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**Report Period**

30/06/2023 | 1/08/2023

# Monthly Monitoring Summary for Hodgson Quarries and Plant Pty Ltd Roberts Road Sand Quarry, Maroota, NSW

Report Date: 05/09/2023

# Site Monitoring Locations

# Groundwater Levels

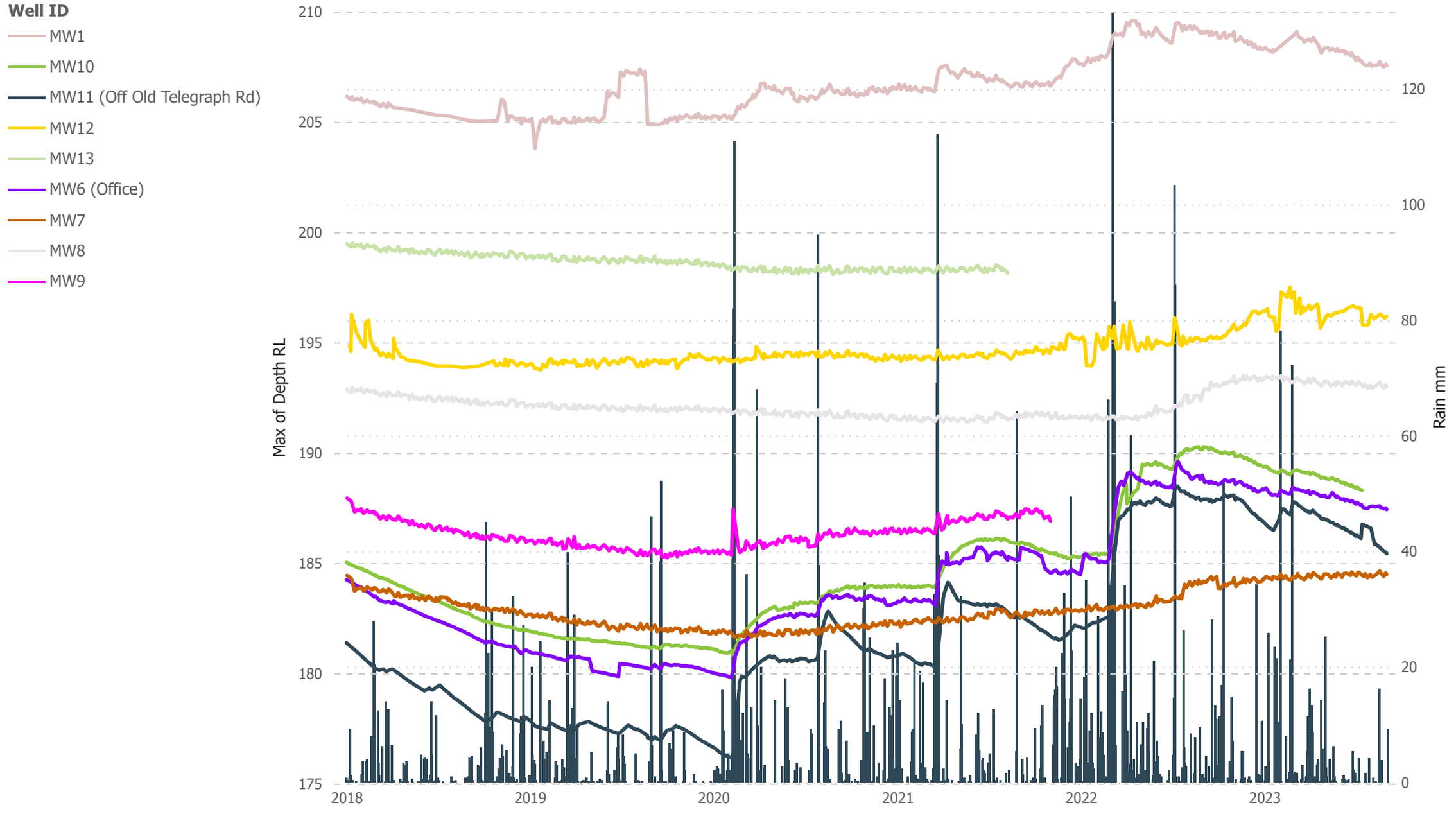
Groundwater levels are currently monitored in nine boreholes located on the site. Groundwater levels are manually measured for depth each month using a groundwater dipper. Data is downloaded from groundwater loggers where present. MW1 logger was installed prior to 2015; the remaining loggers were installed in 2017.

Graph 1 displays the depths as of January 2017. Graph 2 shows depths in the past month. Following anomalous readings from the MW5 logger, the bore was investigated and discovered to have collapsed. The logger was relocated to a functioning bore and the bore abandoned and replaced by nearby MW8.

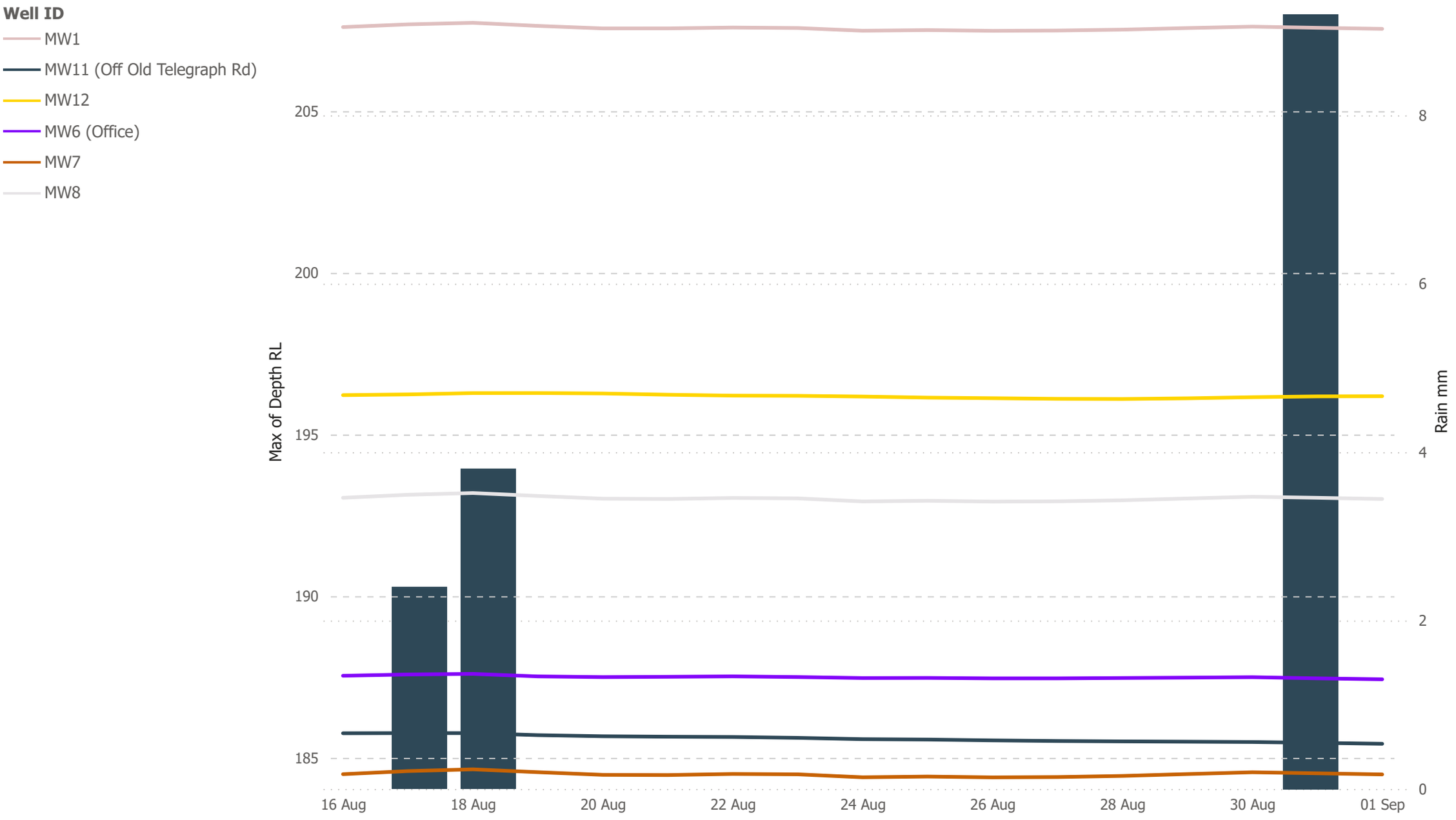
MW1 and MW12 were taken away for repairs during April 2018 and returned in October 2018, hence the gap in reporting on the following graphs.

Due to rain gauge malfunctions, rainfall was not recorded in 2020 until a new weather station was installed onsite 29th May 2020. Where available, daily rainfall received in the interim was been sourced from the Bureau of Meteorology.

