Huntly Bauxite Mine – WQMS Data Review

August 2025

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1. Executive Summary

This report, prepared by RARE Environmental Pty Ltd and SciDev Pty Ltd for Alcoa, provides an analysis of turbidity data collected from Water Quality Monitoring Systems (WQMS) deployed at the Huntly bauxite mining operations during August 2025. 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**: Seven WQMS units were excluded from the analysis due to invalid data caused by equipment faults or environmental interference.
- **False Events**: Seventy-nine 'false' events were identified, primarily attributed to factors such as debris accumulation, sensor obstructions, and water turbulence.
- **Further Investigation**: Ten events were flagged for further investigation.
- **True Events**: Six "true" turbidity exceedance events were identified.

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

RARE Environmental Pty Ltd and SciDev Pty Ltd were engaged by Alcoa to analyse turbidity data collected from the Huntly Water Quality Monitoring Systems (WQMSs). 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 (WQMSs), 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 August 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 Systems (WQMSs)

During the August 2025 monitoring period, forty-three 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 August 2025, 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 WQMSs 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.

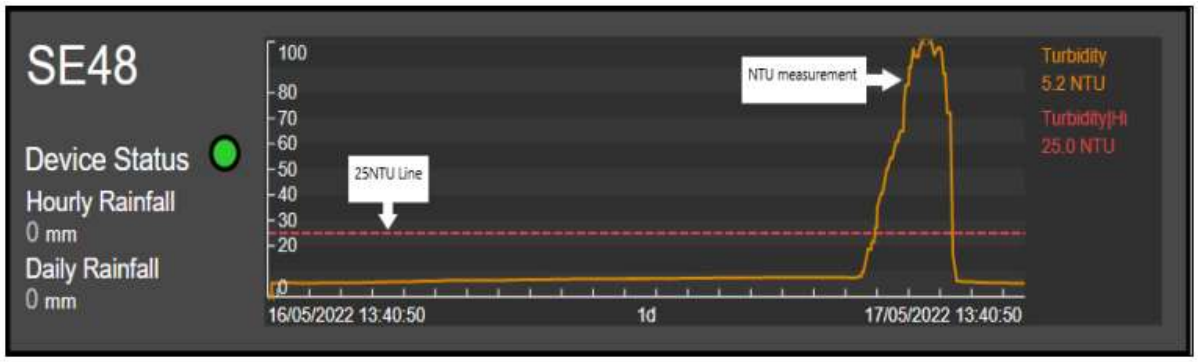


Figure 2 Typical 'false' exceedance event showing both a sharp incline and decline

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
Flagged for further investigation	10
False	79

Table 2 Events Details

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
HUN-2508-001	ND04T	'False'	2/08/2025 9:54	2/08/2025 11:12	1 hr 18 min	38.48	30.72
HUN-2508-002	ND04T	'False'	15/08/2025 8:06	15/08/2025 10:06	2 hr 0 min	779.7	260.01
HUN-2508-003	ND04T	'False'	16/08/2025 5:36	16/08/2025 7:00	1 hr 24 min	353.42	147.55
HUN-2508-004	ND04T	'False'	16/08/2025 9:06	16/08/2025 11:06	2 hr 0 min	1710.44	494.3
HUN-2508-005	ND04T	'Additional Investigation Required'	19/08/2025 4:00	19/08/2025 7:24	3 hr 24 min	52.95	41.38
HUN-2508-006	ND04T	'False'	19/08/2025 7:48	19/08/2025 9:42	1 hr 54 min	51.47	39.41
HUN-2508-007	FPWR1	'False'	19/08/2025 14:06	19/08/2025 16:06	2 hr 0 min	133.77	70.22
HUN-2508-008	SE03T	'False'	1/08/2025 14:12	1/08/2025 18:18	4 hr 6 min	36.79	32.28
HUN-2508-009	SE03T	'False'	2/08/2025 9:24	2/08/2025 19:36	10 hr 12 min	67.12	46.38
HUN-2508-010	SE03T	'False'	4/08/2025 3:06	4/08/2025 10:48	7 hr 42 min	622.58	118.85
HUN-2508-011	SE03T	'False'	14/08/2025 0:00	14/08/2025 4:48	4 hr 48 min	39.16	32.44
HUN-2508-012	SE03T	'False'	19/08/2025 11:08	19/08/2025 19:18	8 hr 11 min	45.58	32.9
HUN-2508-013	SE03INV1	'False'	3/08/2025 3:30	3/08/2025 5:48	2 hr 18 min	37.49	32.09
HUN-2508-014	SE03INV1	'False'	13/08/2025 23:54	14/08/2025 2:00	2 hr 6 min	33.4	29.18
HUN-2508-015	SE03INV1	'False'	19/08/2025 11:48	19/08/2025 13:06	1 hr 18 min	30.12	27.96
HUN-2508-016	SE05T	'False'	13/08/2025 20:42	13/08/2025 23:06	2 hr 24 min	58.13	39.25

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
HUN-2508-017	SE05T	'False'	19/08/2025 8:20	19/08/2025 9:45	1 hr 25 min	51.7	38.52
HUN-2508-018	SE06T	'False'	12/08/2025 7:03	13/08/2025 14:22	31 hr 19 min	66.14	46.82
HUN-2508-019	SE07T	'False'	17/08/2025 6:06	17/08/2025 7:06	1 hr	3289.83	1508.05
HUN-2508-020	SE07T	'False'	17/08/2025 12:36	17/08/2025 15:30	2 hr 54 min	159.57	56.47
HUN-2508-021	SE07T	'False'	18/08/2025 0:12	18/08/2025 1:36	1 hr 24 min	1023.91	359.82
HUN-2508-022	SE07T	'False'	22/08/2025 12:36	22/08/2025 13:36	1 hr	1908.03	879.91
HUN-2508-023	SE07T	'False'	23/08/2025 15:36	23/08/2025 16:36	1 hr	1894.07	873.55
HUN-2508-024	SE07T	'False'	23/08/2025 20:06	23/08/2025 21:06	1 hr	4000	1831.23
HUN-2508-025	SE07T	'False'	25/08/2025 0:36	25/08/2025 1:36	1 hr	1234.58	568.89
HUN-2508-026	SE07T	'False'	25/08/2025 21:06	25/08/2025 22:06	1 hr	1494.17	693.31
HUN-2508-027	SE07T	'False'	26/08/2025 16:06	26/08/2025 17:06	1 hr	757.89	360.31
HUN-2508-028	SE07T	'False'	27/08/2025 6:06	27/08/2025 7:06	1 hr	2020.27	933.74
HUN-2508-029	SE07T	'False'	28/08/2025 6:36	28/08/2025 7:36	1 hr	1930.42	889.01
HUN-2508-030	SE07T	'False'	30/08/2025 18:36	30/08/2025 19:36	1 hr	4000	1831.05
HUN-2508-031	SE10T	'False'	20/08/2025 15:06	21/08/2025 18:24	27 hr 18 min	1061.48	222.52
HUN-2508-033	SE11T	'False'	2/08/2025 3:12	2/08/2025 6:36	3 hr 24 min	141.6	51.84
HUN-2508-034	SE12T	'False'	2/08/2025 9:06	2/08/2025 15:06	6 hr 0 min	382.74	115.81
HUN-2508-035	SE12T	'False'	3/08/2025 3:12	3/08/2025 4:42	1 hr 30 min	349.13	90.75
HUN-2508-036	SE12T	Additional Investigation Required	3/08/2025 8:18	3/08/2025 9:18	1 hr 0 min	128.62	53.27
HUN-2508-037	SE12T	'False'	3/08/2025 13:48	3/08/2025 14:48	1 hr 0 min	235.93	62.64
HUN-2508-038	SE12T	'False'	9/08/2025 14:36	9/08/2025 16:00	1 hr 24 min	114.59	68.67
HUN-2508-039	SE12T	'False'	13/08/2025 20:42	14/08/2025 0:42	4 hr 0 min	181.82	102.52

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
HUN-2508-040	SE12T	Additional Investigation Required	19/08/2025 8:00	19/08/2025 12:12	4 hr 12 min	1229.36	262.71
HUN-2508-041	SE12T	Additional Investigation Required	20/08/2025 5:12	20/08/2025 6:36	1 hr 24 min	247.32	77.37
HUN-2508-042	SE12T	Additional Investigation Required	20/08/2025 13:12	20/08/2025 14:12	1 hr 0 min	193.39	121.42
HUN-2508-043	SE12T	'False'	29/08/2025 15:36	31/08/2025 14:48	47 hr 12 min	4000	3803.15
HUN-2508-044	SE12INV	'False'	1/08/2025 0:00	2/08/2025 10:36	34 hr 36 min	437.87	387.21
HUN-2508-045	SE12INV	'False'	2/08/2025 10:54	3/08/2025 15:42	28 hr 48 min	1309.43	150.18
HUN-2508-046	SE12INV	Additional Investigation Required	9/08/2025 12:30	9/08/2025 15:36	3 hr 6 min	599.09	194.34
HUN-2508-047	SE12INV	'False'	13/08/2025 19:42	14/08/2025 0:24	4 hr 42 min	657.19	263.28
HUN-2508-048	SE12INV	Additional Investigation Required	19/08/2025 7:48	19/08/2025 12:00	4 hr 12 min	1793.16	465.1
HUN-2508-049	SE12INV	'False'	19/08/2025 12:36	19/08/2025 14:12	1 hr 36 min	122.03	57.44
HUN-2508-050	SE12INV	'False'	19/08/2025 15:30	19/08/2025 17:00	1 hr 30 min	88.53	49.7
HUN-2508-051	SE12INV	'False'	19/08/2025 17:18	19/08/2025 18:42	1 hr 24 min	61.2	38.18
HUN-2508-052	SE12INV	Additional Investigation Required	20/08/2025 5:00	20/08/2025 6:12	1 hr 12 min	232.31	75.27
HUN-2508-053	SE15T	'False'	1/08/2025 0:00	14/08/2025 10:36	322 hr 36 min	132.04	41.53
HUN-2508-054	SE22T	'False'	12/08/2025 17:59	13/08/2025 14:54	20 hr 55 min	122.44	57.81
HUN-2508-055	SE23T	'False'	2/08/2025 9:12	2/08/2025 13:42	4 hr 30 min	238.64	146.59
HUN-2508-056	SE23T	'False'	19/08/2025 7:42	19/08/2025 9:12	1 hr 30 min	71.52	46.48
HUN-2508-057	SE25T	'False'	1/08/2025 19:30	2/08/2025 5:36	10 hr 6 min	35.95	29.12
HUN-2508-058	SE25T	'False'	2/08/2025 10:24	2/08/2025 21:12	10 hr 48 min	892.82	397.68
HUN-2508-059	SE25T	'False'	4/08/2025 2:06	4/08/2025 4:06	2 hr 0 min	111.57	84.9
HUN-2508-060	SE25T	'False'	6/08/2025 18:27	6/08/2025 22:23	3 hr 56 min	299.86	167.87

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
HUN-2508-061	SE26T	'False'	3/08/2025 5:42	3/08/2025 11:42	6 hr 0 min	4000	3109.32
HUN-2508-062	SE26T	'False'	19/08/2025 17:24	19/08/2025 18:24	1 hr 0 min	1018.48	589.84
HUN-2508-063	SE26T	'False'	20/08/2025 18:06	20/08/2025 19:30	1 hr 24 min	4000	2766.84
HUN-2508-064	SE26T	'False'	29/08/2025 8:36	29/08/2025 21:42	13 hr 6 min	3095.72	614.87
HUN-2508-065	SE26T	'False'	31/08/2025 4:06	31/08/2025 6:36	2 hr 30 min	3220.34	893.58
HUN-2508-066	SE26T	'False'	31/08/2025 7:36	31/08/2025 9:00	1 hr 24 min	144.12	95.29
HUN-2508-067	SE36T	'False'	4/08/2025 3:57	4/08/2025 8:54	4 hr 57 min	51.06	26.92
HUN-2508-068	SE51T	'False'	13/08/2025 23:00	14/08/2025 0:24	1 hr 24 min	30.96	28.82
HUN-2508-069	SE52T	'False'	2/08/2025 12:12	2/08/2025 18:18	6 hr 6 min	73.55	41.63
HUN-2508-070	SE52T	'False'	3/08/2025 2:18	3/08/2025 20:00	17 hr 42 min	53.99	34.25
HUN-2508-071	SE52T	'False'	13/08/2025 21:42	14/08/2025 8:00	10 hr 18 min	247.62	46.87
HUN-2508-072	SE52T	'False'	19/08/2025 8:54	20/08/2025 2:00	17 hr 6 min	122.22	43.97
HUN-2508-073	SE52T	'False'	20/08/2025 14:30	20/08/2025 17:30	3 hr 0 min	28.64	26.91
HUN-2508-074	SE52T	'False'	24/08/2025 13:06	24/08/2025 16:18	3 hr 12 min	31.06	28.3
HUN-2508-075	SE52T	'False'	25/08/2025 1:12	25/08/2025 2:30	1 hr 18 min	27.91	26.07
HUN-2508-076	SE53T	'False'	19/08/2025 12:31	19/08/2025 20:18	7 hr 47 min	38.25	32.73
HUN-2508-077	SE59T	'False'	13/08/2025 21:42	14/08/2025 3:00	5 hr 18 min	43.07	33.92
HUN-2508-078	SE59T	'False'	19/08/2025 7:42	19/08/2025 14:18	6 hr 36 min	114.49	41.16
HUN-2508-079	SE60T	'False'	1/08/2025 0:00	2/08/2025 16:12	40 hr 12 min	832.42	238.53
HUN-2508-080	SE60T	'False'	19/08/2025 5:18	19/08/2025 7:42	2 hr 24 min	38.24	32.49
HUN-2508-081	SE61T	'False'	2/08/2025 13:12	2/08/2025 18:18	5 hr 6 min	32.69	30.39
HUN-2508-082	SE61T	'False'	3/08/2025 6:48	3/08/2025 21:24	14 hr 36 min	47.56	36.53
HUN-2508-083	SE61T	'False'	13/08/2025 22:18	14/08/2025 6:30	8 hr 12 min	60.03	40.27

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
HUN-2508-084	SE61T	Additional Investigation	19/08/2025 9:12	20/08/2025 10:48	25 hr 36 min	118.38	49.6
HUN-2508-085	SE61T	'False'	20/08/2025 11:00	20/08/2025 22:48	11 hr 48 min	33.65	28.98
HUN-2508-086	SE62T	Additional Investigation	2/08/2025 8:42	2/08/2025 10:18	1 hr 36 min	34.45	28.62
HUN-2508-087	SE62T	'False'	4/08/2025 1:06	4/08/2025 9:00	7 hr 54 min	110.29	72.9
HUN-2508-088	SE62T	'False'	6/08/2025 4:36	6/08/2025 12:06	7 hr 30 min	102.09	71.64
HUN-2508-089	SE62T	'False'	7/08/2025 7:12	7/08/2025 9:00	1 hr 48 min	187.89	97.62

5.2. Additional Investigation

Ten events were flagged for additional investigation.

5.2.1. HUN-2508-005 Additional Investigation

The event, occurring between 4:00 and 7:24 on the 19th of August at ND04T exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 3 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

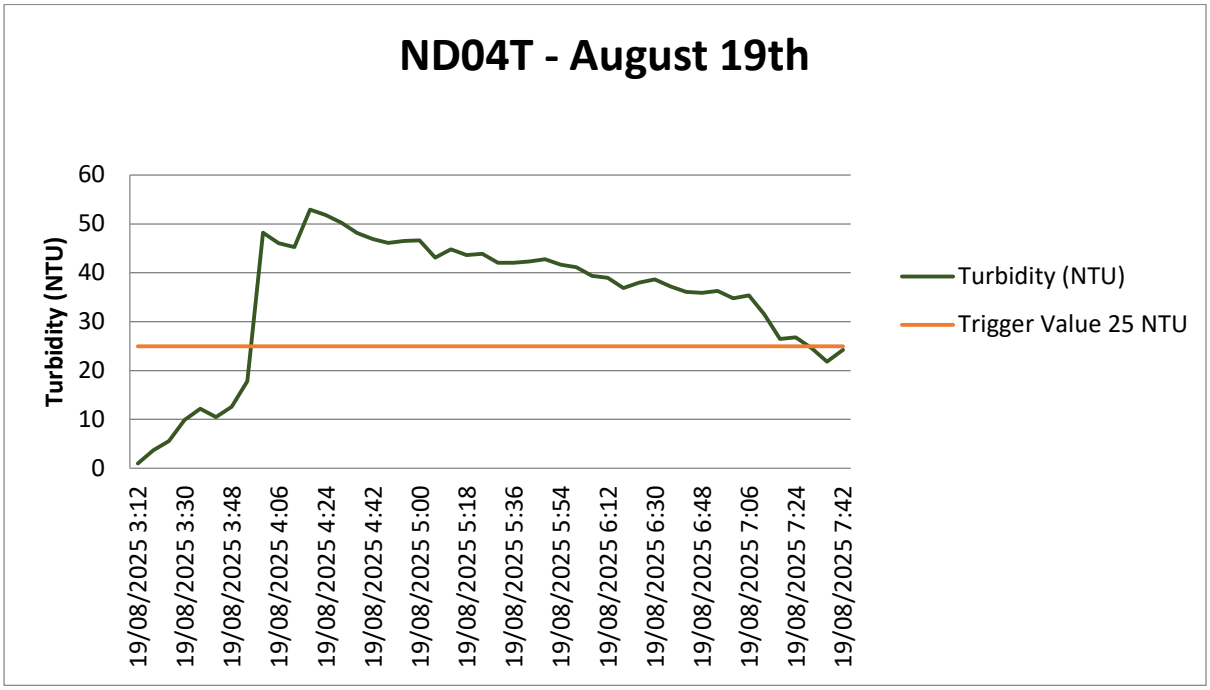


Figure 3 HUN-2508-028

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event.
- It was identified as the first flush event after the stream had been stagnant.

Field notes provided by Alcoa are included below.

"Site inspected 22/8/25 due to rain event >20mm received 19/08/2025. The stream was clear and flowing. The sensor was cleaned and returned to the stream. Turbidity pre-clean read 1.8 NTU and post-clean 2.8 NTU. Data analysis indicated turbidity initially spiked due to the first rainfall flush which increase water flow and level (last inspection identified sensor positioned outside of water due to low level), likely carrying debris and sediment downstream. The turbidity stopped spiking >25 NTU as the rain event continues on the 19/08/2025."

Based on the evidence of the first flush event at the site this event is considered a false event. No additional investigation is required.

