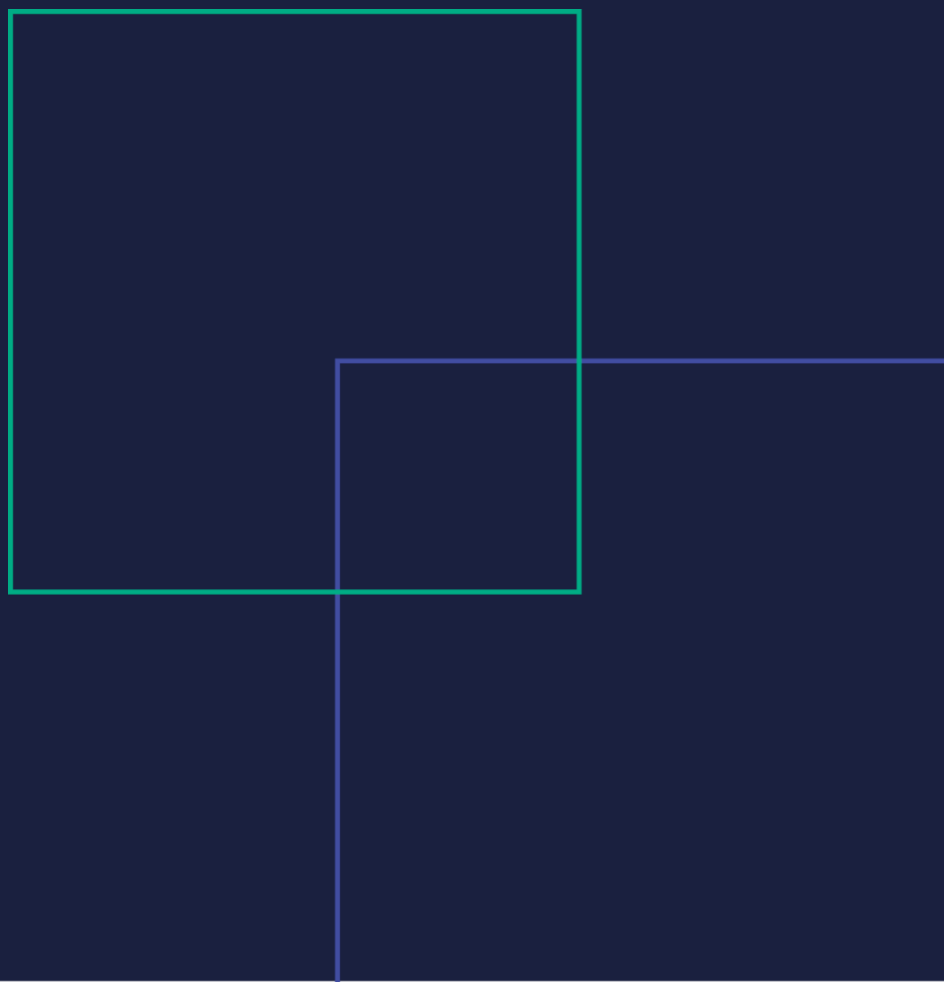
SCIDEV

WQMS Data Review

Huntly Bauxite Mine

MARCH 2026



Document Control

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Rev.	**Data Analysis**	**Approved By**	**Date**
00	Chris Blockley	Todd Placek	30/04/26
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02	Wendy Spunner	Todd Placek	27/05/26
03	Wendy Spunner	Todd Placek	3/06/26

Contents

List of Figures

1. Executive Summary

This report, prepared by SciDev for Alcoa, provides an analysis of turbidity data collected from Water Quality Monitoring Systems (WQMS) deployed at the Huntly bauxite mining operations during March 2026. The primary objective of this analysis was to evaluate the quality of the data, identify potential "true" turbidity exceedance events, and support Alcoa's compliance reporting obligations under Schedule 1, Division 2, Clause 6 of the **Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023**.

The analysis focused on identifying and classifying turbidity events where levels exceeded 25 nephelometric turbidity units (NTU) for at least one hour. Events were categorized as "true" or "false" based on Alcoa's **Turbidity Event Classification Guidelines**, which distinguish actual turbidity increases (true events) from false readings caused by environmental factors such as debris, air bubbles, or fluctuating water levels.

Key findings include:

- **Excluded Units**: Twenty-four (24) WQMS units were excluded from the analysis due to invalid data caused by equipment faults or environmental interference.
- **False Events**: Fifty-four (54) 'False' events were identified, primarily attributed to factors such as debris accumulation, sensor obstructions, and water turbulence.
- **Further Investigation**: Twelve (12) events were flagged for further investigation.
- **True Events**: Twelve (12) "True" turbidity exceedance events were identified, however none related to mining activities.

The report also highlights periods of missing data, which occurred due to system logoffs, equipment faults, or unplanned shutdowns. These gaps are detailed in the report to ensure transparency in data handling.

2. Scope

SciDev were engaged by Alcoa to analyse turbidity data collected from the Huntly Water Quality Monitoring Systems (WQMS). The primary objective of this engagement is to assess the quality of the collected data and identify potential "true" turbidity events. This analysis supports Alcoa's reporting obligations under *Schedule 1, Division 2, Clause 6 of the Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023*.

3. Introduction

3.1 Background

Alcoa of Australia Ltd (Alcoa) operates two bauxite mines, Huntly and Willowdale, approximately 100 km southeast of Perth, Western Australia. These mining operations are subject to environmental controls mandated by the *Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023*.

Under this Exemption Order, Alcoa is required to implement drainage control measures and monitor effectiveness in water bodies within and downstream of mining operations. Turbidity, a critical water quality parameter, is monitored using Water Quality Monitoring Systems (WQMS), to detect deviations and identify high-turbidity events.

Alcoa is obligated to report monthly on-stream turbidity, including the identification and classification of any “true” high-turbidity exceedance events. (Refer to Appendix B for the site map showing WQMS locations.)

3.2 Monitoring Requirements

Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023

specifies that a drainage incident occurs when:

a. Runoff from a disturbance area enters the surrounding environment, resulting in surface water turbidity of at least 25 NTU for a duration of at least one hour; or
b. a discharge from containment infrastructure includes, or may include, environmentally hazardous material.

Trigger levels for drainage incidents are outlined in Schedule 1 of the Exemption Order. To meet these requirements, Alcoa has developed "Turbidity Event Classification Guidelines" which define a true turbidity exceedance event as a WQMS recording turbidity levels of at least 25 NTU for a period exceeding one hour.

3.3 Water Quality Management System (WQMS)

During the March 2026 monitoring period, forty-three (43) WQMS units were deployed to monitor turbidity levels in streams subject to surface water runoff within and downstream of Huntly mining operations.

Each WQMS unit consists of the following components:

Aquas SMR10 Turbidity Probe

Positioned at a 90-degree angle to water flow, each probe is equipped with an automatic lens wiper and a guard to protect against larger debris.

Data Taker DT82 Logger

Records data locally every six seconds, with six-minute averages transmitted via IoT-enabled modems to a cloud-based platform.

Float Switch

Detects whether the sensor is submerged, or the stream is dry.

3.4 Purpose

This report aims to analyse turbidity data collected during March 2026, focusing on the identification and classification of "true" turbidity exceedance events based on Alcoa's Turbidity Event Classification Guidelines.

3.5 Exclusions

This report is not intended as:

- An assessment of the WQMS network or Alcoa's compliance with relevant legislation and requirements.
- An evaluation of the suitability of the trigger levels or event classification procedures adopted by Alcoa.

3.6 Abbreviations

	Term
IoT	Internet of Things
NTU	Nephelometric Turbidity Units
WQMS	Water Quality Management System

4. Methodology

4.1 WQMS Locations

A site map showing the WQMS locations is provided in Appendix B.

4.2 Data Review

Data recorded by the WQMS Units was reviewed and potential events where turbidity levels exceeded 25 NTU for at least one hour. Each potential event was categorised as either 'true' or 'false'.

4.2.1 True Turbidity Exceedance Events

These events are caused by an actual increase in stream turbidity. Per Alcoa's "Turbidity Event Classification Guidelines" true exceedance events typically exhibit:

- A sharp, sudden incline in turbidity levels.
- A return to baseline turbidity levels in a pattern resembling a normal (Gaussian) distribution.

Figure 1 Typical 'true' exceedance event showing the sharp incline and gradual return to background levels.

4.2.2 False Turbidity Exceedance Events

These events are caused by factors unrelated to actual turbidity increase, such as:

- Organic debris (e.g., leaves, sticks, algae) obstructing the sensor
- Air bubbles or water turbulence near the sensor
- Fluctuating water levels intermittently covering and uncover the sensor lens.

False events typically exhibit sharp inclines and declines without the characteristic bell curve shape of true events

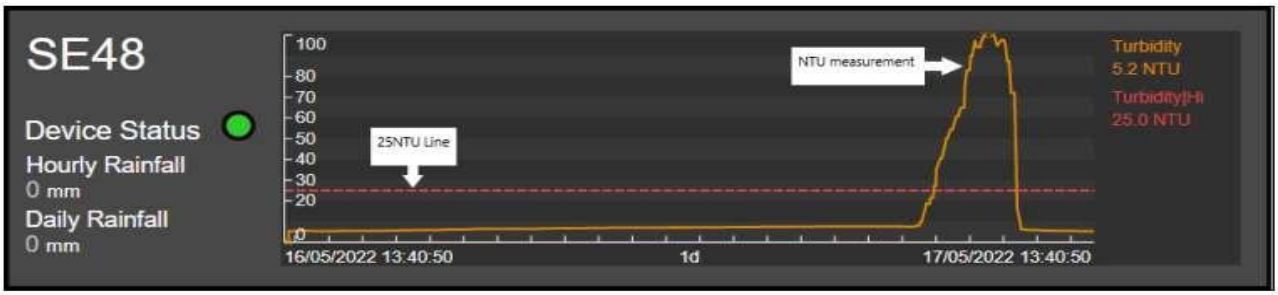

Figure 2 Typical 'false' exceedance event showing both a sharp incline and decline

4.2.3 Missing Data

Missing data occurs when a WQMS unit fails to record information, this can occur from unexpected system logoffs, equipment faults, or unplanned shutdowns.

5. Results and Discussion

5.1 Events

Table 1 provides a summary of identified events. Table 2 offers detailed information about each event.

Table 1: Events Summary

Category	# of events
Total events	66
Flagged for further investigation	12
False events	54
Caused by mining related activity	0

It was found that:

a) There were sixty-six (66) total events recorded.
b) There were twelve (12) events flagged for further investigation. Of these twelve events, all twelve were true events. Zero (0) of these were directly caused by mining related activity.
c) Five (5) units that were previously dry, now had water present.
d) Twenty-four (24) units remained dry with no presence of water.
e) Fourteen (14) units remained flowing throughout the month.

Note:

A True event is recorded when there is water present within the water way, and, that the probe has not been affected by any external sources.

Table 2: Events Details

Event ID	Monitor	Event Assessment (Additional Investigation Required / False)	Event Start Date	Event Start Time	Event End Date	Event End Time	Event Duration Minutes	Event Duration Hrs/Mins	Ave. Turbidity (NTU)	Peak Turbidity (NTU)
HUN-2604-001	SE02T	FALSE	27/02/2026	5:36 PM	1/03/2026	9:30 AM	2388	39:48	158.54	887.24
HUN-2604-002	SE03INV1	FALSE	28/02/2026	8:42 PM	1/03/2026	5:18 AM	516	8:36	54.98	60.14
HUN-2604-003	SE03INV1	FALSE	1/03/2026	5:54 AM	1/03/2026	10:00 AM	258	4:18	25.51	25.94
HUN-2604-004	SE52T	FALSE	2/03/2026	11:36 PM	3/03/2026	2:30 AM	174	2:54	45.79	59.43
HUN-2604-005	SE02T	FALSE	3/03/2026	7:05 AM	8/03/2026	3:57 PM	1431.68	23:51	650.66	1431.68
HUN-2604-006	SE53T	FALSE	6/03/2026	12:58 AM	7/03/2026	7:15 AM	1097	18:17	120.17	357.96
HUN-2604-007	SE03INV1	FALSE	7/03/2026	2:27 AM	7/03/2026	9:21 PM	1134	18:54	402.65	455.54
HUN-2604-008	SE53T	FALSE	7/03/2026	9:41 AM	11/03/2026	11:22 AM	5861	97:41	74.56	98.98
HUN-2604-009	SE06T	FALSE	7/03/2026	6:12 AM	8/03/2026	2:54 PM	1962	32:42	68.34	119.05
HUN-2604-010	SE03INV1	FALSE	8/03/2026	5:32 AM	8/03/2026	11:24 AM	352	5:52	148.71	164.03
HUN-2604-011	SE03INV1	FALSE	8/03/2026	9:54 PM	8/03/2026	11:07 PM	73	1:13	174.56	191.57

HUN-2604-012	ND14T	FALSE	9/03/2026	1:41 PM	9/03/2026	4:00 PM	101	1:41	169.57	457.74
HUN-2604-013	SE03INV1	FALSE	9/03/2026	8:49 AM	9/03/2026	7:19 PM	630	10:30	26.95	27.79
HUN-2604-014	SE02T	FALSE	10/03/2026	3:48 AM	12/03/2026	12:00 PM	3372	56:12	187.66	349.94
HUN-2604-015	ND06T	FALSE	10/03/2026	8:18 PM	10/03/2026	11:06 PM	168	2:48	55.81	86.18
HUN-2604-016	ND06T	FALSE	11/03/2026	8:48 PM	11/03/2026	11:24 PM	156	2:36	43.17	54.44
HUN-2604-017	SE06T	FALSE	13/03/2026	1:54 AM	13/03/2026	4:12 AM	138	2:18	66.15	88.62
HUN-2604-018	PD01T	FALSE	14/03/2026	6:54 AM	15/03/2026	3:18 PM	1938	32:18	35.07	72.42
HUN-2604-019	SE03INV1	FALSE	14/03/2026	1:42 AM	14/03/2026	5:48 AM	246	4:06	73.38	142.86
HUN-2604-020	SE03T	FALSE	14/03/2026	2:18 PM	14/03/2026	4:48 PM	150	2:30	298.36	590.48
HUN-2604-021	SE02T	FALSE	16/03/2026	8:48 AM	17/03/2026	7:30 AM	1362	22:42	172.2	1537.86
HUN-2604-022	SE02T	FALSE	17/03/2026	8:18 AM	17/03/2026	9:30 AM	72	1:12	78.61	182.83
HUN-2604-023	SE02T	FALSE	17/03/2026	11:12 AM	17/03/2026	12:30 PM	78	1:18	100.07	230.94
HUN-2604-024	SE02T	FALSE	17/03/2026	2:48 PM	22/03/2026	11:42 AM	7014	116:54	724.94	1411.2
HUN-2604-025	ND06T	FALSE	17/03/2026	5:42 PM	17/03/2026	6:48 PM	66	1:06	72.41	118.01
HUN-2604-026	SE06T	FALSE	18/03/2026	6:06 AM	19/03/2026	10:30 AM	1704	28:24	129.88	556.23