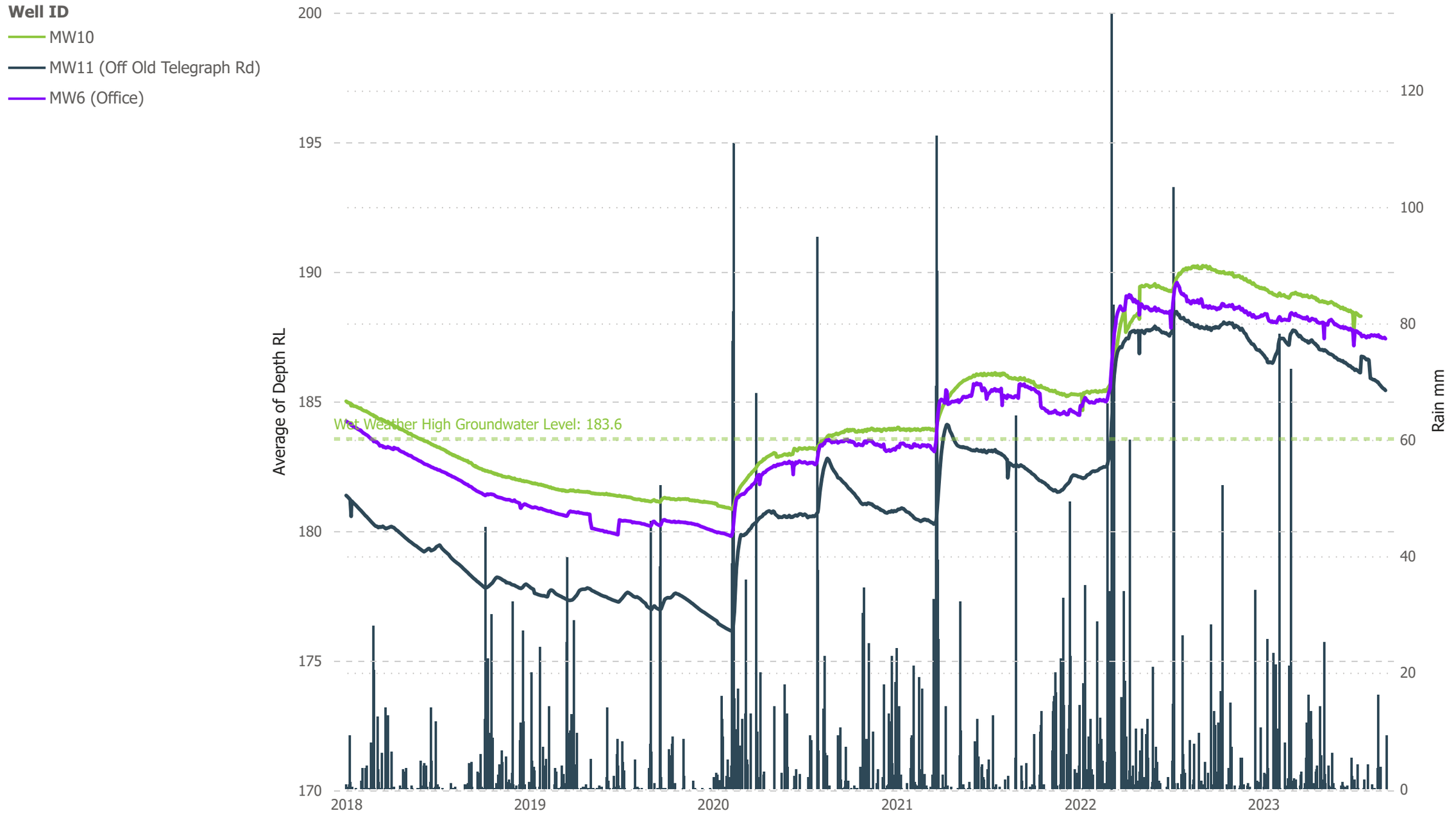
**Graph 1:** All Groundwater Depths with Rainfall from 1/1/2017



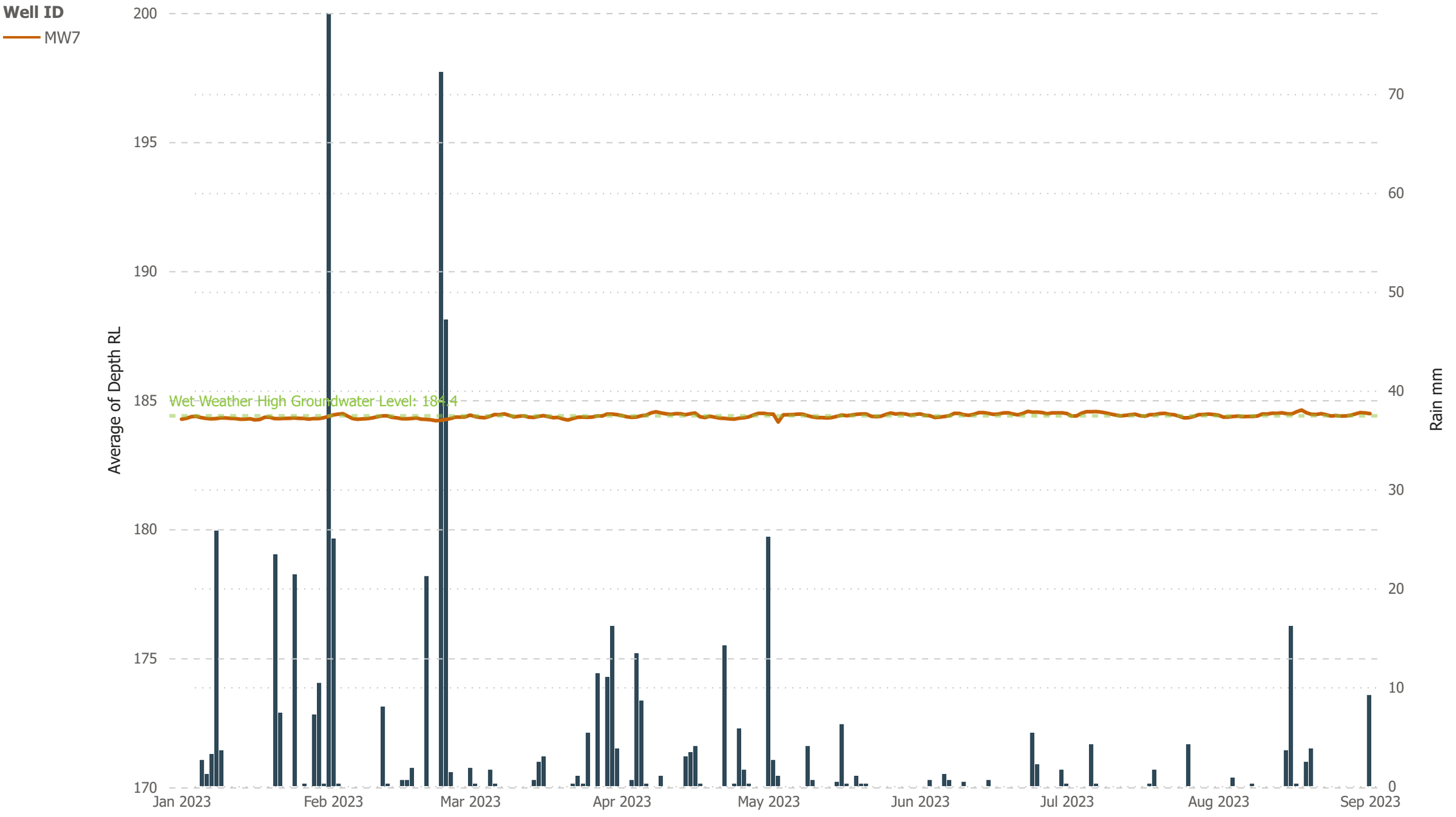
**Graph 2:** All Groundwater Depths with Rainfall this month



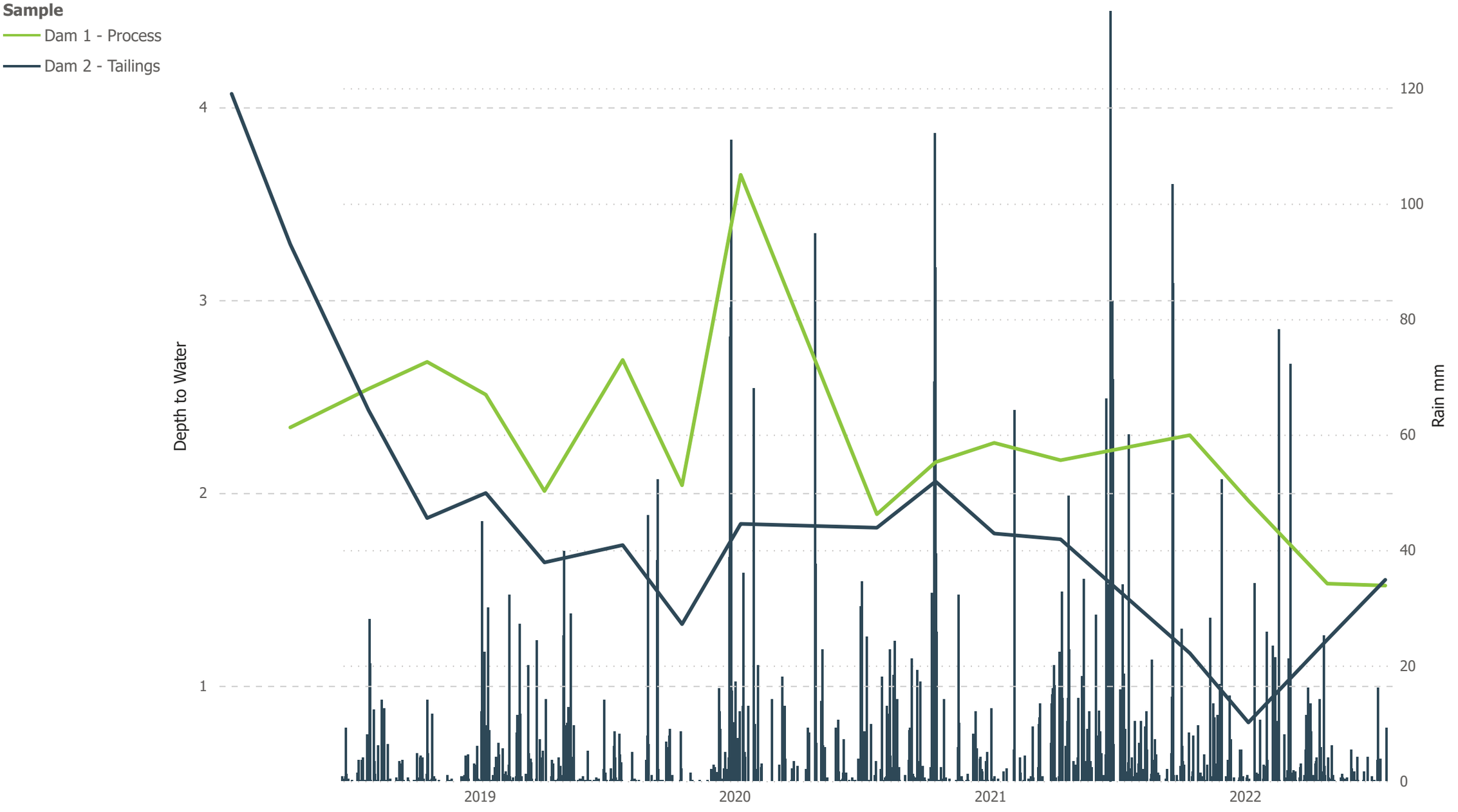
**Graph 3:** All Groundwater Depths with Rainfall in Maroota Sand