5.2.2. HUN-2508-036 Additional Investigation

The event, occurring between 8:18 and 9:18 on the 3rd of August at SE12T exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 4 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

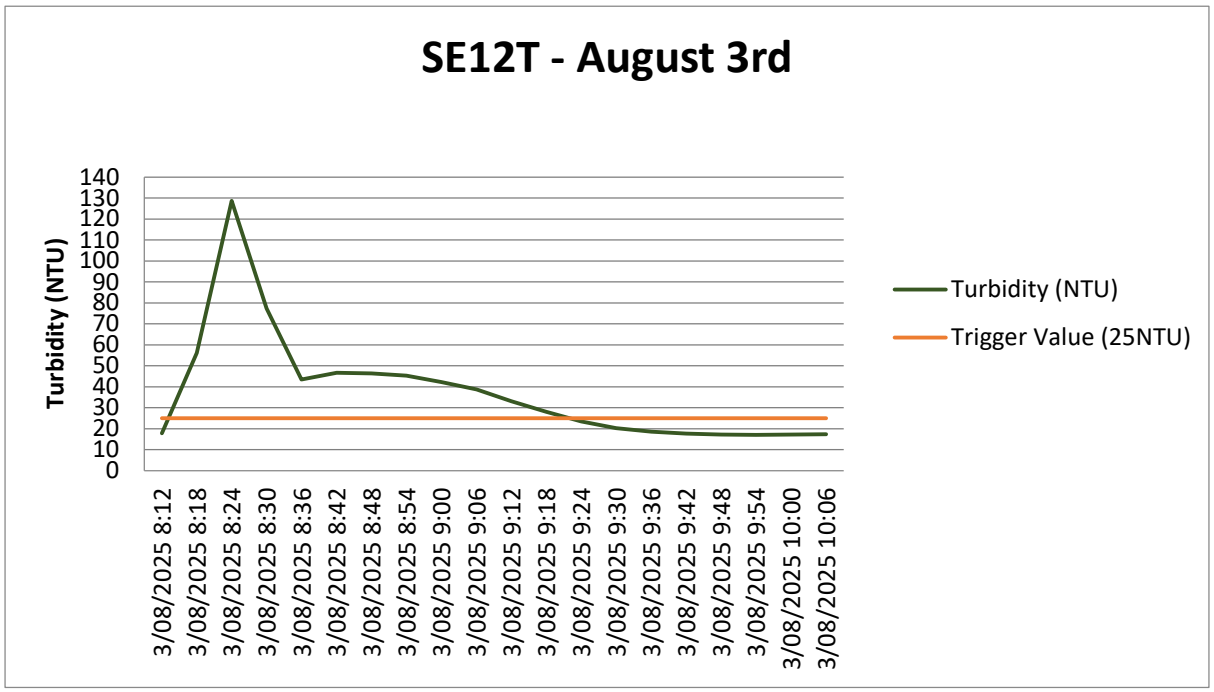


Figure 4 - HUN-2508-036

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event.
- Erosion controls were installed in 2024 adjacent the embankment of the Wittwer haul road, inspection of these controls identified that they are still operating effectively.
- Sediment deposits identified upstream at SE12INV have been linked to mobilised sediment from the forest track.

Field notes provided by Alcoa are included below.

"On the 2 & 3 August 2025, turbidity monitor SE12T measured four stream turbidity events exceeding 25 NTU for more than 1 hour (02/08/25 from 0906 to 1506 hours & 03/08/25 from 0312 to 0442 hours, 0818 to 0918 hours, and 1348 to 1448 hours). These exceedances coincide with Alcoa Huntly Mine receiving 60.8mm of rain over a two day period.

Data analysis indicates a true rise in stream turbidity, as well as sensor interference caused by organic debris.

On 2 August 2025, site SE12T was inspected and found to have very low stream depth, with water just covering the sensor lens which was positioned close to the stream bed. Organic

debris was observed in the stream bed and around the sensor, along with mild stream turbidity. On the same day, upstream monitor SE12INV was also inspected and found buried in sediment caused by runoff from the adjacent forest track. The sensor was cleaned and repositioned. On 3 August 2025, SE12T was revisited. Stream depth had increased, and the sensor was adjusted to sit horizontally and higher in the water profile to reduce interference from stream bed sediment/debris. SE12INV was again found nearly buried by sediment and was cleaned and repositioned. Both sites were again inspected on 4 August 2025, the stream was clear at both SE12T and SE12INV, with no new sediment accumulation observed at SE12INV.

In 2024, Alcoa identified that the Wittwer haul road adjacent to SE12T turbidity monitor had experienced erosion from the haul road embankment. Sediment controls (coir logs and sediment screen) have been installed adjacent to the haul road to minimise impact to the stream. Inspection of the controls on 04/08/2025 identified that some minor erosion occurred during the rainfall, however controls appear to have been effective.

Following the events of 2024, an additional investigation turbidity monitor (SE12INV) was placed upstream of SE12T, south of the Wittwer haul road. Data from this monitor and field inspections identified significant sediment contribution from a non-mining related forest track.

Alcoa does not believe that mining infrastructure contributed to the turbidity exceedance at SE12T."

Based on the comments provided by Alcoa, and the existing sediment controls, this event is considered 'True', however non mining related and likely due to mobilised sediment from the upstream non-mining-related forest track.

5.2.3. HUN-2508-040 Additional Investigation

The event, occurring between 8:00 and 12:12 on the 19th of August at SE12T exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 5 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

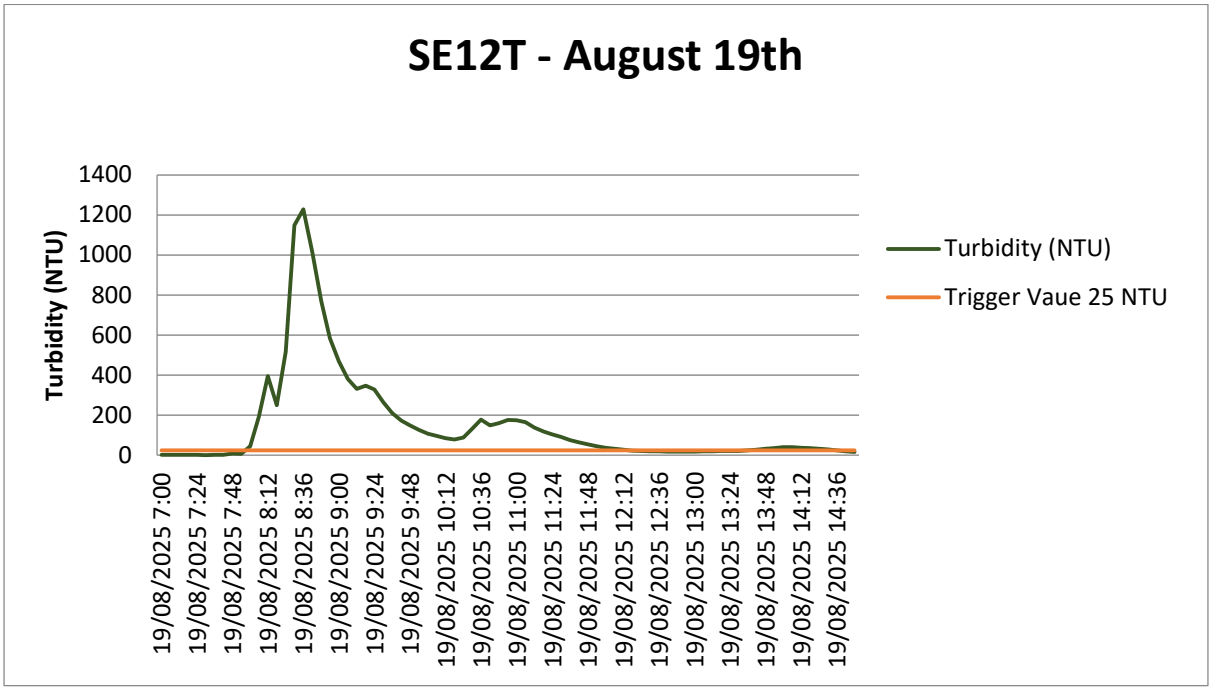


Figure 5 - HUN-2508-040

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event.
- Erosion controls were installed in 2024 adjacent the embankment of the Wittwer haul road, inspection of these controls identified that they are still operating effectively.
- Sediment deposits identified upstream at SE12INV have been linked to mobilised sediment from the forest track.

Field notes provided by Alcoa are included below.

"Local turbidity monitoring site SE12T recorded 3 turbidity events exceeding 25 NTU for >1 hour on 19 & 20 August 2025.

19 August, 0800 hours to 19 August 1212 hours (4:20 hours duration)

20 August, 0512 hours to 20 August 0636 hours (1:24 hours duration)

20 August, 1312 hours to 20 August 1412 hours (1 hour duration)

These exceedances coincided with a rainfall event, during which the Alcoa Huntly Mine received a total of 55.2 mm of rain.

In 2024, Alcoa identified erosion along the embankment of the Wittwer haul road, located adjacent to SE12T turbidity monitor. In response, sediment controls (coir logs and sediment screen) were installed adjacent to the haul road to mitigate sediment runoff into the stream. An additional investigation turbidity monitor (SE12INV) was also installed upstream of the SE12T monitor, south of the Wittwer haul road. Data from SE12INV and field inspections have since identified a significant sediment source originating from a non-mining-related forest track.

An inspection conducted on 20 August 2025 indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at both SE12T and SE12INV appeared clear with no signs of turbidity, however, it was identified that the SE12INV monitor was partially buried by sediment mobilised from the adjacent forest track, and organic debris was visible in the SE12T stream bed.

Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedances recorded at SE12T & SE12INV, but as a result of upstream activity from the forest track."

Based on the comments provided by Alcoa, and the existing sediment controls, this event is considered 'True', however non mining related and likely due to mobilised sediment from the upstream non-mining-related forest track.

5.2.4. HUN-2508-041 Additional Investigation

The event, occurring between 5:12 and 6:36 on the 20th of August at SE12T exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 6 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

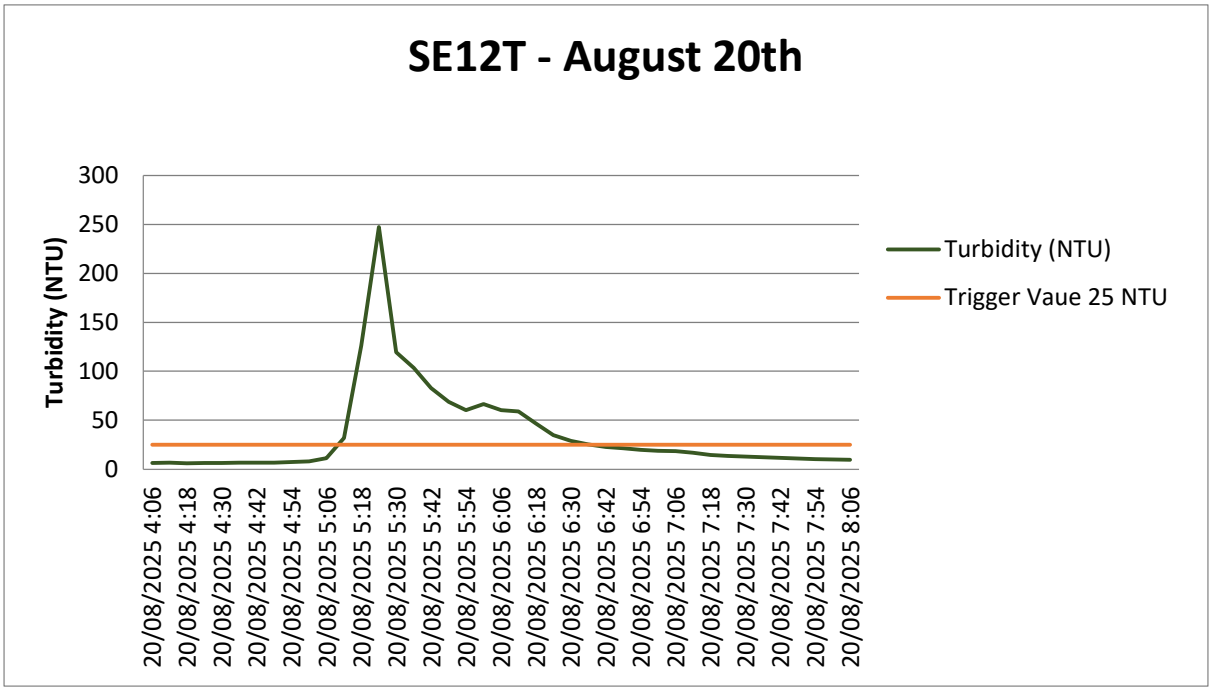


Figure 6 - HUN-2508-041

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event.
- Erosion controls were installed in 2024 adjacent the embankment of the Wittwer haul road, inspection of these controls identified that they are still operating effectively.
- Sediment deposits identified upstream at SE12INV have been linked to mobilised sediment from the forest track.

Field notes provided by Alcoa are included below.

"Local turbidity monitoring site SE12T recorded 3 turbidity events exceeding 25 NTU for >1 hour on 19 & 20 August 2025.

19 August, 0800 hours to 19 August 1212 hours (4:20 hours duration)

20 August, 0512 hours to 20 August 0636 hours (1:24 hours duration)

20 August, 1312 hours to 20 August 1412 hours (1 hour duration)

These exceedances coincided with a rainfall event, during which the Alcoa Huntly Mine received a total of 55.2 mm of rain.

In 2024, Alcoa identified erosion along the embankment of the Wittwer haul road, located adjacent to SE12T turbidity monitor. In response, sediment controls (coir logs and sediment screen) were installed adjacent to the haul road to mitigate sediment runoff into the stream. An additional investigation turbidity monitor (SE12INV) was also installed upstream of the SE12T monitor, south of the Wittwer haul road. Data from SE12INV and field inspections have since identified a significant sediment source originating from a non-mining-related forest track.

An inspection conducted on 20 August 2025 indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at both SE12T and SE12INV appeared clear with no signs of turbidity, however, it was identified that the SE12INV monitor was partially buried by sediment mobilised from the adjacent forest track, and organic debris was visible in the SE12T stream bed.

Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedances recorded at SE12T & SE12INV, but as a result of upstream activity from the forest track."

Based on the comments provided by Alcoa, and the existing sediment controls, this event is considered 'True', however non mining related and likely due to mobilised sediment from the upstream non-mining-related forest track.

5.2.5. HUN-2508-042 Additional Investigation

The event, occurring between 13:12 and 14:12 on the 20th of August at SE12T exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 7 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

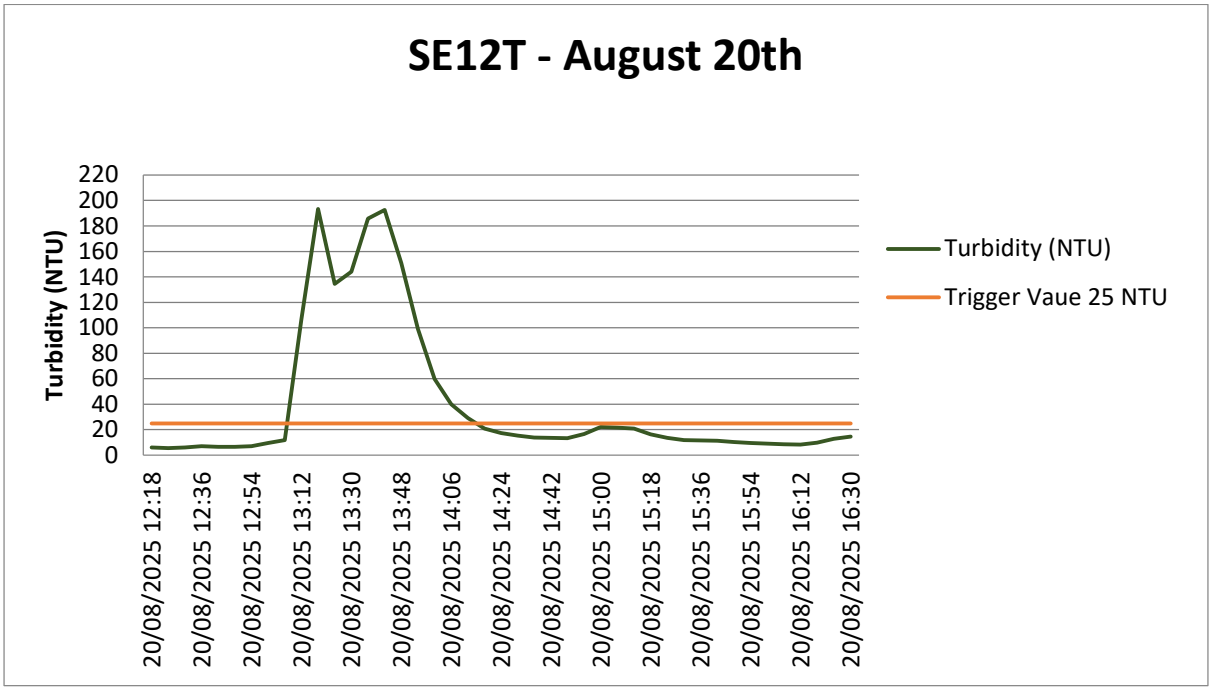


Figure 7 - HUN-2508-042

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event.
- Erosion controls were installed in 2024 adjacent the embankment of the Wittwer haul road, inspection of these controls identified that they are still operating effectively.
- Sediment deposits identified upstream at SE12INV have been linked to mobilised sediment from the forest track.

Field notes provided by Alcoa are included below.

"Local turbidity monitoring site SE12T recorded 3 turbidity events exceeding 25 NTU for >1 hour on 19 & 20 August 2025.

19 August, 0800 hours to 19 August 1212 hours (4:20 hours duration)

20 August, 0512 hours to 20 August 0636 hours (1:24 hours duration)

20 August, 1312 hours to 20 August 1412 hours (1 hour duration)

These exceedances coincided with a rainfall event, during which the Alcoa Huntly Mine received a total of 55.2 mm of rain.

In 2024, Alcoa identified erosion along the embankment of the Wittwer haul road, located adjacent to SE12T turbidity monitor. In response, sediment controls (coir logs and sediment screen) were installed adjacent to the haul road to mitigate sediment runoff into the stream. An additional investigation turbidity monitor (SE12INV) was also installed upstream of the SE12T monitor, south of the Wittwer haul road. Data from SE12INV and field inspections have since identified a significant sediment source originating from a non-mining-related forest track.

An inspection conducted on 20 August 2025 indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at both SE12T and SE12INV appeared clear with no signs of turbidity, however, it was identified that the SE12INV monitor was partially buried by sediment mobilised from the adjacent forest track, and organic debris was visible in the SE12T stream bed.

Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedances recorded at SE12T & SE12INV, but as a result of upstream activity from the forest track."

Based on the comments provided by Alcoa, and the existing sediment controls, this event is considered 'True', however non mining related and likely due to mobilised sediment from the upstream non-mining-related forest track.