HUN-2604-027	SE06T	FALSE	19/03/2026	4:36 PM	20/03/2026	12:30 AM	474	7:54	50.49	69.44
HUN-2604-028	SE52T	FALSE	19/03/2026	5:12 AM	19/03/2026	6:42 PM	252	4:12	130.56	298.76
HUN-2604-029	PD01T	FALSE	20/03/2026	9:06 PM	21/03/2026	9:48 PM	1482	24:42	83.62	134.65
HUN-2604-030	SE06T	FALSE	20/03/2026	11:36 PM	21/03/2026	1:30 AM	114	1:54	113.1	240.4
HUN-2604-031	SE52T	FALSE	20/03/2026	5:54 AM	20/03/2026	10:24 AM	270	4:30	87.23	134.03
HUN-2604-032	SE59T	FALSE	21/03/2026	9:00 AM	21/03/2026	10:42 AM	102	1:42	73.3	185.91
HUN-2604-033	SE06T	FALSE	21/03/2026	8:36 PM	21/03/2026	9:36 PM	60	1:00	64.96	103.65
HUN-2604-034	SE02T	FALSE	22/03/2026	10:24 PM	26/03/2026	1:36 PM	5232	87:12	881.93	5000
HUN-2604-035	SE06T	FALSE	22/03/2026	10:36 PM	25/03/2026	1:12 PM	3756	62:36	576.25	1601.13
HUN-2604-036	SE53T	FALSE	22/03/2026	4:36 PM	22/03/2026	6:00 PM	84	1:24	33.06	39.84
HUN-2604-037	SE53T	FALSE	22/03/2026	8:06 PM	22/03/2026	9:30 PM	84	1:24	32.68	36.76
HUN-2604-038	SE53T	FALSE	23/03/2026	12:06 AM	23/03/2026	1:30 AM	84	1:24	35.96	45.99
HUN-2604-039	SE53T	FALSE	23/03/2026	4:00 AM	23/03/2026	5:00 AM	60	1:00	44.92	67.59
HUN-2604-040	SE53T	FALSE	23/03/2026	7:30 AM	23/03/2026	8:30 AM	60	1:00	44.93	68.46
HUN-2604-041	SE59T	FALSE	23/03/2026	8:42 AM	23/03/2026	10:24 AM	102	1:42	64.58	105.97

HUN-2604-042	SE03INV1	FALSE	24/03/2026	7:24 AM	25/03/2026	10:24 AM	1620	27:00	77.67	165.19
HUN-2604-043	SE52T	FALSE	25/03/2026	5:12 AM	25/03/2026	6:12 AM	60	1:00	122.85	237.4
HUN-2604-044	ND06T	FALSE	25/03/2026	8:48 PM	26/03/2026	12:12 AM	204	3:24	80.02	112.88
HUN-2604-045	ND07T	FALSE	27/03/2026	2:12 PM	27/03/2026	3:42 PM	90	1:30	37.17	55.16
HUN-2604-046	SE01T	FALSE	27/03/2026	1:48 PM	27/03/2026	7:48 PM	360	6:00	68.19	164.14
HUN-2604-047	SE01T	FALSE	27/03/2026	9:42 PM	28/03/2026	1:30 AM	228	3:48	83.41	130.36
HUN-2604-048	SE03T	FALSE	27/03/2026	11:24 AM	27/03/2026	1:36 PM	132	2:12	49.66	145.63
HUN-2604-049	SE02T	Additional Investigation Required	27/03/2026	1:36 PM	27/03/2026	4:06 PM	150	2:30	52.86	93.75
HUN-2604-050	SE05T	FALSE	27/03/2026	3:06 AM	27/03/2026	4:30 AM	84	1:24	29.31	36.4
HUN-2604-051	SE05T	Additional Investigation Required	27/03/2026	12:24 PM	27/03/2026	7:24 PM	420	7:00	66.13	135.31
HUN-2604-052	SE05T	Additional Investigation Required	27/03/2026	11:30 PM	28/03/2026	2:48 AM	198	3:18	37.6	56.8
HUN-2604-053	SE06T	FALSE	27/03/2026	1:18 PM	27/03/2026	3:00 PM	102	1:42	36.44	53.74
HUN-2604-054	SE51T	Additional Investigation Required	27/03/2026	3:30 PM	27/03/2026	7:00 PM	210	3:30	30.25	34.22

HUN-2604-055	SE59T	Additional Investigation Required	27/03/2026	1:17 PM	27/03/2026	6:08 PM	288	4:48	90.15	147.77
HUN-2604-056	SE59T	Additional Investigation Required	27/03/2026	6:38 PM	28/03/2026	3:31 AM	528	8:48	40.28	77.85
HUN-2604-057	SE61T	Additional Investigation Required	27/03/2026	5:12 PM	27/03/2026	11:00 PM	348	5:48	47.3	67.3
HUN-2604-058	SE05T	Additional Investigation Required	28/03/2026	5:12 AM	28/03/2026	6:54 AM	102	1:42	27.35	30.28
HUN-2604-059	SE05T	Additional Investigation Required	28/03/2026	7:54 AM	28/03/2026	11:24 AM	210	3:30	34.05	46.21
HUN-2604-060	SE53T	Additional Investigation Required	28/03/2026	10:36 AM	28/03/2026	12:00 PM	84	1:24	27.7	32.48
HUN-2604-061	SE59T	Additional Investigation Required	28/03/2026	4:32 AM	28/03/2026	3:15 PM	636	10:36	37.77	63.05
HUN-2604-062	SE61T	Additional Investigation Required	28/03/2026	6:06 AM	28/03/2026	1:18 PM	432	7:12	38.53	62.19
HUN-2604-063	DB03T	FALSE	29/03/2026	12:59 AM	29/03/2026	2:24 AM	85	1:25	37.81	47.87
HUN-2604-064	SE03INV1	FALSE	29/03/2026	7:48 AM	30/03/2026	1:06 PM	1758	29:18	36.53	66.79
HUN-2604-066	SE05T	FALSE	31/03/2026	10:06 PM	1/04/2026	3:30 AM	264	4:24	32.2	60.91
HUN-2604-067	ND06T	FALSE	31/03/2026	5:12 PM	1/04/2026	10:54 AM	1062	17:42	39.57	66.02

5.2 Additional Investigation

5.2.1 HUN-2604-049

SE02

The event, occurring between 1:36 PM and 4:06 PM on the 27th of March 2026 at SE02T. Trend analysis of the monitoring data, as shown in Figure 3 below, identified a gradual increase and subsequent decline in turbidity levels, forming a response pattern characteristic of a genuine turbidity exceedance event associated with natural runoff processes. The turbidity profile demonstrates sustained elevated values, followed by a gradual return toward baseline conditions, consistent with rainfall-driven sediment mobilisation within the catchment. Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall, 9.2mm of rainfall was recorded in the 24hrs preceding the event. The recorded rainfall is considered to have contributed to increased surface runoff and the mobilisation of fine sediments and organic particulates within the catchment.

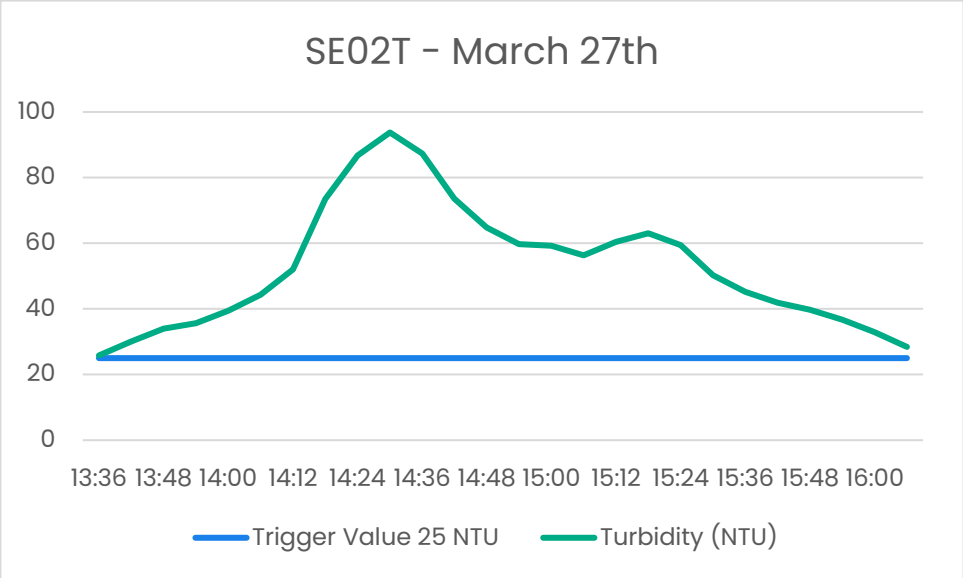

Figure 3 - SE02T - March 27th

Field notes provided by Alcoa are included below.

> *"Compliance turbidity monitoring site SE02T recorded a turbidity event exceeding 25 NTU for >1 hour on 27 March 2026. The event was recorded from 1:36 PM to 4:06 PM, with a duration of 2 hours and 30 minutes. The average turbidity value during the event was 52.86 NTU, with a peak of 93.75 NTU. There was 9.2 mm of rainfall recorded in the 24 hours preceding the event.*
>
> *The monitoring site was inspected on 28 March 2026. The stream was clear and flowing, with a measured turbidity value of 4.32 NTU. Trend analysis indicates a gradual rise and*

subsequent decline in turbidity values, which correlates with recorded rainfall. An inspection of the SE02T catchment found no evidence of mining related contributions to the turbidity exceedance.
SE02T is located within OCA1 of Serpentine Dam. GPS coordinates of this turbidity event: 419792E; 6409491N GDA 1994 Zone 50."

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.2 HUN-2604-051

SE05T

The event, occurring between 12:24 PM to 7:24 PM on the 27th of March 2026 at SE05T. Trend analysis of the monitoring data is shown in Figure 4 below. The turbidity graph displays a response pattern characteristic of a true turbidity exceedance event, with progressively increasing turbidity followed by a gradual return toward baseline conditions rather than abrupt fluctuations typical of false exceedance events.
The extended event duration and elevated peak turbidity indicate a sustained inflow of suspended sediments and organic material within the catchment following rainfall. 3.6mm of rainfall was recorded in the 24hrs preceding the event. The recorded rainfall is considered to have contributed to increased surface runoff and the mobilisation of fine sediments and organic particulates within the catchment.

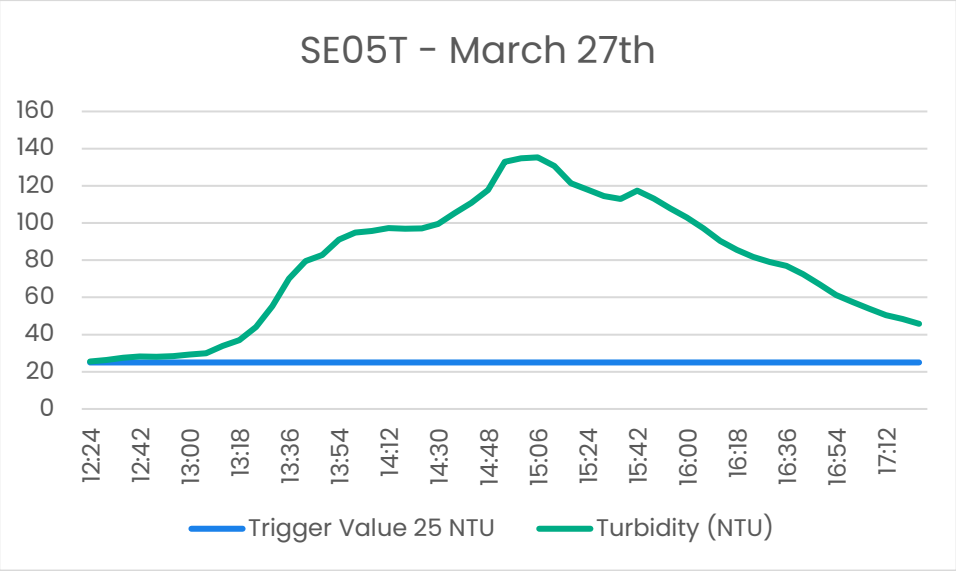

Figure 4 - SE05T - March 27th

Field notes provided by Alcoa are included below.

> *"Compliance turbidity monitoring site SE05T recorded a turbidity event exceeding 25 NTU for >1 hour on 27 March 2026. The event was recorded from 12:24 PM to 7:24 PM, with a duration of 7 hours. The average turbidity value during the event was 66.13 NTU, with a peak of 135.31 NTU. There was 3.6mm of rainfall recorded in the 24 hours preceding the event.*
> *An inspection of the SE05T monitoring site commenced on 28 March 2026. Stream flow velocity had increased significantly, resulting in turbulent conditions around the sensor and the accumulation of organic debris and algae. Turbidity was measured at 29.14 NTU.*
> *Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall. The SE05T catchment area was inspected, no evidence of mining related contribution to the turbidity exceedance was found.*
> *SE05T is located within OCA1 of the Serpentine Dam catchment area. GPS coordinates of this turbidity event: 416326 E, 6412821 N GDA 1994 Zone 50"*

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.3 HUN-2604-052

SE05T

The event, occurring between 11:30 PM 27 March 2026 and 2:48 AM 28 March at SE05T. Trend analysis of the monitoring data is shown in Figure 5 below. The turbidity graph displays a response pattern characteristic of a true turbidity exceedance event, with progressively increasing turbidity followed by a gradual return toward.
Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall data. A total of 41.3 mm of rainfall was recorded during the 24 hours preceding the event. This rainfall is considered to have contributed to increased surface runoff and the mobilisation of fine sediments and organic particulates within the catchment.

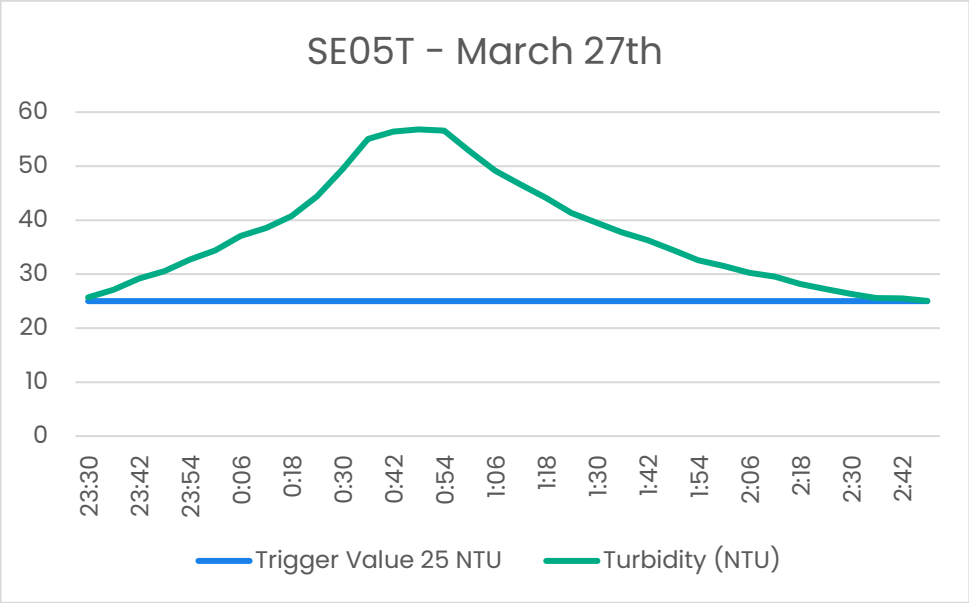

Figure 5 – SE05T – March 27th

Field notes provided by Alcoa are included below.