**Graph 4:** All Groundwater Depths with Rainfall in Hawkesbury Sandstone



**Graph 5:** Surface Water Depths with Rainfall

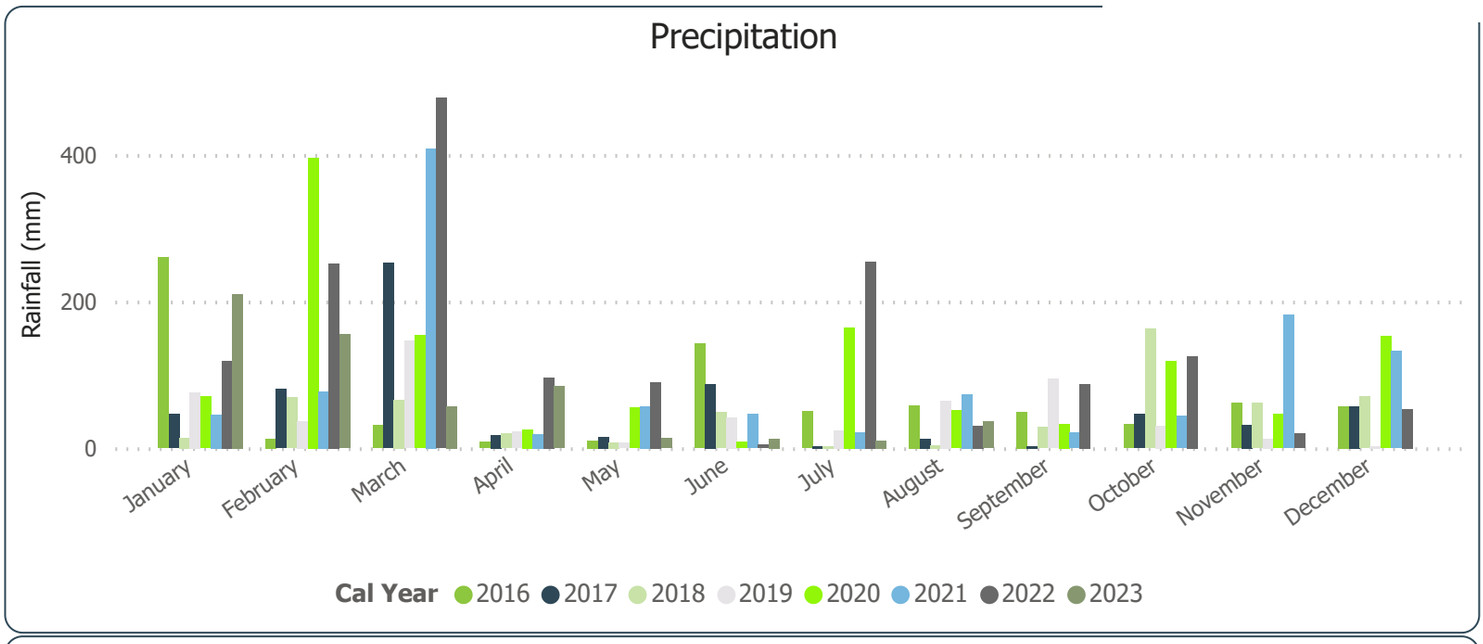


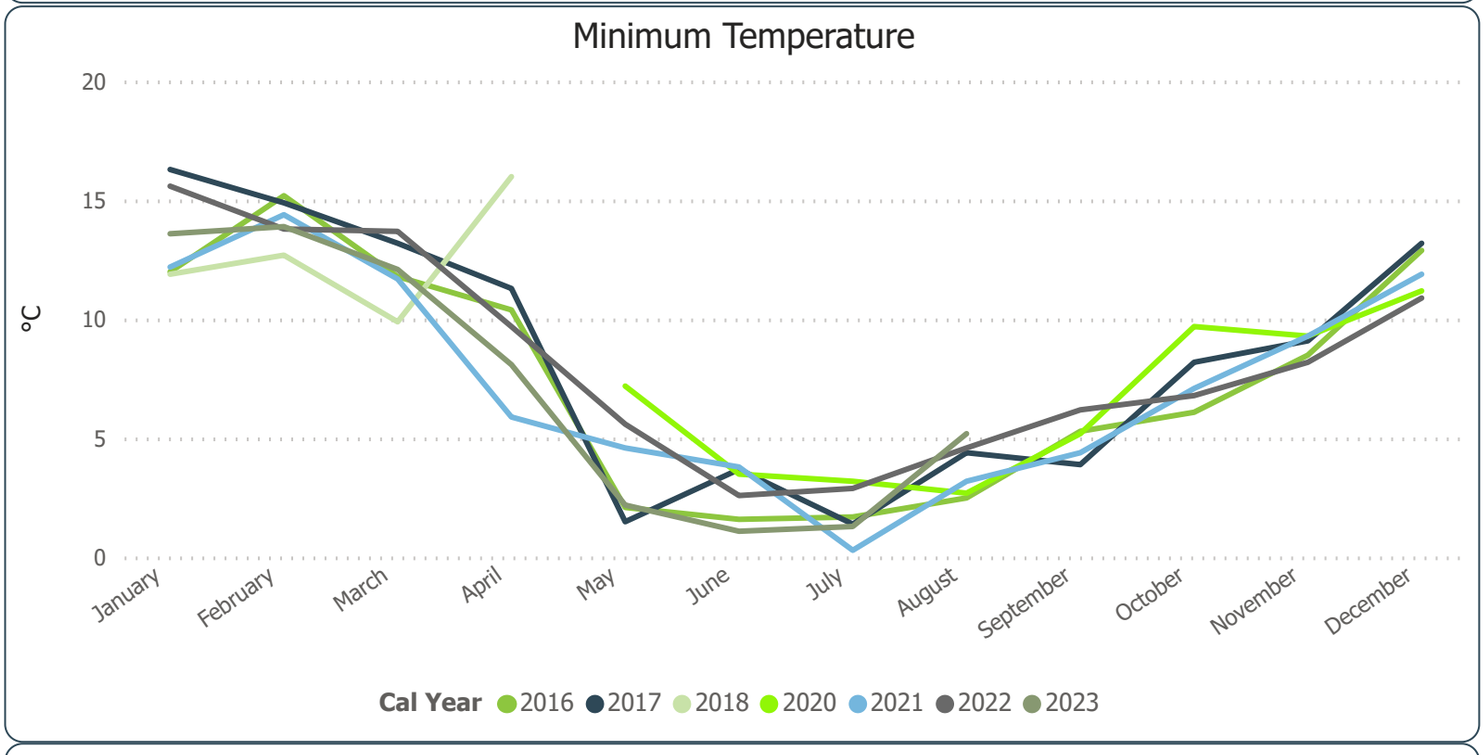
## Weather Station Monitoring

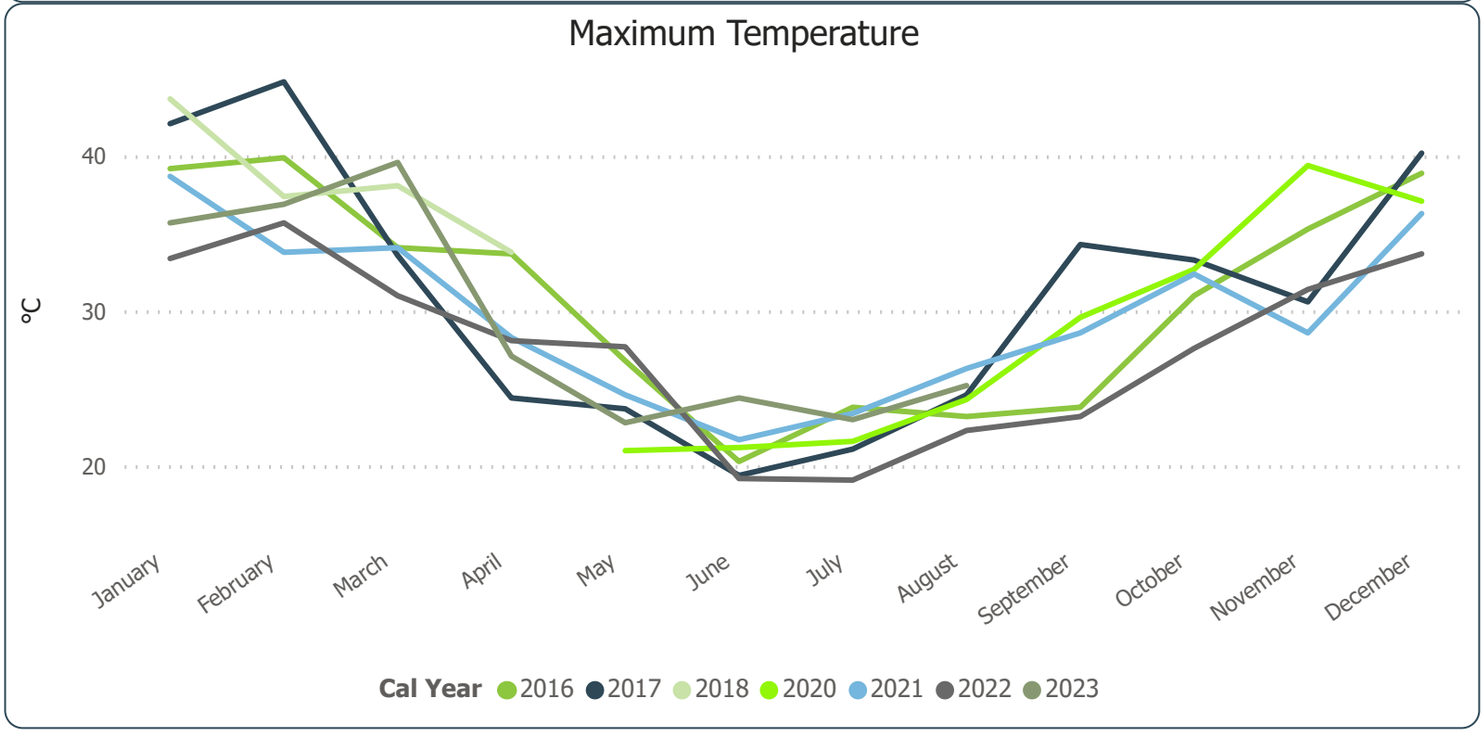
Due to gauge malfunctions, rainfall was not recorded in 2020 until a new weather station was installed onsite 29th May 2020. Where available, daily rainfall received in the interim was been sourced from the Bureau of Meteorology. Temperature monitoring during that period also shows gaps in the data. For modelling and reporting, Bureau of Meteorology averages were used