5.2.6. HUN-2508-046 Additional Investigation

The event, occurring between 12:30 and 15:36 on the 9th of August at SE12INV exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 8 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

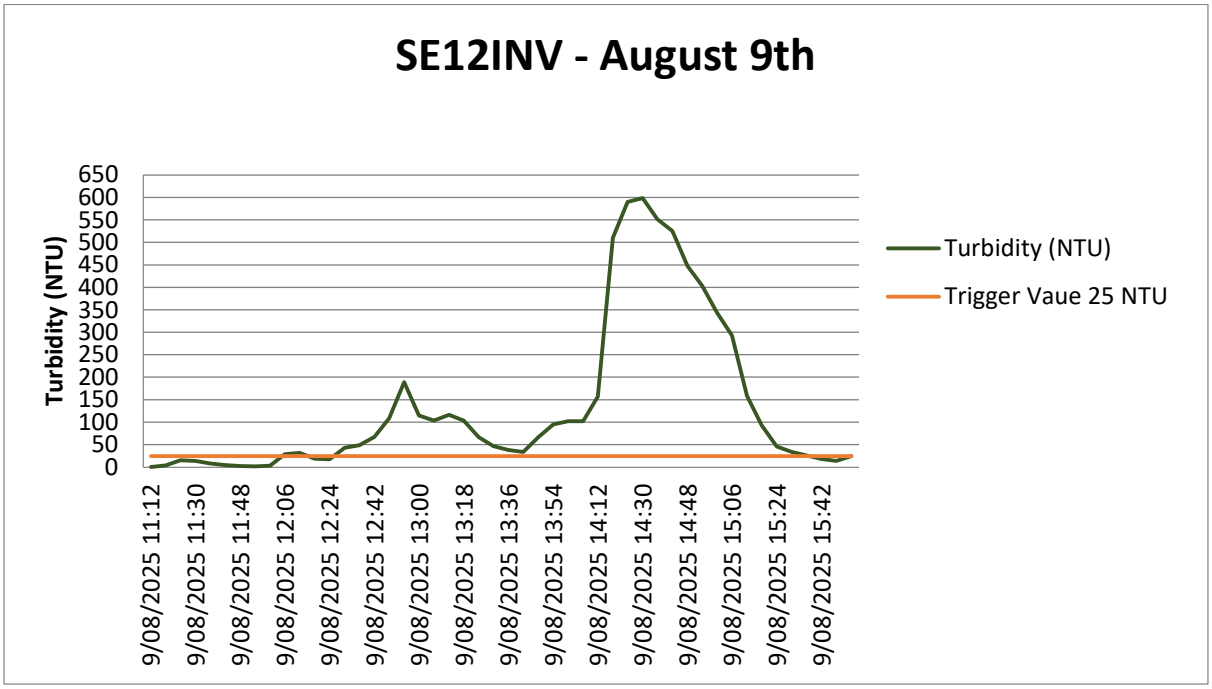


Figure 8 - HUN-2508-046

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event.
- Erosion controls were installed in 2024 adjacent the embankment of the Wittwer haul, inspection of these controls identified that they are still operating effectively.
- Inspection of the adjacent forest track has identified signs of erosion.
- Increased sediment deposits in the stream have been linked to mobilised sediment from the forest track.

Field notes provided by Alcoa are included below.

"On August 9th, 2025, turbidity monitor SE12INVT measured a stream turbidity event exceeding 25 NTU for more than 1 hour (1230 to 1536 for 186 minutes). This exceedance coincides with Alcoa Huntly Mine receiving 9.4mm of rain over a two day period (3.7 mm of rainfall in the proceeding 24 hours).

Data analysis indicates a true rise in stream turbidity, as well as sensor interference caused by organic debris.

On 10 August 2025, site SE12INV was inspected and found to have buried in sediment. Organic debris was observed in the stream bed and around the sensor, along with mild stream turbidity. The sensor was cleaned and repositioned in the stream, only partially submerged due to shallow stream. The sediment is believed to be derived from the DBCA forest track which has been eroded. On the same day, upstream monitor SE12T was also inspected and found to be impacted by sediment.

In 2024, Alcoa identified that the Wittwer haul road adjacent to SE12T turbidity monitor had experienced erosion from the haul road embankment. Sediment controls (coir logs and sediment screen) have been installed adjacent to the haul road to minimise impact to the stream. Inspection of the controls on 10/08/2025 identified that some minor erosion occurred during the rainfall, however controls appear to have been effective.

Following the events of 2024, SE12INV was placed upstream of SE12T, south of the Wittwer haul road. Data from this monitor and field inspections identified significant sediment contribution from a non-mining related forest track.

Alcoa does not believe that mining infrastructure contributed to the turbidity exceedance at SE12INV."

Based on the comments provided by Alcoa, and the existing sediment controls, this event is considered 'True', however non mining related and likely due to mobilised sediment from the upstream non-mining-related forest track.

5.2.7. HUN-2508-048 Additional Investigation

The event, occurring between 7:48 and 12:00 on the 19th of August at SE12INV exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 9 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

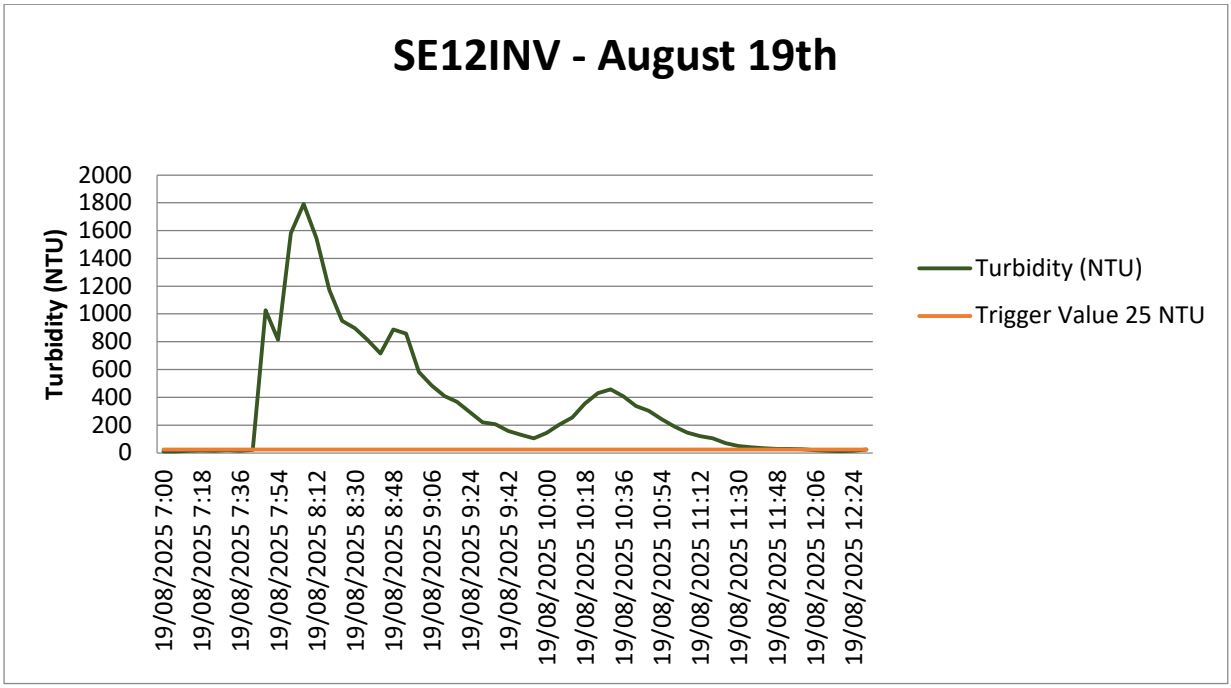


Figure 9 - HUN-2508-048

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event.
- Erosion controls were installed in 2024 adjacent the embankment of the Wittwer haul, inspection of these controls identified that they are still operating effectively.
- Inspection of the adjacent forest track has identified signs of erosion.
- Increased sediment deposits in the stream have been linked to mobilised sediment from the forest track.

Field notes provided by Alcoa are included below.

"On 19-20 August 2025, turbidity monitors SE12INV recorded 5 stream turbidity events exceeding 25 NTU for more than 1 hour.

19 August 0748 hours to 19 August 1200 hours (4:20 hours duration)

19 August 1236 hours to 19 August 1412 hours (1.60 hours duration)

19 August 1530 hours to 19 August 1700 hours (1.50 hours duration)

19 August 1718 hours to 19 August 1842 hours (1.40 hours duration)

20 August 0500 hours to 20 August 0612 hours (1.20 hours duration)

These exceedances coincided with a rainfall event, during which the Alcoa Huntly Mine received a total of 55.2 mm of rain.

In 2024, Alcoa identified erosion along the embankment of the Wittwer haul road, located adjacent to SE12T turbidity monitor. In response, sediment controls (coir logs and sediment screen) were installed adjacent to the haul road to mitigate sediment runoff into the stream. An additional investigation turbidity monitor (SE12INV) was also installed upstream of the SE12T monitor, south of the Wittwer haul road. Data from SE12INV and field inspections have since identified a significant sediment source originating from a non-mining-related forest track.

An inspection conducted on 20 August 2025 indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at both SE12T and SE12INV appeared clear with no signs of turbidity, however, it was identified that the SE12INV monitor was partially buried by sediment mobilised from the adjacent forest track, and organic debris was visible in the SE12T stream bed.

Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedances recorded at SE12T & SE12INV, but as a result of upstream activity from the forest track."

Based on the comments provided by Alcoa, and the existing sediment controls, this event is considered 'True', however non mining related and likely due to mobilised sediment from the upstream non-mining-related forest track.

5.2.8. HUN-2508-052 Additional Investigation

The event, occurring between 5:00 and 6:12 on the 20th of August at SE12INV exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 10 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

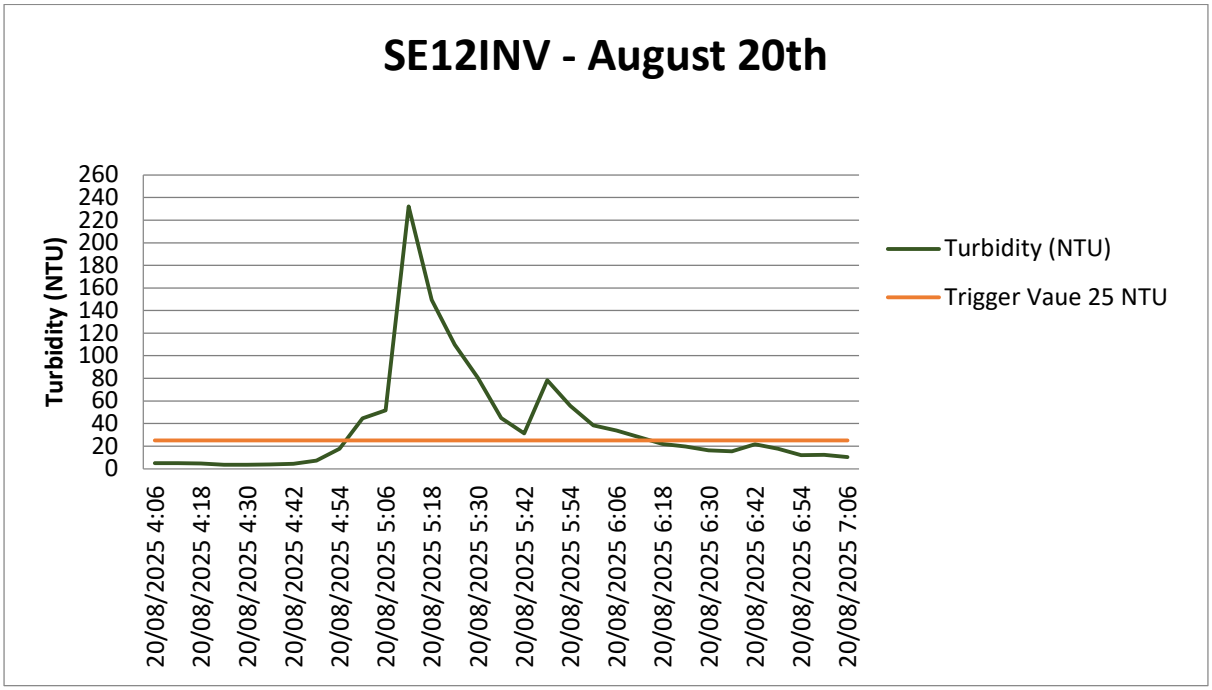


Figure 10 - HUN-2508-052

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event.
- Erosion controls were installed in 2024 adjacent the embankment of the Wittwer haul, inspection of these controls identified that they are still operating effectively.
- Inspection of the adjacent forest track has identified signs of erosion.
- Increased sediment deposits in the stream have been linked to mobilised sediment from the forest track.

Field notes provided by Alcoa are included below.

"On 19-20 August 2025, turbidity monitors SE12INV recorded 5 stream turbidity events exceeding 25 NTU for more than 1 hour.

19 August 0748 hours to 19 August 1200 hours (4:20 hours duration)

19 August 1236 hours to 19 August 1412 hours (1.60 hours duration)

19 August 1530 hours to 19 August 1700 hours (1.50 hours duration)

19 August 1718 hours to 19 August 1842 hours (1.40 hours duration)

20 August 0500 hours to 20 August 0612 hours (1.20 hours duration)

These exceedances coincided with a rainfall event, during which the Alcoa Huntly Mine received a total of 55.2 mm of rain.

In 2024, Alcoa identified erosion along the embankment of the Wittwer haul road, located adjacent to SE12T turbidity monitor. In response, sediment controls (coir logs and sediment screen) were installed adjacent to the haul road to mitigate sediment runoff into the stream. An additional investigation turbidity monitor (SE12INV) was also installed upstream of the SE12T monitor, south of the Wittwer haul road. Data from SE12INV and field inspections have since identified a significant sediment source originating from a non-mining-related forest track.

An inspection conducted on 20 August 2025 indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at both SE12T and SE12INV appeared clear with no signs of turbidity, however, it was identified that the SE12INV monitor was partially buried by sediment mobilised from the adjacent forest track, and organic debris was visible in the SE12T stream bed.

Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedances recorded at SE12T & SE12INV, but as a result of upstream activity from the forest track."

Based on the comments provided by Alcoa, and the existing sediment controls, this event is considered 'True', however non mining related and likely due to mobilised sediment from the upstream non-mining-related forest track.

5.2.9. HUN-2508-084 Additional Investigation

The event, occurring between 9:12 on the 19th of August and 10:48 on the 20th of August at SE61T exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 11 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

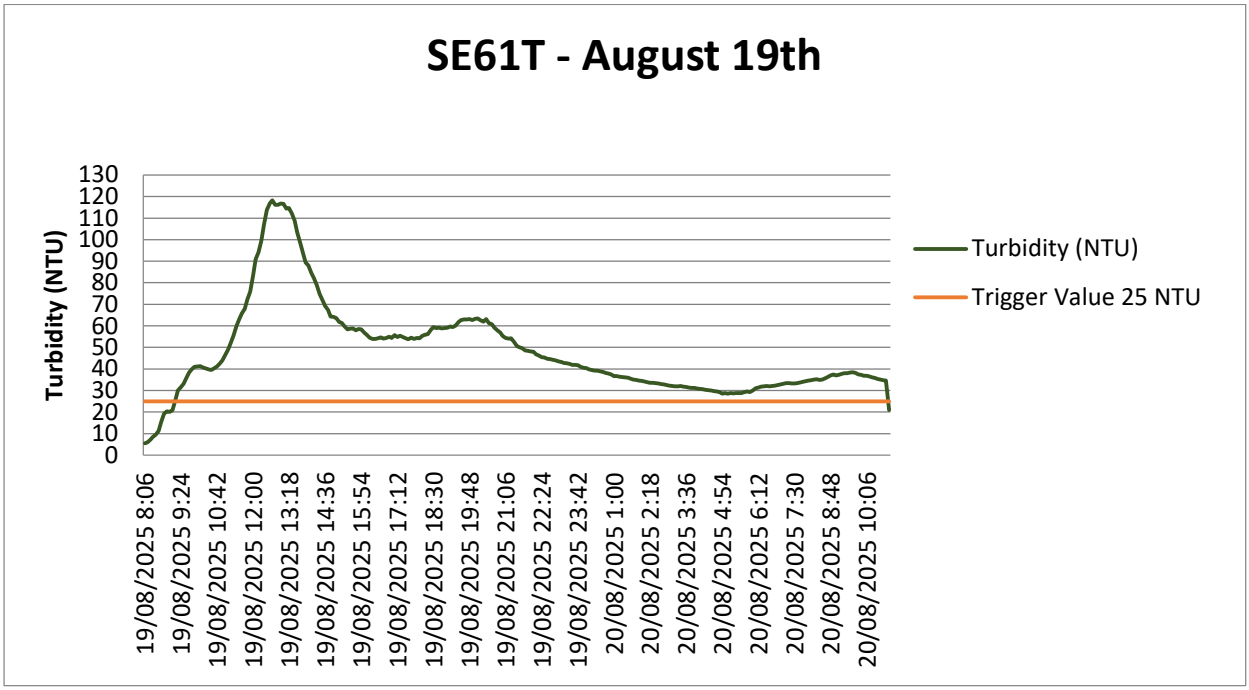


Figure 11 - HUN-2508-084

Further investigation into the event and location has determined the following

- Rainfall occurred in the 24 hours prior to the event.
- Inspection of the creek identified stormwater runoff from the adjacent bush track entering the stream.

Field notes provided by Alcoa are included below.

"Local turbidity monitoring site SE61T recorded a turbidity event on 19 August 2025 for 25 hours and 36 minutes, following 50.2mm of rainfall in the preceding 24 hours. Data trend shows a gradual incline and decline in turbidity values which coincide with rainfall.

The monitoring site was inspected on 20 August 2025. Upon arrival, stormwater runoff from the adjacent bush track was visibly evident rapidly flowing down the track and into the stream. The steam was rapidly flowing and turbidity was visibly evident. The sensor was cleaned and repositioned back into the stream. Turbidity reading pre-clean was 34.9 NTU and post-clean slightly reduced to 33.74 NTU.

An inspection of the SE61T catchment including mining pits, rehabilitation pits, tracks and sumps was completed, no evidence on mining contribution was found."

Based on the comments provided by Alcoa and identified stormwater runoff from the bush track resulting in an increase in turbidity in the stream. This event is considered 'True' however non mining related and likely due to mobilised sediment from the forest track.

5.2.10. HUN-2508-086 Additional Investigation

The event, occurring between 8:42 and 10:18 on the 2nd of August at SE62T exhibits a sharp, incline in turbidity levels followed by a gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 12 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

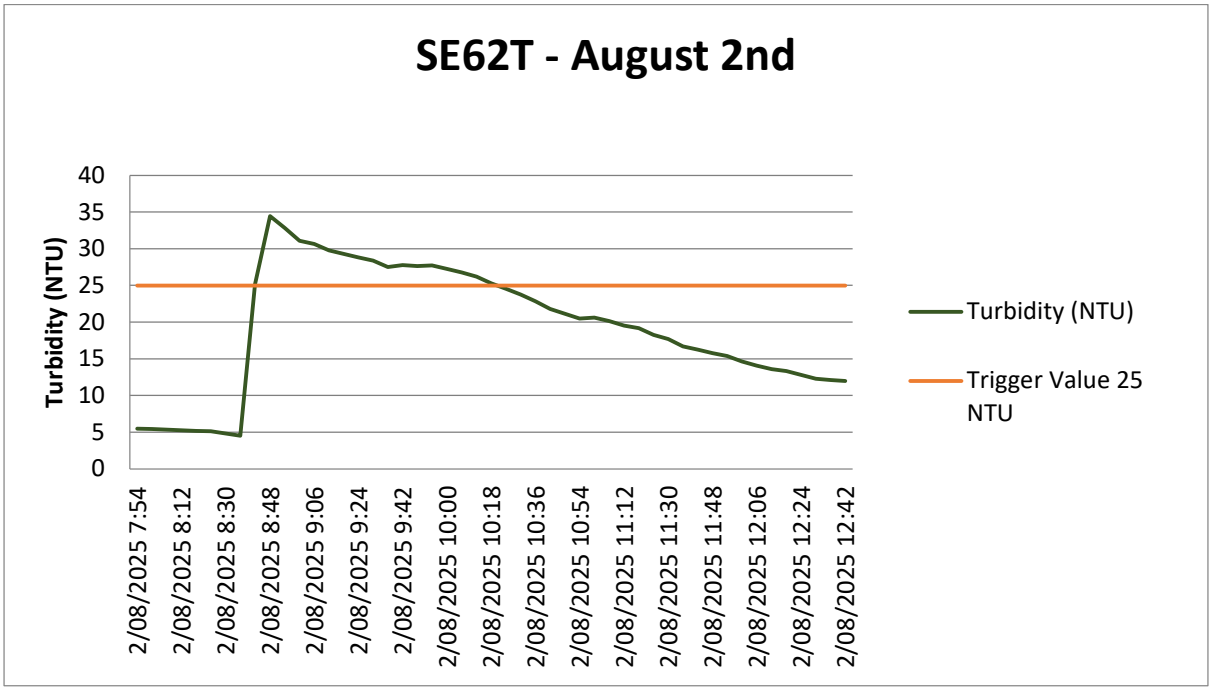


Figure 102 - HUN-2508-086

Further investigation into the event and location has determined the following

- Inspection of the stream prior to the event identified that the stream was dry.
- Inspection of the stream after the event identified that water was present however the stream was ponded with heavy debris present.

