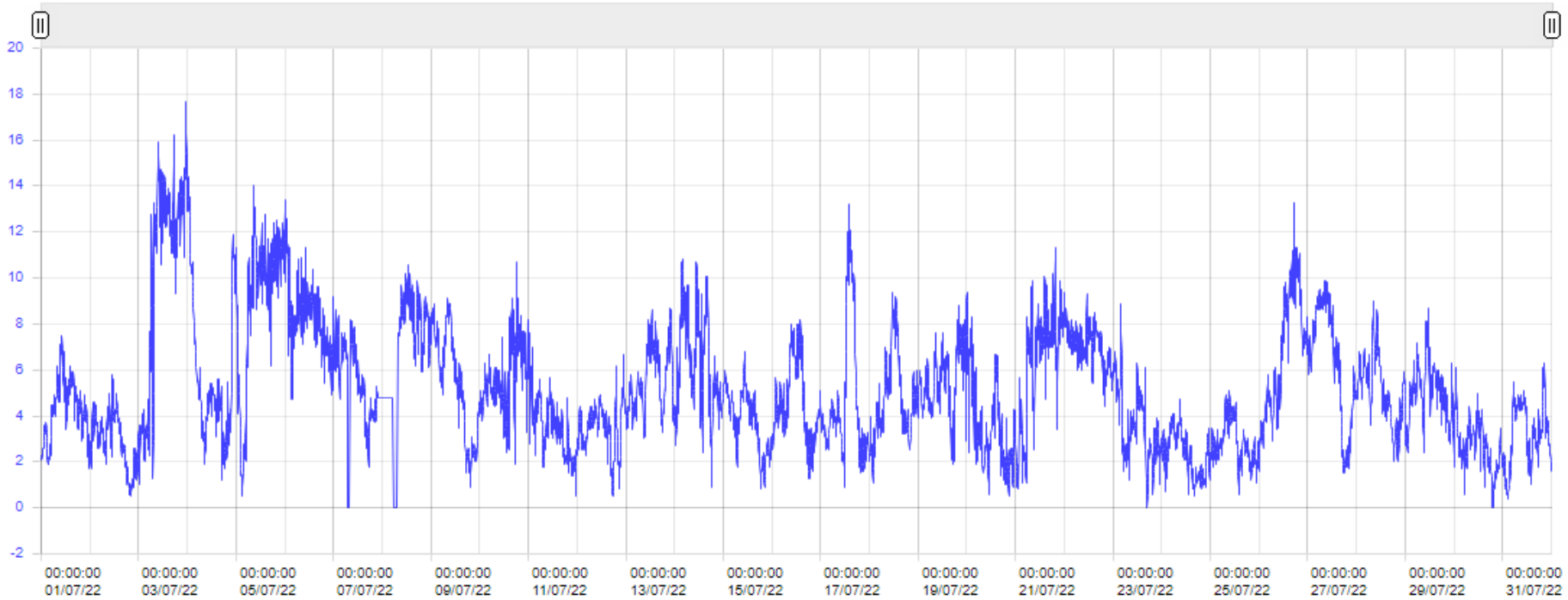
00:00:00 27/06/22
00:00:00 29/06/22


20
18
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10
8
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2
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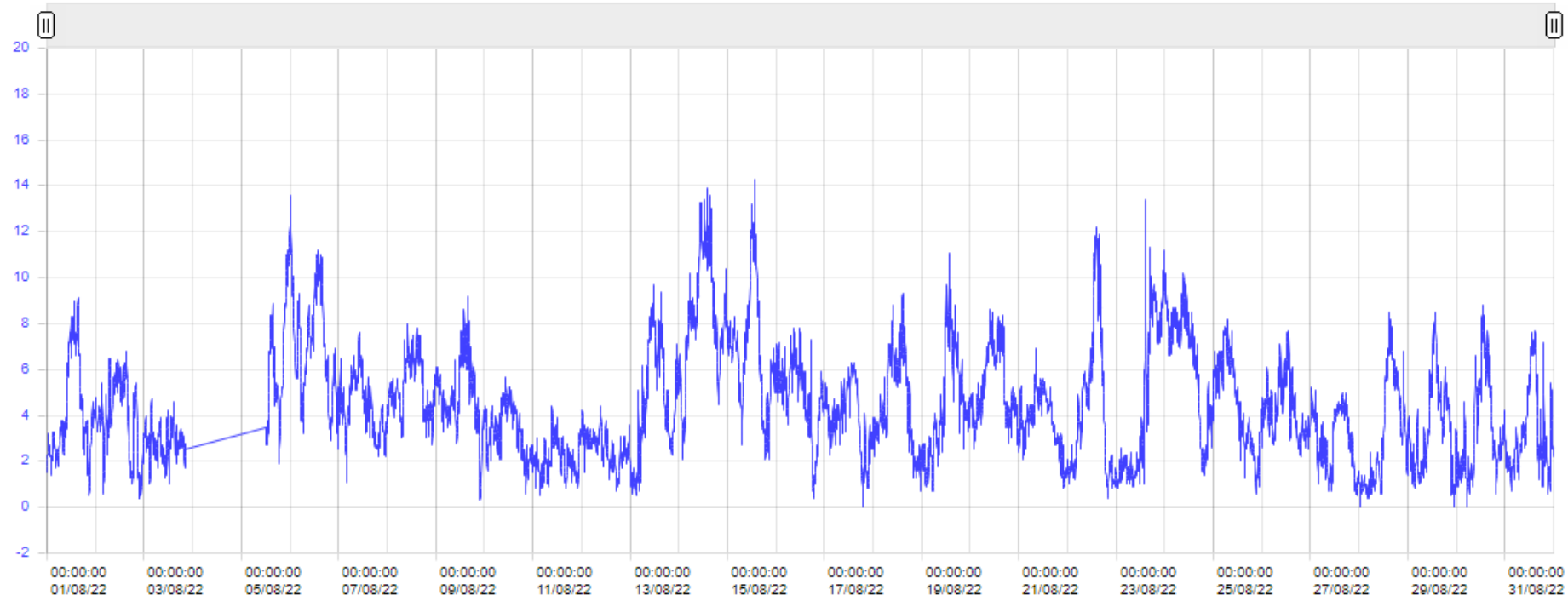
-2
00:00:00 01/07/22
00:00:00 03/07/22
00:00:00 05/07/22
00:00:00 07/07/22
00:00:00 09/07/22
00:00:00 11/07/22
00:00:00 13/07/22
00:00:00 15/07/22
00:00:00 17/07/22
00:00:00 19/07/22
00:00:00 21/07/22
00:00:00 23/07/22
00:00:00 25/07/22
00:00:00 27/07/22
00:00:00 29/07/22
00:00:00 31/07/22


20
18
16
14
12