## Weather Trends

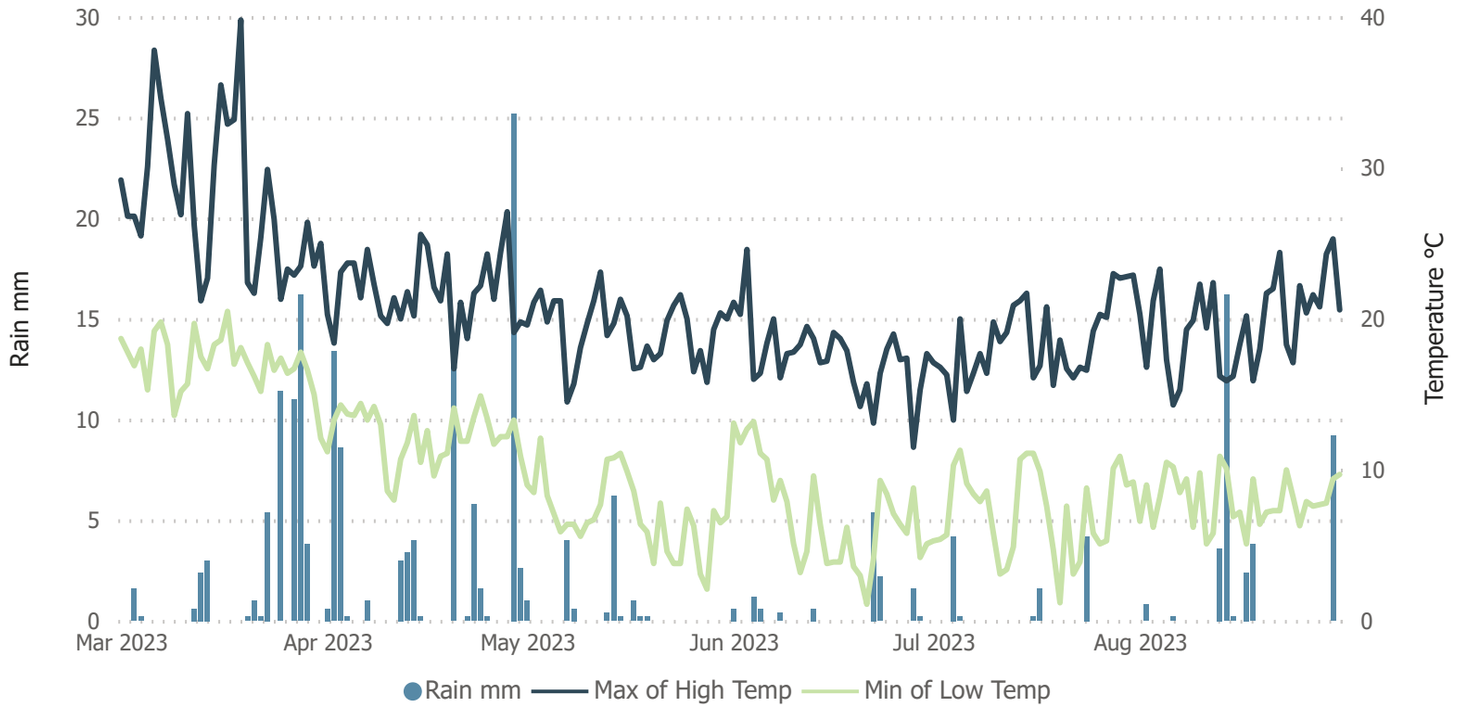
1/01/2016 30/09/2023



## Weather Detail for last 6




### Precipitation mm

| Cal Year | March | April | May | June | July | August | **Total** |
|---|---|---|---|---|---|---|---|
| 2023 | 57.0 | 84.2 | 13.8 | 12.8 | 10.4 | 36.4 | **214.6** |
| **Total** | **57.0** | **84.2** | **13.8** | **12.8** | **10.4** | **36.4** | 214.6 |

### Minimum Temperature °C

| Cal Year | March | April | May | June | July | August | **Total** |
|---|---|---|---|---|---|---|---|
| 2023 | 12.1 | 8.1 | 2.2 | 1.1 | 1.3 | 5.2 | **1.1** |
| **Total** | **12.1** | **8.1** | **2.2** | **1.1** | **1.3** | **5.2** | 1.1 |

### Average Temperature °C

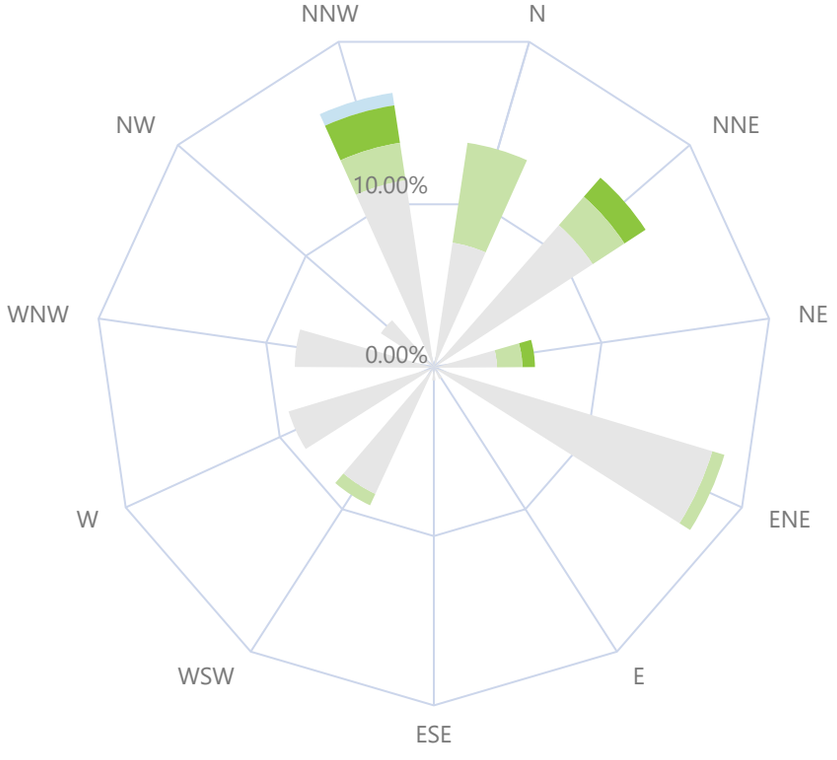
| Cal Year | March | April | May | June | July | August | **Total** |
|---|---|---|---|---|---|---|---|
| 2023 | 21.6 | 16.5 | 12.6 | 11.7 | 12.4 | 13.1 | **14.7** |
| **Total** | **21.6** | **16.5** | **12.6** | **11.7** | **12.4** | **13.1** | 14.7 |

### Maximum Temperature °C

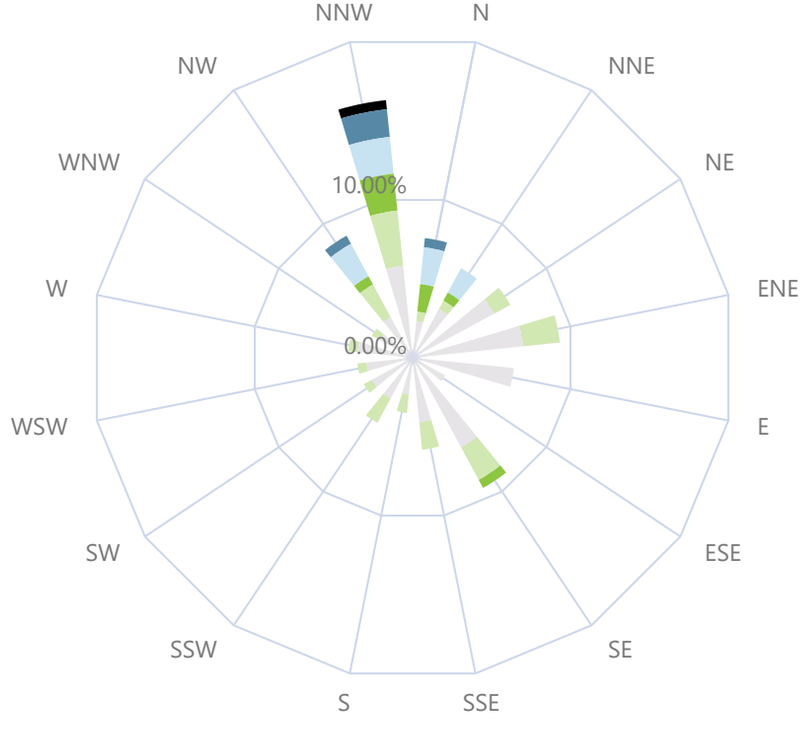
| Cal Year | March | April | May | June | July | August | **Total** |
|---|---|---|---|---|---|---|---|
| 2023 | 39.6 | 27.1 | 22.8 | 24.4 | 23.0 | 25.2 | **39.6** |
| **Total** | **39.6** | **27.1** | **22.8** | **24.4** | **23.0** | **25.2** | 39.6 |