Field notes provided by Alcoa are included below.

"The site was inspected on 01/08/2025 and stream was dry. Inspected again on 4/08/2025, water was present around the sensor but the stream was ponded, with no connected flow. Heavy debris present in the stream bed. Data analysis shows the event was likely due to the initial water pooling around the sensor and the lens partially out of water. There was likely also interference from organic debris during the initial stages of stream flow."

Based on the inspections on the days before and after, the event is likely to have been caused by a first flush with debris impacting the sensor. The event is considered false, no further investigation is required.

5.3. True Event(s)

Eight 'True' turbidity events were identified during the reporting period, all occurring at sites SE12T, SE12INV and SE61T. Each event met the trigger of >25 NTU sustained for ≥1 hour. Based on paired-site data, rainfall timing, and field observations, the events are assessed as True but non-mining related, with turbidity attributable to sediment mobilised from an upstream forest tracks. Sediment controls installed along the Wittwer haul road adjacent to SE12T (coir logs and sediment screen; installed in 2024) were observed to be functioning effectively.

5.4. False Event(s)

Seventy-nine 'False' events were identified during the reporting period. Rationale on potential causes is summarised below.

Table 3 False Events Rationale

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-001	ND04T	This event is marked by a gradual increase turbidity followed by a rapid decrease. This is indicative of a false event	Site inspected on 04/08/2025. Water is present (ponded) but stream is not yet flowing
HUN-2508-002	ND04T	This event is marked by a gradual increase and decrease in turbidity with multiple peaks. This is indicative of a false event	Site Inspected 16/08/2025. Water is present (ponded) but stream is not yet flowing
HUN-2508-003	ND04T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site Inspected 16/08/2025. Water is present (ponded) but stream is not yet flowing
HUN-2508-004	ND04T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site Inspected 16/08/2025. Water is present (ponded) but stream is not yet flowing
HUN-2508-006	ND04T	This event is marked by a gradual increase and decrease in turbidity. This is indicative of a false event	Site inspected 22/8/25 due to rain event >20mm received 19/08/2025. The stream was clear and flowing. The sensor was cleaned and returned to the stream. Turbidity pre-clean read 1.8 NTU and post-clean 2.8 NTU. Data analysis indicated turbidity initially spiked due to the first rainfall flush which increase water flow and level (last inspection identified sensor positioned outside of water due to low level), likely carrying debris and sediment downstream. The turbidity stopped spiking >25 NTU as the rain event continues on the 19/08/2025.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-007	FPWR1	This event is marked by a gradual increase and decrease in turbidity. This is indicative of a false event	Site inspection on 4/08/2025: Stream flow had commenced. Heavy organic debris was observed in the stream bed and around the sensor. Site inspection on 7/08/2025: the stream was dry again. Site inspection on 18/08/2025: stream was still dry. The level float sensor recorded flow again on 19/08/2025 at 4:57 PM. The site was inspected on 22/08/2025, the stream was ponded and organic debris was impacting the sensor.
HUN-2508-008	SE03T	This event is marked by a gradual increase and decrease in turbidity. This is indicative of a false event	Data analysis indicates false event. The sensor is experiencing intermittent calibration issues and recording false readings. The sensor is scheduled for replacement.
HUN-2508-009	SE03T	This event is marked by a gradual increase and decrease in turbidity with multiple peaks. This is indicative of a false event	Local turbidity monitoring site SE03T recorded a turbidity event exceeding 25NTU for >1 hour on 2/08/2025 for 10 hours and 12 minutes, following 12.5 mm of rainfall. The monitoring site was inspected on 4/08/2025, the stream was clear and flowing. Built up debris impacting the sensor was cleared and returned to stream. A catchment Inspection was completed, no evidence of mining contribution to the turbidity event was found. Data analysis indicates the event was potentially false. The sensor is experiencing intermittent calibration issues and recording false readings. Turbidity values began to increase prior to commencement of rainfall, with a gradual incline and decline. Due to the coinciding rain event, the exceedance was investigated. The sensor is scheduled for replacement.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-010	SE03T	This event is marked by a gradual increase turbidity followed by a rapid decrease. This is indicative of a false event	Local turbidity monitoring site SE03T recorded a turbidity event exceeding 25NTU for >1 hour on 4/08/2025 for 7 hours and 30 minutes, following 14.8 mm of rainfall. The monitoring site was inspected on 4/08/2025 to download end of month data. The stream was clear and flowing. Built up debris impacting the sensor was cleared and returned to stream. A catchment Inspection was completed, no evidence of mining contribution to the turbidity event was found. No turbidity event recorded at downstream turbidity monitors SE36T and SE48T.
HUN-2508-011	SE03T	This event is marked by a gradual increase and decrease in turbidity with multiple peaks. This is indicative of a false event	Local turbidity monitor SE03T recorded a turbidity event exceeding 25NTU for >1 hour on 14/08/2025 for 4 hours and 48 minutes, following a 26.8mm rainfall. The monitor site was inspected on 14/08/2025. The stream was flowing and slightly tannin. The sensor was sitting low in flow cell and when removed was covered in sediment, possibly contributing to exceeding NTU. Upstream turbidity monitor SE03INV1 recorded a turbidity event. No events were recorded at upstream turbidity monitor SE03INV3 and downstream turbidity monitors SE36T and SE48T. SE03T catchment inspection was completed, no evidence of mining contribution to the turbidity event was found.
HUN-2508-012	SE03T	This event is marked by a gradual increase and decrease in turbidity with multiple peaks. This is indicative of a false event	Local turbidity monitor SE03T recorded a turbidity event exceeding 25NTU for >1 hour on 19/08/2025 for 8 hours and 12 minutes, following a 27.8mm rainfall. The monitor site was inspected on 20/08/2025. The stream was flowing and

Event ID	Monitor ID	Rationale	Field Notes
			slightly tannin. The sensor was sitting low in flow cell and when removed was covered in sediment, possibly contributing to exceeding NTU. Upstream turbidity monitor SE03INV1 recorded a turbidity event. No event was recorded at upstream turbidity monitor SE03INV3. SE03T catchment inspection was completed on August 21 , no evidence of mining contribution to the turbidity event was found.
HUN-2508-013	SE03INV1	This event is marked by multiple peaks. This is indicative of a false event.	SE03INV1 monitoring site was inspected on 4/08/2025. The stream was clear and water level was low. Some leaf litter/debris was caught around the sensor which was cleaned and repositioned. All rehab and mining pits, haul roads and sumps were inspected. No evidence of mining contribution to the turbidity event was found. Data trend shows an initial turbidity spike followed by a gradual incline and decline, which could be conducive to a false event caused by debris.
HUN-2508-014	SE03INV1	This event is marked by a gradual increase and decrease in turbidity. This is indicative of a false event	Local turbidity monitoring site SE03INV1, located within the SE03T catchment, recorded a turbidity exceedance event on 13/08/2025 for 2 hours and 6 minutes following 26.8mm of rainfall. The monitoring site was inspected on 16/08/2025, the stream level was very low and the sensor was impacted by stream bed sediment and organic debris. Data trend shows a gradual incline and decline in turbidity values which coincides with rainfall. The SE03T catchment was inspected 15/08/2025, no mining related impact was found.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-015	SE03INV1	This event is marked by a gradual increase and decrease in turbidity. This is indicative of a false event	Local turbidity monitoring site SE03INV1, located within the SE03T catchment, recorded a turbidity exceedance event on 19/08/2025 for 1 hour and 18 minutes following 29.4mm of rainfall. The monitoring site was inspected on 20/08/2025, the stream level was very low and the sensor was impacted by stream bed sediment and organic debris. Data trend shows a gradual incline and decline in turbidity values which coincides with rainfall. The SE03T catchment was inspected 21/08/2025, no mining related impact was found.
HUN-2508-016	SE05T	This event is marked by a gradual increase and decrease in turbidity with multiple peaks. This is indicative of a false event	Compliance turbidity monitoring site SE05T recorded two turbidity events exceeding 25 NTU for >1 hour on 13 August 2025. The event was recorded on 13 August 2025 from 8:42 PM to 11:06 PM, with a duration of 2 hours and 24 minutes. The average turbidity value during the event was 39.24 NTU, with a peak of 58.13 NTU. There was 13.6mm of rainfall recorded in the 24 hours preceding the event. Data trend shows stream turbidity elevated above 25 NTU following 13.6mm of rainfall which fell in approximately 1.5 hours. Inspection of the SE05T monitoring site and catchment area commenced on 15 August 2025. The stream was clear at the time of inspection, with a measured value of 6.52 NTU. Assessment of the drainage controls installed at Doherty 2/3 showed no further impact to the adjacent forest, with the installed temporary controls effectively stabilizing erosion. No

Event ID	Monitor ID	Rationale	Field Notes
			mining related contributions to the turbidity exceedance were found.
HUN-2508-017	SE05T	This event is marked by a gradual increase and decrease in turbidity with multiple peaks. This is indicative of a false event	Compliance turbidity monitoring site SE05T recorded two turbidity events exceeding 25 NTU for >1 hour on 19 August 2025. The event was recorded on 19 August 2025 from 8:20 APM to 9:45 AM, with a duration of 1 hours and 24 minutes. The average turbidity value during the event was 38.52 NTU, with a peak of 51.69 NTU. There was 12.5 mm of rainfall recorded in the 24 hours preceding the event. Inspection of the SE05T monitoring site and catchment area commenced on 20 August 2025. The stream was clear at the time of inspection, with a measured value of 10.68 NTU. Assessment of the drainage controls installed at Doherty 2/3 showed no further impact to the adjacent forest, with the installed temporary controls effectively stabilizing erosion. No mining related contributions to the turbidity exceedance were found.
HUN-2508-018	SE06T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	An exceedance notification for SE06T occurred on 12 August 2025 for 31 hours and 0 minutes with 0 mm rainfall in preceding 24 hours. Site inspected on 13/08/2025, stream very shallow, sensor very slightly out of the water, lense was impacted by algae and stream bed sediment. NTU on arrival was 48.94, after clean this dropped to 0.64.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-019	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-020	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-021	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-022	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-023	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-024	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-025	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-026	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-027	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-028	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-029	SE07T	This event is marked by a rapid increase in turbidity followed by a system fault value. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-030	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by a sensor fault. Maintenance assessment/repair carried out on 18th, 21st & 28th August, fault continued - sensor scheduled for replacement on 3rd September.
HUN-2508-031	SE10T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspected 23 August 2025 due to >25 turbidity exceedance between 19 and 20 August 2025. The stream was clear and rapidly flowing. The probe was cleaned and returned to the stream. Turbidity reading pre-clean was 18.73 NTU and decreased significantly post-clean to 0.95 NTU. Turbidity data trend shows multiple rapid spikes and drops, indicating a potential temporary data error. This event is considered false.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-033	SE11T	This event is marked by a gradual increase and decrease with a single rapid spike. This is indicative of a false event.	Site inspected on 02/08/2025. Stream flowing, very shallow and clear. Float switch activated to flowing on 27/07/2025. Observed sensor heavily impacted by organic debris and sensor partially out of water due to low water level.
HUN-2508-034	SE12T	This event is marked by multiple peaks. This is indicative of a false event.	On the 2 & 3 August 2025, turbidity monitor SE12T measured four stream turbidity events exceeding 25 NTU for more than 1 hour (02/08/25 from 0906 to 1506 hours & 03/08/25 from 0312 to 0442 hours, 0818 to 0918 hours, and 1348 to 1448 hours). These exceedances coincide with Alcoa Huntly Mine receiving 60.8mm of rain over a two day period. Data analysis indicates a true rise in stream turbidity, as well as sensor interference caused by organic debris. On 2 August 2025, site SE12T was inspected and found to have very low stream depth, with water just covering the sensor lens which was positioned close to the stream bed. Organic debris was observed in the stream bed and around the sensor, along with mild stream turbidity. On the same day, upstream monitor SE12INV was also inspected and found buried in sediment caused by runoff from the adjacent forest track. The sensor was cleaned and repositioned. On 3 August 2025, SE12T was revisited. Stream depth had increased, and the sensor was adjusted to sit horizontally and higher in the water profile to reduce interference from stream bed sediment/debris. SE12INV was again found nearly buried by sediment and was cleaned and repositioned. Both sites were again inspected on 4 August 2025, the stream was clear at both SE12T and SE12INV, with no new sediment accumulation

Event ID	Monitor ID	Rationale	Field Notes
			observed at SE12INV. In 2024, Alcoa identified that the Wittwer haul road adjacent to SE12T turbidity monitor had experienced erosion from the haul road embankment. Sediment controls (coir logs and sediment screen) have been installed adjacent to the haul road to minimise impact to the stream. Inspection of the controls on 04/08/2025 identified that some minor erosion occurred during the rainfall, however controls appear to have been effective. Following the events of 2024, an additional investigation turbidity monitor (SE12INV) was placed upstream of SE12T, south of the Wittwer haul road. Data from this monitor and field inspections identified significant sediment contribution from a non-mining related forest track. Alcoa does not believe that mining infrastructure contributed to the turbidity exceedance at SE12T.
HUN-2508-035	SE12T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	On the 2 & 3 August 2025, turbidity monitor SE12T measured four stream turbidity events exceeding 25 NTU for more than 1 hour (02/08/25 from 0906 to 1506 hours & 03/08/25 from 0312 to 0442 hours, 0818 to 0918 hours, and 1348 to 1448 hours). These exceedances coincide with Alcoa Huntly Mine receiving 60.8mm of rain over a two day period. Data analysis indicates a true rise in stream turbidity, as well as sensor interference caused by organic debris. On 2 August 2025, site SE12T was inspected and found to have very low stream depth, with water just covering the sensor lens which was positioned close to the stream bed.

Event ID	Monitor ID	Rationale	Field Notes
			Organic debris was observed in the stream bed and around the sensor, along with mild stream turbidity. On the same day, upstream monitor SE12INV was also inspected and found buried in sediment caused by runoff from the adjacent forest track. The sensor was cleaned and repositioned. On 3 August 2025, SE12T was revisited. Stream depth had increased, and the sensor was adjusted to sit horizontally and higher in the water profile to reduce interference from stream bed sediment/debris. SE12INV was again found nearly buried by sediment and was cleaned and repositioned. Both sites were again inspected on 4 August 2025, the stream was clear at both SE12T and SE12INV, with no new sediment accumulation observed at SE12INV. In 2024, Alcoa identified that the Wittwer haul road adjacent to SE12T turbidity monitor had experienced erosion from the haul road embankment. Sediment controls (coir logs and sediment screen) have been installed adjacent to the haul road to minimise impact to the stream. Inspection of the controls on 04/08/2025 identified that some minor erosion occurred during the rainfall, however controls appear to have been effective. Following the events of 2024, an additional investigation turbidity monitor (SE12INV) was placed upstream of SE12T, south of the Wittwer haul road. Data from this monitor and field inspections identified significant sediment contribution from a non-mining related forest track. Alcoa does not believe that mining infrastructure contributed to the turbidity exceedance at SE12T.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-037	SE12T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	On the 2 & 3 August 2025, turbidity monitor SE12T measured four stream turbidity events exceeding 25 NTU for more than 1 hour (02/08/25 from 0906 to 1506 hours & 03/08/25 from 0312 to 0442 hours, 0818 to 0918 hours, and 1348 to 1448 hours). These exceedances coincide with Alcoa Huntly Mine receiving 60.8mm of rain over a two day period. Data analysis indicates a true rise in stream turbidity, as well as sensor interference caused by organic debris. On 2 August 2025, site SE12T was inspected and found to have very low stream depth, with water just covering the sensor lens which was positioned close to the stream bed. Organic debris was observed in the stream bed and around the sensor, along with mild stream turbidity. On the same day, upstream monitor SE12INV was also inspected and found buried in sediment caused by runoff from the adjacent forest track. The sensor was cleaned and repositioned. On 3 August 2025, SE12T was revisited. Stream depth had increased, and the sensor was adjusted to sit horizontally and higher in the water profile to reduce interference from stream bed sediment/debris. SE12INV was again found nearly buried by sediment and was cleaned and repositioned. Both sites were again inspected on 4 August 2025, the stream was clear at both SE12T and SE12INV, with no new sediment accumulation observed at SE12INV. In 2024, Alcoa identified that the Wittwer haul road adjacent to SE12T turbidity monitor had experienced erosion from the

Event ID	Monitor ID	Rationale	Field Notes
			haul road embankment. Sediment controls (coir logs and sediment screen) have been installed adjacent to the haul road to minimise impact to the stream. Inspection of the controls on 04/08/2025 identified that some minor erosion occurred during the rainfall, however controls appear to have been effective. Following the events of 2024, an additional investigation turbidity monitor (SE12INV) was placed upstream of SE12T, south of the Wittwer haul road. Data from this monitor and field inspections identified significant sediment contribution from a non-mining related forest track. Alcoa does not believe that mining infrastructure contributed to the turbidity exceedance at SE12T.
HUN-2508-038	SE12T	This event is marked by a gradual increase and decrease with two separate peaks. This is indicative of a false event.	On August 9th, 2025, turbidity monitor SE12T measured one stream turbidity event exceeding 25 NTU for more than 1 hour (14:40 to 15:59 for 79 minutes). This exceedance coincides with Alcoa Huntly Mine receiving 9.4mm of rain over a two day period. Data analysis indicates a true rise in stream turbidity, as well as sensor interference caused by organic debris. On 10 August 2025, site SE12T was inspected and found to have very low stream depth, with water just covering the sensor lens which was positioned close to the stream bed. Organic debris was observed in the stream bed and around the sensor, along with mild stream turbidity. On the same day, upstream monitor SE12INV was also inspected and found

Event ID	Monitor ID	Rationale	Field Notes
			buried in sediment caused by runoff from the adjacent forest track. The sensor was cleaned and repositioned. The previous sediment deposited has now settled, but it is likely that future rain events will disturb the area. Additional core logs and sediment screens will be installed. In 2024, Alcoa identified that the Wittwer haul road adjacent to SE12T turbidity monitor had experienced erosion from the haul road embankment. Sediment controls (coir logs and sediment screen) have been installed adjacent to the haul road to minimise impact to the stream. Inspection of the controls on 10/08/2025 identified that some minor erosion occurred during the rainfall, however controls appear to have been effective. Following the events of 2024, an additional investigation turbidity monitor (SE12INV) was placed upstream of SE12T, south of the Wittwer haul road. Data from this monitor and field inspections identified significant sediment contribution from a non-mining related forest track. Alcoa does not believe that mining infrastructure contributed to the turbidity exceedance at SE12T.
HUN-2508-039	SE12T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Local turbidity monitoring site SE12T recorded a turbidity event exceeding 25 NTU for >1 hour on 13-14 August 2025. The event was recorded on 13 August 2025 from 8:42 PM to 14 August 2025 at 12:44 AM, with a duration of 4 hours and 2 minutes. The average turbidity value during the event was 102.52 NTU, with a peak of181.82 NTU. There was 13.6mm of