> *"Compliance turbidity monitoring site SE05T recorded a turbidity event exceeding 25 NTU for >1 hour on 27 March 2026.The event was recorded from 11:30 PM 27 March 2026 to 2:48 AM 28 March 2026, with a duration of 3 hours and 18 minutes. The average turbidity value during the event was 37.6 NTU, with a peak of 56.8 NTU. There was 41.3mm of rainfall recorded in the 24 hours preceding the event.*
> *An inspection of the SE05T monitoring site commenced on 28 March 2026. Stream flow velocity had increased significantly, resulting in turbulent conditions around the sensor and the accumulation of organic debris and algae. Turbidity was measured at 29.14 NTU. Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall. The SE05T catchment area was inspected; no evidence of mining related contribution to the turbidity exceedance was found.*
> *SE05T is located within OCA1 of the Serpentine Dam catchment area. GPS coordinates of this turbidity event: 416326 E, 6412821 N GDA 1994 Zone 50"*

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.4 HUN-2604-054

SE51T

The event, occurring between 3:30 PM and 7:00 PM on the 27th of March at SE51T. Trend analysis of the monitoring data is shown in Figure 6 below. The turbidity graph displays a response pattern characteristic of a genuine turbidity exceedance event, with progressively increasing turbidity levels followed by a gradual return toward baseline conditions.

Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall data. A total of 20 mm of rainfall was recorded during the five hours preceding the event. This rainfall is considered to have contributed to increased surface runoff and the mobilisation of fine sediments and organic particulates within the catchment.

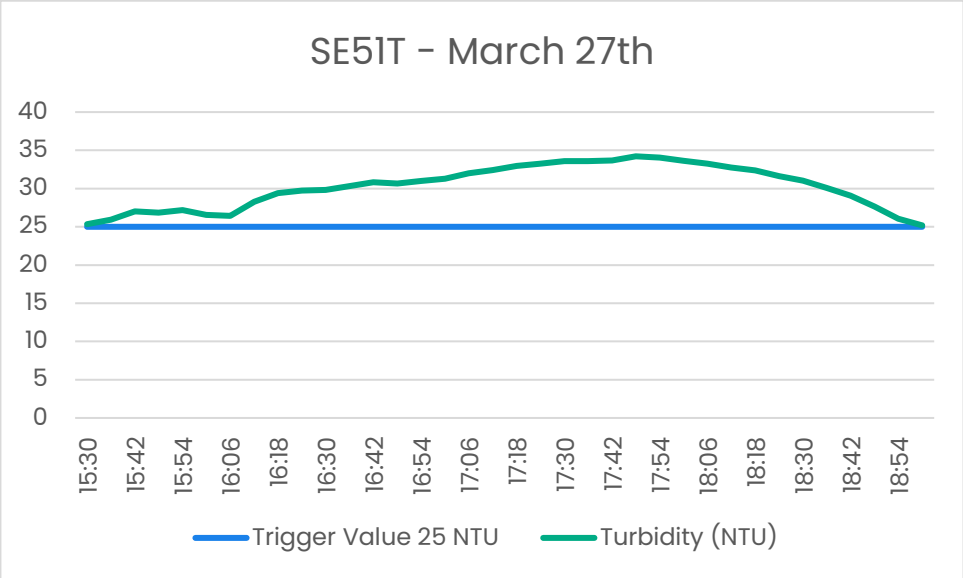

Figure 6– SE51T – March 27th

Field notes provided by Alcoa are included below.

> *"Compliance turbidity monitoring site SE51T recorded a turbidity event exceeding 25 NTU for >1 hour on 27 March 2026. The event was recorded from 3:30 PM to 7:00 PM, with a duration of 3 hours and 30 minutes. The average turbidity value during the event was 30.25 NTU, with a peak of 34.22 NTU.*
> *Data analysis indicates an increase in stream turbidity following approximately 20 mm of rainfall over a five-hour period, corresponding with a rapid rise in stream flow and depth after an extended period of low water levels associated with warmer conditions. Following this event, turbidity levels gradually declined to approximately 7.7 NTU, despite a further ~20 mm of rainfall. Within the 24 hours following the event, an additional approximately 53 mm of rainfall was recorded, and turbidity values remained below 25 NTU throughout this*

period. Two smaller, gradual increases in turbidity were observed, coinciding with periods of increased rainfall intensity.
The SE51T catchment area was inspected; no mining related contributions to the turbidity exceedances were found."

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.5 HUN-2604-055

SE59T

The event, occurring between 1:17 PM and 6:08 PM on the 27 March 2026 at SE59T. Trend analysis of the monitoring data is shown in Figure 7 below. The turbidity graph displays a response pattern characteristic of a genuine turbidity exceedance event, with progressively increasing turbidity levels followed by a gradual return toward baseline conditions.

Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall data. A total of 28mm of rainfall was recorded in the 24 hours preceding the event. This rainfall is considered to have contributed to increased surface runoff and the mobilisation of fine sediments and organic particulates within the catchment.

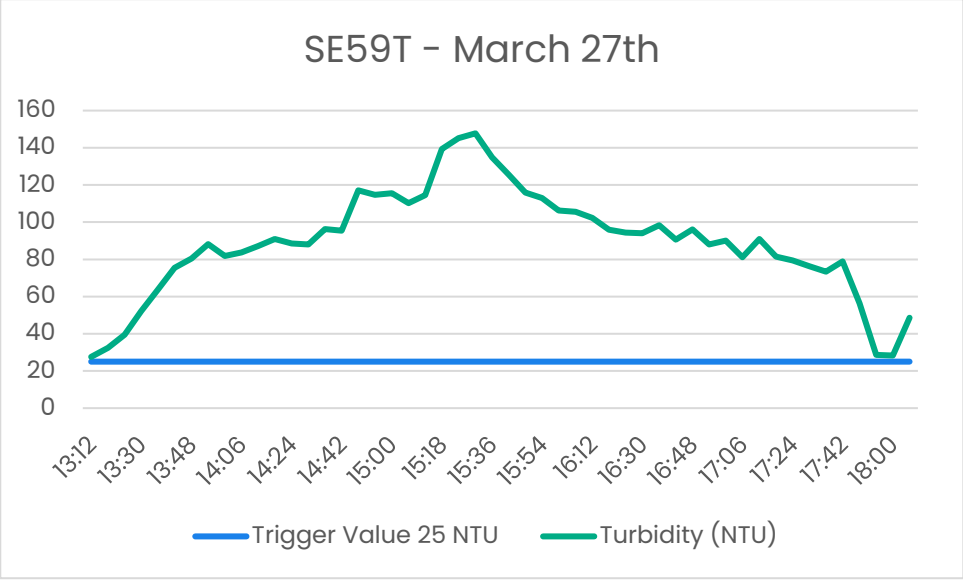

Figure 7– SE59T – March 27th

Field notes provided by Alcoa are included below.

"Compliance turbidity monitoring site SE59T recorded a turbidity event exceeding 25 NTU for >1 hour on 27 March 2026. The event was recorded from 1:17PM to 6:08 PM, with a

duration of 4 hours and 28 minutes. The average turbidity value during the event was 90.15 NTU, with a peak of 147.77 NTU. There was 8.7mm of rainfall recorded in the 24 hours preceding the event.
The monitoring site was inspected on 2 April 2026. The delayed inspection was due to a fallen tree previously blocking access on a DBCA bush track. Turbidity value on arrival was 5.6 NTU, which dropped to 1.5NTU after cleaning. Stream observations showed a clear low water level, with visible red algae on the sensor.
Data trend shows a gradual incline and decline, coinciding with an increase in rainfall.
The SE59T catchment inspection was completed, no mining related contributions to the turbidity exceedances were found.
SE59T is located within OCA1 of Serpentine Dam. 418505 E; 6412796 N GDA 1994 Zone 50"

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.6 HUN-2604-056

SE59T

The event, occurring between 6:38 PM 27 March 2026 and 3:31 AM 28 March at SE59T. Trend analysis of the monitoring data is shown in Figure 8 below. The turbidity graph displays a response pattern characteristic of a genuine turbidity exceedance event. The turbidity profile shows a rapid initial increase, followed by a gradual decline, interspersed with minor fluctuations and a secondary peak. A smaller tertiary rise is observed before turbidity levels continue a steady and gradual return toward baseline conditions.
Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall data. A total of 28mm of rainfall was recorded in the 24 hours preceding the event. This rainfall is considered to have contributed to increased surface runoff and the mobilisation of fine sediments and organic particulates within the catchment.

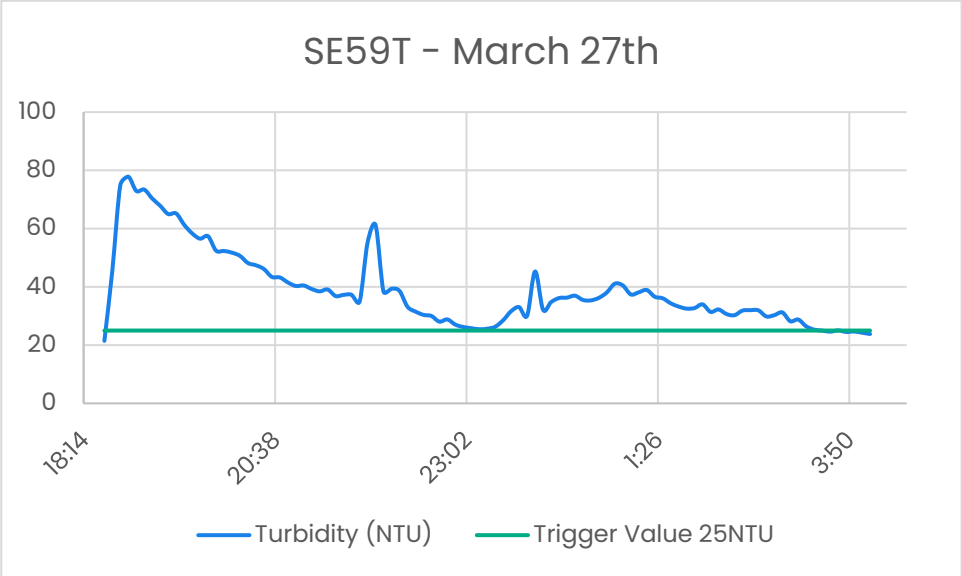

Figure 8– SE59T – March 27th

Field notes provided by Alcoa are included below.

> *"Compliance turbidity monitoring site SE59T recorded a turbidity event exceeding 25 NTU for >1 hour on 27 March 2026. The event was recorded from 6:38 PM 27 March 2026 to 3:31 AM 28 March 2026, with a duration of 8 hours and 48 minutes. The average turbidity value during the event was 40.28 NTU, with a peak of 77.85 NTU. There was 28mm of rainfall recorded in the 24 hours preceding the event.*
> *The monitoring site was inspected on 2 April 2026. The delayed inspection was due to a fallen tree previously blocking access on a DBCA bush track. Turbidity value on arrival was 5.6 NTU, which dropped to 1.5NTU after cleaning. Stream observations showed a clear low water level, with visible red algae on the sensor.*
> *Data trend shows a gradual incline and decline, coinciding with an increase in rainfall.*
> *The SE59T catchment inspection was completed; no mining related contributions to the turbidity exceedances were found.*
> *SE59T is located within OCA1 of Serpentine Dam. 418505 E; 6412796 N GDA 1994 Zone 50"*

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.7 HUN-2604-057

SE61T

The event, occurring between 5:12 PM and 11:00 PM on the 27 March at SE61T. Trend analysis of the monitoring data is shown in Figure 9 below. The turbidity graph displays a response pattern characteristic of a genuine turbidity exceedance event, with rapid initial increase followed by a brief fluctuation and a secondary peak turbidity level followed by a steady and gradual return toward baseline conditions.

Trend analysis indicates a clear correlation between turbidity response and preceding rainfall conditions. A total of 67.3 mm of rainfall was recorded in the 24 hours prior to the event, representing a significant precipitation input. This rainfall is considered to have generated substantial surface runoff, resulting in the mobilisation and transport of fine sediments, organic matter, and suspended particulates from the surrounding catchment into the monitoring location.

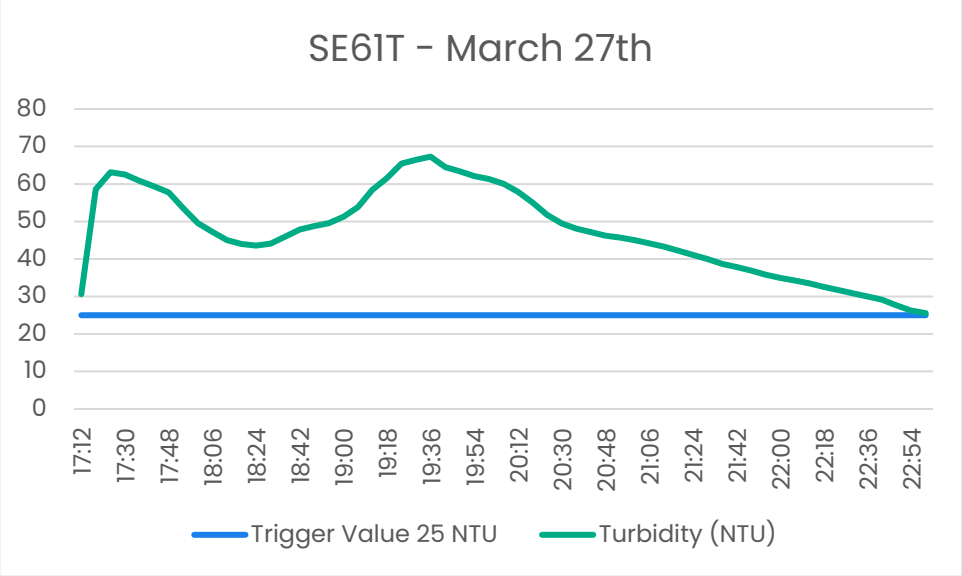

Figure 9 – SE61T – March 28th

Field notes provided by Alcoa are included below.

> *"Local turbidity monitoring site SE61T recorded a turbidity event exceeding 25 NTU for >1 hour on 27 March 2026, with the event duration of 5 hours and 48 minutes. There was 67.3mm of rainfall received in the preceding 24 hours.*
> *The SE61T monitoring site was inspected on 28 March 2026. On arrival, rainwater on the adjacent bush track was flowing into the surrounding vegetation and subsequently into the stream. Stream flow velocity had increased significantly, resulting in turbulent conditions around the sensor and the accumulation of organic debris and algae.*
> *Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall.*

An inspection of the SE61T catchment area was completed; no evidence of mining contribution to the turbidity exceedance was found."