# Wind Rose for Last 6 Months

## 9 am




## 3 pm




Wind Speed Groups

0-5 km/h | 5-10 km/h | 10-15 km/h | 15-20 km/h | 20-25 Km/h | 25-30 Km/h | 30+ Km/h

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Plan of:** | Annual Review & Compliance Report 2022 for Roberts Road Maroota Sand Quarry - Wet Weather High Groundwater Level Maroota Sands (2022) | **Location:** | Maroota Quarry, Roberts Road, Maroota, NSW | **Source:** | nearmap - Image Date 23/06/2022 Zone MGA 56 | **Plan By:** | SK/JD |
| **Figure:** | FIVE-A | **Council:** | Hills Shire Council | **Survey:** | Fyfe Quarry Contours 24/02/2022 NSW Spatial Services ELVISDEM Surrounding Contours Dated May 2017 | **Project Manager:** | LT |
| **Version/ Date:** | V1 30/03/2023 | **Tenure:** | Not Applicable | **Projection:** | GDA2020/MGA Zone 56 EPSG:7856 | | |
| **Our Ref:** | 12498_HMA_AR2022_Q007_V1_F5A | **Client:** | Hodgson Quarries & Plant Pty Ltd | **Contour Interval:** | 0.5m | | |

0 50 100 m

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This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.


**Legend**

- Property Boundary
- Contours of Wet Weather High GW Level (mRL)
- Edge of Saturated Maroota Sands
- Groundwater Monitoring Well Location
- Spot Heights 2023

VGT Environmental Compliance Solutions Pty Ltd 4/30 Glenwood Drive, Thornton NSW 2322 PO Box 2335, Greenhills NSW 2323 ph: (02) 4028 6412 email: mail@vgt.com.au www.vgt.com.au ABN: 26 621 943 888

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ***Plan of:*** | Annual Review & Compliance Report 2022 for Roberts Road Maroota Sand Quarry - Wet Weather High Groundwater Level Hawkesbury Sandstone (Feb 2018) | ***Location:*** | Maroota Quarry, Roberts Road, Maroota, NSW | ***Source:*** | Dundon Consulting Pty Ltd Figure 16 Dwg No. 06-0318-021d 08/03/2018 | ***Our Ref:*** | 12498_HMA_AR2022_C001_V0_F5B.cdr |
| ***Figure:*** | FIVE-B | ***Council:*** | Hills Shire Council | ***Survey:*** | Dundon Consulting Pty Ltd 08/03/2018 | ***Plan By:*** | LT/JD/SK |
| ***Sheet:*** | 1 of 1 | ***Tenures:*** | N/A | ***Projection:*** | MGA | ***Project Manager:*** | LT |
| ***Version/Date:*** | V0 15/03/2023 | ***Client:*** | Hodgson Quarries & Plant Pty Ltd | ***Contour Interval:*** | 1m | ***Office:*** | Thornton |

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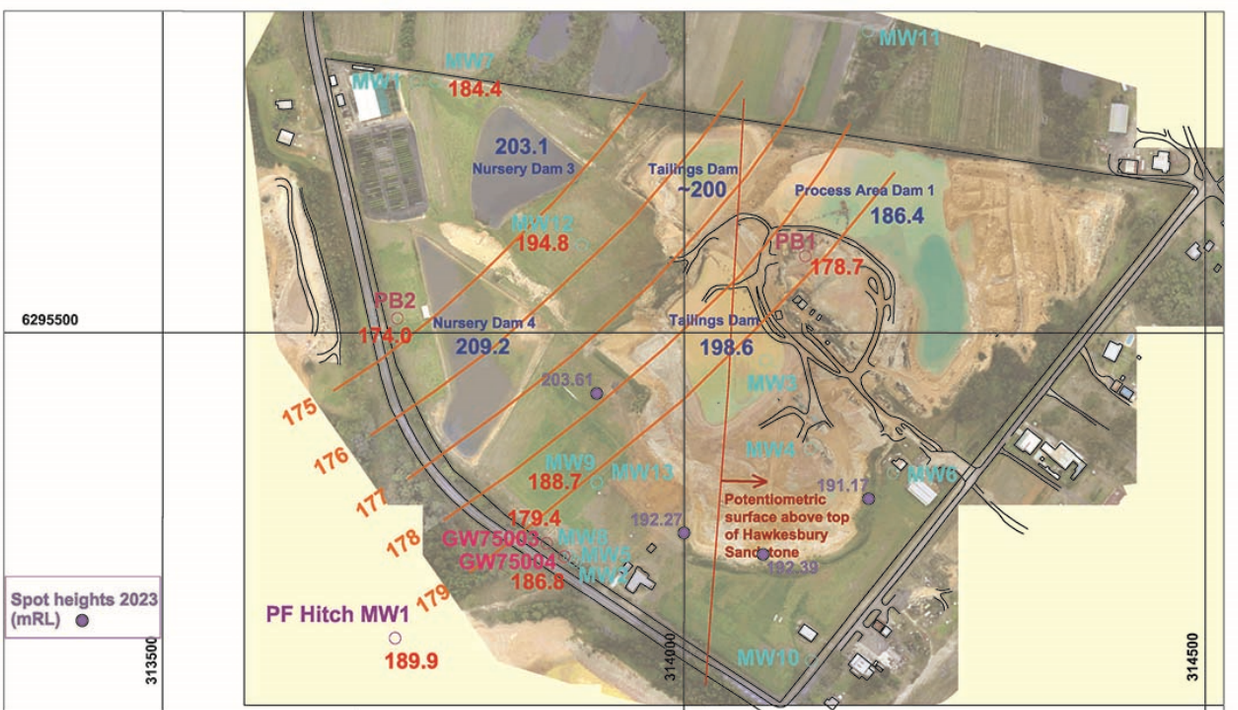
This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.

N

0 20 40 60 80 100m




**LEGEND:**

- Hodgson monitoring bore
- Hodgson production bore
- 174.0 Hawkesbury Sandstone water level
- Contours of wet weather high GW level
- Potentiometric surface above top of HS

| | | | |
|---|---|---|---|
| DATE: 8 March 2018 | SCALE: | **Hodgson Quarry and Plant Pty Ltd** | |
| PROJECT NO: 06-0318 | AUTHOR: PD | **ROBERTS ROAD MAROOTA SAND QUARRY** | |
| DRAWING NO: 06-0318-021d | REVISION: D | **Wet Weather High Groundwater Level** | |
| **Dundon Consulting Pty Ltd** | | **Hawkesbury Sandstone (February 2018)** | **Figure 16** |

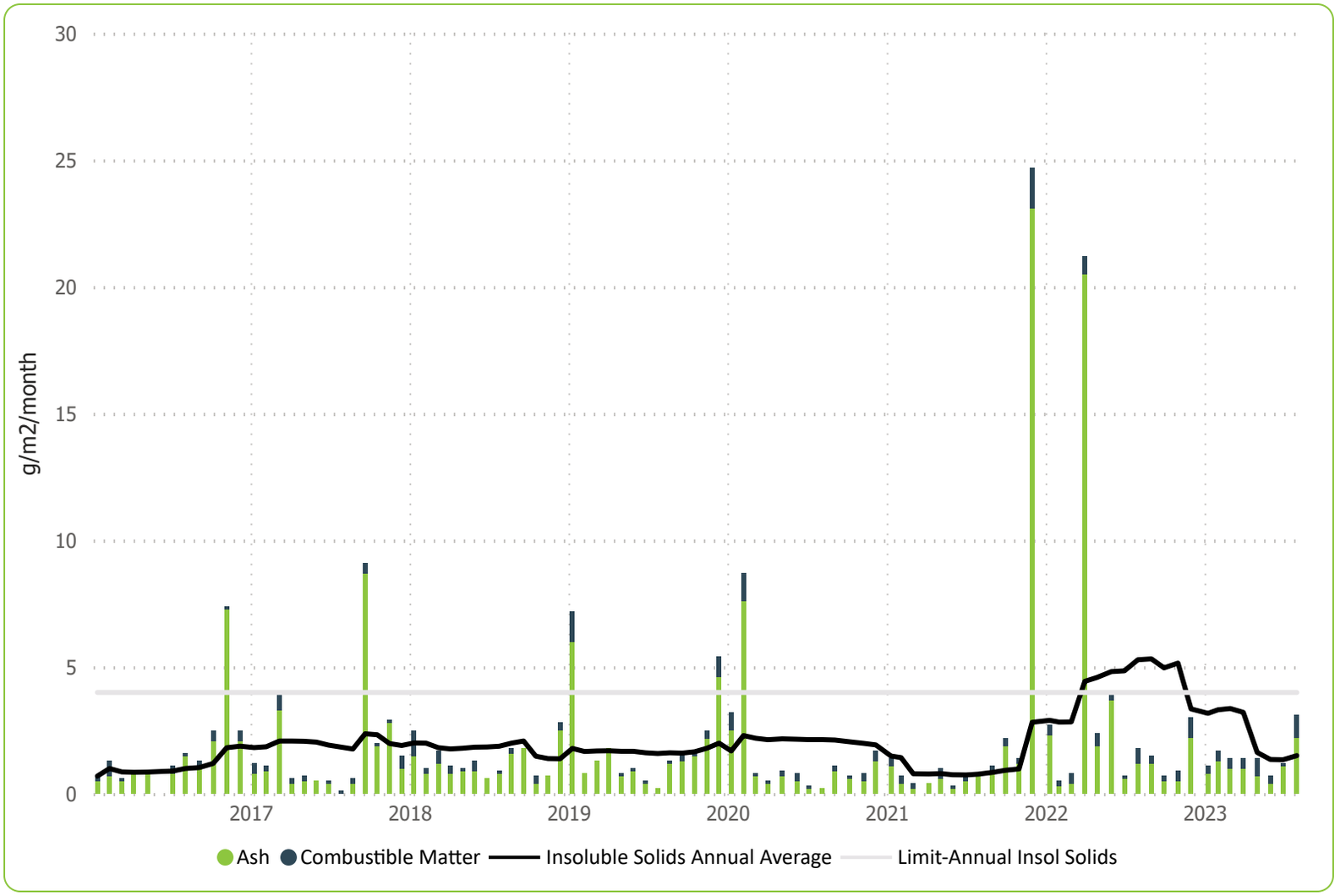
VGT Environmental Compliance Solutions Pty Ltd 4/30 Glenwood Drive, Thornton NSW 2322 PO Box 2335, Greenhills NSW 2323 ph: (02) 4028 6412 email: mail@vgt.com.au www.vgt.com.au ABN: 26 621 943 888