Event ID	Monitor ID	Rationale	Field Notes
			rainfall recorded in the 24 hours preceding the event. The catchment inspection was conducted on 14 August 2025 and indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at SE12T appeared clear with no signs of turbidity, though organic debris was visible in the SE12T stream bed. Upstream monitor SE12INV was also inspected and found to be partially buried in sediment runoff from the adjacent forest track. Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedance recorded, and is instead a result of turbid water flushing from the upstream forest track.
HUN-2508-043	SE12T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspected on 31/08/2025, the sensor was sitting in the stream bed. Cleaned and repositioned, turbidity value dropped to 6.3NTU
HUN-2508-044	SE12INV	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site visited on 03/08/2025. Stream is flowing, very shallow. Observed sensor and float completely buried in sediment. Cleaned sensor returned to stream, only partially submerged due to shallow stream.
HUN-2508-045	SE12INV	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site visited on 03/08/2025. Stream is flowing, very shallow. Observed sensor and float completely buried in sediment. Cleaned sensor returned to stream, only partially submerged due to shallow stream.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-047	SE12INV	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Local turbidity monitoring site SE12INV recorded a turbidity event exceeding 25 NTU for >1 hour on 13-14 August 2025. The event was recorded on 13 August 2025 from 7:44 PM to 14 August 2025 at 12:29 AM, with a duration of 4 hours and 45 minutes. The average turbidity value during the event was 263.28 NTU, with a peak of 657.19 NTU. There was 4.8mm of rainfall recorded in the 24 hours preceding the event. The catchment inspection was conducted on 14 August 2025 and indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at SE12INV appeared clear with no signs of turbidity, however, it was identified that the SE12INV monitor was partially buried by sediment mobilised from the adjacent forest track. The sensor was cleared and resulted in a temporary spike in turbidity (9.4 NTU) due to cleaning process. This settled to 2.3 NTU after approx. 10min. The forest track was dry during inspection (i.e.. no active water flow off track), though residual turbid pooling was observed. Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedance recorded.
HUN-2508-049	SE12INV	This event is marked by a gradual increase in turbidity followed by a gradual fall. This is indicative of a false event.	On 19-20 August 2025, turbidity monitors SE12INV recorded 5 stream turbidity events exceeding 25 NTU for more than 1 hour. 19 August 0748 hours to 19 August 1200 hours (4:20 hours duration) 19 August 1236 hours to 19 August 1412 hours (1.60 hours

Event ID	Monitor ID	Rationale	Field Notes
			duration) 19 August 1530 hours to 19 August 1700 hours (1.50 hours duration) 19 August 1718 hours to 19 August 1842 hours (1.40 hours duration) 20 August 0500 hours to 20 August 0612 hours (1.20 hours duration) These exceedances coincided with a rainfall event, during which the Alcoa Huntly Mine received a total of 55.2 mm of rain. In 2024, Alcoa identified erosion along the embankment of the Wittwer haul road, located adjacent to SE12T turbidity monitor. In response, sediment controls (coir logs and sediment screen) were installed adjacent to the haul road to mitigate sediment runoff into the stream. An additional investigation turbidity monitor (SE12INV) was also installed upstream of the SE12T monitor, south of the Wittwer haul road. Data from SE12INV and field inspections have since identified a significant sediment source originating from a non-mining-related forest track. An inspection conducted on 20 August 2025 indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at both SE12T and SE12INV appeared clear with no signs of turbidity, however, it was identified that the SE12INV monitor was partially buried by sediment mobilised from the adjacent forest track, and organic debris was visible in the SE12T stream bed.

Event ID	Monitor ID	Rationale	Field Notes
			Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedances recorded at SE12T & SE12INV, but as a result of upstream activity from the forest track.
HUN-2508-050	SE12INV	This event is marked by multiple sporadic peaks. This is indicative of a false event.	On 19-20 August 2025, turbidity monitors SE12INV recorded 5 stream turbidity events exceeding 25 NTU for more than 1 hour. 19 August 0748 hours to 19 August 1200 hours (4:20 hours duration) 19 August 1236 hours to 19 August 1412 hours (1.60 hours duration) 19 August 1530 hours to 19 August 1700 hours (1.50 hours duration) 19 August 1718 hours to 19 August 1842 hours (1.40 hours duration) 20 August 0500 hours to 20 August 0612 hours (1.20 hours duration) These exceedances coincided with a rainfall event, during which the Alcoa Huntly Mine received a total of 55.2 mm of rain. In 2024, Alcoa identified erosion along the embankment of the Wittwer haul road, located adjacent to SE12T turbidity monitor. In response, sediment controls (coir logs and sediment screen) were installed adjacent to the haul road to mitigate sediment runoff into the stream. An additional investigation turbidity monitor (SE12INV) was also installed

Event ID	Monitor ID	Rationale	Field Notes
			upstream of the SE12T monitor, south of the Wittwer haul road. Data from SE12INV and field inspections have since identified a significant sediment source originating from a non-mining-related forest track. An inspection conducted on 20 August 2025 indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at both SE12T and SE12INV appeared clear with no signs of turbidity, however, it was identified that the SE12INV monitor was partially buried by sediment mobilised from the adjacent forest track, and organic debris was visible in the SE12T stream bed. Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedances recorded at SE12T & SE12INV, but as a result of upstream activity from the forest track.
HUN-2508-051	SE12INV	This event is marked by multiple sporadic peaks. This is indicative of a false event.	On 19-20 August 2025, turbidity monitors SE12INV recorded 5 stream turbidity events exceeding 25 NTU for more than 1 hour. 19 August 0748 hours to 19 August 1200 hours (4:20 hours duration) 19 August 1236 hours to 19 August 1412 hours (1.60 hours duration) 19 August 1530 hours to 19 August 1700 hours (1.50 hours duration) 19 August 1718 hours to 19 August 1842 hours (1.40 hours

Event ID	Monitor ID	Rationale	Field Notes
			duration) 20 August 0500 hours to 20 August 0612 hours (1.20 hours duration) These exceedances coincided with a rainfall event, during which the Alcoa Huntly Mine received a total of 55.2 mm of rain. In 2024, Alcoa identified erosion along the embankment of the Wittwer haul road, located adjacent to SE12T turbidity monitor. In response, sediment controls (coir logs and sediment screen) were installed adjacent to the haul road to mitigate sediment runoff into the stream. An additional investigation turbidity monitor (SE12INV) was also installed upstream of the SE12T monitor, south of the Wittwer haul road. Data from SE12INV and field inspections have since identified a significant sediment source originating from a non-mining-related forest track. An inspection conducted on 20 August 2025 indicated the installed sediment controls implemented as part of the 2024 erosion management response appeared to be effective. Water flow at both SE12T and SE12INV appeared clear with no signs of turbidity, however, it was identified that the SE12INV monitor was partially buried by sediment mobilised from the adjacent forest track, and organic debris was visible in the SE12T stream bed. Based on available data and field observations, Alcoa does not believe that mining infrastructure contributed to the turbidity exceedances recorded at SE12T & SE12INV, but as a result of upstream activity from the forest track.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-053	SE15T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site was inspected on 10/08/25 and the stream was dry. Float switch activated to flowing on 14/08/2025 at 07:18. Site also visited on 15/08/2025 and confirmed the stream is slowly flowing.
HUN-2508-054	SE22T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site visited on 13/08/2025, stream is flowing clear and shallow. Sensor was heavily impacted by organic debris and likely impacted the sensor during slow stream flow.
HUN-2508-055	SE23T	This event is marked by multiple peaks. This is indicative of a false event.	Site inspected on 05/08/2025. Stream is flowing. Observed mild turbidity likely due to stream flowing over small concrete weir immediately upstream of sensor. Float switch activated to flowing on 20/07/2025 at 16:54. The data trend indicates likely organic debris has impacted the sensor during the stream depth increasing.
HUN-2508-056	SE23T	This event is marked by multiple peaks. This is indicative of a false event.	Site inspected 22 August 2025 due to >25 turbidity exceedance on 19 August 2025. The stream was clear and flowing. The probe was cleaned and returned to the stream. Turbidity reading pre-clean was 4.74 NTU and pos-clean 4.65 NTU. The turbidity data trend rapidly spikes and drops at the beginning of a rain event, indicating debris was likely temporarily impacting the sensor. This event is considered false.
HUN-2508-057	SE25T	This event is marked by gradual increase in turbidity followed by a rapid	Site visited on 05/08/2025. The stream was flowing. The rapid decline in the data trend and extensive organic debris

Event ID	Monitor ID	Rationale	Field Notes
		decrease. This is indicative of a false event.	observed in the stream, this was a false event occurring with commencement of stream flow.
HUN-2508-058	SE25T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site visited on 05/08/2025, stream was flowing. The rapid incline and spikes in the data trend together with extensive organic debris observed in the stream, indicate this was a false event occurring with commencement of stream flow.
HUN-2508-059	SE25T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site visited on 05/08/2025. The stream was flowing. The rapid incline and decline spikes in the data trend together with extensive organic debris observed in the stream, indicate this was a false event occurring with commencement of stream flow.
HUN-2508-060	SE25T	This event is marked by a gradual increase in turbidity followed by a gradual fall. This is indicative of a false event.	Site was inspected on 05/08/2025. The stream is flowing and observed turbidity likely due to stream flowing over small concrete weir immediately upstream of sensor. Float switch activated to flowing on 20/07/2025 at 16:54. The data trend indicates likely organic debris has impacted the sensor during the stream depth increasing. There was no rainfall during this event.
HUN-2508-061	SE26T	This event is marked by a rapid increase in turbidity followed by a rapid fall. This is indicative of a false event.	Site inspection on 05/08/2025, stream is dry.
HUN-2508-062	SE26T	This event is marked by a rapid increase in turbidity followed by a rapid fall. This is indicative of a false event.	Site inspected 22 August 2025 due to >25 turbidity exceedance on 19 August 2025. The stream was clear and flowing. The probe was cleaned and returned to the stream.

Event ID	Monitor ID	Rationale	Field Notes
			Turbidity reading pre-clean was 7.72 NTU and pos-clean 7.49 NTU. Turbidity data trend shows a rapid spike and drop, indicating a potential temporary data error. This event is considered false.
HUN-2508-063	SE26T	This event is marked by a rapid increase in turbidity followed by a rapid fall. This is indicative of a false event.	Site inspected 22 August 2025 due to >25 turbidity exceedance on 20 August 2025. The stream was clear and flowing. The probe was cleaned and returned to the stream. Turbidity reading pre-clean was 7.72 NTU and post-clean 7.49 NTU. Turbidity data trend shows a rapid spike and drop, indicating a potential temporary data error. This event is considered false.
HUN-2508-064	SE26T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspected on 1/09/2025. Stream level had dropped significantly and the sensor was out of water.
HUN-2508-065	SE26T	This event is marked by a gradual increase in turbidity followed by a gradual fall. This is indicative of a false event.	Site inspected on 1/09/2025. Stream level had dropped significantly and the sensor was out of water.
HUN-2508-066	SE26T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspected on 1/09/2025. Stream level had dropped significantly and the sensor was out of water.
HUN-2508-067	SE36T	This event is marked by a rapid increase in turbidity followed by a rapid fall. This is indicative of a false event.	Site inspected on 4/08/2025. Stream clear, debris caught around the sensor. Turbidity reading on arrival 27.4 NTU which dropped to 4.9NTU after the lens was cleaned and repositioned.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-068	SE51T	This event is marked by a gradual increase in turbidity followed by a gradual fall. This is indicative of a false event.	On 13-14 August 2025, turbidity monitor SE51T recorded one stream turbidity event exceeding 25 NTU for 1 hour and 24 minutes (13/08/2025 23:00 hours to 14/08/2025 00:24 hours). This exceedance coincided with a rainfall event, during which the Alcoa Huntly Mine received a total of 28.4 mm of rain. An inspection conducted on 14 August 2025 identified erosion at three locations along a long-term forest track that had been reinstated during the previous year's rehabilitation season. Initial observations indicated that water flow from the adjacent Ingen 5 rehabilitated mine pit contributed to surface water movement along the track. Sediment movement was observed to be localised, with material having travelled approximately 6 metres into the adjacent forest. Based on available monitoring data and field observations, Alcoa does not consider mining infrastructure to have contributed to the turbidity exceedance recorded at SE51T.
HUN-2508-069	SE52T	This event is marked by a gradual increase in turbidity followed by a gradual fall with multiple peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE52T recorded two turbidity events exceeding 25 NTU for >1 hour overnight, from 2 August 2025 to 3 August 2025, during which time Huntly mine site recorded 60.8mm of rainfall in 48 hours. The first event was recorded on 2 August 2025 from 12:12 PM to 6:18 PM, with a duration of 6 hours and 6 minutes. The average turbidity value during the event was 41.63 NTU, with a peak of 73.55 NTU. There was 24.1mm of rainfall recorded in the 24 hours preceding the event. The second event was recorded on 3 August 2025 from 2:18

Event ID	Monitor ID	Rationale	Field Notes
			AM to 8:00 PM, with a duration of 17 hours and 42 minutes. The average turbidity value during the event was 34.25 NTU, with a peak of 53.99 NTU. There was 41.4mm of rainfall recorded in the 24 hours preceding the event. The monitoring site was inspected on 4 August 2025. Stream observations showed elevated turbidity, with a measured value of 19.38 NTU. Data analysis shows a gradual incline and decline in turbidity values coinciding with rainfall. Investigation of the SE52T catchment area included inspection of drainage controls installed following the Simpson 1 drainage event on 27 July 2025. Observations confirmed no further sediment mobilisation in the area. No mining related contributions to the SE52T turbidity exceedance was identified.
HUN-2508-070	SE52T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE52T recorded two turbidity events exceeding 25 NTU for >1 hour overnight, from 2 August 2025 to 3 August 2025, during which time Huntly mine site recorded 60.8mm of rainfall in 48 hours. The first event was recorded on 2 August 2025 from 12:12 PM to 6:18 PM, with a duration of 6 hours and 6 minutes. The average turbidity value during the event was 41.63 NTU, with a peak of 73.55 NTU. There was 24.1mm of rainfall recorded in the 24 hours preceding the event. The second event was recorded on 3 August 2025 from 2:18 AM to 8:00 PM, with a duration of 17 hours and 42 minutes. The average turbidity value during the event was 34.25 NTU, with a peak of 53.99 NTU. There was 41.4mm of rainfall

Event ID	Monitor ID	Rationale	Field Notes
			recorded in the 24 hours preceding the event. The monitoring site was inspected on 4 August 2025. Stream observations showed elevated turbidity, with a measured value of 19.38 NTU. Data analysis shows a gradual incline and decline in turbidity values coinciding with rainfall. Investigation of the SE52T catchment area included inspection of drainage controls installed following the Simpson 1 drainage event on 27 July 2025. Observations confirmed no further sediment mobilisation in the area. No mining related contributions to the SE52T turbidity exceedance was identified.
HUN-2508-071	SE52T	This event is marked by a gradual increase in turbidity followed by a gradual fall with multiple peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE52T recorded a turbidity event exceeding 25 NTU for >1 hour on 13 August 2025. The event was recorded from 13 August 9:42 PM to 14 August 8:00 AM, with a duration of 10 hours and 18 minutes. The average turbidity value during the event was 46.87 NTU, with a peak of 247.62 NTU. There was 19.8mm of rainfall recorded in the 24 hours preceding event. The monitoring site was inspected on 15 August 2025. Stream observations indicated clear water, with significant debris accumulation around the sensor. Data analysis shows a gradual incline and decline in turbidity values coinciding with rainfall, with the elevated peak likely attributed to the debris interference. The SE52T catchment was inspected, no mining related contributions to the turbidity exceedance were found. There

Event ID	Monitor ID	Rationale	Field Notes
			are multiple areas of concern on forest tracks within the catchment, where forest track run-off has been observed entering the forest and stream.
HUN-2508-072	SE52T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE52T recorded two turbidity events exceeding 25 NTU for >1 hour on 19 & 20 August 2025, during which time Huntly mine recorded 65.2mm of rainfall over approximately 36 hours. The first event was recorded from 19 August 2025 8:54 AM to 20 August 2:00 AM, with a duration of 17 hours and 6 minutes. The average turbidity value during the event was 43.97 NTU, with a peak of 122.21 NTU. There was 15.4mm of rainfall recorded in the 24 hours preceding the event. The second event was recorded on 20 August 2025 from 2:30 PM to 5:30 PM, with a duration of 3 hours. The average turbidity value during the event was 26.9 NTU, with a peak of 27.8 NTU. There was 28.2mm of rainfall recorded in the 24 hours preceding the event Data analysis indicates a rise in stream turbidity coinciding with a period of intense rainfall. Turbidity values exceeded 25 NTU following 15.4 mm of rainfall recorded within less than two hours. The SE52T monitoring site and catchment area were inspected on 21 August 2025. The investigation found no evidence of mining-related drainage incidents contributing to the event.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-073	SE52T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE52T recorded two turbidity events exceeding 25 NTU for >1 hour on 19 & 20 August 2025, during which time Huntly mine recorded 65.2mm of rainfall over approximately 36 hours. The first event was recorded from 19 August 2025 8:54 AM to 20 August 2:00 AM, with a duration of 17 hours and 6 minutes. The average turbidity value during the event was 43.97 NTU, with a peak of 122.21 NTU. There was 15.4mm of rainfall recorded in the 24 hours preceding the event. The second event was recorded on 20 August 2025 from 2:30 PM to 5:30 PM, with a duration of 3 hours. The average turbidity value during the event was 26.9 NTU, with a peak of 27.8 NTU. There was 28.2mm of rainfall recorded in the 24 hours preceding the event Data analysis indicates a rise in stream turbidity coinciding with a period of intense rainfall. Turbidity values exceeded 25 NTU following 15.4 mm of rainfall recorded within less than two hours. The SE52T monitoring site and catchment area were inspected on 21 August 2025. The investigation found no evidence of mining-related drainage incidents contributing to the event.
HUN-2508-074	SE52T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE52T recorded two turbidity events exceeding 25 NTU for >1 hour on 24 & 25 August 2025, during a 41.8mm rain event. The first event was recorded on 24 August 2025 from 1:06 PM to 4:18 PM, with a duration of 3 hours and 12 minutes. The average turbidity value during the event was 28.3 NTU, with a

Event ID	Monitor ID	Rationale	Field Notes
			peak of 31.06 NTU. There was 47.2mm of rainfall recorded in the 24 hours preceding the event. The second event was recorded on 25 August 2025 from 1:12 AM to 2:30 AM, with a duration of 1 hour and 18 minutes. The average turbidity value during the event was 26.07 NTU, with a peak of 27.9 NTU. There was 52.6mm of rainfall recorded in the 24 hours preceding the event. Data analysis indicates an increase in stream turbidity following approximately 30 mm of rainfall over a 5.5-hour period. Following the cessation of the first event, turbidity levels dropped below 25 NTU but remained elevated above 20 NTU for a period before rising again during the second exceedance. The SE52T catchment was inspected, no mining related contributions to the turbidity exceedance were found.
HUN-2508-075	SE52T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE52T recorded two turbidity events exceeding 25 NTU for >1 hour on 24 & 25 August 2025, during a 41.8mm rain event. The first event was recorded on 24 August 2025 from 1:06 PM to 4:18 PM, with a duration of 3 hours and 12 minutes. The average turbidity value during the event was 28.3 NTU, with a peak of 31.06 NTU. There was 47.2mm of rainfall recorded in the 24 hours preceding the event. The second event was recorded on 25 August 2025 from 1:12 AM to 2:30 AM, with a duration of 1 hour and 18 minutes. The average turbidity value during the event was 26.07 NTU, with a peak of 27.9 NTU. There was 52.6mm of rainfall recorded in