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.8 HUN-2604-058

SE05T

The event, occurring between 5:12 AM and 6:54 AM on the 28 March at SE05T. Trend analysis of the monitoring data is shown in Figure 10 below. The turbidity graph displays a response pattern characteristic of a genuine turbidity exceedance event, with progressively increasing turbidity levels followed by a brief fluctuation and a secondary peak turbidity level followed by a steady and gradual return toward baseline conditions.

Trend analysis indicates a clear correlation between turbidity response and preceding rainfall conditions. A total of 52.8 mm of rainfall was recorded in the 24 hours prior to the event, representing a significant precipitation input. This rainfall is considered to have increased stream flow velocity, resulting in turbulent conditions around the sensor and the mobilisation and accumulation of organic debris and algae within the monitoring location.

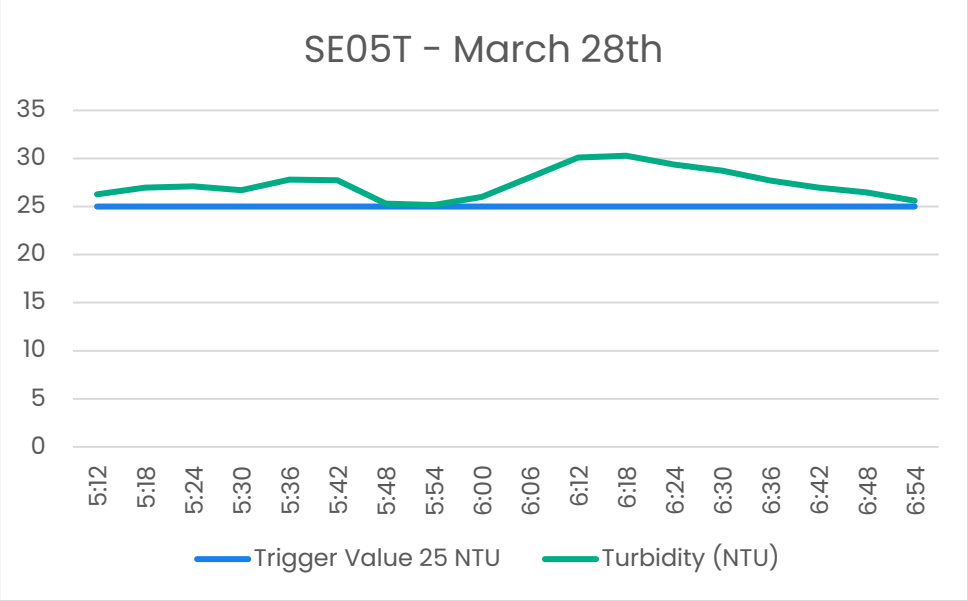

Figure 10 – SE05T – March 28th

Field notes provided by Alcoa are included below.

"Compliance turbidity monitoring site SE05T recorded a turbidity event exceeding 25 NTU for >1 hour on 28 March 2026. The event was recorded from 5:12 AM to 6:54 AM, with a

duration of 1 hour and 42 minutes. The average turbidity value during the event was 27.3 NTU, with a peak of 30.2 NTU. There was 52.8mm of rainfall recorded in the 24 hours preceding the event.
An inspection of the SE05T monitoring site commenced on 28 March 2026. Stream flow velocity had increased significantly, resulting in turbulent conditions around the sensor and the accumulation of organic debris and algae. Turbidity was measured at 29.14 NTU. Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall.
The SE05T catchment area was inspected; no evidence of mining related contribution to the turbidity exceedance was found.
SE05T is located within OCA1 of the Serpentine Dam catchment area. GPS coordinates of this turbidity event: 416326 E, 6412821 N GDA 1994 Zone 50"

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.9 HUN-2604-059

SE05T

The event, occurring between 7:54 AM and 11:24 AM on the 28 March at SE05T. Trend analysis of the monitoring data is shown in Figure 11 below. The turbidity graph displays a response pattern characteristic of a genuine turbidity exceedance event, with progressively increasing turbidity levels followed by a steady and gradual return toward baseline conditions.

Trend analysis indicates a clear correlation between turbidity response and preceding rainfall conditions. A total of 66.3 mm of rainfall was recorded in the 24 hours prior to the event, representing a significant precipitation input. This rainfall is considered to have substantially increased stream flow velocity, resulting in turbulent conditions at the monitoring site and the

mobilisation and transport of fine sediments, organic material, and suspended particulates within the monitoring location.

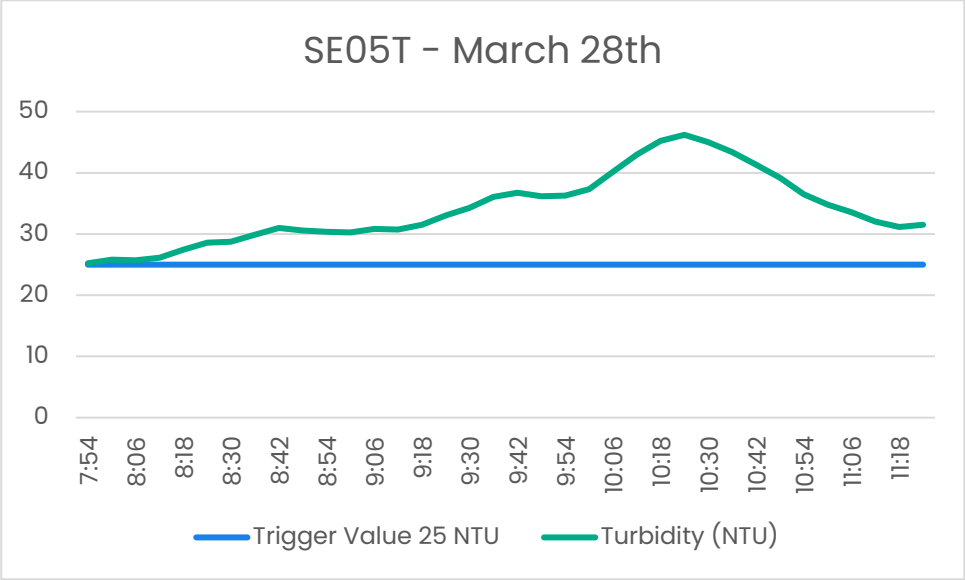

Figure 11 - SE05T – March 28th

Field notes provided by Alcoa are included below.

> *"Compliance turbidity monitoring site SE05T recorded a turbidity event exceeding 25 NTU for >1 hour on 28 March 2026. The event was recorded from 7:54 AM 27 to 11:24 AM, with a duration of 3 hours and 30 minutes. The average turbidity value during the event was 34 NTU, with a peak of 46.2 NTU. There was 66.3mm of rainfall recorded in the 24 hours preceding the event.*
> *An inspection of the SE05T monitoring site commenced on 28 March 2026. Stream flow velocity had increased significantly, resulting in turbulent conditions around the sensor and the accumulation of organic debris and algae. Turbidity was measured at 29.14 NTU. Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall.*
> *The SE05T catchment area was inspected; no evidence of mining related contribution to the turbidity exceedance was found.*
> *SE05T is located within OCA1 of the Serpentine Dam catchment area. GPS coordinates of this turbidity event: 416326 E, 6412821 N GDA 1994 Zone 50"*

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.10 HUN-2604-060

SE53T

The event, occurring between 10:36 AM and 12:00 PM on the 28 March at SE053T. Trend analysis of the monitoring data is shown in Figure 12 below. The turbidity graph displays a response pattern characteristic of a genuine turbidity exceedance event, with progressively increasing turbidity levels followed by a brief fluctuation and a secondary peak turbidity level followed by a steady and gradual return toward baseline conditions.

Trend analysis indicates a clear correlation between turbidity response and preceding rainfall conditions. A total of 73.9 mm of rainfall was recorded in the 24 hours prior to the event, representing a significant precipitation input. This rainfall is considered to have contributed to increased surface runoff and the mobilisation of fine sediments and organic particulates within the catchment.

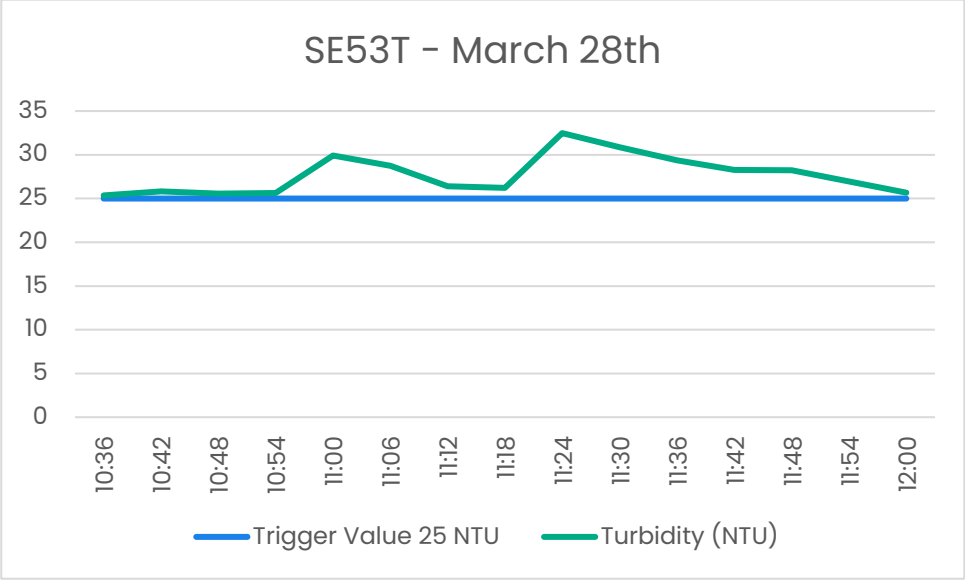

Figure 12 – SE53T – March 28th

Field notes provided by Alcoa are included below.

> *"Compliance turbidity monitoring site SE53T recorded a turbidity event exceeding 25 NTU for >1 hour on 28 March 2026. The event was recorded from 10:36 AM to 12:00 PM, with a duration of 1 hour and 24 minutes. The average turbidity value during the event was 27.7 NTU, with a peak of 32.48 NTU. There was 73.9mm of rainfall recorded in the 24 hours preceding the event.*
> *The monitoring site was inspected on 29 March 2026. The stream depth was low and clear, with organic debris settled on the sensor shroud. The turbidity value on arrival was 3.07NTU which dropped to 1.36 NTU after cleaning the sensor.*

Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall.
The SE53T catchment was inspected; no evidence of mining impact was observed. SE53T is located within OCA 2 of Serpentine Dam. 422191 E; 6411914 N GDA 1994 Zone 50."

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.11 HUN-2604-061

SE59T

The event, occurring between 4:32 AM and 3:15 PM on the 28 March 2026 at SE59T. Trend analysis of the monitoring data is shown in Figure 13 below. The turbidity graph displays a response pattern characteristic of a genuine turbidity exceedance event. The turbidity profile shows an initial rise during the early morning period, followed by a brief period of fluctuation. Turbidity levels then increase more sharply. Following this peak, turbidity values exhibit a steady and sustained decline, gradually returning toward the trigger threshold.

Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall data. A total of 51.4mm of rainfall was recorded in the 24 hours preceding the event. This rainfall is considered to have contributed to increased

surface runoff and the mobilisation of fine sediments and organic particulates within the catchment.

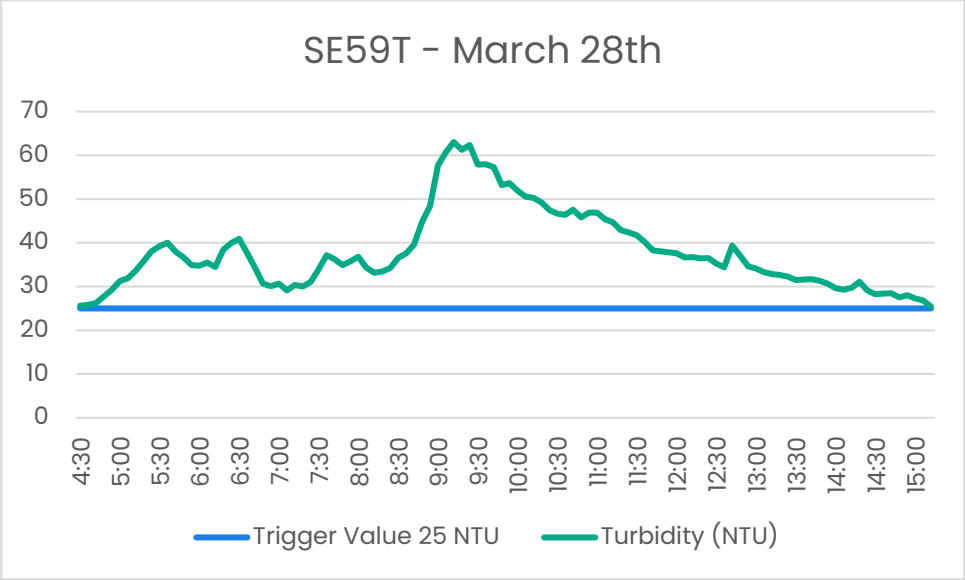

Figure 13 – SE59T – March 28th

Field notes provided by Alcoa are included below.

> *"Compliance turbidity monitoring site SE59T recorded a turbidity event exceeding 25 NTU for >1 hour on 28 March 2026. The event was recorded from 4:32 AM to 3:15 PM, with a duration of 10 hours and 36 minutes. The average turbidity value during the event was 37.77 NTU, with a peak of 63.05 NTU. There was 51.4mm of rainfall recorded in the 24 hours preceding the event.*
> *The monitoring site was inspected on 2 April 2026. The delayed inspection was due to a fallen tree previously blocking access on a DBCA bush track. Turbidity value on arrival was 5.6 NTU, which dropped to 1.5NTU after cleaning the sensor. Stream observations showed a clear low water level, with visible red algae on the sensor.*
> *Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall. The SE59T catchment inspection was completed; no mining related contributions to the turbidity exceedances were found.*
> *SE59T is located within OCA1 of Serpentine Dam. 418505 E; 6412796 N GDA 1994 Zone 50"*

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.2.12 HUN-2604-062

SE61T

The event, occurring between 6:06 AM and 1:18 PM on the 28 March 2026 at SE59T. Trend analysis of the monitoring data is shown in Figure 14 below. The turbidity profile shows a minor initial rise in the early morning, followed by a brief stabilisation near the trigger threshold. Turbidity levels increase steadily, forming a well-defined peak, following this peak, turbidity levels gradually decline over several hours, returning to below trigger conditions.

Trend analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall data. A total of 57.2mm of rainfall was recorded in the 24 hours preceding the event. This rainfall is considered to have substantially increased stream flow velocity, resulting in turbulent conditions at the monitoring site and the mobilisation and transport of fine sediments, organic material, and suspended particulates within the monitoring location.