# Depositional Dust and Particulate Matter Monitoring

## Depositional Dusts last 12 months

D1 Gate

### Insoluble Solids Annual Average g/m2/month

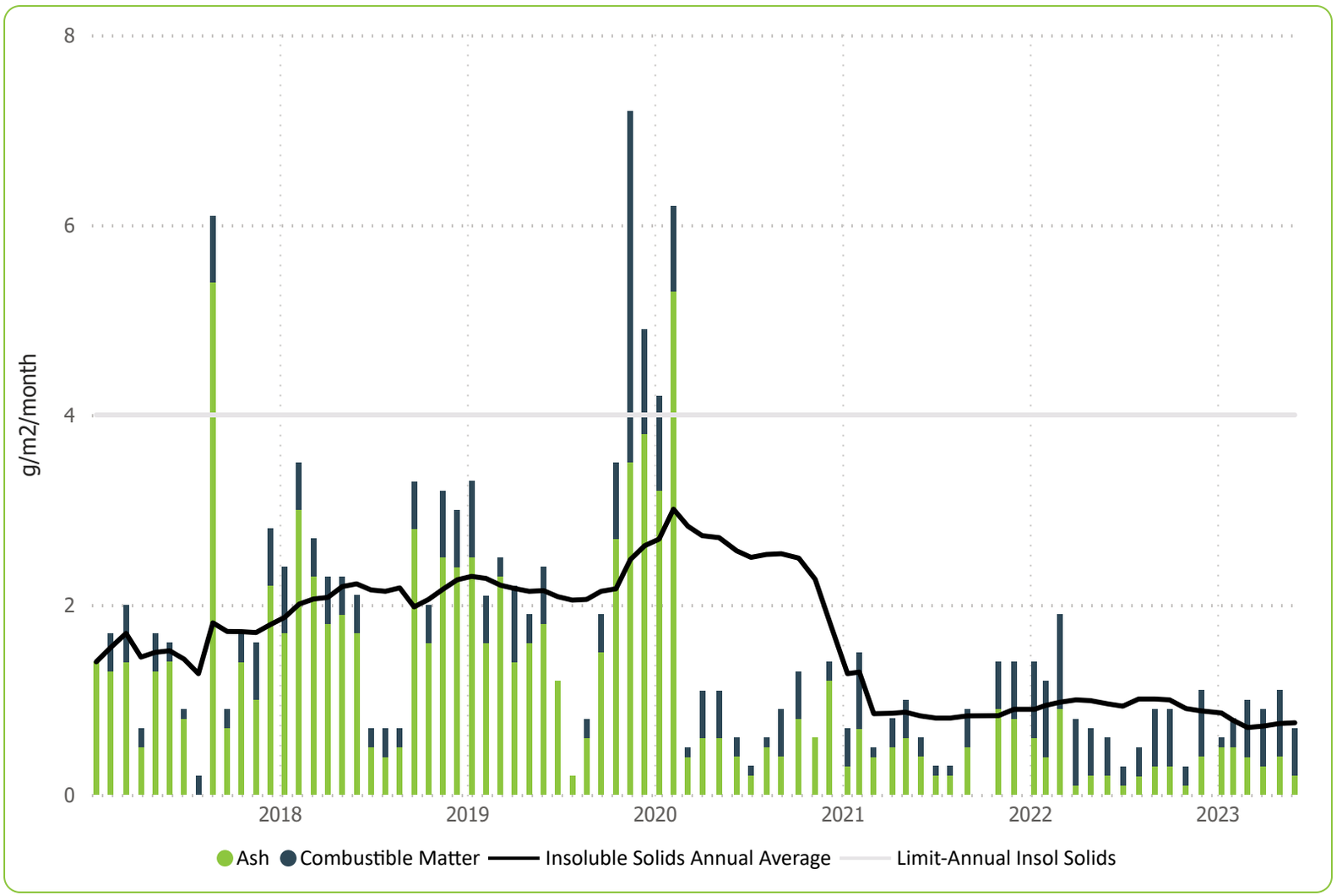

| Date On | Comments |
|---|---|
| 1/08/22 | Sampled by Melissa Mass. |
| 1/09/22 | Sampled by Melissa Mass. |
| 30/09/22 | Sampled by Melissa Mass. |
| 1/11/22 | Sampled by Melissa Mass. |
| 1/12/22 | Sampled by Melissa Mass. |
| 9/01/23 | |
| 1/02/23 | Sampled by M.Mass |
| 1/03/23 | Sampled by M.Mass |
| 31/03/23 | Sampled by M.Mass |
| 2/05/23 | Sampled by M.Mass. |
| 1/06/23 | Sampled by M.Mass. |
| 30/06/23 | |

| Date Sampled | Days On | Insoluble Solids | Ash | Combustible Matter | Calculated Rain |
|---|---|---|---|---|---|
| 1/9/22 | 31 | 1.5 | 1.2 | 0.3 | 32 |
| 30/9/22 | 29 | 0.7 | 0.5 | 0.2 | 64 |
| 1/11/22 | 32 | 0.9 | 0.5 | 0.4 | 114 |
| 1/12/22 | 30 | 3.0 | 2.2 | 0.8 | 27 |
| 9/1/23 | 39 | 1.1 | 0.8 | 0.3 | 91 |
| 1/2/23 | 23 | 1.7 | 1.3 | 0.4 | 114 |
| 1/3/23 | 28 | 1.4 | 1.0 | 0.4 | 115 |
| 31/3/23 | 30 | 1.4 | 1.0 | 0.4 | 59 |
| 2/5/23 | 32 | 1.4 | 0.7 | 0.7 | 86 |
| 1/6/23 | 30 | 0.7 | 0.4 | 0.3 | 18 |
| 30/6/23 | 29 | 1.2 | 1.1 | 0.1 | 16 |
| 1/8/23 | 32 | 3.1 | 2.2 | 0.9 | 14 |