Event ID	Monitor ID	Rationale	Field Notes
			the 24 hours preceding the event. Data analysis indicates an increase in stream turbidity following approximately 30 mm of rainfall over a 5.5-hour period. Following the cessation of the first event, turbidity levels dropped below 25 NTU but remained elevated above 20 NTU for a period before rising again during the second exceedance. The SE52T catchment was inspected, no mining related contributions to the turbidity exceedance were found.
HUN-2508-076	SE53T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE53T recorded a turbidity event exceeding 25 NTU for >1 hour on 19 August 2025, during a 49.6mm rain event. The event was recorded on 19 August 2025, from 12:31 PM to 8:18 PM, with a duration of 10 hours and 18 minutes. The average turbidity value during the event was 32.72 NTU, with a peak of 38.25 NTU. There was 30.4mm of rainfall recorded in the 24 hours preceding the event. The SE53T monitoring site and catchment area was inspected on 20 August 2025. During inspection of rehabilitation in Atherton 1, it was observed that water runoff from the adjacent forest track had flowed into Atherton 1 rehabilitation rip lines, and subsequently overflowed into the adjacent forest area. Water movement through the forest to the stream zone was observed, however water appeared relatively clear and slow moving, not appearing to be carrying sediment. Based on available data and field observations, Alcoa does not

Event ID	Monitor ID	Rationale	Field Notes
			believe that water discharge from Atherton 1 contributed significantly to the turbidity exceedance recorded at SE53T.
HUN-2508-077	SE59T	This event is marked by a gradual increase in turbidity followed by a gradual fall with multiple peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE59T recorded a turbidity event exceeding 25 NTU for >1 hour on 13 August 2025. The event was recorded from 13 August 2025 9:42PM to 14 August 3:00 AM, with a duration of 5 hours and 18 minutes. The average turbidity value during the event was 33.93 NTU, with a peak of 43.07 NTU. There was 19.8mm of rainfall recorded in the 24 hours preceding the event. The monitoring site was inspected on 16 August 2025, the stream was clear at the time of inspection, with a measured value of 5.97 NTU. Data analysis shows a rise in stream turbidity coinciding with a period of intense rainfall, and turbidity values elevated above 25 NTU after 19.8mm of rainfall was recorded in approximately 2.5 hours. The SE59T catchment inspection was completed, no mining related contributions to the turbidity exceedance was found.
HUN-2508-078	SE59T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE59T recorded a turbidity event exceeding 25 NTU for >1 hour on the 19 August 2025. The event was recorded on 19 August from 7:42 AM to 2:18 PM, with a duration of 6 hours and 36 minutes. The average turbidity value during the event was 41.15 NTU, with a peak of 114.48 NTU. There was 5.5mm of rainfall recorded in 24 hours preceding event.

Event ID	Monitor ID	Rationale	Field Notes
			Data analysis shows an initial spike in turbidity values and an erratic trend shortly after rainfall commenced, likely due to debris interference. Subsequent readings displayed a more consistent pattern, forming a typical bell-shaped curve as rainfall intensity continued. Stream flow had increased significantly, resulting in turbulent conditions around the sensor, which is positioned below a precipice. Visual assessment indicated moderate turbidity, consistent with the mobilisation of organic material due to elevated stream velocity. An inspection of the SE59T catchment was completed, which identified no evidence of mining related contributions to the turbidity event.
HUN-2508-079	SE60T	This event is marked by a rapid rise and a rapid fall in turbidity. This is indicative of false event.	Site visited on 04/08/2025. Stream is flowing and clear. Float switch activated to flowing on 28/07/2025 at 01:12. Organic debris was observed around the sensor area and the rapid incline and decline in the data trend and extreme peak indicates sensor impacted by organic matter during commencement of stream flowing.
HUN-2508-080	SE60T	This event is marked by a gradual increase in turbidity followed by a gradual fall. This is indicative of a false event.	Rapid incline and decline of turbidity values outside of rainfall period. As rainfall commenced, turbidity values dropped to 1.12NTU indicating the sensor was impacted by organic debris
HUN-2508-081	SE61T	This event is marked by a gradual increase in turbidity followed by a gradual fall. This is indicative of a false event.	Local turbidity monitor SE61T recorded a Turbidity event on 2/08/2025 for 5 hours and 6 minutes, following 32.69mm of rain. A catchment inspection was completed on 5/08/2025 of the surrounding pits and rehab zones, including Brownes 1 &

Event ID	Monitor ID	Rationale	Field Notes
			2, Davey 1 &2, Wittwer 1 & 2, Rance 1 & 2, Downes 16 & 17, and Wittwer and Kisler sumps. The investigation confirmed there was no areas of concern, and the exceedance was not mining related.
HUN-2508-082	SE61T	This event is marked by a gradual increase in turbidity followed by a gradual fall with multiple peaks. This is indicative of a false event.	Local turbidity monitor SE61T recorded a Turbidity event on 3/08/2025 for 14 hours and 36 minutes, following 45.2mm of rain. A catchment inspection was completed on 5/08/2025 of the surrounding pits and rehab zones. The investigation confirmed there was no areas of concern, and the exceedance was not mining related.
HUN-2508-083	SE61T	This event is marked by a gradual increase in turbidity followed by a gradual fall. This is indicative of a false event.	Local turbidity monitoring site SE61T recorded a turbidity event exceeding 25 NTU for >1 hour on 13/08/2025 for 8 hours and 12 minutes following 23mm of rainfall in the preceding 24 hours. Data trend shows an increase in stream turbidity following a period of intense rainfall, during which time more than 20mm of rainfall was recorded in approximately 3 hours. The SE61T monitoring site was inspected on 15/08/2025, the stream was clear at the time of inspection. Stream flow velocity had increased significantly, resulting in turbulent conditions around the sensor, which is positioned below a precipice. An inspection of the SE61T catchment area was completed, no evidence of mining contribution to the turbidity exceedance was found.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2508-085	SE61T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Local turbidity monitoring site SE61T recorded a turbidity event on 19 August 2025 for 25 hours and 36 minutes, following 50.2mm of rainfall in the preceding 24 hours. Data trend shows a gradual incline and decline in turbidity values which coincide with rainfall. The monitoring site was inspected on 20 August 2025. Upon arrival, stormwater runoff from the adjacent bush track was visibly evident rapidly flowing down the track and into the stream. The steam was rapidly flowing and turbidity was visibly evident. The sensor was cleaned and repositioned back into the stream. Turbidity reading pre-clean was 34.9 NTU and post-clean slightly reduced to 33.74 NTU. An inspection of the SE61T catchment including mining pits, rehabilitation pits, tracks and sumps was completed, no evidence on mining contribution was found.
HUN-2508-087	SE62T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	The site was inspected on 01/08/2025 and stream was dry. Inspected again on 4/08/2025, water was present around the sensor but the stream was ponded, with no connected flow. Heavy debris present in the stream bed. Data analysis shows the event was likely due to the initial water pooling around the sensor and the lens partially out of water. There was likely also interference from organic debris during the initial stages of stream flow.
HUN-2508-088	SE62T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	The site was inspected on 01/08/2025 and stream was dry. Inspected again on 4/08/2025, water was present around the sensor but the stream was ponded, with no connected flow.

Event ID	Monitor ID	Rationale	Field Notes
			Heavy debris present in the stream bed. Data analysis shows the event was likely due to the initial water pooling around the sensor and the lens partially out of water. There was likely also interference from organic debris during the initial stages of stream flow.
HUN-2508-089	SE62T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	The site was inspected on 01/08/2025 and stream was dry. Inspected again on 4/08/2025, water was present around the sensor but the stream was ponded, with no connected flow. Heavy debris present in the stream bed. Data analysis shows the event was likely due to the initial water pooling around the sensor and the lens partially out of water. There was likely also interference from organic debris during the initial stages of stream flow.

5.5. Excluded WQMS Units

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

Table 4 Excluded WQMS Units

Unit	Dates/	Comments
DB01T	23/08/2025-31/08/2025	Data gap due to equipment theft.
ND12T	16/08/2025-28/08/2025	Data errors from 16/08/2025 to 28/08/2025 due to damage to the sensor cable. The cable was replaced on the 28/08/2025.
PD02T	01/08/2025-31/08/2025	Awaiting water Corp approval to access Pipe head catchment
PD03T	01/08/2025-31/08/2025	Awaiting water Corp approval to access Pipe head catchment
SE03T	01/08/2025-07/08/2025	Sensor reading fault intermittently from the 1/8/2025 to 7/8/2025 due to intermittent calibration issues.
SE07T	1/08/2025-21/08/2025	Sensor reading fault code intermittently from 1/08/2025 to 21/08/2025
SE34T	01/08/2025-06/08/2025	System Fault

5.6. Missing Data

Periods of missing data are detailed in Table 5.

Table 5 Missing Data Summary

Missing Data ID	Unit	Start	End	Comments
MD-2508-001	DB02T	25/08/2025	26/08/2025	Data gap from 25/08/2025 5:00 to 26/08/2025 10:54 due to system power failure
MD-2508-002	DB02T	31/08/2025	1/09/2025	Data gap from 31/08/2025 6:48 to 1/09/2025 10:54 due to system power failure.
MD-2508-003	FPWR1	3/08/2025	3/08/2025	42 minute data gap on 3/08/2025 due to system malfunction.
MD-2508-004	FPWR1	4/08/2025	7/08/2025	Data gap from 4/08/2025 10:00 to 7/08/2025 12:24 due to system malfunction.
MD-2508-005	ND14T	23/08/2025	23/08/2025	Intermittent data gap on the 23/08/2025 due to system logging fault.
MD-2508-006	SE09T	22/08/2025	28/08/2025	Data gap on the 22/08/2025 at 22:30 to 28/08/2025 12:24 due to system power failure.

MD-2508-007	SE12T	21/08/2025	21/08/2025	Data gap on the 21/08/2025 from 14:00 to 15:23 due to system maintenance.
MD-2508-008	SE24T	7/08/2025	7/08/2025	Data gap on the 7/08/2025 from 14:06 to 14:18 due to system maintenance.
MD-2508-009	SE25T	8/08/2025	18/08/2025	Data gaps intermittently between 8/08/2025 to 18/08/2025 due to system power failure.
MD-2508-010	SE34T	1/08/2025	1/08/2025	36-minute data gap on 1/08/2025 due to system malfunction
MD-2508-011	SE48T	30/08/2025	30/08/2025	Data gap from 30/08/2025 11:01 due to system power failure
MD-2508-012	SE52T	6/08/2025	6/08/2025	Data gap from 6/08/2025 14:18 to 6/08/2025 14:30 due to system maintenance

6. Appendices

Appendix A. Huntly Raw WQMS Data

Date	Huntly WQMS Data – August 2025 - Events with turbidity > 25 NTU for an hour or more																
	DB01T	DB02T	FPWR1	ND04T	ND06T	ND07T	ND12T	ND13T	ND14T	PD01T	SE01T	SE02T	SE03T	SE05T	SE06T	SE07T	SE08T
1/08/2025																	
2/08/2025				**1**									**1**				
3/08/2025																	
4/08/2025													**1**				
5/08/2025																	
6/08/2025																	
7/08/2025																	
8/08/2025																	
9/08/2025																	
10/08/2025																	
11/08/2025																	
12/08/2025															**1**		
13/08/2025														**1**			
14/08/2025													**1**				
15/08/2025				**1**													
16/08/2025				**2**													
17/08/2025																**2**	
18/08/2025																**1**	
19/08/2025			**1**	**1**									**1**	**1**			
20/08/2025																	
21/08/2025																	
22/08/2025																**1**	
23/08/2025																**2**	
24/08/2025																	
25/08/2025																**2**	
26/08/2025																**1**	
27/08/2025																**1**	
28/08/2025																**1**	
29/08/2025																	
30/08/2025																**1**	
31/08/2025																	

Note: False events have been annotated by **black** bold text. True events are annotated by **red** bold text

Date	Huntly WQMS Data -August 2025 - Events with turbidity > 25 NTU for an hour or more																
	SE09T	SE10T	SE11T	SE12T	SE12INV	SE15T	SE34T	SE36T	SE48T	SE51T	SE52T	SE53T	SE59T	SE60T	SE61T	SE62T	SN07T
1/08/2025					**1**	**1**								**1**			
2/08/2025			**1**	**1**	**1**						**1**				**1**	**1**	
3/08/2025				**2** | **1**							**1**				**1**		
4/08/2025								**1**								**1**	
5/08/2025																	
6/08/2025																**1**	
7/08/2025																**1**	
8/08/2025																	
9/08/2025				**1**	**1**												
10/08/2025																	
11/08/2025																	
12/08/2025						**1**											
13/08/2025				**1**	**1**					**1**	**1**		**1**		**1**		
14/08/2025																	
15/08/2025																	
16/08/2025																	
17/08/2025																	
18/08/2025																	
19/08/2025				**1**	**3** | **1**						**1**	**1**	**1**	**1**	**1**		
20/08/2025		**1**		**2**	**1**						**1**				**1**		
21/08/2025																	
22/08/2025																	
23/08/2025																	
24/08/2025											**1**						
25/08/2025											**1**						
26/08/2025																	
27/08/2025																	
28/08/2025																	
29/08/2025				**1**													
30/08/2025																	
31/08/2025																	

Note: False events have been annotated by **black** bold text. True events are annotated by **red** bold text

Date	Huntly WQMS Data – August 2025 - Events with turbidity > 25 NTU for an hour or more																
	SE22T	SE23T	SE24T	SE25T	SE26T	SE03INV1	SE03INV3										
1/08/2025				**1**													
2/08/2025		**1**		**1**													
3/08/2025					**1**	**1**											
4/08/2025				**1**													
5/08/2025																	
6/08/2025				**1**													
7/08/2025																	
8/08/2025																	
9/08/2025																	
10/08/2025																	
11/08/2025																	
12/08/2025																	
13/08/2025						**1**											
14/08/2025																	
15/08/2025																	
16/08/2025																	
17/08/2025																	
18/08/2025																	
19/08/2025		**1**			**1**	**1**											
20/08/2025					**1**												
21/08/2025																	
22/08/2025																	
23/08/2025																	
24/08/2025																	
25/08/2025																	
26/08/2025																	
27/08/2025																	
28/08/2025																	
29/08/2025					**1**												
30/08/2025																	
31/08/2025					**2**												

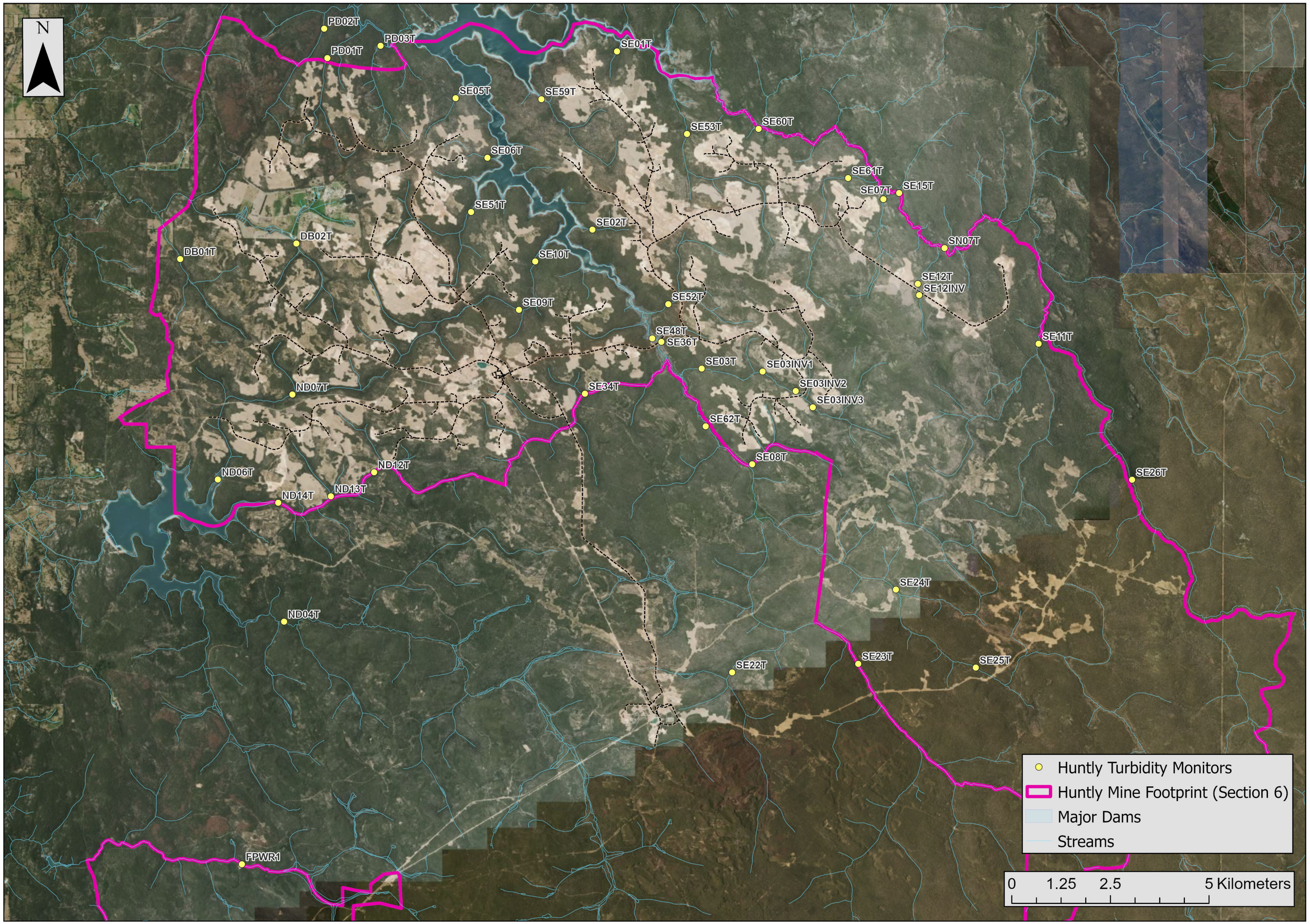
Note: False events have been annotated by **black** bold text. True events are annotated by **red** bold text