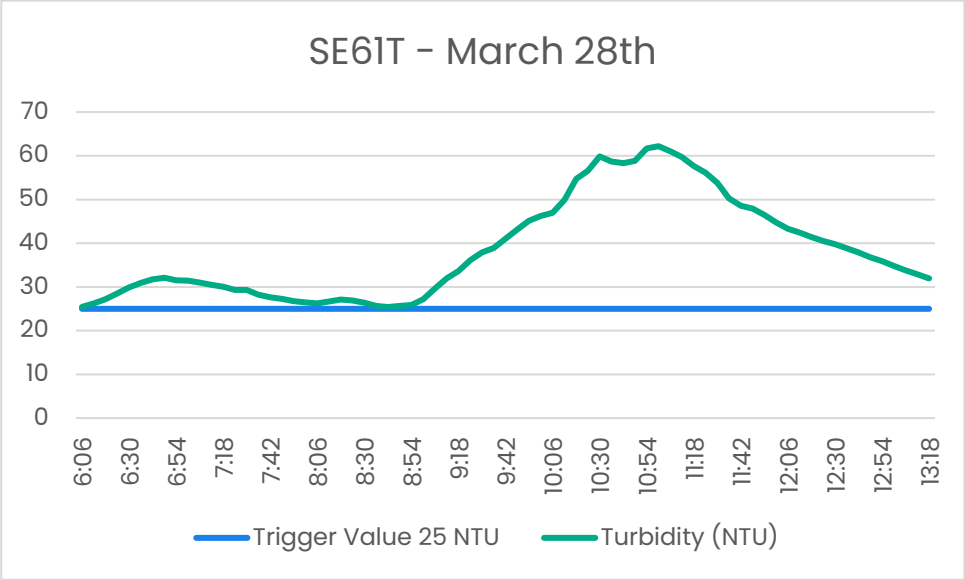

Figure 14 – SE61T – March 28th

Field notes provided by Alcoa are included below.

> *"Local turbidity monitoring site SE61T recorded a turbidity event exceeding 25 NTU for >1 hour on 28 March 2026, with a duration of 1 hour and 18 minutes. A total of 57.2mm of rainfall was recorded in the preceding 24 hours.*
> *The SE61T monitoring site was inspected on 28 March 2026. On arrival, rainwater on the adjacent bush track was flowing into the surrounding vegetation and subsequently into the stream. Stream flow velocity had increased significantly, resulting in turbulent conditions around the sensor and the accumulation of organic debris and algae. Trend*

analysis indicates a gradual rise and subsequent decline in turbidity values, which correlates with recorded rainfall.
An inspection of the SE61T catchment area was completed, no evidence of mining contribution to the turbidity exceedance was found."

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.3 True Event(s)

Twelve 'True' turbidity events were identified during the period. Refer to section 5.2 for additional information.

5.4 False Event(s)

Fifty-four (54) 'False' events were identified during the reporting period. Rationale on potential causes is summarised below.

Table 3: False Events Rationale

Event ID	Monitor	Rationale	Comments
HUN-2604-001	SE02T	The event is marked with a rapid decrease in turbidity. This is indicative of a false event	Site inspected on 01/03/2026. The stream level is very low, and the sensor was impacted by algae. The turbidity value on arrival was 362.48 NTU, which dropped to 4.8 NTU after the lens was cleaned.
HUN-2604-002	SE03INV1	The event is marked with a rapid decrease in turbidity. This is indicative of a false event	The monitoring site was inspected on 1/03/2026. The stream level is very low and heavily impacted by organic debris, algae, and tannins. The lens was impacted by algae, turbidity value on arrival was 25.93 NTU which dropped to 1.63 NTU after cleaning.
HUN-2604-003	SE03INV1	The event is marked with a rapid decrease in turbidity. This is indicative of a false event	The monitoring site was inspected on 1/03/2026. The stream level is very low and heavily impacted by organic debris, algae, and tannins. The lens was impacted by algae, turbidity value on arrival was 25.93 NTU which dropped to 1.63 NTU after cleaning.
HUN-2604-004	SE52T	The event is marked by step increase and rapid decrease in turbidity. This is indicative of a false event	Site inspected on 15/03/2026. Stream is flowing, shallow and clear. The sensor was impacted with organic debris on arrival. Data trend of this event supports organic debris impact in a shallow stream due to a stepping incline with a direct decline. The float switch also changed from 1 (flowing) to 0 (dry) on 05/03/2026 at 21:12.
HUN-2604-005	SE02T	The event is marked by gradual increase and rapid decrease in turbidity. This is indicative of a false event	Site inspected on 08/03/2026. The stream is flowing; low and the sensor was heavily impacted with algae. The turbidity value preclean was 1406.5190 NTU and post clean dropped to 7.3877 NTU.

Event ID	Monitor	Rationale	Comments
HUN-2604-006	SE53T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected 20/03/2026. The stream level is low, stagnant with minimal flow. The stream bed has built up algae and organic debris which is impacting the sensor. No rainfall was received in the 24 hours proceeding this event.
HUN-2604-007	SE03INV1	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected on 15/03/2026, the stream is very low and not sufficient to submerge the sensor, causing false readings. The level float sensor is fluctuating between 1(flow) and 0(dry) due to low water depth.
HUN-2604-008	SE53T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected 20/03/2026. The stream level is low, stagnant with minimal flow. The stream bed has built up algae and organic debris which is impacting the sensor. No rainfall was received in the 24 hours proceeding this event.
HUN-2604-009	SE06T	The event is marked by gradual increase and rapid decrease in turbidity. This is indicative of a false event	Site inspected on 08/03/2026. Stream level is low with minimal flow and built-up debris/algae on stream bed impacting the Sensor. Evident a false event as the turbidity NTU preclean was 110.54 and post clean 2.12 NTU. The data trend of gradual incline supports false event.
HUN-2604-010	SE03INV1	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected on 15/03/2026, the stream is very low and not sufficient to submerge the sensor, causing false readings. The level float sensor is fluctuating between 1(flow) and 0(dry) due to low water depth.

Event ID	Monitor	Rationale	Comments
HUN-2604-011	SE03INV1	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected on 15/03/2026, the stream is very low and not sufficient to submerge the sensor, causing false readings. The level float sensor is fluctuating between 1(flow) and 0(dry) due to low water depth.
HUN-2604-012	ND14T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Stream has become stagnant with minimal flow. Turbidity trend rapidly increases, then rapidly decreases back to low NTU indicating the sensor was likely impacted by debris.
HUN-2604-013	SE03INV1	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Site inspected on 15/03/2026, the stream is very low and not sufficient to submerge the sensor, causing false readings. The level float sensor is fluctuating between 1(flow) and 0(dry) due to low water depth.
HUN-2604-014	SE02T	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Site inspected on 22/03/2026. The stream is flowing; low and the sensor was heavily impacted with algae. The turbidity value preclean was 942.9816 NTU and post clean 15.1255 NTU.
HUN-2604-015	ND06T	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	The site was inspected on 12/03/2026. The stream was flowing however very low, and the level float sensor and turbidity sensor were out of water. The level float sensor has been fluctuating between 1(flow) and 0(dry) during March due to very low water level.
HUN-2604-016	ND06T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	The site was inspected on 12/03/2026. The stream was flowing however very low, and the level float sensor and turbidity sensor were out of water. The level float sensor has been fluctuating between 1(flow) and 0(dry) during March due to very low water level.

Event ID	Monitor	Rationale	Comments
HUN-2604-017	SE06T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected on 16/03/2026. Stream is flowing, very shallow and clear. The stream bed and sensor are impacted with algae and organic debris. Data trend of incline and decline spikes indicate likely organic debris impacting sensor.
HUN-2604-018	PD01T	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	The site was inspected on 16/03/2026, the sensor was impacted by organic debris. Turbidity value on arrival was 53.94NTU, which dropped to 0.76 NTU after the sensor was cleaned and repositioned.
HUN-2604-019	SE03INV1	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Site inspected on 15/03/2026, the stream is very low and not sufficient to submerge the sensor, causing false readings. The level float sensor is fluctuating between 1(flow) and 0(dry) due to low water depth.
HUN-2604-020	SE03T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	The monitoring site was inspected on 15/03/2026, the turbidity sensor was partially out of water, causing false readings. The level float sensor was reading 0(dry) due to very low water level.
HUN-2604-021	SE02T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected on 22/03/2026. The stream is flowing; low and the sensor was heavily impacted with algae. The turbidity value preclean was 942.9816 NTU and post clean 15.1255 NTU.
HUN-2604-022	SE02T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected on 22/03/2026. The stream is flowing; low and the sensor was heavily impacted with algae. The turbidity value preclean was 942.9816 NTU and post clean 15.1255 NTU.

Event ID	Monitor	Rationale	Comments
HUN-2604-023	SE02T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected on 22/03/2026. The stream is flowing; low and the sensor was heavily impacted with algae. The turbidity value preclean was 942.9816 NTU and post clean 15.1255 NTU.
HUN-2604-024	SE02T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected on 22/03/2026. The stream is flowing; low and the sensor was heavily impacted with algae. The turbidity value preclean was 942.9816 NTU and post clean 15.1255 NTU.
HUN-2604-025	ND06T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	The site was inspected on 12/03/2026. The stream was flowing however very low, and the level float sensor and turbidity sensor were out of water. The level float sensor has been fluctuating between 1(flow) and 0(dry) during March due to very low water level.
HUN-2604-026	SE06T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected on 22/03/2026. Stream is very shallow, and the sensor is being impacted with algae and stream bed sediment.
HUN-2604-027	SE06T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected on 22/03/2026. Stream is very shallow, and the sensor is being impacted with algae and stream bed sediment.
HUN-2604-028	SE52T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected on 22/03/2026 and stream is dry.

Event ID	Monitor	Rationale	Comments
HUN-2604-029	PD01T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Data analysis indicates false event, showing a gradual rise in turbidity followed by a near vertical spike and very high peak. Turbidity values then drop from 100 NTU to 1.48 NTU within 12 minutes, which is consistent with organic debris being dislodged from the sensor. The trend aligns with observed stream conditions being very low and heavily impacted by organic debris.
HUN-2604-030	SE06T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected on 22/03/2026. Stream is very shallow, and the sensor is being impacted with algae and stream bed sediment.
HUN-2604-031	SE52T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected on 22/03/2026 and stream is dry.
HUN-2604-032	SE59T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	SE59T recorded a turbidity event on 21/03/2026. Analysis of the overall data trend indicates the event was false, likely caused by organic debris interfering with the lens. During this event the turbidity trend is erratic, rapidly elevating from 10.20 NTU to 185.91 NTU, then rapidly drops to below 25 NTU. The monitoring site was inspected on 2 April 2026 due to a fallen tree previously blocking access on a DBCA bush track. Turbidity value on arrival was 5.6 NTU, which dropped to 1.5NTU after cleaning. Stream observations showed a clear low water level, with visible red algae on the sensor.
HUN-2604-033	SE06T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected on 22/03/2026. Stream is very shallow, and the sensor is being impacted with algae and stream bed sediment.

Event ID	Monitor	Rationale	Comments
HUN-2604-034	SE02T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected on 26/03/2026. The stream is flowing; low depth and the sensor was heavily impacted with algae. The turbidity value preclean was 1090.5964 NTU and post clean 5.22 NTU.
HUN-2604-035	SE06T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected on 25/03/2026. Stream is very shallow, and the sensor is being impacted with algae and stream bed sediment. The turbidity value preclean was 507.7897 NTU and post clean 2.1464 NTU.
HUN-2604-036	SE53T	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Site visited on 23/03/2026. Stream was low and observed organic material and pig activity at the sensor area. Data trend indicates organic debris impact with gradual incline and then sharp decline.
HUN-2604-037	SE53T	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Site visited on 23/03/2026. Stream was low and observed organic material and pig activity at the sensor area. Data trend indicates organic debris impact with gradual incline and then sharp decline.
HUN-2604-038	SE53T	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Site visited on 23/03/2026. Stream was low and observed organic material and pig activity at the sensor area. Data trend indicates organic debris impact with gradual incline and then sharp decline.
HUN-2604-039	SE53T	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Site visited on 23/03/2026. Stream was low and observed organic material and pig activity at the sensor area. Data trend indicates organic debris impact with gradual incline and then sharp decline.
HUN-2604-040	SE53T	The event is marked by a gradual increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Site visited on 23/03/2026. Stream was low and observed organic material and pig activity at the sensor area. Data trend indicates organic debris impact with gradual incline and then sharp decline.

Event ID	Monitor	Rationale	Comments
HUN-2604-041	SE59T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	SE59T recorded a turbidity event on 23/03/2026. Analysis of the overall data trend indicates the event was false, likely caused by organic debris interfering with the lens. During this event the turbidity trend is erratic, rapidly elevating from 10.58 NTU to 62.04 NTU within 6 minutes. The monitoring site was inspected on 2 April 2026 due to a fallen tree previously blocking access on a DBCA bush track. Turbidity value on arrival was 5.6 NTU, which dropped to 1.5NTU after cleaning. Stream observations showed a clear low water level, with visible red algae on the sensor.
HUN-2604-042	SE03INV1	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Site inspected on 25/03/2026. The stream is very low and not sufficient to submerge the sensor, causing false readings. The level float sensor is fluctuating between 1(flow) and 0(dry) due to low water depth.
HUN-2604-043	SE52T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected on 25/02/2026. and stream is dry.
HUN-2604-044	ND06T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	The level float sensor has been fluctuating between 1(flow) and 0(dry) during March due to very low water level. During this event, the level float was reading 0(dry) indicating the sensor was out of water.

Event ID	Monitor	Rationale	Comments
HUN-2604-045	ND07T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	The stream was dry at the time of the previous inspection on 16/03/2026. A subsequent inspection was undertaken on 29/03/2026, following 84.2 mm of rainfall over a two-day period, during which the stream was observed to be flowing rapidly. Data analysis indicates that the recorded turbidity event during this period was false, most likely caused by organic debris being flushed through the system during the initial onset of flow. The data trend is erratic, characterised by sharp fluctuations. During the event, the level float sensor continued to record 0 (dry) conditions and subsequently changed to 1 (flow) on 28/03/2026, following an additional approximately 44 mm of rainfall. No further events were recorded; however, some subsequent erratic turbidity values were observed, which are likely attributable to residual debris remaining within the stream.

Event ID	Monitor	Rationale	Comments
HUN-2604-046	SE01T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	A site inspection conducted on 25/03/2026 confirmed that the stream was dry prior to incoming rainfall. A subsequent site inspection on 29/03/2026 confirmed that the stream had commenced flowing, with substantial organic debris observed accumulating around the sensor. At the time of inspection, the sensor was found to be partially out of the water due to insufficient stream depth and was relocated to a deeper section of the channel, where it was only just submerged. Review of the data indicates that the recorded turbidity event was false, triggered by the initial commencement of stream flow and resulting in false readings caused by debris accumulation and partial exposure of the sensor lens. The data trend is erratic, showing rapidly fluctuating turbidity values over an approximately 24-hour period, during which time the level float sensor remained at 0 (dry). Between turbidity spikes, values dropped to approximately 0.12 NTU. The level float sensor subsequently changed to 1 (flow) on 28/03/2026 at approximately 11:00 am, coinciding with an extreme turbidity spike peaking at 1,494.95 NTU, indicative of organic debris impacting the sensor lens. Following the inspection, the level float returned to 0 (dry), which is consistent with the very low water levels observed in the field.