## Depositional Dusts last 12 months

D2 North East Corner

### Insoluble Solids Annual Average g/m2/month

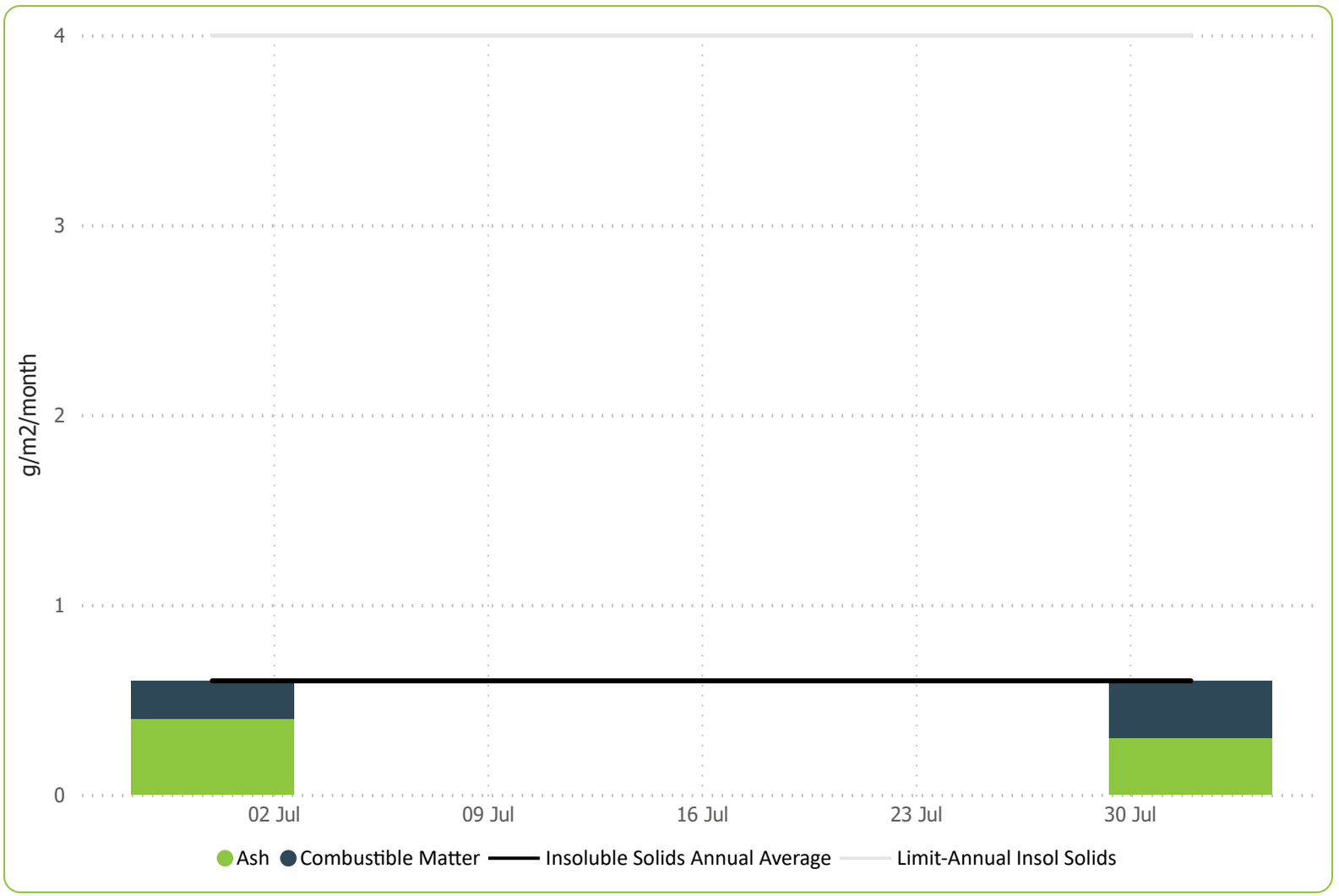

| Date On | Comments |
|---|---|
| 1/06/22 | Sampled by Melissa Mass |
| 1/07/22 | Sampled by Melissa Mass. Flooding rainfall event during July. |
| 1/08/22 | Sampled by Melissa Mass. |
| 1/09/22 | Sampled by Melissa Mass. |
| 30/09/22 | Sampled by Melissa Mass. |
| 1/11/22 | Sampled by Melissa Mass. |
| 1/12/22 | Sampled by Melissa Mass. |
| 9/01/23 | |
| 1/02/23 | Sampled by M.Mass |
| 1/03/23 | Sampled by M.Mass. Not compliant - Clear sky/ 10m from obstacle |
| 31/03/23 | Sampled by M.Mass. |

| Date Sampled | Days On | Insoluble Solids | Ash | Combustible Matter | Calculated Rain |
|---|---|---|---|---|---|
| 1/7/22 | 30 | 0.3 | 0.1 | 0.2 | 4 |
| 1/8/22 | 31 | 0.5 | 0.2 | 0.3 | 115 |
| 1/9/22 | 31 | 0.9 | 0.3 | 0.6 | 26 |
| 30/9/22 | 29 | 0.9 | 0.3 | 0.6 | 72 |
| 1/11/22 | 32 | 0.3 | 0.1 | 0.2 | 114 |
| 1/12/22 | 30 | 1.1 | 0.4 | 0.7 | 20 |
| 9/1/23 | 39 | 0.6 | 0.5 | 0.1 | 68 |
| 1/2/23 | 23 | 0.8 | 0.5 | 0.3 | 114 |
| 1/3/23 | 28 | 1.0 | 0.4 | 0.6 | 114 |
| 31/3/23 | 30 | 0.9 | 0.3 | 0.6 | 47 |
| 2/5/23 | 32 | 1.1 | 0.4 | 0.7 | 67 |
| 1/6/23 | 30 | 0.7 | 0.2 | 0.5 | 12 |

## Depositional Dusts last 12 months

D2a North East Corner

### Insoluble Solids Annual Average g/m2/month

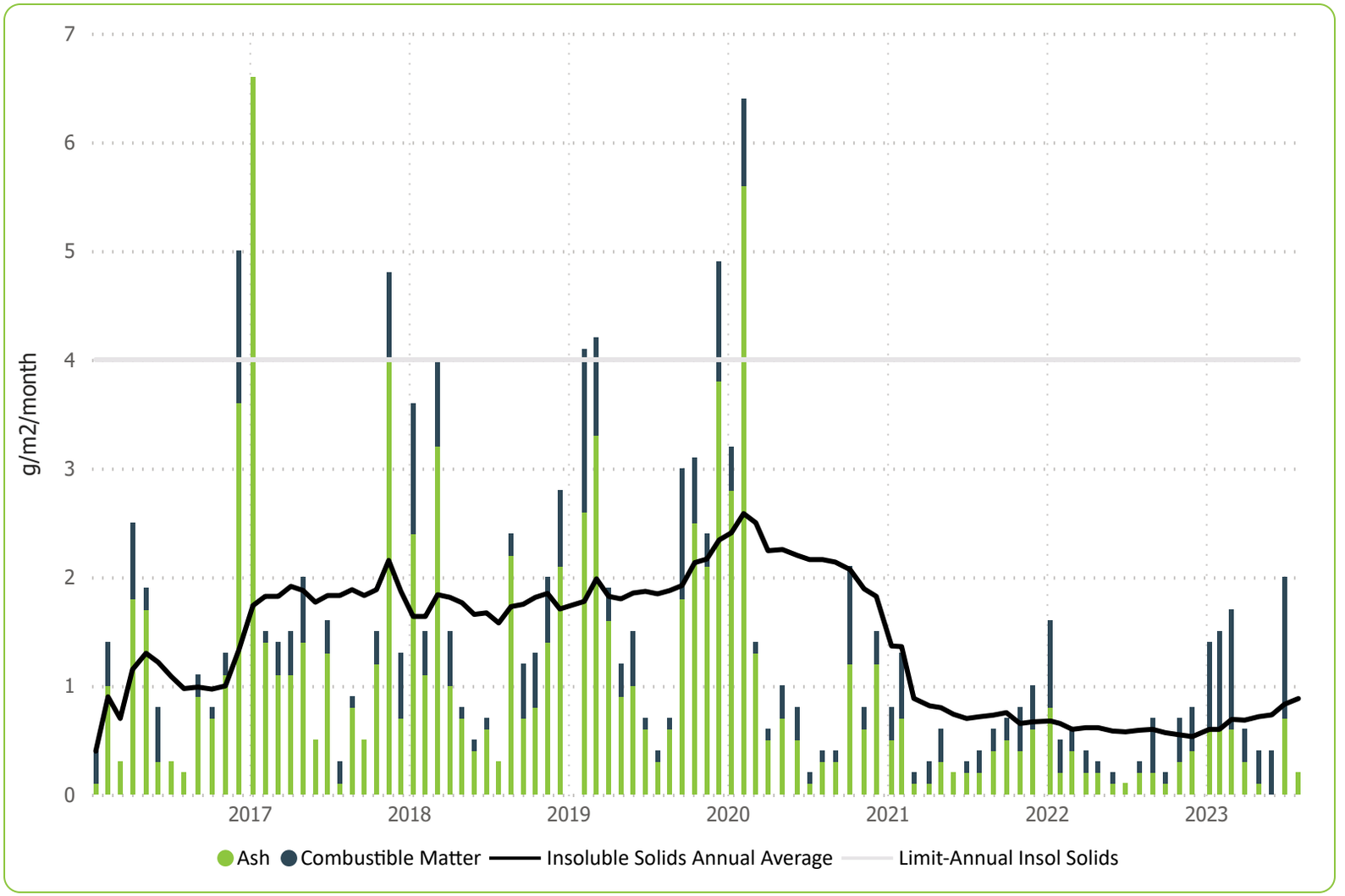

| Date On | Comments |
|---|---|
| 1/06/23 | Sampled by M.Mass. |
| 30/06/23 | |

| Date Sampled | Days On | Insoluble Solids | Ash | Combustible Matter | Calculated Rain |
|---|---|---|---|---|---|
| 30/6/23 | 29 | 0.6 | 0.4 | 0.2 | 9 |
| 1/8/23 | 32 | 0.6 | 0.3 | 0.3 | 3 |

## Depositional Dusts last 12 months

D3A Bundwall

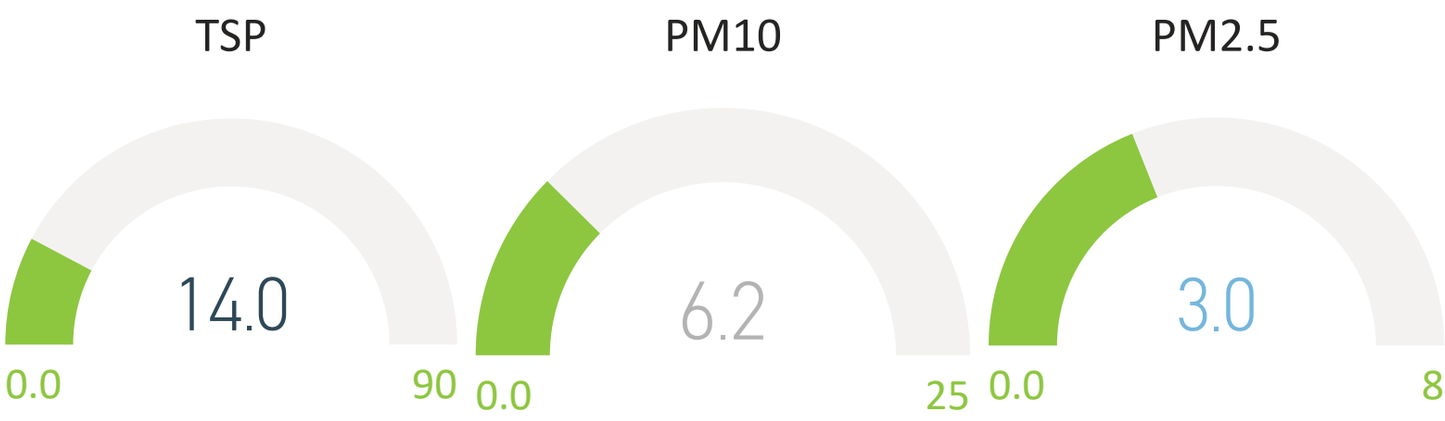
### Insoluble Solids Annual Average g/m2/month