10
8
6
4
2
0
-2
00:00:00 01/08/22
00:00:00 03/08/22
00:00:00 05/08/22
00:00:00 07/08/22
00:00:00 09/08/22
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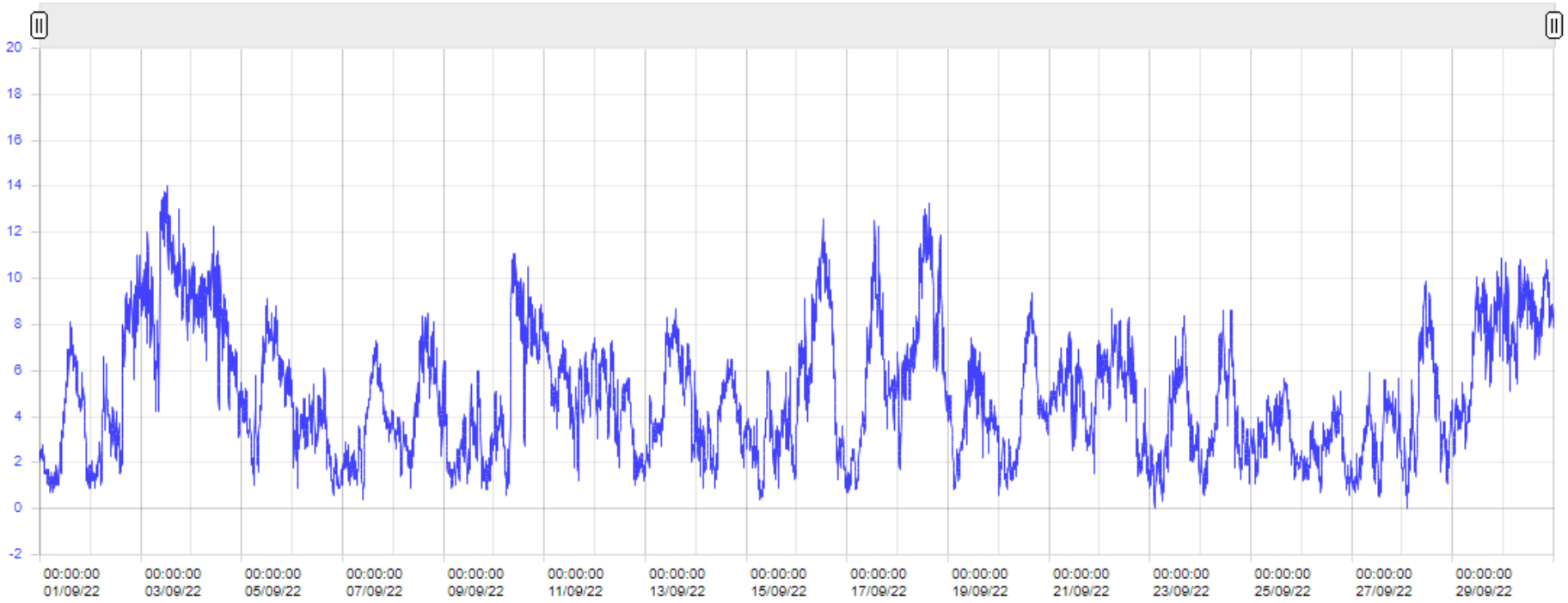
00:00:00 21/08/22
00:00:00 23/08/22
00:00:00 25/08/22
00:00:00 27/08/22
00:00:00 29/08/22
00:00:00 31/08/22


20
18
16
14
12
10
8
6
4
2
0
-2
00:00:00 01/09/22
00:00:00 03/09/22
00:00:00 05/09/22
00:00:00 07/09/22
00:00:00 09/09/22
00:00:00 11/09/22
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00:00:00 15/09/22
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00:00:00 19/09/22
00:00:00 21/09/22