Date	Huntly WQMS Data – August 2025 - Turbidity (Daily Average, NTU)																
	DB01T	DB02T	FPWR1	ND04T	ND06T	ND07T	ND12T	ND13T	ND14T	PD01T	SE01T	SE02T	SE03T	SE05T	SE06T	SE07T	SE08T
1/08/2025		1.59		1.3	1.8	1.17	1.68	0.49	1.25	1.74	0.06	1.5	13.27	5.59	13.45		1.2
2/08/2025		1.68		9.18	3.18	1.61	1.91	0.66	4.62	4.07	0.07	3.54	22.02	9.65	6.9		1.26
3/08/2025		1.72		7.78	3.23		2.07	0.7	3.52	3.79	0.06	2.92	1.5	9.96	1.92		1.45
4/08/2025		1.63		1.53	2.13	1.28	1.88	0.55	1.53	2.05	0.06	1.95	40.53	6.87	1.86	0.06	1.22
5/08/2025		1.64		1.11	1.8	1.2	1.81	0.51	1.29	1.84	0.06	1.97	0.01	5.64	2.71		1.16
6/08/2025		1.63		1.38	1.76	1.16	1.79	0.49	1.14	1.83	0.06	1.63		5.06	3		1.13
7/08/2025		1.65	2.8	0.99	1.77	1.19	1.81	0.48	1.05	1.92	0.06	1.6	62.23	4.95	4.94		1.14
8/08/2025		1.67	5.03	0.98	1.84	1.17	1.81	0.46	1.1	2.13	0.06	1.66	3.19	5.05	6.93		1.12
9/08/2025		1.73	2.34	1.25	1.94	1.23	1.84	0.45	1.25	2.91	0.06	2.72	5.3	6.95	2.02		1.1
10/08/2025		1.76	9.21	1.9	2.28	1.33	1.92	0.48	1.83	3.23	0.06	1.84	7.82	6.26	1.87	0.06	1.12
11/08/2025		1.96	18.98	1.41	1.86	1.18	1.92	0.47	1.06	2.5	0.06	1.78	3.23	5.23	3.84		1.15
12/08/2025		1.81	2.92	1.23	1.85	1.15	1.95	0.44	1.06	2.75	0.06	1.8	3.46	5.66	34.68		1.13
13/08/2025		2.01	11.28	2.01	2	1.59	2.02	0.49	1.33	4.21	0.08	5.11	4.44	10.54	30.3		1.15
14/08/2025		1.79	10.26	2.56	2.75	1.7	2.12	0.59	2.55	6.16	0.07	3.31	14.43	8.04	0.91		1.19
15/08/2025		1.75	37.18	24.6	1.95	1.23	1.99	0.49	1.09	2.39	0.06	2.11	3.63	6.36	0.94	97.38	1.16
16/08/2025		1.77	31.31	54.25	1.77	1.21		0.48	1	2.05	0.06	2.08	3.75	5.47	1.74	185.91	1.18
17/08/2025		1.76	18.99	2	1.6	1.19		0.45	1.02	1.65	0.06	2.03	4.13	5.73	1.36	86.05	1.16
18/08/2025		1.76	3.41	1.04	1.62	1.16		0.41	1.15	1.77	0.06	1.96	4.82	6.13	1.45		1.12
19/08/2025		1.97	13.54	14.96	3.06	1.71		0.83	3.01	8.31	0.25	8.66	19.01	14.12	6.01	77.81	1.35
20/08/2025		1.84	1.49	6.81	3.01			0.63	1.75	5	0.06	5.39	12.58	11.8	4.07	13.66	1.29
21/08/2025		1.76	28.94	2.45	1.98			0.5	1.27	2.64	0.06	2.86	6.53	6.71	2.56		1.19
22/08/2025		2.26	0.16	1.83	1.69			0.46	1.12	1.9	0.06	2.14	5.99	5.96	2.14	63.62	1.14
23/08/2025		1.8	0.1	1.59	1.59	1.16		0.45	1.04	1.74	0.06	2.01	5.97	5.67	1.46	375.38	1.13
24/08/2025		2.12	0.13	2.11	1.94			0.62	1.54	3.58	0.07	3.21	9.44	7.62	1.92	124.12	1.57
25/08/2025		1.96	0.39	2.09	2.09			0.61	1.35	3.55	0.06	3.59	10.88	7.43	2.45	82.74	2.16
26/08/2025		1.96	0.46	1.65	1.6			0.56	1.07	2.45	0.06	3.47	9.58	6.37	2.47	36.28	1.4
27/08/2025		1.79	0.43	1.38	1.44			0.53	0.97	1.98	0.06	2.61	9.09	5.89	3.2	77.8	1.24
28/08/2025		1.49	0.3	1.25	1.37			0.5	0.95	1.86	0.06	2.64	9.5	5.99	2.9		1.19
29/08/2025		1.48	0.11	1.17	1.35	1.19	2.17	0.5	0.94	1.81	0.06	2.42	9.53	6.09	2.54	295.97	1.19
30/08/2025		1.48	0.1	1.12	1.33	1.18	2.18	0.49	0.93	1.74	0.06	2.83	9.63	6.29	1.29	374.92	1.19
31/08/2025		1.49	0.09	1.09	1.38	1.13	2.2	0.49	0.99	1.81	0.06	2.3	9.99	6.6	7.17	209.04	1.19

Date	Huntly WQMS Data – August 2025 - Turbidity (Daily Average, NTU)																
	SE09T	SE10T	SE11T	SE12T	SE12INV	SE15T	SE34T	SE36T	SE48T	SE51T	SE52T	SE53T	SE59T	SE60T	SE61T	SE62T	SN07T
1/08/2025	1.09	1	4.9	7.5	403.5	43.08		11.36	4.12	1.89	14.49	1.96	6.69	241.51	2.38	7.93	7.62
2/08/2025	1.11	1.18	17.12	36.6	267.84	42.12		11.12	5.52	6.06	24.17	6.13	13.04	161.98	12.56	9.05	7.64
3/08/2025	1.16	1.6	11.55	24.28	70.43	42.57		20.36	9.55	5.38	31.19	8.4	11.83	7.16	28.85	29.98	7.31
4/08/2025	1.09	1.12	6.67	1.9	1	42.52		12.79	5.44	3.09	18.81	3.81	8.11	4.35	9.13	27.55	7.61
5/08/2025	1.07	3.04	4.9	1.4	0.59	42.51		3.95	4.09	2.59	15.82	2.66	7.77	0.99	4.39	4.61	7.62
6/08/2025	1.07	1.02	4.46	1.25	0.62	42.4	1.02	3.83	3.94	2.28	15.25	2.31	8.19	2.62	3.21	27.2	7.63
7/08/2025	1.12	1.12	4.64	1.28	0.53	42.62	1.06	3.78	3.91	2.13	14.48	2.19	9.1	0.95	2.7	11.11	7.44
8/08/2025	1.07	0.96	4.6	1.81	3.15	42.33	1.03	4.17	3.96	2.06	14.29	2.08	10.26	2.1	2.51	1.85	7.24
9/08/2025	1.06	12.5	4.6	7.75	37.45	41.65	1.02	3.91	4.1	3.01	17.09	2.99	11.5	1.34	5.29	1.51	7.64
10/08/2025	1.06	1.1	4.63	3.21	5.76	40.22	1.09	4.08	4.38	3.15	16.82	3.24	8.07	1.04	5.87	1.09	7.64
11/08/2025	1.07	0.96	4.61	1.48	2.23	39.33	1.1	3.96	4.06	2.25	15.18	2.25	4.82	1.23	3	1.18	7.6
12/08/2025	1.06	0.96	4.68	1.94	2.54	39.03	1.04	3.78	4.01	2.24	15.12	2.14	5.21	2.42	2.9	1.08	7.61
13/08/2025	1.06	1.01	4.79	16.73	54.04	38.6	1.14	3.42	4.46	4.47	18.61	2.77	8.81	6	5.33	1.17	6.92
14/08/2025	1.26	18.06	6.12	4.96	5.21	22.03	1.39	5.75	7.05	6.9	28.73	7.74	15	1.94	20.03	1.64	7.6
15/08/2025	1.07	1.02	4.57	2.02	0.74	7.26	1.16	5.35	4.54	2.37	15.9	2.63	6.63	1.02	3.82	2.59	7.62
16/08/2025	1.08	0.99	4.54	1.43	0.66	5.07	1.17	4.23	4.55	2.12	14.4	2.27	5.2	0.99	2.8	1.89	7.61
17/08/2025	1.07	2.38	4.68	1.38	0.79	4.99	1.17	3.44	4.2	2.09	14.18	2.16	4.04	0.98	2.58	1.71	7.62
18/08/2025	13.96	0.95	4.77	1.39	10.2	4.49	1.19	2.49	4.09	1.96	13.68	2.07	4.22	0.95	2.69	1.41	7.62
19/08/2025	1.2	1.41	9.54	56.5	100.03	4.51	1.4	4.58	7.56	8.37	33.84	16.95	20.09	8.07	39.32	1.62	7.6
20/08/2025	1.14	191.92	8.08	17.54	16.51	5.51	1.39	5.11	7.8	4.83	24.51	8.07	10.76	3.74	30.96	3.66	7.52
21/08/2025	1.09	68.09	5.46	3.16	0.98	4.86	1.37	4.93	6.42	3.39	19.31	4.61	7.38	2.39	14.05	3.62	7.56
22/08/2025	1.09	21.48	4.3	2.19	0.7	3.97	1.22	4.35	5.49	2.63	16.64	3.15	5.63	1.59	6.8	2.88	7.6
23/08/2025	1.08	12.88	4.54		0.62	3.76	1.23	3.96	4.71	2.34	15.44	2.69	4.73	1.26	4.85	2.13	7.59
24/08/2025	1.84	4.63	5.67		29.03	3.99	2.5	7.67	5.02	6.08	20.24	3.9	7.36	1.3	10.76	2.73	7.58
25/08/2025	1.24	1.45	8.81		9.03	3.78	1.36	5.48	6.51	4.08	21.07	4.9	7.14	1.65	18.72	3.83	7.58
26/08/2025	1.11	1.13	7.31		0.92	5.48	1.35	3.79	6.17	3.3	17.48	3.29	5.35	2.7	9.74	3.36	7.44
27/08/2025	1.11	1.03	4.99		0.66	5.95	1.33	2.99	5.2	3.68	16.12	2.65	4.66	3.15	5.49	2.59	7.42
28/08/2025	1.09	1	4.27	1.5	0.62	5.02	1.19	2.84	4.58	3.96	15.41	2.45	4.65	2.59	4.73	1.94	7.47
29/08/2025	1.09	0.93	4.44	1126.54	0.61	4.58	1.16	2.82	4.3	2.23	15.17	2.3	4.42	1.94	3.98	1.66	7.52
30/08/2025	1.1	21.03	4.59	3914.04	0.66	4.31	1.15	3.04	4.16	2.09	14.87	2.21	4.54	1.6	3.71	1.44	7.55
31/08/2025	1.1	0.92	4.62	2458.18	0.74	4.18	1.17	3.12		2.03	14.13	2.12	4.76	1.33	3.53	1.25	7.58

Date	Huntly WQMS Data – August 2025 - Turbidity (Daily Average, NTU)																	
	SE22T	SE23T	SE24T	SE25T	SE26T	SE03INV1	SE03INV3											
1/08/2025	6.05	12.25	8.17	20.54	6.08	2.98	0.36											
2/08/2025	12.8	39.2	6.85	190.26	2.95	7.9	0.54											
3/08/2025	3.79	10.74	7.29	7.65	850.6	11.85	0.86											
4/08/2025	3.67	8.13	7.64	18.08	3	4.53	0.59											
5/08/2025	3.65	7.56	6.79	3.33	4.03	3.58	0.49											
6/08/2025	3.62	7.06	5.93	33.98	5.35	3.4	0.44											
7/08/2025	3.7	7.58	7.37	0.86	6.47	3.44	0.42											
8/08/2025	4.19	7.4	6.06	0	4.91	3.55	0.4											
9/08/2025	4	7.22	5.6	0.01	11.36	4.63	0.43											
10/08/2025	3.61	6.01	8.29	0.01	3.98	4.45	0.44											
11/08/2025	3.82	5.72	5.38	0.01	5.59	3.79	0.42											
12/08/2025	13.97	5.88	4.17	0	5.66	3.87	0.43											
13/08/2025	43.43	7	3.43	0.03	4.73	5.2	0.44											
14/08/2025	3.92	6.18	4.66	0.08	4.17	8.91	0.76											
15/08/2025	3.7	6.18	4.69	0	6.32	4.12	0.53											
16/08/2025	3.71	6.39	4.13	0	6.36	3.25	0.53											
17/08/2025	4.33	6.27	3.64	0.01	6.35	2.29	0.48											
18/08/2025	3.82	6.12	3.52		6.25	2.26	0.4											
19/08/2025	4.09	11.22	3.34	8.05	35.88	8.64	0.92											
20/08/2025	3.77	6.99	5.48	9.86	175.32	4.42	0.81											
21/08/2025	3.75	5.41	3.84	8.76	7.75	3.22	0.57											
22/08/2025	3.77	4.79	3.29	7.49	9.12	2.87	0.51											
23/08/2025	3.69	4.35	2.95	6.39	7.18	2.78	0.52											
24/08/2025	4.14	7.49	3.89	11.87	6.7	4.55	0.69											
25/08/2025	3.94	6.48	3.96	10.42	31.13	4.65	0.82											
26/08/2025	3.86	5.34	4.76	9.2	6.87	3.72	0.75											
27/08/2025	4.01	4.51	4.57	7.91	11.33	3.06	0.64											
28/08/2025	3.8	4.13	4.36	7.05	6.61	3.01	0.63											
29/08/2025	3.81	3.88	4.09	6.48	341.39	2.93	0.62											
30/08/2025	3.8	3.83	3.84	5.89	0.89	2.92	0.6											
31/08/2025	3.8	3.78	3.54	5.44	105.59	2.85	0.62											

Appendix B. Huntly WQMS Locations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SE02T
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SE03INV2
SE03INV3
ND07T
SE34T
SE62T
SE08T
ND12T
ND06T
ND13T
ND14T
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 TRANSMISSION TO IOT

DATA OUTLET

POWER INLET

40 X 60 MM CABLE DUCT

20 AMP MPPT
SOLAR CHARGER

40 X 60 MM CABLE DUCT

SIERRA WIRELESS FX30

40 X 60 MM CABLE DUCT

12 V, 120 AH LI-ION BATTERY

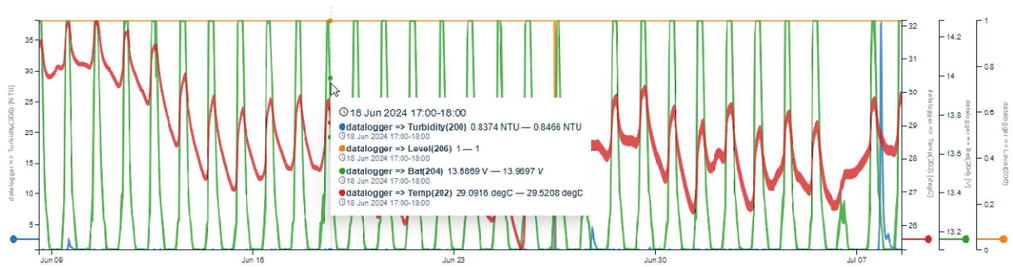
DATA INLET

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.

CLIENT

NSW - BUILDING G, 22 POWERS RD, SEVEN HILLS, NSW 2147
(02) 8385 5357
WA - 512, 1A QUEEN ST FREEMANTLE WA 6160
(08) 6245 9843
waterservices@scidev.com.au
www.scidev.com.au
SCIDEV

TITLE
IOT TURBIDITY MONITORING STATION
SITE LAYOUT
GENERAL ARRANGEMENT

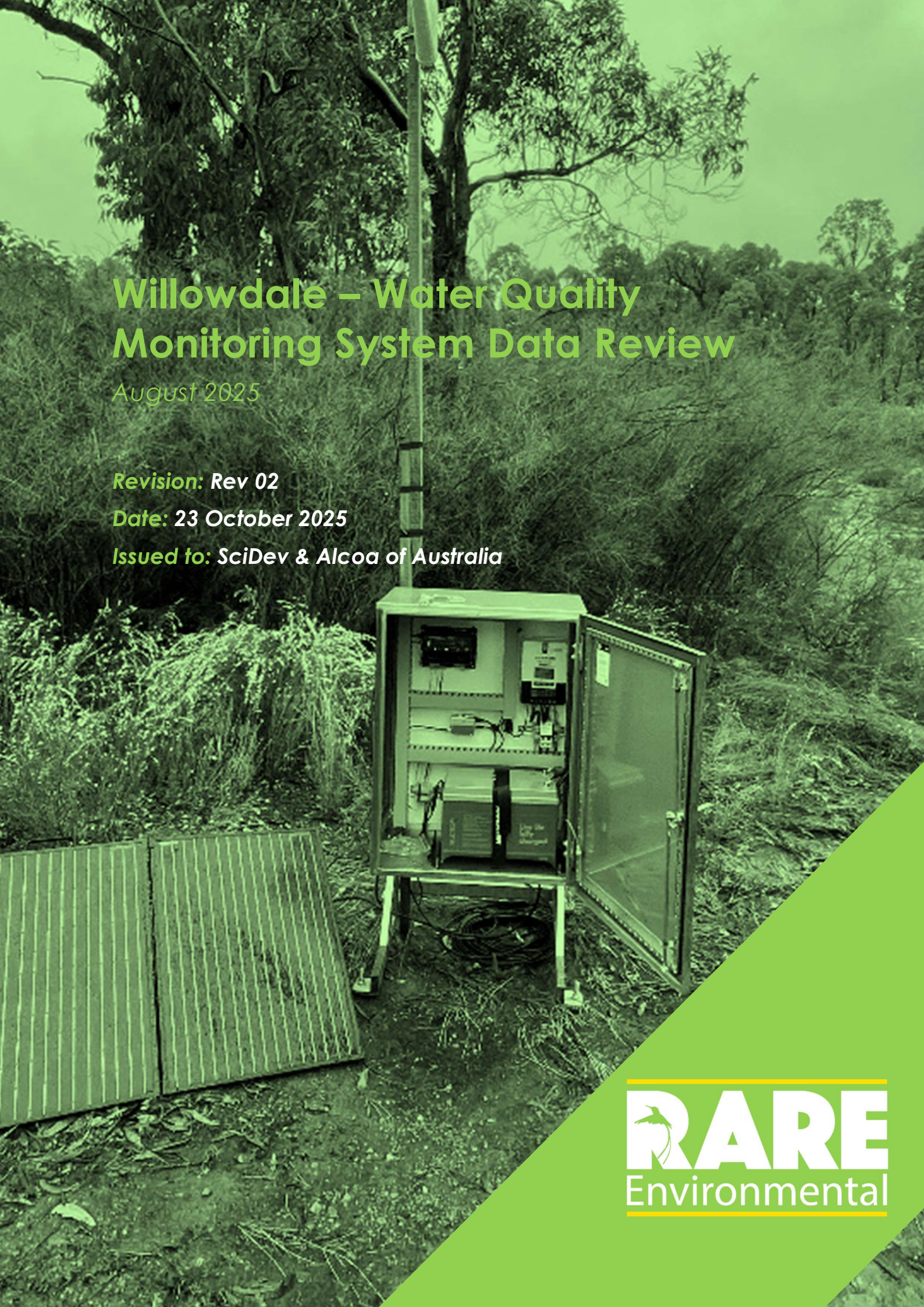
SHEET 1 OF 2

SCALE NTS OR AS SHOWN

DRAWING NO.
HI0090 - ALCOA WQMS

SHEET SIZE
A3

REV.
1



Willowdale – Water Quality Monitoring System Data Review

August 2025

Revision: ***Rev 02***

Date: ***23 October 2025***

Issued to: ***SciDev & Alcoa of Australia***

RARE Environmental

Document Control

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Project Name	WQ Data Processing
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Client Reference	PO002447

Document History and Status						
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02	23/10/25	Issued to client	MM	GD	GD	Alcoa

Report Sign Off					
Report Version	02				
Prepared by		Technical Review		Approved for Issue	
Michael Minter		Georgia Duffy		Georgia Duffy	
Name	Michael Minter	Name	Georgia Duffy	Name	Georgia Duffy
Position	Env. Engineer	Position	Chemical Engineer	Position	Chemical Engineer
Date	23/10/25	Date	23/10/25	Date	23/10/25

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Contents

1. Executive Summary

This report, prepared by RARE Environmental Pty Ltd and SciDev Pty Ltd for Alcoa, provides an analysis of turbidity data collected from Water Quality Monitoring Systems (WQMS) deployed at the Willowdale bauxite mining operations during August 2025. 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:

- **False Events**: Three 'False' events were identified, primarily attributed to factors such as debris accumulation, sensor obstructions, and water turbulence.
- **Further Investigation**: One event was flagged for further investigation.
- **True Events**: One "True" turbidity exceedance event was identified.
- **Excluded Units**: One WQMS unit was temporarily excluded from the analysis due to invalid data caused by equipment faults or environmental interference.