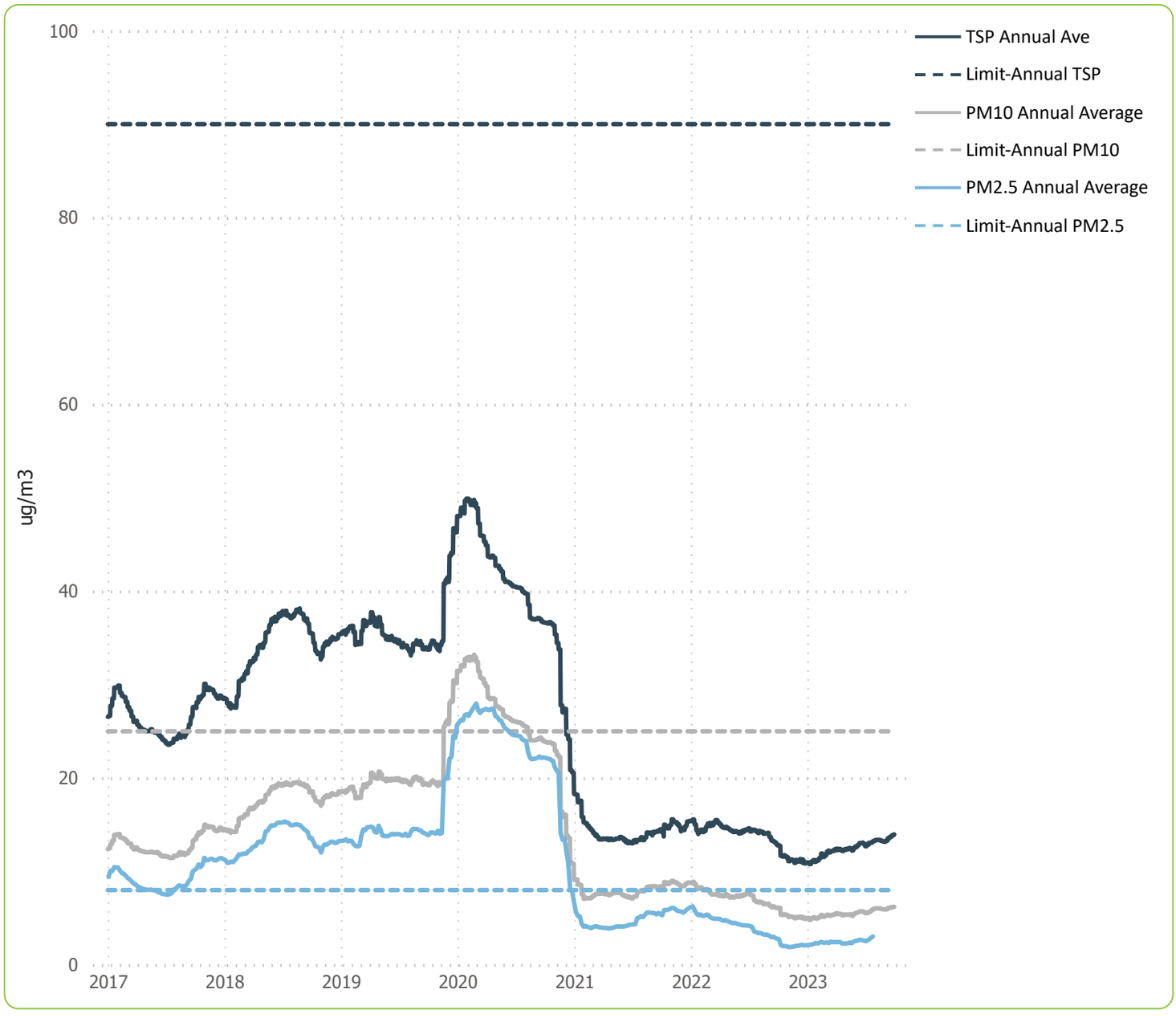




| Date On | Comments |
|---|---|
| 1/08/22 | Sampled by Melissa Mass. |
| 1/09/22 | Sampled by Melissa Mass. |
| 30/09/22 | Sampled by Melissa Mass. |
| 1/11/22 | Sampled by Melissa Mass. |
| 1/12/22 | Sampled by Melissa Mass. |
| 9/01/23 | |
| 1/02/23 | Sampled by M.Mass |
| 1/03/23 | Sampled by M.Mass |
| 31/03/23 | Sampled by M.Mass |
| 2/05/23 | Sampled by M.Mass. |
| 1/06/23 | Sampled by M.Mass. |
| 30/06/23 | |

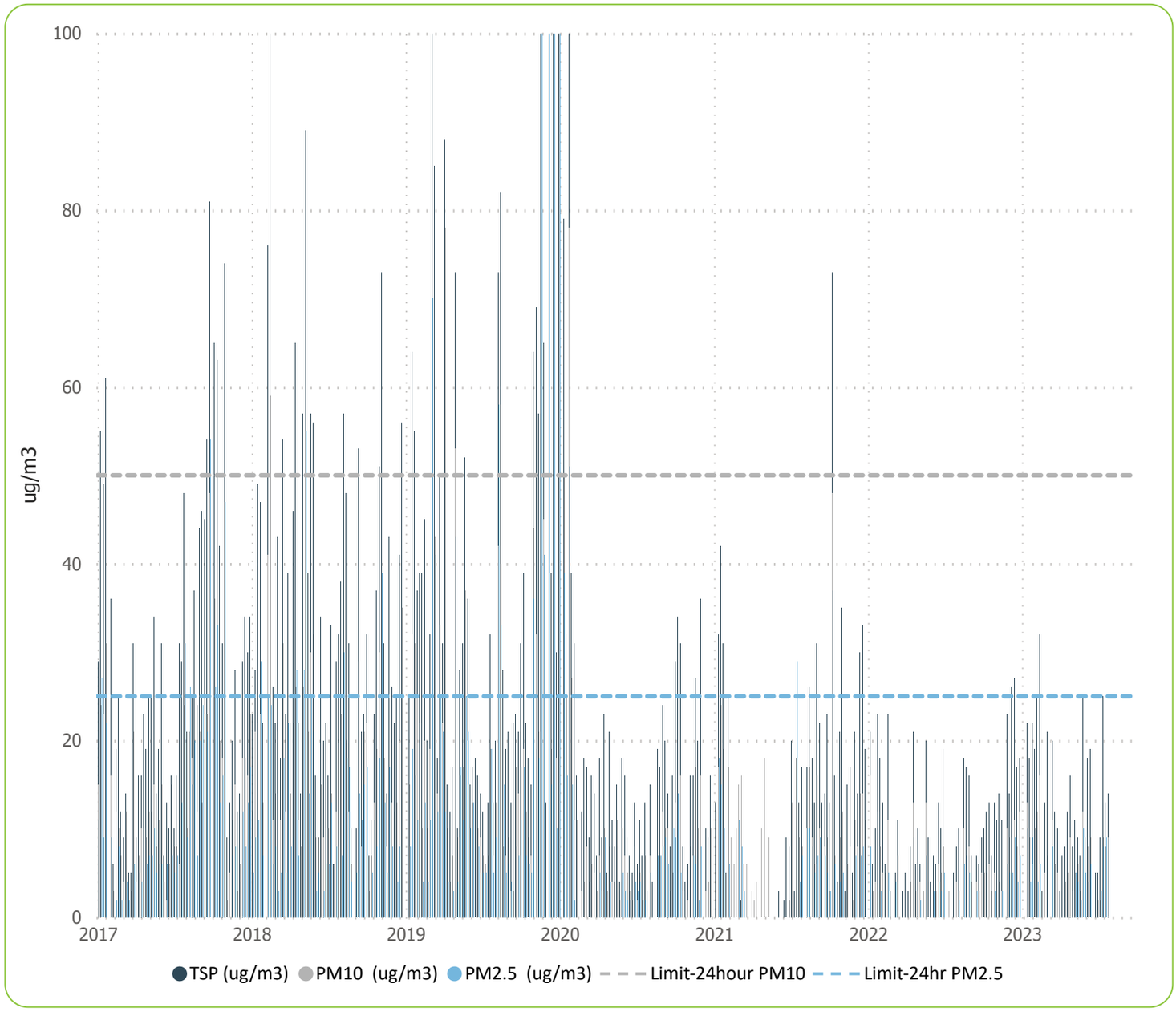
| Date Sampled | Days On | Insoluble Solids | Ash | Combustible Matter | Calculated Rain |
|---|---|---|---|---|---|
| 1/9/22 | 31 | 0.7 | 0.2 | 0.5 | 31 |
| 30/9/22 | 29 | 0.2 | 0.1 | 0.1 | 82 |
| 1/11/22 | 32 | 0.7 | 0.3 | 0.4 | 109 |
| 1/12/22 | 30 | 0.8 | 0.4 | 0.4 | 28 |
| 9/1/23 | 39 | 1.4 | 0.6 | 0.8 | 83 |
| 1/2/23 | 23 | 1.5 | 0.6 | 0.9 | 115 |
| 1/3/23 | 28 | 1.7 | 0.6 | 1.1 | 115 |
| 31/3/23 | 30 | 0.6 | 0.3 | 0.3 | 55 |
| 2/5/23 | 32 | 0.4 | 0.1 | 0.3 | 82 |
| 1/6/23 | 30 | 0.4 | 0.0 | 0.4 | 19 |
| 30/6/23 | 29 | 2.0 | 0.7 | 1.3 | 16 |
| 1/8/23 | 32 | 0.2 | 0.2 | 0.0 | 13 |

## Particulate Matter Annual Averages (µg/m3)



## Particulate Matter 24 Hour Averages (µg/m3)




PM10 24 hour exceedances (>50 µg/m3)

| Date | PM10 (ug/m3) | Sampling Comments |
|---|---|---|

PM2.5 24 hour exceedances (>25 µg/m3)

| Date | PM2.5 (ug/m3) | Sampling Comments |
|---|---|---|