Event ID	Monitor	Rationale	Comments
HUN-2604-047	SE01T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	A site inspection conducted on 25/03/2026 confirmed that the stream was dry prior to incoming rainfall. A subsequent site inspection on 29/03/2026 confirmed that the stream had commenced flowing, with substantial organic debris observed accumulating around the sensor. At the time of inspection, the sensor was found to be partially out of the water due to insufficient stream depth and was relocated to a deeper section of the channel, where it was only just submerged. Review of the data indicates that the recorded turbidity event was false, triggered by the initial commencement of stream flow and resulting in false readings caused by debris accumulation and partial exposure of the sensor lens. The data trend is erratic, showing rapidly fluctuating turbidity values over an approximately 24-hour period, during which time the level float sensor remained at 0 (dry). Between turbidity spikes, values dropped to approximately 0.12 NTU. The level float sensor subsequently changed to 1 (flow) on 28/03/2026 at approximately 11:00 am, coinciding with an extreme turbidity spike peaking at 1,494.95 NTU, indicative of organic debris impacting the sensor lens. Following the inspection, the level float returned to 0 (dry), which is consistent with the very low water levels observed in the field.

Event ID	Monitor	Rationale	Comments
HUN-2604-048	SE03T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Data analysis indicates false event, likely caused by organic debris impacting the sensor as the stream recommenced flowing. The turbidity trend shows an initial sharp spike with very high peak, followed by fluctuating values and a sharp decline. Following cessation of the turbidity event, and a further 11mm of rainfall, the level float sensor changed to 1(flow). A further ~75mm of rainfall was recorded in the 48 hours following this event, during which time turbidity levels remained stable between approximately 2 and 12NTU. This is consistent with field observations at the time of inspection on 28/03/2026, which showed the stream was flowing and clear, with no further debris impacting the sensor and sufficient stream depth for stable measurement.
HUN-2604-050	SE05T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	The site was inspected on 27/03/2026. The stream was clear, but the sensor and streambed were impacted by algae and decaying organic debris. The turbidity trend before and after the event shows fluctuating values consistent with these field observations. When the sensor was removed for cleaning, the algae and organic debris were easily dispersed into the water column, and turbidity values took some time to stabilise. In the hours following this, as rainfall commenced and increased, turbidity values gradually rose with a more regular trend, consistent with algae and natural sediments being flushed through the stream system.

Event ID	Monitor	Rationale	Comments
HUN-2604-053	SE06T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Previous inspections identified very low stream levels, with the sensor affected by algae and natural sediment. This condition is reflected in the data, which shows irregular and fluctuating turbidity values before and after the event, consistent with lens interference. Turbidity did not stabilise until the sensor was cleaned and repositioned during an inspection on 28/03/2026, after which readings remained below 1.5 NTU despite further rainfall.
HUN-2604-063	DB03T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Assessment of the data indicates the event was false. A site inspection on 29/03/2026 confirmed the stream was dark with tannins. The turbidity trend shows fluctuating and erratic values before and after the event, with a general upward pattern and several spikes exceeding 25 NTU. On arrival, turbidity measured 26.01 NTU, which dropped to 3.98 NTU after the sensor lens was cleaned.

Event ID	Monitor	Rationale	Comments
HUN-2604-064	SE03INV1	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	During previous inspections, the stream has been observed very low, and the level float sensor has been fluctuating between 1 (flow) and 0 (dry) due to very low water level. Following ~85mm of rainfall recorded over 48 hours, the site was inspected on 30/03/2026. Stream depth and flow had increased, and substantial organic debris was observed around the sensor which was impacting the lens. Turbidity value on arrival was 34.79 NTU which dropped to 1.54 NTU after the sensor was cleaned and repositioned. There was approximately 2.4mm of rainfall recorded in the 14 hours preceding this event, and the data is consistent with a false event caused by the flushing of organic debris with increased stream flow.
HUN-2604-066	SE05T	The event is marked by a gradual increase in turbidity followed by a rapid decrease with multiple sporadic peaks. This is indicative of a false event.	Data trend indicates a gradual incline in turbidity levels corresponding with increase in rainfall and stream flow. The site was inspected on 1/04/2026, the stream bed was heavily impacted by algae and debris, which easily dispersed through the water when disturbed. The sensor was significantly affected by algae and debris, showing a turbidity value of 40.0 NTU upon arrival, which dropped to 13.8 NTU after cleaning. The data trend over the two-day period indicates a false event, turbidity levels remained stable at <13 NTU in the hours following lens cleaning.

Event ID	Monitor	Rationale	Comments
HUN-2604-067	ND06T	The event is marked by a rapid increase in turbidity with multiple sporadic peaks. This is indicative of a false event.	The site was inspected on 28/03/2026 following 74mm of rainfall in the preceding 24 hours, at which time stream depth had increased significantly. The sensor had broken loose from the picket and was loosely swinging within the stream, however the sensor was submerged within the water column. The sensor was cleaned and repositioned. The site was inspected again on 2/04/2026, and the stream level had receded, and the sensor was positioned above the water level.

5.5 Excluded WQMS Units

Twenty-four WQMS Units were excluded from analysis due to inaccurate data. Alcoa confirmed the invalidity of data recorded from these units and provided commentary on the condition of each.

Table 4: Excluded WQMS Units

WQMS ID	Comment
DB01T	Stream dry as of 3/01/2026
FPWR1	Stream dry as of 12/11/2025
ND12T	Stream dry as of 15/12/2025. Unit removed from the field 19/03/2026 for planned DBCA prescribed burn.
ND13T	Stream dry as of 13/01/2026. Unit removed from the field 19/03/2026 for planned DBCA prescribed burn.
SE03INV3	Stream dry as of 1/12/2025
SE04T	New monitoring site installed 20/11/2025, stream dry at time of installation.
SE07T	Equipment reinstated on 5/03/2026, the stream was dry at the time of installation.
SE09T	Stream dry as of 4/01/2026
SE10T	Stream dry as of 1/01/2026
SE11T	Stream dry as of 3/11/2025
SE12INV	Stream dry as of 12/11/2025
SE12T	Stream dry as of 3/12/2025
SE15T	Equipment reinstated on 12/02/2026, the stream was dry at the time of installation.
SE22T	Stream dry as of 1/12/2025
SE23T	Stream dry as of 3/10/2025
SE24T	Stream dry as of 12/11/2025
SE25T	Stream dry as of 12/11/2025
SE26T	Stream dry as of 28/09/2025
SE34T	Stream dry as of 15/12/2025
SE36T	Stream dry as of 19/12/2025
SE48T	Stream dry as of 21/12/2025
SE60T	Equipment reinstated on 5/02/2026, the stream was dry at the time of installation.
SE62T	Stream dry as of 17/12/2025
SN07T	Stream dry as of 31/01/2026

5.6 Missing Data

Periods of missing data are detailed in Table 5.

Table 5: Missing Data Summary

WQMS ID	Data Notes
ND06T	Data gap from 19/03/2026 7:18 AM to 24/03/2026 11:18 AM due to unit removal for DBCA burn (no rainfall during this period)
ND14T	Data gap 12/3/2026 3:06:00 PM to 12/3/2026 7:49:00 PM Data gap from 19/03/2026 8:52 to 24/03/2026 10:51 due to unit removal for DBCA burn (no rainfall during this period)

Appendix A Huntly Raw WQMS Data

Date	Huntly WQMS Data – March 2026 - Events with turbidity > 25 NTU for an hour or more											
	DB01T	DB02T	DB03T	FPWR1	ND06T	ND07T	ND12T	ND13T	ND14T	PD01T	PD02T	PD03T
1/03/2026												
2/03/2026												
3/03/2026												
4/03/2026												
5/03/2026												
6/03/2026												
7/03/2026												
8/03/2026												
9/03/2026									1 x False			
10/03/2026					1 x False							
11/03/2026					1 x False							
12/03/2026												
13/03/2026												
14/03/2026												
15/03/2026												
16/03/2026												
17/03/2026					1 x False							
18/03/2026												
19/03/2026												
20/03/2026										1 x False		
21/03/2026												
22/03/2026												
23/03/2026												
24/03/2026												
25/03/2026					1 x False							
26/03/2026												
27/03/2026						1 x False				1 x False		
28/03/2026												
29/03/2026												
30/03/2026												
31/03/2026					1 x False							

Date	Huntly WQMS Data – March 2026 - Events with turbidity > 25 NTU for an hour or more											
	SE01T	SE02T	SE03INV1	SE03INV3	SE03T	SE04T	SE05T	SE06T	SE07T	SE08T	SE09T	SE10T
1/03/2026		1 x False	1 x False									
2/03/2026												
3/03/2026		1 x False										
4/03/2026												
5/03/2026												
6/03/2026												
7/03/2026			1 x False					1 x False				
8/03/2026			2 x False					1x False				
9/03/2026			1 x False									
10/03/2026		1 x False										
11/03/2026												
12/03/2026												
13/03/2026								1 x False				
14/03/2026			1 x False		1 x False							
15/03/2026												
16/03/2026		1 x False										
17/03/2026		3 x False										
18/03/2026								1 x False				
19/03/2026								1 x False				
20/03/2026								1 x False				
21/03/2026								1 x False				
22/03/2026		1 x False						1 x False				
23/03/2026												
24/03/2026			1 x False									
25/03/2026												
26/03/2026												
27/03/2026	2 x False	1x True			1 x False		2x True, 1 x False	1 x False				
28/03/2026							2x True					
29/03/2026			1 x False									
30/03/2026												
31/03/2026							1 x False					

Date	Huntly WQMS Data – March 2026 - Events with turbidity > 25 NTU for an hour or more											
	SE11T	SE12T	SE12INV	SE15T	SE23T	SE24T	SE25T	SE26T	SE34T	SE36T	SE48T	SE51T
1/03/2026												
2/03/2026												
3/03/2026												
4/03/2026												
5/03/2026												
6/03/2026												
7/03/2026												
8/03/2026												
9/03/2026												
10/03/2026												
11/03/2026												
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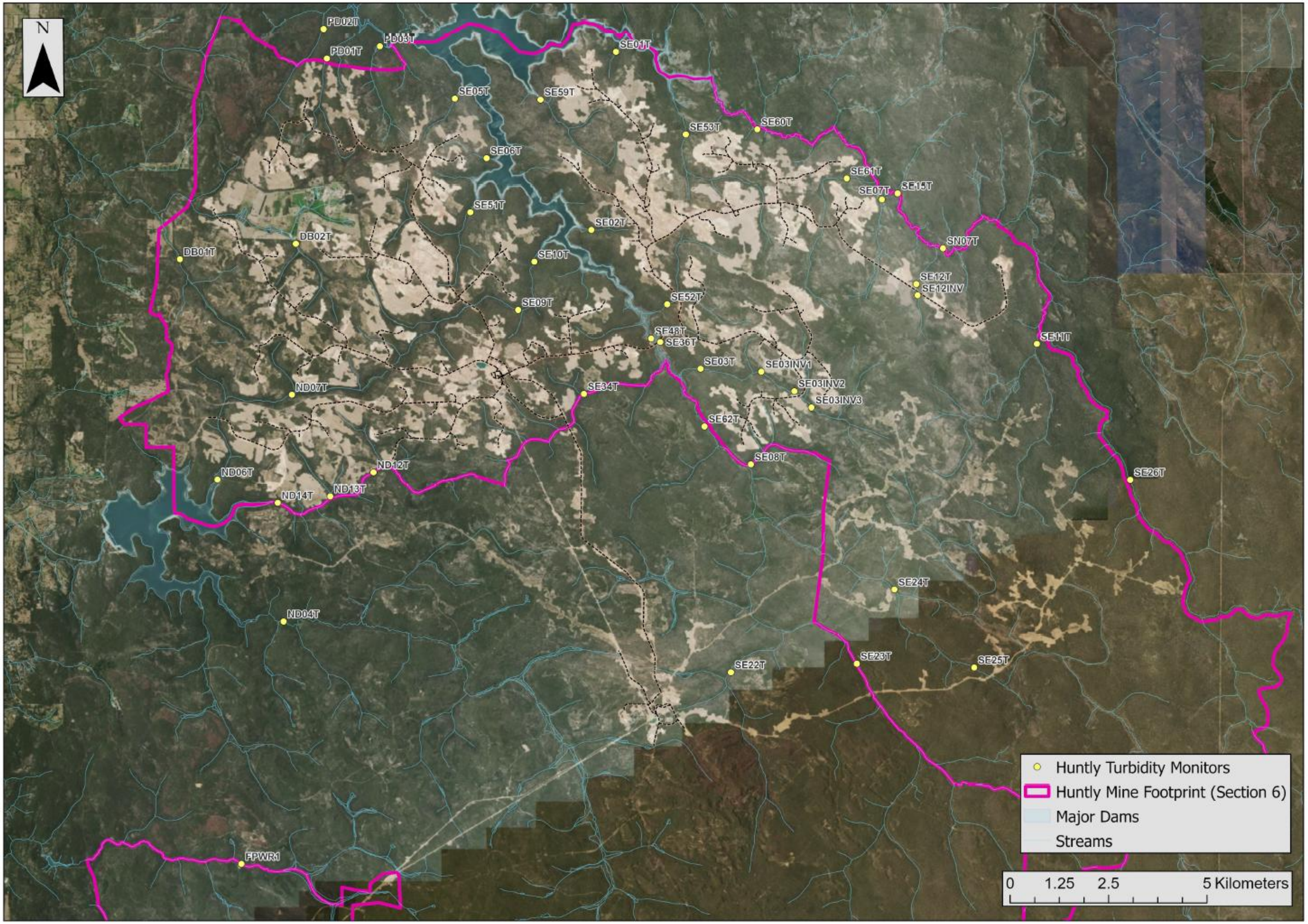
19/03/2026												
20/03/2026												
21/03/2026												
22/03/2026												
23/03/2026												
24/03/2026												
25/03/2026												
26/03/2026												
27/03/2026												1x True
28/03/2026												
29/03/2026												
30/03/2026												
31/03/2026												

Date	Huntly WQMS Data – March 2026 - Events with turbidity > 25 NTU for an hour or more						
	SE52T	SE53T	SE59T	SE60T	SE61T	SE62T	SN07T
1/03/2026							
2/03/2026	1 x False						
3/03/2026							
4/03/2026							
5/03/2026							
6/03/2026		1 x False					
7/03/2026		1 x False					
8/03/2026							
9/03/2026							
10/03/2026							
11/03/2026							
12/03/2026							
13/03/2026							
14/03/2026							
15/03/2026	1x False						
16/03/2026							
17/03/2026							
18/03/2026							
19/03/2026	1 x False						
20/03/2026	1 x False	2x False					
21/03/2026			1 x False				
22/03/2026		2x False					
23/03/2026		3x False	1 x False				
24/03/2026							
25/03/2026	1 x False						
26/03/2026							
27/03/2026			2x True		1x True		
28/03/2026		1x True	1x True		1x True		
29/03/2026							
30/03/2026							
31/03/2026							