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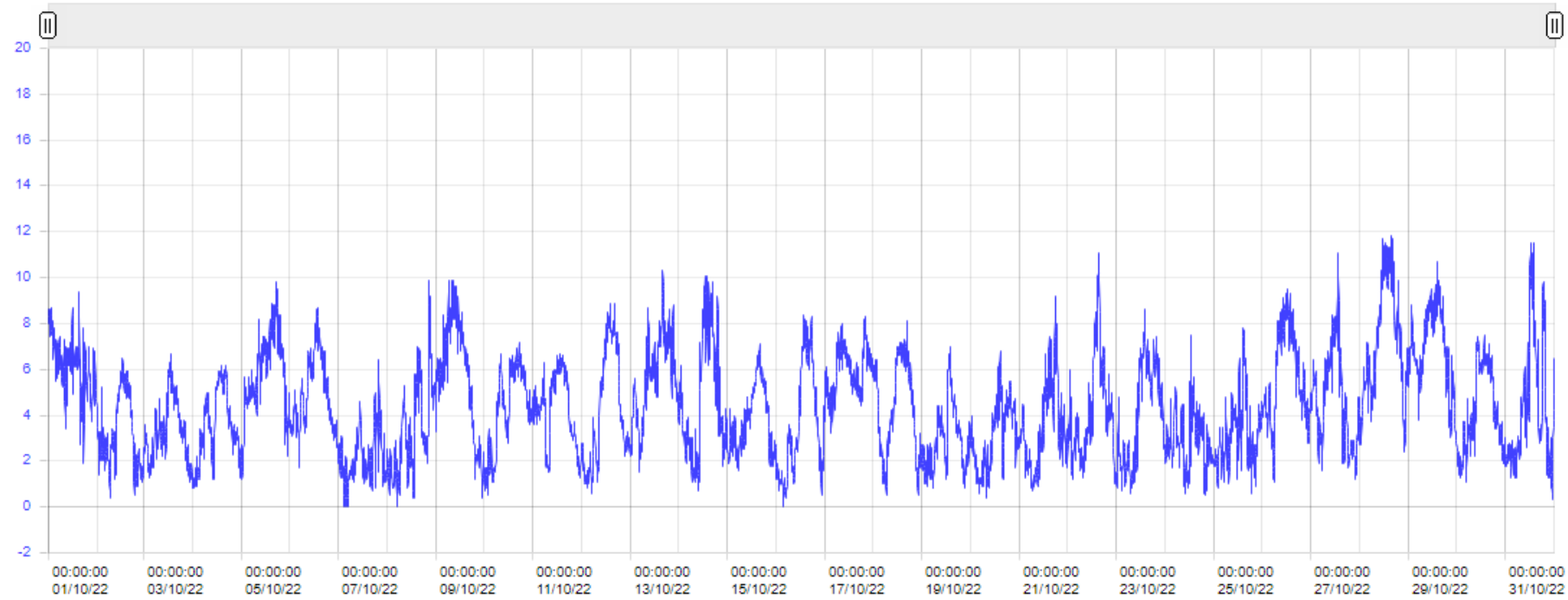
00:00:00 27/09/22
00:00:00 29/09/22


20
18
16
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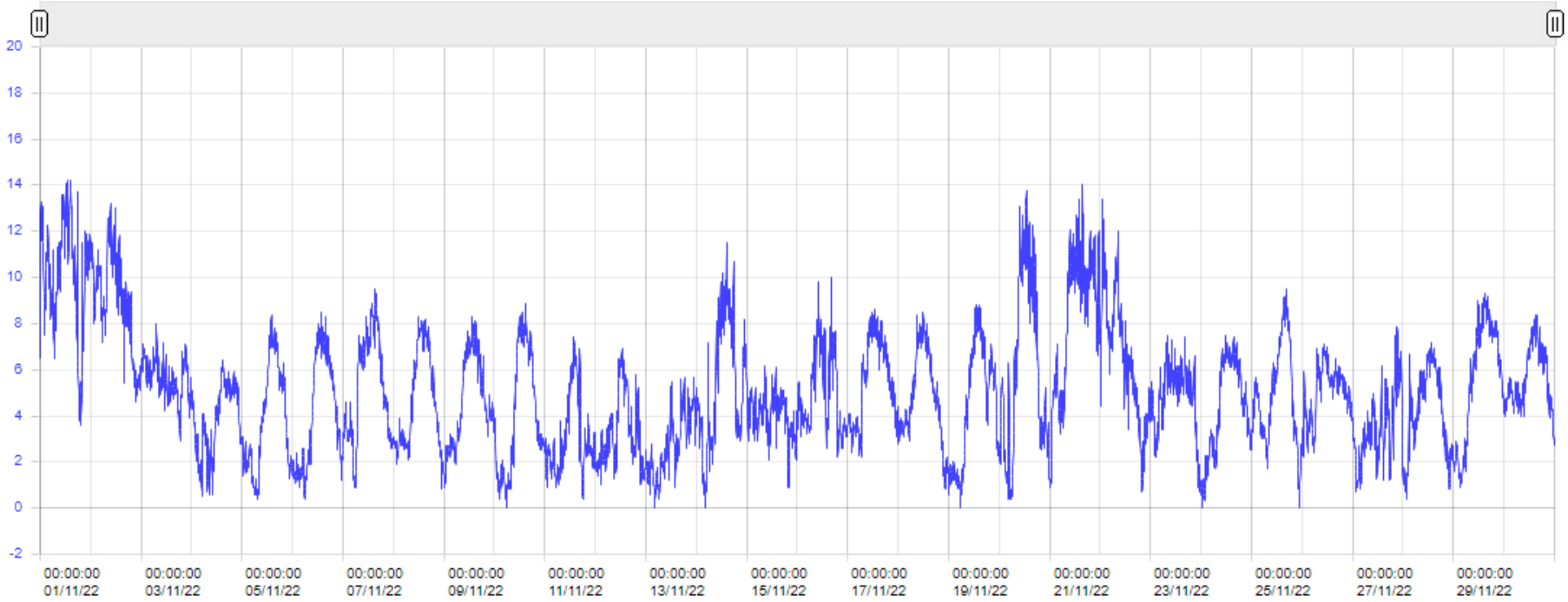
12
10
8
6
4
2
0
-2
00:00:00 01/10/22
00:00:00 03/10/22
00:00:00 05/10/22
00:00:00 07/10/22
00:00:00 09/10/22
00:00:00 11/10/22
00:00:00 13/10/22
00:00:00 15/10/22
00:00:00 17/10/22
00:00:00 19/10/22
00:00:00 21/10/22
00:00:00 23/10/22
00:00:00 25/10/22
00:00:00 27/10/22
00:00:00 29/10/22
00:00:00 31/10/22


20
18
16
14
12
10
8
6
4
2