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

RARE Environmental Pty Ltd and SciDev Pty Ltd were engaged by Alcoa to analyse turbidity data collected from the Willowdale Water Quality Monitoring Systems (WQMSs). 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 (WQMSs), 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 August 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 Systems (WQMSs)

During the August 2025 monitoring period, four Turbidity units were deployed in section six areas 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 6-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 August 2025, 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 WQMSs 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.

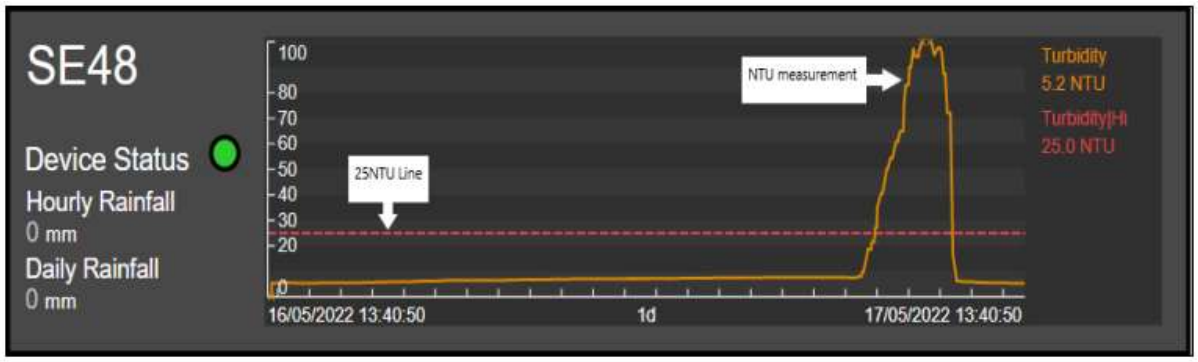


Figure 2 Typical 'false' exceedance event showing both a sharp incline and decline

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
Flagged for further investigation	1
False	3

Table 2 Events Details

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
WDL-2508-001	HV07T	'False'	10/08/2025 20:38	10/08/2025 23:04	2 hr 26 min	452.13	128
WDL-2508-002	HV07T	'False'	10/08/2025 23:22	11/08/2025 0:59	1 hr 37 min	36.56	29.14
WDL-2508-003	RHB2	'False'	28/08/2025 16:32	28/08/2025 17:33	1 hr 1 min	872.18	537.53
WDL-2508-004	RHB3	Additional Investigation Required	2/08/2025 10:48	2/08/2025 12:55	2 hr 7 min	127.24	38.91

5.2. Additional Investigation

One event was flagged for additional investigation

5.2.1. WDL-2507-002 Additional Investigation

The event, occurring between 10:48 and 13:01 on the 2nd of August at RHB3 does not exhibit the typical sharp, incline in turbidity levels however the initial spike and gradual return to baseline levels in a pattern resembling a normal (Gaussian) distribution as shown in Figure 3 below indicates a potential drainage event.

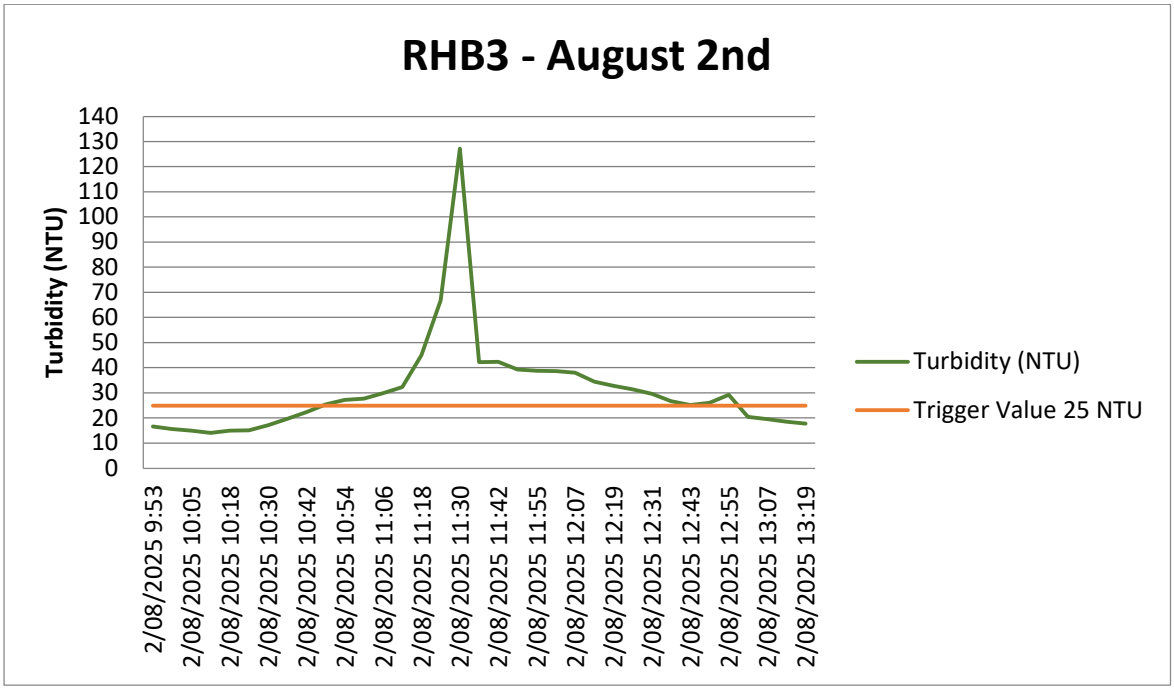


Figure 3 WDL-2587-001

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event
- Inspection of Irrawaddy stream crossing identified minor erosion resulting in mobilisation of fine sediment.

Field notes provided by Alcoa are included below.

"Catchment inspections commenced on 02/08/2025. The turbidity event was in progress at the time. The monitor was inspected at approximately 12:00. Visual inspection of a confluence upstream of the monitor identified water coming from the Irrawaddy region appeared more turbid.

Following this inspection drone imagery of the Irrawaddy stream crossing from the 08/07/2025 was reviewed in greater detail and it was identified that there may be some minor erosion of the stream channel occurring.

On 05/08/2025, a visual inspection of the Irrawaddy stream crossing was conducted and confirmed some minor erosion of the stream channel has occurred resulting in mobilisation of some fine sediment. In addition, a recently re-opened DBCA forest track that runs adjacent to

the stream was inspected. A significant amount of disturbance had occurred to re-open the track. Due to the potential contribution from the Irrawaddy stream crossing a drainage incident 24 hour notification was submitted on the 06/08/2025.

On 07/08/2025, the Rehabilitation team inspected the Irrawaddy stream crossing to assess the erosion and deploy coir logs if required. The Rehabilitation team confirmed that the minor erosion of the stream channel was normal and concluded that installing coir logs or any other screening material in the stream channel may result in further erosion of the embankments. The Rehabilitation team will continue to monitor the area.

On 15/08/2025, a visual inspection of the Walrus stream crossing was conducted to ensure this area was not contributing. No significant erosion was identified. It was noted that a significant amount of maintenance along the DBCA forest tracks has also occurred in this area.

Confirmation was received from the Rehabilitation team that the DBCA forest track maintenance near the Irrawaddy stream crossing occurred on 23/06/2025. Further analysis of previous rain events showed increased turbidity after this forest track was re-opened. Of note, on 20/06/2025, prior to the track maintenance, 28.4 mm of rainfall was recorded at the Nanga Dell weather station with minimal turbidity recorded on the RHB3T monitor.

Based on the available data and field observations, Alcoa considers the main contributing factor to these turbidity events is the DBCA forest track maintenance that has occurred within the catchment. The erosion within the Irrawaddy stream crossing channel may have also contributed. However, Alcoa considers the erosion to be minor and expected in light of the rehabilitation being conducted. 21-day report for this event was submitted on 26/08/2025."

Based on the inspection and field notes provided, this event was deemed to be a 'True' event with significant contribution from non-mining related activities including the DBCA forest track maintenance that has occurred within the catchment.

5.3. True Event(s)

One 'True' turbidity events was identified during the reporting period on the 2nd of August. Details of the event and investigation are outlined in section 5.2

5.4. False Event(s)

Three 'False' event were identified during the reporting period. Rationale on potential causes is summarised below.

Table 3 False Events Rationale

Event ID	Monitor ID	Rationale	Field Notes
WDL-2508-001	HV07T	This event is marked by a rapid increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Stream inspected on 11/08/2025 at 10:30am. The stream was flowing but with no intensity and the turbidity was reading 18.4806 NTU. The probe was laying on the floor bed of the stream, and on inspection had silt over the probe. Probe was cleaned and turbidity returned to 1.1126 NTU. Event classified as a false event.
WDL-2508-002	HV07T	This event is marked by multiple sporadic peaks this is indicative of a false event.	Stream inspected on 11/08/2025 at 10:30am. The stream was flowing but with no intensity and the turbidity was reading 18.4806 NTU. The probe was laying on the floor bed of the stream, and on inspection had silt over the probe. Probe was cleaned and turbidity returned to 1.1126 NTU. Event classified as a false event.
WDL-2508-003	RHB2	This event is marked by multiple sporadic peaks this is indicative of a false event.	Due to the sharp increases and decreases and extremely high readings of the turbidity data, this event is considered to be caused by an equipment fault. Event classified as a false event.

5.5. Excluded WQMS Units

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

Table 4 Excluded WQMS Units

Unit	Dates	Comments
HV49T	01/08/2025-05/08/2025	Monitor fault (negative readings) between 01/08/2025 and 03/08/2025.

5.6. Missing Data

Periods of missing data are detailed in Table 5.

Table 5 Missing Data Summary

Missing Data ID	Unit	Start	End	Comments
MD-2508-01	HV49T	03/08/2025	05/08/2025	Equipment failure between 03/08/2025 and 05/08/2025. No data available during this period.

6. Appendices

Appendix A. Willowdale Raw WQMS Data

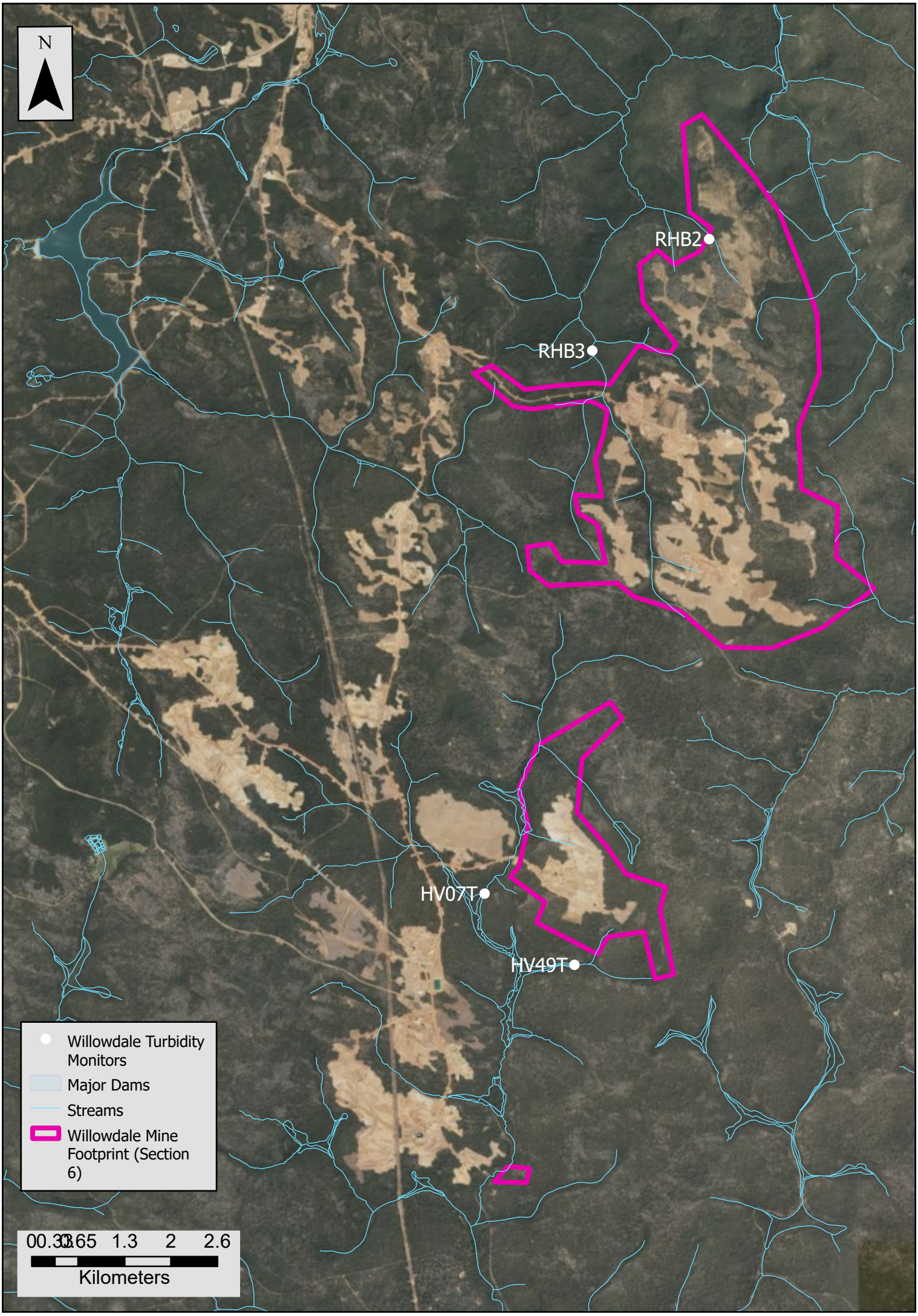
Date	Willowdale WQMS Data - August 2025 - Events with turbidity > 25 NTU for an hour or more			
	HV07T	HV49T	RHB2	RHB3
1/08/2025				
2/08/2025				**1**
3/08/2025				
4/08/2025				
5/08/2025				
6/08/2025				
7/08/2025				
8/08/2025				
9/08/2025				
10/08/2025	**2**			
11/08/2025				
12/08/2025				
13/08/2025				
14/08/2025				
15/08/2025				
16/08/2025				
17/08/2025				
18/08/2025				
19/08/2025				
20/08/2025				
21/08/2025				
22/08/2025				
23/08/2025				
24/08/2025				
25/08/2025				
26/08/2025				
27/08/2025				
28/08/2025			**1**	
29/08/2025				
30/08/2025				
31/08/2025				

Note: False events have been annotated by black bold text. True events are annotated by red bold text

Date	Willowdale WQMS Data - August 2025 – Daily Average Turbidity (NTU)			
	HV07T	HV49T	RHB2	RHB3
1/08/2025	0.97		0.34	1.64
2/08/2025	1.69		1	10.26
3/08/2025	1.26		1.17	6.4
4/08/2025	1.28		1.15	3.32
5/08/2025	4.94	0.97	0.6	2.53
6/08/2025	2.3	0.95	0.45	2.2
7/08/2025	1.79	0.97	1.67	2.02
8/08/2025	1.96	0.95	0.41	1.86
9/08/2025	2.26	0.95	0.59	2.12
10/08/2025	16.28	0.95	0.62	2.66
11/08/2025	5	0.98	0.46	1.77
12/08/2025	1.04	0.96	0.37	1.75
13/08/2025	1.34	1.01	1.23	3.95
14/08/2025	5.71	0.99	0.87	5.35
15/08/2025	3.05	1.01	0.74	2.21
16/08/2025	1.06	1	0.59	1.96
17/08/2025	0.95	1.03	0.49	1.87
18/08/2025	0.93	0.94	0.42	1.73
19/08/2025	0.97	0.96	1.78	4.66
20/08/2025	1.4	0.85	2.26	3.34
21/08/2025	0.95	0.86	1.29	2.41
22/08/2025	0.99	0.87	0.96	2.04
23/08/2025	0.96	0.9	0.73	1.86
24/08/2025	1.07	0.95	2.19	3.82
25/08/2025	0.96	1.06	2.74	3.01
26/08/2025	1.05	0.92	2.07	2.59
27/08/2025	1.25	1.7	1.26	2.12
28/08/2025	1.05	0.97	26.06	1.97
29/08/2025	1.04	0.91	0.73	1.86
30/08/2025	0.95	0.92	0.66	1.84
31/08/2025	0.95	0.93	0.63	1.76

* - Adjusted average with sensor fault data removed

Appendix B. Willowdale WQMS Locations


N
RHB2
RHB3
HV07T
HV49T
Willowdale Turbidity Monitors
Major Dams
Streams
Willowdale Mine Footprint (Section 6)
0 0.33 0.65 1.3 2 2.6
Kilometers

Appendix C. WQMS General Arrangement

ANTENNA

SOLAR PANEL

DATA TRANSMISSION TO IOT

DATA OUTLET

POWER INLET

40 X 60 MM CABLE DUCT

20 AMP MPPT
SOLAR CHARGER

40 X 60 MM CABLE DUCT

SIERRA WIRELESS FX30

40 X 60 MM CABLE DUCT

12 V, 120 AH LI-ION BATTERY

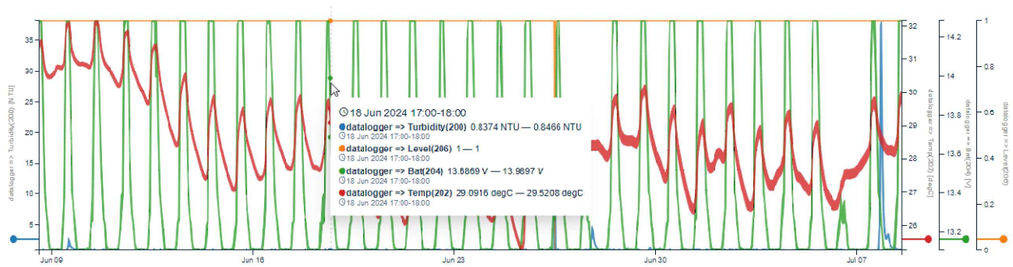
DATA INLET

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.

CLIENT

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SCIDEV

TITLE
IOT TURBIDITY MONITORING STATION
SITE LAYOUT
GENERAL ARRANGEMENT

SHEET 1 OF 2

SCALE NTS OR AS SHOWN

DRAWING NO.
HI0090 - ALCOA WQMS

SHEET SIZE
A3

REV.
1