Appendix B Huntly WQMS Locations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PD03T
PD01T
SE01T
SE05T
SE59T
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SE60T
SE06T
SE61T
SE07T
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SE51T
SE02T
DB02T
DB01T
SE10T
SN07T
SE12T
SE12INV
SE09T
SE52T
SE48T
SE36T
SE11T
SE03T
SE03INV1
SE03INV2
SE03INV3
ND07T
SE34T
SE62T
SE08T
ND12T
ND06T
ND14T
ND13T
SE26T
SE24T
ND04T
SE23T
SE25T
SE22T
FPWR1
Huntly Turbidity Monitors
Huntly Mine Footprint (Section 6)
Major Dams
Streams
0
1.25
2.5
5 Kilometers

Appendix C WQMS General Arrangement

ANTENNA

SOLAR PANEL

DATA OUTLET

POWER INLET

60 X 60 MM CABLE DUCT

SIERRA WIRELESS FX30

60 X 60 MM CABLE DUCT

12 V, 120 AH LI-ION BATTERY

DATA INLET

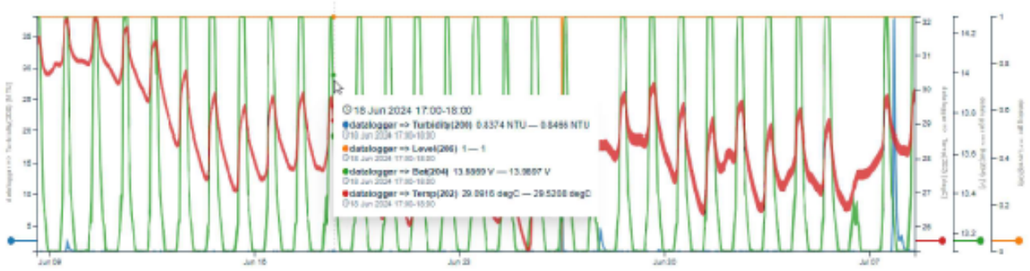
DATA TRANSMISSION TO IOT

SENSOR

STREAM DRY

SENSOR

STREAM FLOWING



REV.	REMARKS	DATE	DESIGNED	DRAWN	CHECKED	APPROVED	REFERENCE DRAWINGS
0	ISSUE FOR APPROVAL	05.07.2024	A.K.	S.A.	A.K.	A.K.	

ALL DIMENSIONS IN MILLIMETRES U.N.O.
LEVELS ARE IN METRES ON AHD U.N.O.
DO NOT SCALE DRAWING
IF IN DOUBT - ASK
TOLERANCES ISO2768-m U.N.O.
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TITLE

IOT TURBIDITY MONITORING STATION
SITE LAYOUT
GENERAL ARRANGEMENT

SHEET SIZE: A3

REV.: 1

SHEET 1 OF 2

SCALE NTS OR AS SHOWN

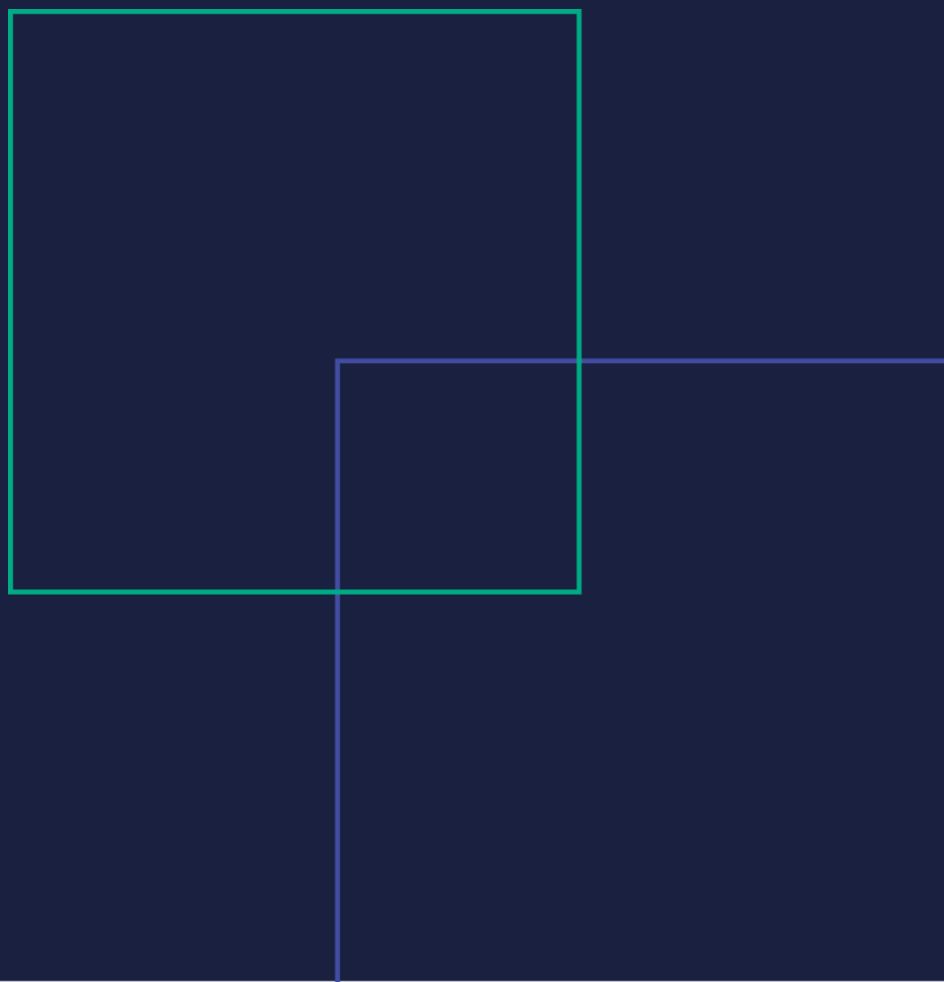
DRAWING NO. HI0090 - ALCOA WQMS

SCIDEV

WQMS Data Review

Willowdale Bauxite Mine

MARCH 2026



Document Control

Document Control			
Rev.	**Data Analysis**	**Approved By**	**Date**
00	Chris Blockley	Todd Placek	30/04/2026
01	Chris Blockley	Todd Placek	15/05/2026
02	Wendy Spunner	Todd Placek	27/05/26
03	Wendy Spunner	Todd Placek	3/06/2026

Contents

List of Figures

1. Executive Summary

This report, prepared by SciDev for Alcoa, provides an analysis of turbidity data collected from Water Quality Monitoring Systems (WQMS) deployed at the Willowdale bauxite mining operations during March 2026. The primary objective of this analysis was to evaluate the quality of the data, identify potential "true" turbidity exceedance events, and support Alcoa's compliance reporting obligations under Schedule 1, Division 2, Clause 6 of the **Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023**.

The analysis focused on identifying and classifying turbidity events where levels exceeded 25 nephelometric turbidity units (NTU) for at least one hour. Events were categorized as "true" or "false" based on Alcoa's **Turbidity Event Classification Guidelines**, which distinguish actual turbidity increases (true events) from false readings caused by environmental factors such as debris, air bubbles, or fluctuating water levels.

Key findings include:

Excluded Units: Four (4) WQMS units were excluded from the analysis due to invalid data caused by equipment faults or environmental interference.
False Events: Five (5) 'False' events were identified, primarily attributed to factors such as debris accumulation, sensor obstructions, and water turbulence.
Further Investigation: One (1) event was flagged for further investigation.
True Events: One (1) "True" turbidity exceedance event was identified, however none related to mining activities.

The report also highlights periods of missing data, which occurred due to system logoffs, equipment faults, or unplanned shutdowns. These gaps are detailed in the report to ensure transparency in data handling.

2. Scope

SciDev were engaged by Alcoa to analyse turbidity data collected from the Willowdale Water Quality Monitoring Systems (WQMS). The primary objective of this engagement is to assess the quality of the collected data and identify potential "true" turbidity events. This analysis supports Alcoa's reporting obligations under *Schedule 1, Division 2, Clause 6 of the Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023*.

3. Introduction

3.1 Background

Alcoa of Australia Ltd (Alcoa) operates two bauxite mines, Huntly and Willowdale, approximately 100 km southeast of Perth, Western Australia. These mining operations are subject to environmental controls mandated by the *Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023*.

Under this Exemption Order, Alcoa is required to implement drainage control measures and monitor effectiveness in water bodies within and downstream of mining operations. Turbidity, a critical water quality parameter, is monitored using Water Quality Monitoring Systems (WQMS), to detect deviations and identify high-turbidity events.

Alcoa is obligated to report monthly on-stream turbidity, including the identification and classification of any “true” high-turbidity exceedance events. (Refer to Appendix B for the site map showing WQMS locations.)

3.2 Monitoring Requirements

Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023

specifies that a drainage incident occurs when:

a. Runoff from a disturbance area enters the surrounding environment, resulting in surface water turbidity of at least 25 NTU for a duration of at least one hour; or
b. a discharge from containment infrastructure includes, or may include, environmentally hazardous material.

Trigger levels for drainage incidents are outlined in Schedule 1 of the Exemption Order. To meet these requirements, Alcoa has developed "Turbidity Event Classification Guidelines" which define a true turbidity exceedance event as a WQMS recording turbidity levels of at least 25 NTU for a period exceeding one hour.

3.3 Water Quality Management System (WQMS)

During the March 2026 monitoring period, four (4) WQMS units were deployed to monitor turbidity levels in streams subject to surface water runoff within and downstream of Willowdale mining operations.

Each WQMS unit consists of the following components:

Aquas SMR10 Turbidity Probe

Positioned at a 90-degree angle to water flow, each probe is equipped with an automatic lens wiper and a guard to protect against larger debris.

Data Taker DT82 Logger

Records data locally every six seconds, with six-minute averages transmitted via IoT-enabled modems to a cloud-based platform.

Float Switch

Detects whether the sensor is submerged, or the stream is dry.

3.4 Purpose

This report aims to analyse turbidity data collected during March 2026, focusing on the identification and classification of "true" turbidity exceedance events based on Alcoa's Turbidity Event Classification Guidelines.

3.5 Exclusions

This report is not intended as:

An assessment of the WQMS network or Alcoa's compliance with relevant legislation and requirements.
An evaluation of the suitability of the trigger levels or event classification procedures adopted by Alcoa.

3.6 Abbreviations

	Term
IoT	Internet of Things
NTU	Nephelometric Turbidity Units
WQMS	Water Quality Management System

4. Methodology

4.1 WQMS Locations

A site map showing the WQMS locations is provided in Appendix B.

4.2 Data Review

Data recorded by the WQMS Units was reviewed and potential events where turbidity levels exceeded 25 NTU for at least one hour. Each potential event was categorised as either ‘true ‘or ‘false’.

4.2.1 True Turbidity Exceedance Events

These events are caused by an actual increase in stream turbidity. Per Alcoa’s "Turbidity Event Classification Guidelines" true exceedance events typically exhibit:

A sharp, sudden incline in turbidity levels.
A return to baseline turbidity levels in a pattern resembling a normal (Gaussian) distribution.

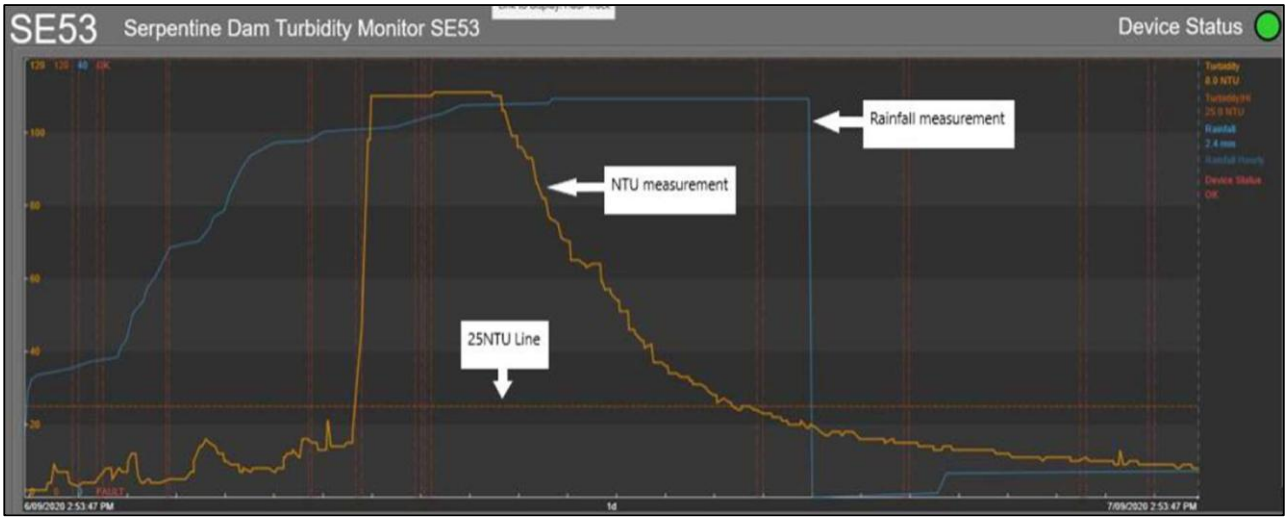


Figure 1 Typical 'true' exceedance event showing the sharp incline and gradual return to background levels.

4.2.2 False Turbidity Exceedance Events

These events are caused by factors unrelated to actual turbidity increase, such as:

Organic debris (e.g., leaves, sticks, algae) obstructing the sensor
Air bubbles or water turbulence near the sensor

Fluctuating water levels intermittently covering and uncover the sensor lens.

False events typically exhibit sharp inclines and declines without the characteristic bell curve shape of true events

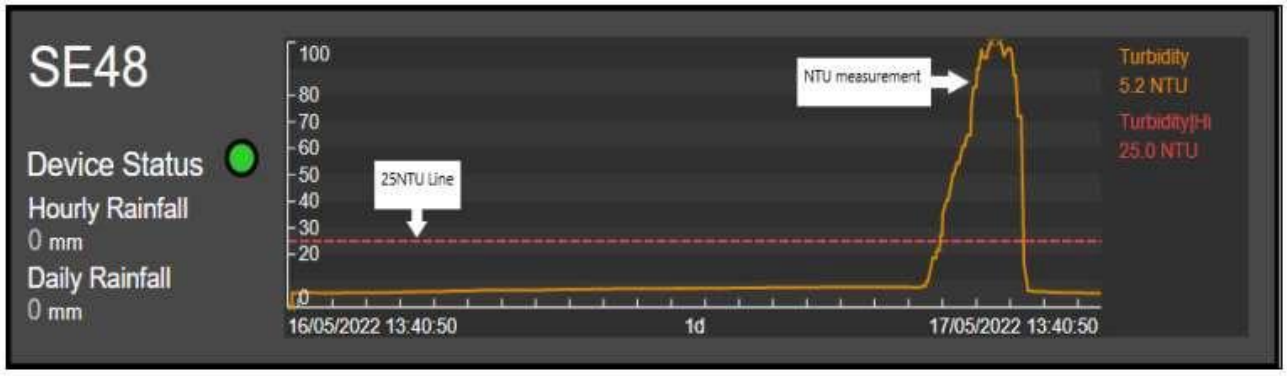


Figure 2 Typical 'false' exceedance event showing both a sharp incline and decline

4.2.3 Missing Data

Missing data occurs when a WQMS unit fails to record information, this can occur from unexpected system logoffs, equipment faults, or unplanned shutdowns.