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-2
00:00:00 01/11/22
00:00:00 03/11/22
00:00:00 05/11/22
00:00:00 07/11/22
00:00:00 09/11/22
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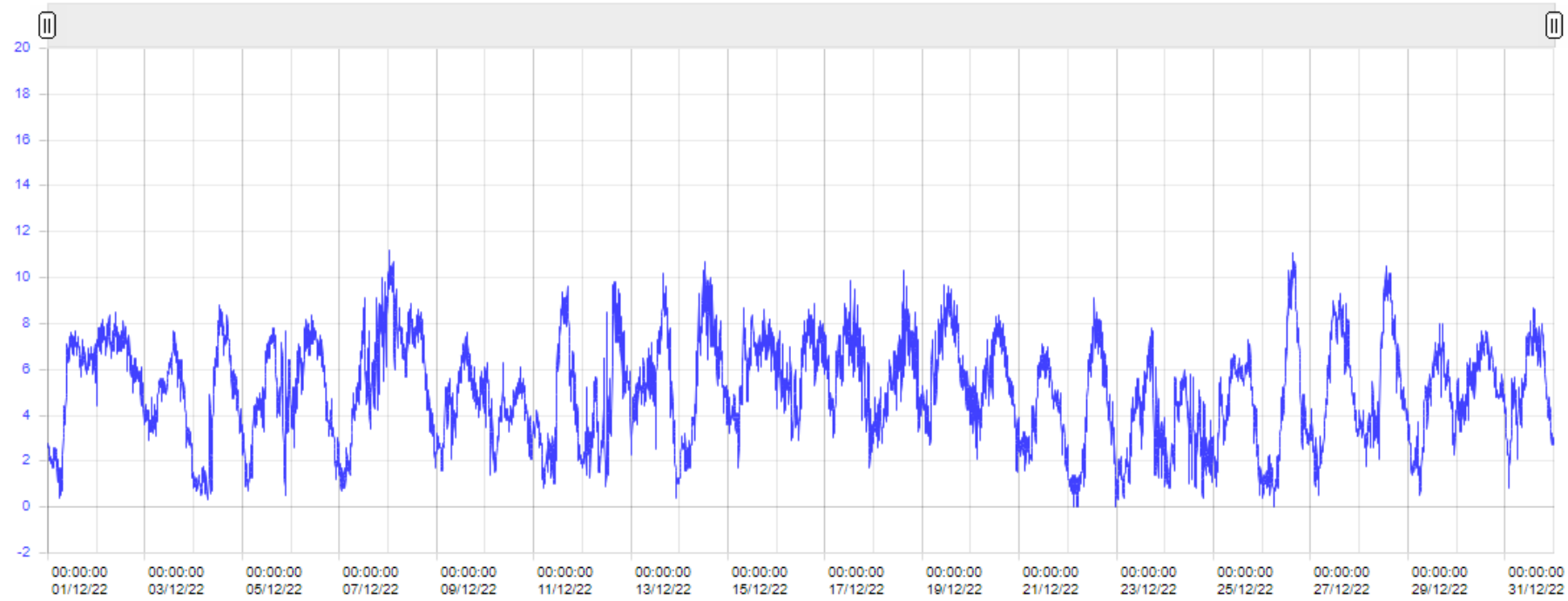
00:00:00 19/11/22
00:00:00 21/11/22
00:00:00 23/11/22
00:00:00 25/11/22
00:00:00 27/11/22
00:00:00 29/11/22


20
18
16
14
12
10
8
6
4
2
0
-2
00:00:00 01/12/22
00:00:00 03/12/22
00:00:00 05/12/22
00:00:00 07/12/22
00:00:00 09/12/22
00:00:00 11/12/22
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00:00:00 19/12/22
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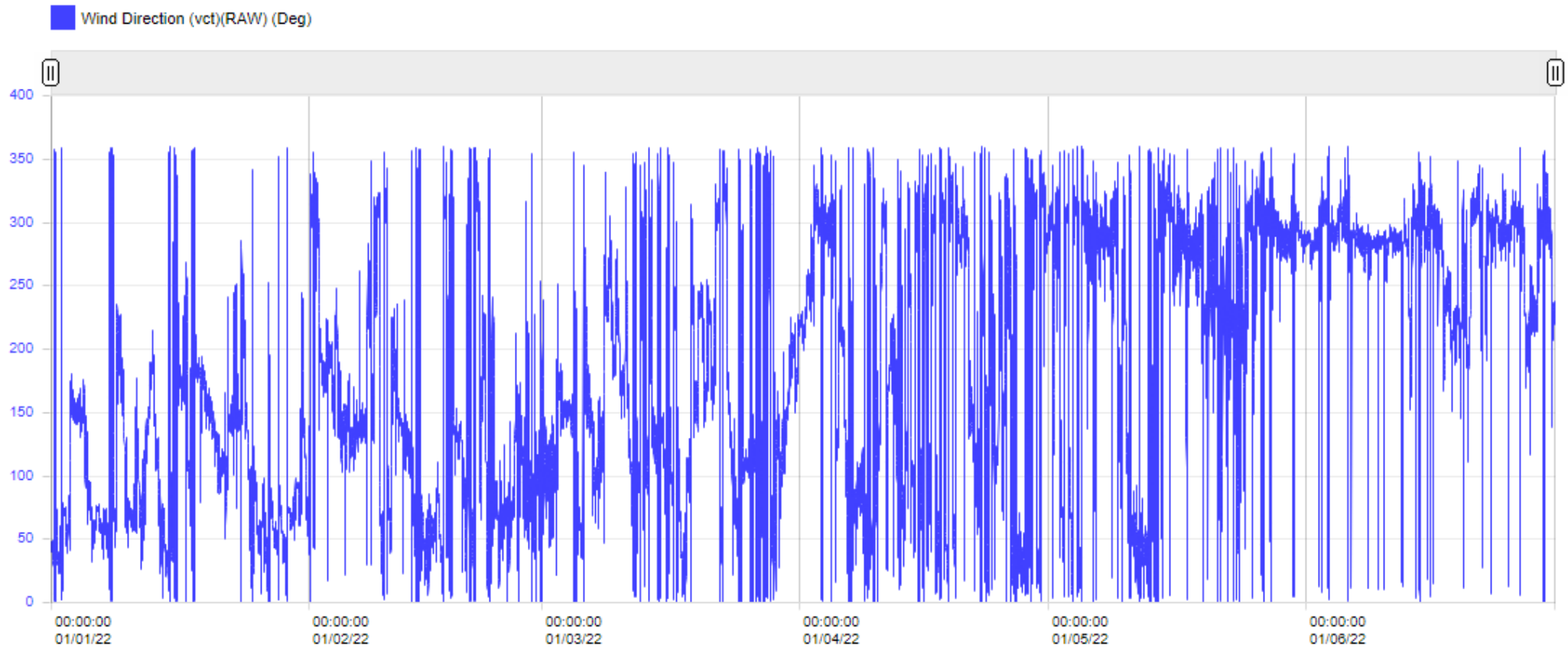