5. Results and Discussion

5.1 Events

Table 1 provides a summary of identified events. Table 2 offers detailed information about each event.

Table 1: Events Summary

Category	# of events
Total events	6
Flagged for further investigation	1
False events	5
Caused by mining related activity	0

It was found that:

a. There was one (1) event flagged for further investigation. Of this event, it was a true event. This event was not directly caused by mining related activity.
b. Two (2) units remained dry with no presence of water.
c. Two (2) units remained flowing throughout the month.

Note:

A True event is recorded when there is water present within the water way, and, that the probe has not been affected by any external sources.

Table 2: Events Details

Event ID	Monitor	Event Assessment (Additional Investigation Required /FALSE)	Event Start Date	Event Start Time	Event End Date	Event End Time	Event Duration	Ave. Turbidity (NTU)	Peak Turbidity (NTU)
WDL-2604-001	RHB3	FALSE	02/03/2026	16:16	02/03/2026	20:59	1 hour 43 min	2125.5	5000
WDL-2604-003	RHB3	FALSE	03/03/2026	19:07	03/03/2026	21:08	2 hours 1 min	2217.7	5000
WDL-2604-005	RHB3	FALSE	09/03/2026	19:04	09/03/2026	21:17	2 hours 13 mins	304.29	2853.3
WDL-2604-006	RHB3	FALSE	09/03/2026	23:06	10/03/2026	6:04	6 hours 58 mins	128.01	356.49
WDL-2604-007	RHB3	FALSE	10/03/2026	19:06	10/03/2026	20:13	1 hour 6 min	523.34	2342.2
WDL-2604-019	RHB3	Additional Investigation Required	28/03/2026	8:09	28/03/2026	11:29	3 hours 20 min	36.799	44.854

5.2 Additional Investigation

5.2.1 WDL-2604-019

RHB3

The event, occurring between 8:09 AM and 11:29 AM on the 28th of March at RHB3. Trend analysis of the monitoring data is shown in Figure 3 below. The turbidity graph displays a response pattern characteristic of a genuine turbidity exceedance event, with progressively increasing turbidity levels followed by a gradual return toward baseline conditions.

Trend analysis indicates a clear rise-and-fall pattern, which correlates with recent rainfall conditions. A total of 86.8 mm of rainfall was recorded within the 24-hour period preceding the event. This substantial rainfall likely resulted in increased surface runoff across the catchment.

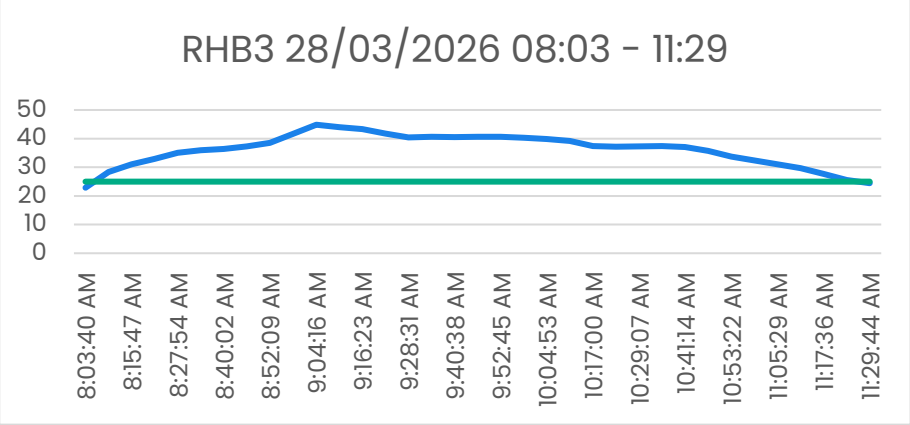


Figure 3 - RHB3 28/03/2026 08:03 - 11:29

Field notes provided by Alcoa are included below.

> *"The stream was inspected on 28/03/2026 and it was flowing vigorously at the time. The water was somewhat turbid with turbidity readings approximately 15 NTU. No runoff from forest tracks between Gibber Road and the monitor was noted. The full catchment investigation was undertaken on 31/03/2026. The first bush track south off Gibber Road that followed the stream was in good condition though had a few signs of runoff into the bush, but this was very minor (track passed through Gibber 10, Walrus 1, Minke 5, Vaquita 1, Walrus 4 and Vaquita 8). The stream crossing between Walrus 4 and Vaquita 8 was not connected. There was water on the Vaquita 8 side (upstream) but not on the Walrus 4 side (downstream). The Walrus stream crossing (rehabilitated in 2025) was inspected and was in very good condition (no signs of erosion or sediment build up). There did not appear to be any runoff from Gibber Road onto the forest track. Following the forest tracks alongside the stream through Minke 1, Minke 2 and Gibber 16, no stream flow was*

observed in this stream. No breaches of pit edges were observed on any of the rehabilitation pits examined during the catchment inspection. The Irrawaddy stream crossing was examined, and no erosion or sediment build up was observed. A second stream off Gibber Road was followed using forest tracks and a small amount of erosion off the track near the stream zone was observed, however, this was minor. This track was followed to Walrus 3 and no significant erosion was found on this track. Based on the shape of the turbidity graph, this appears to be a true event, however, no mining-related sources could be determined. In winter 2025, runoff from forest tracks has been attributed as the cause of turbidity events at this monitor during high rainfall events. Event classified as a true, non-mining related turbidity event."

Based on the comments provided by Alcoa this event is considered 'True', however no evidence of mining related contributions to the turbidity exceedance.

5.3 True Event(s)

One (1) 'True' turbidity event was identified during the period. Refer to section 5.2 for additional information.

5.4 False Event(s)

Five (5) 'False' events were identified during the reporting period. Rationale on potential causes is summarised below.

Table 3: False Events Rationale

Event ID	Monitor	Rationale	Comments
WDL-2604-001	RHB3	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	This event consisted of a very sharp and very sudden increase in readings, high readings for the duration of the event and a very sharp and sudden decrease. This is indicative of a fault with the equipment rather than something environmental. Event classified as a false event.
WDL-2604-003	RHB3	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Stream inspected 10/03/2026 at 10:30am. Water flowing and clear. Probe inspected and replaced back into the stream. No evidence of pig activity, but accumulating leaf litter in the pool. Turbidity noted as 0.8178NTU. This event consisted of a very sharp and very sudden increase in readings, high readings for the duration of the event and a very sharp and sudden decrease. This is indicative of a fault with the equipment rather than something environmental. Event classified as a false event.
WDL-2604-005	RHB3	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Stream inspected 10/03/2026 at 10:30am. Water flowing and clear. Probe inspected and replaced back into the stream. No evidence of pig activity, but accumulating leaf litter in the pool. Turbidity noted as 0.8178NTU. Classified as a false event.
WDL-2604-006	RHB3	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Stream inspected 10/03/2026 at 10:30am. Water flowing and clear. Probe inspected and replaced back into the stream. No evidence of pig activity, but accumulating leaf litter in the pool. Turbidity noted as 0.8178NTU. Classified as a false event.
WDL-2604-007	RHB3	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	This event consisted of a very sharp and very sudden increase in readings, high readings for the duration of the event and a very sharp and sudden decrease. This is indicative of a fault with the equipment rather than something environmental. Event classified as a false event.

5.5 Excluded WQMS Units

Two (2) WQMS Units were excluded from analysis due to inaccurate data. Alcoa confirmed the invalidity of data recorded from these units and provided commentary on the condition of each.

Table 4: Excluded WQMS Units

WQMS ID	Status	Comment
HV07T	Dry	Stream dry. Probe installed in bucket of deionised water 15/11/2025.
HV49T	Dry	Stream dry. Probe installed in a bucket of deionised water 03/03/2026.

5.6 Missing Data

Periods of missing data are detailed in Table 5.

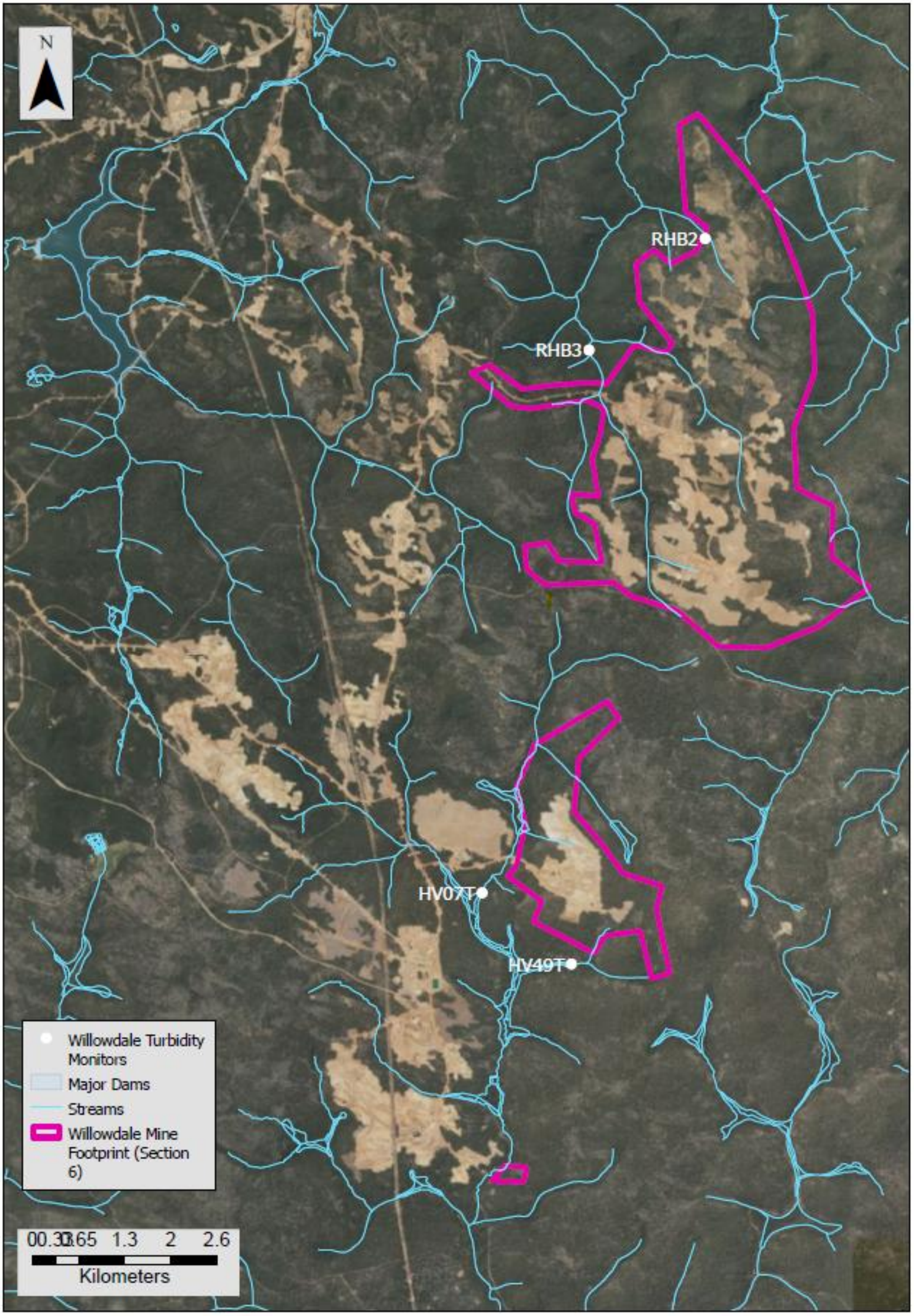
Table 5: Missing Data Summary

WQMS ID	Data Notes
RHB2	Equipment fault between 28/03/2026 22:43 and 29/03/2026 03:25. Data unavailable during this period.

Appendix A Willowdale Raw WQMS Data

Date	Willowdale WQMS Data – March 2026 - Events with turbidity > 25 NTU for an hour or more			
	HV07T	HV49T	RHB2	RHB3
1/03/2026				
2/03/2026				1x False
3/03/2026				1x False
4/03/2026				
5/03/2026				
6/03/2026				
7/03/2026				
8/03/2026				
9/03/2026				2x False
10/03/2026				1x False
11/03/2026				
12/03/2026				
13/03/2026				
14/03/2026				
15/03/2026				
16/03/2026				
17/03/2026				
18/03/2026				
19/03/2026				
20/03/2026				
21/03/2026				
22/03/2026				
23/03/2026				
24/03/2026				
25/03/2026				
26/03/2026				
27/03/2026				
28/03/2026				1x True
30/03/2026				
31/03/2026				

Appendix B Willowdale WQMS Locations


N
RHB2
RHB3
HV07T
HV49T
Willowdale Turbidity Monitors
Major Dams
Streams
Willowdale Mine Footprint (Section 6)
0 0.3 0.65 1.3 2 2.6
Kilometers

Appendix C WQMS General Arrangement

ANTENNA

SOLAR PANEL

DATA OUTLET

POWER INLET

60 X 60 MM CABLE DUCT

SIERRA WIRELESS FX30

60 X 60 MM CABLE DUCT

12 V, 120 AH LI-ION BATTERY

DATA INLET

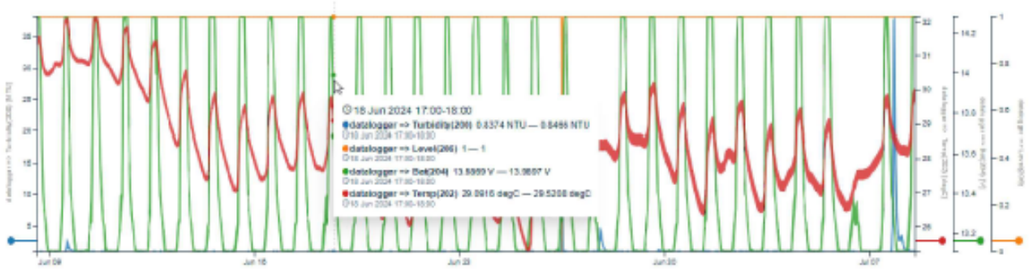
DATA TRANSMISSION TO IOT

SENSOR

STREAM DRY

SENSOR

STREAM FLOWING



REV.	REMARKS	DATE	DESIGNED	DRAWN	CHECKED	APPROVED	REFERENCE DRAWINGS
0	ISSUE FOR APPROVAL	05.07.2024	A.K.	S.A.	A.K.	A.K.	

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TITLE

IOT TURBIDITY MONITORING STATION
SITE LAYOUT
GENERAL ARRANGEMENT

SHEET SIZE: A3

REV.: 1

SHEET 1 OF 2

SCALE NTS OR AS SHOWN

DRAWING NO. HI0090 - ALCOA WQMS