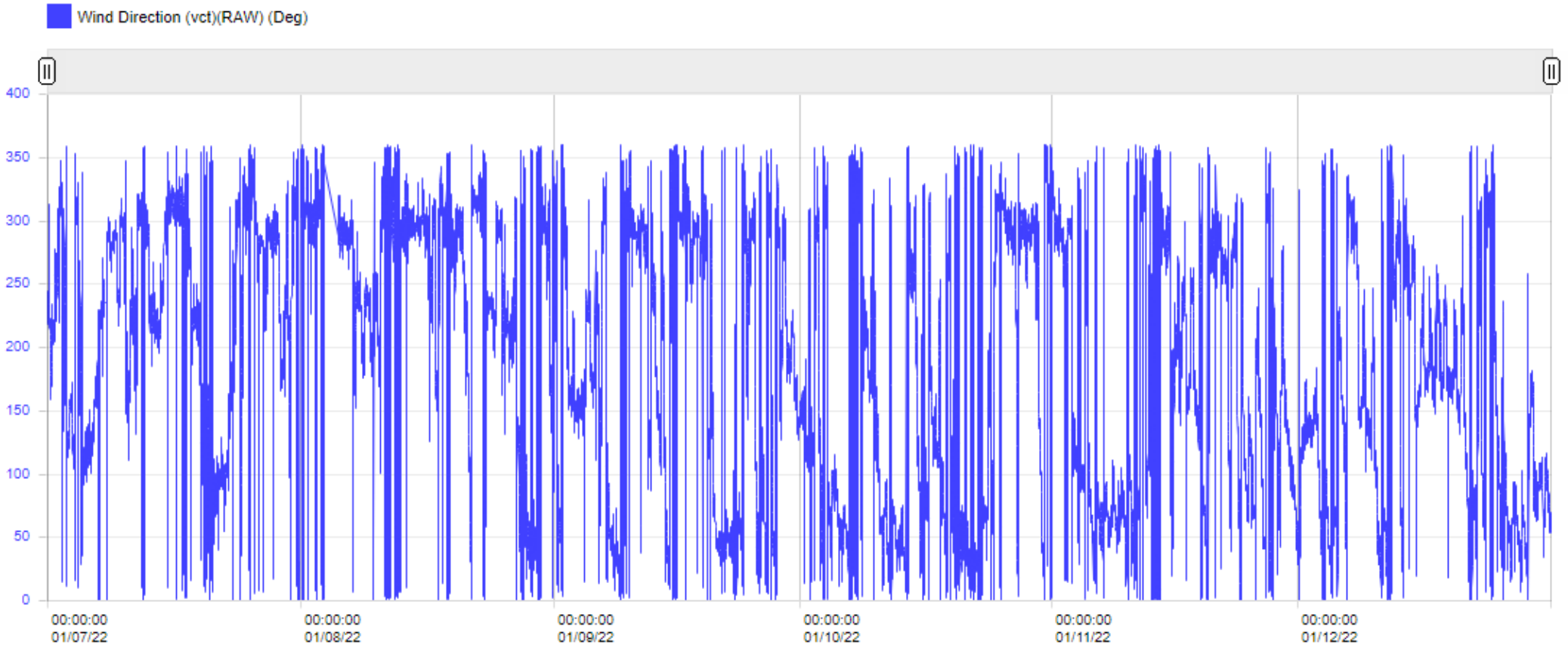
00:00:00 23/12/22
00:00:00 25/12/22
00:00:00 27/12/22
00:00:00 29/12/22
00:00:00 31/12/22

M4 Meteorological Data – Wind Direction – January to December 2022




Wind Direction (vct)(RAW) (Deg)
400
350
300
250
200
150
100
50
0
00:00:00
01/07/22
00:00:00
01/08/22
00:00:00
01/09/22
00:00:00
01/10/22
00:00:00
01/11/22
00:00:00
01/12/22

APPENDIX H – DANGEROUS GOODS RECORD

ENVRG013 - M4 DANGEROUS GOODS REGISTER

DG approval					Master Data File								Log	
Movement ID	UNDG Code	UNDG Class	Packing Group	Cargo/Product	Visit ID	Date of Arrival	Time of Arrival	Date of Dispatch	Time of Dispatch	Time at Berth Hours (hrs)	Final Quantity (t)	Load / Unload	Storage / Handling Method	Dwell Time (mins)
364457000	1942	5.1	III	Ammonium Nitrate	364457	29/01/2022	8:32	1/02/2022	14:34	76.38	6499	Unload	AN Bags to Truck	0
364689000	1942	5.1	III	Ammonium Nitrate	364689	4/03/2022	16:30	6/03/2022	21:29	50.87	6499.2	Unload	AN Bags to Truck	0
365399000	1942	5.1	III	Ammonium Nitrate	365399	12/05/2022	7:18	15/05/2022	12:38	75.53	6499	Unload	AN Bags to Truck	0
365947000	1942	5.1	III	Ammonium Nitrate	365947	15/07/2022	9:00	17/07/2022	8:36	45.92	3450	Unload	AN Bags to Truck	0
365954000	1942	5.1	III	Ammonium Nitrate	365954	18/07/2022	6:49	21/07/2022	21:23	84.65	6499	Unload	AN Bags to Truck	0
366286000	1942	5.1	III	Ammonium Nitrate	366286	27/08/2022	11:15	29/08/2022	17:12	51.33	4311	Unload	AN Bags to Truck	0
366313000	1942	5.1	III	Ammonium Nitrate	366313	31/08/2022	14:05	5/09/2022	16:56	121.08	6516	Unload	AN Bags to Truck	0
366523000	1942	5.1	III	Ammonium Nitrate	366523	24/09/2022	14:50	27/09/2022	19:51	75.17	6499.2	Unload	AN Bags to Truck	0
366664000	1942	5.1	III	Ammonium Nitrate	366664	26/10/2022	22:06	29/10/2022	11:30	61.4	4500	Unload	AN Bags to Truck	0
366781000	1942	5.1	III	Ammonium Nitrate	366781	11/11/2022	12:02	16/11/2022	12:40	99.4	5001	Unload	AN Bags to Truck	0
366745000	1942	5.1	III	Ammonium Nitrate	366745	19/11/2022	1:48	23/11/2022	0:22	71.75	6499	Unload	AN Bags to Truck	0
367128000	1942	5.1	III	Ammonium Nitrate	367128	17/12/2022	12:53	20/12/2022	16:52	74.2	6499.5	Unload	AN Bags to Truck	0
367217000	1942	5.1	III	Ammonium Nitrate	367217	26/12/2022	8:10	28/12/2022	12:20	50.5	1004	Unload	AN Bags to Truck	0
367217000	1942	5.1	III	Ammonium Nitrate	367217	26/12/2022	8:10	28/12/2022	12:20	50.5	1605	Load	AN Bags to Truck	0