

WQMS Data Review

Huntly Bauxite Mine

JULY 2026



Document Control

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1. Executive Summary

SciDev conducted an analysis of turbidity data collected from Water Quality Monitoring Systems (WQMS) operating across Alcoa's Huntly bauxite mining operations for July 2026. The purpose of this assessment was to evaluate data quality, identify genuine turbidity exceedance events, and support compliance with the *Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023*.

The review focused on events where turbidity exceeded 25 NTU for at least one hour. Events were evaluated in accordance with Alcoa's Turbidity Event Classification Guidelines and classified as either "true" exceedances, representing genuine increases in turbidity, or "false" exceedances resulting from environmental or operational interferences.

Key outcomes of the analysis were:

- **Excluded Unit:** Eight (8) WQMS units were excluded from the analysis due to invalid data caused by equipment faults or environmental interference.
- **False Events:** Fifty-nine (59) turbidity exceedances were identified as false, commonly caused by debris, sensor obstruction, or hydraulic disturbances.
- **True Events:** Ten (10) "True" turbidity exceedance event were recorded following detailed assessment; however, none were attributable to mining activities.

Data gaps were also identified due to system outages, maintenance, and unexpected shutdowns. These have been documented to maintain transparency in reporting.

Overall, while turbidity exceedance events were recorded during July 2026, the assessment found no evidence that any true turbidity exceedance event was caused by mining activities.

2. Scope

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

3. Introduction

3.1 Background

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

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

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

3.2 Monitoring Requirements

Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023 specifies that a drainage incident occurs when:

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

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

3.3 Water Quality Management System (WQMS)

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

Each WQMS unit consists of the following components:

Aquas SMR10 Turbidity Probe

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

Data Taker DT82 Logger

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

Float Switch

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

3.4 Purpose

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

3.5 Exclusions

This report is not intended as:

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

3.6 Abbreviations

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

4. Methodology

4.1 WQMS Locations

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

4.2 Data Review

Data recorded by the WQMS Units was reviewed to identify potential events where turbidity 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.

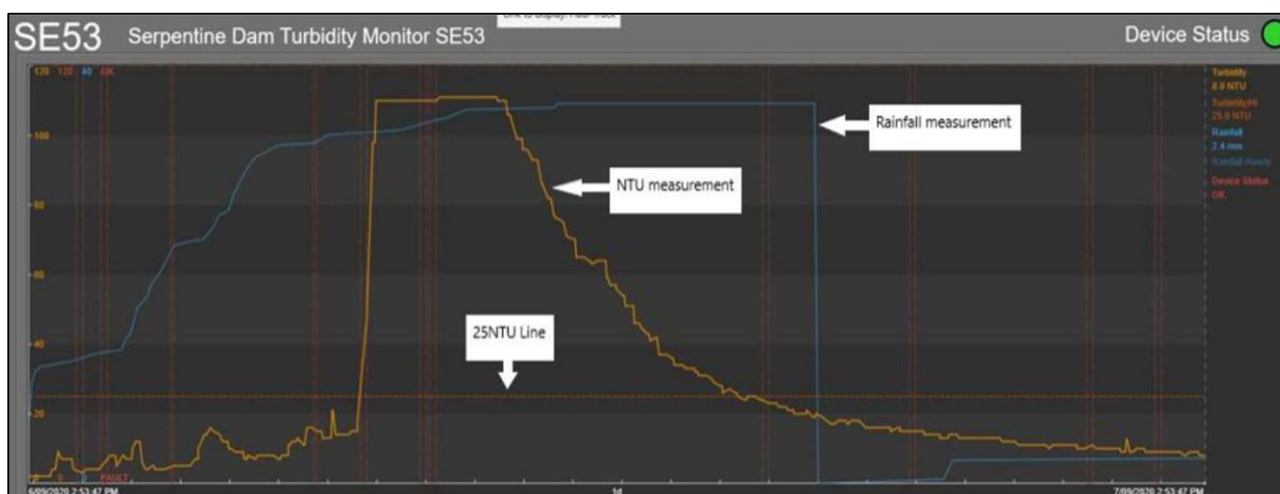


Figure 1 Typical 'true' exceedance event

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.

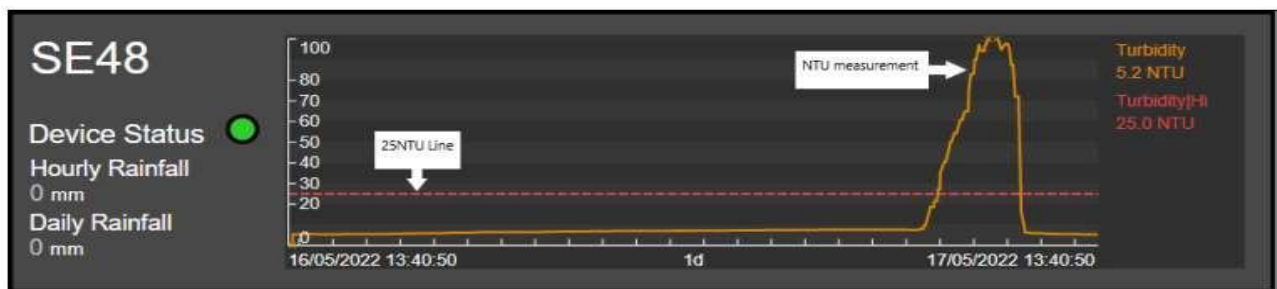


Figure 2 Typical 'False' Exceedance event

4.2.3 Missing Data

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

5. Results and Discussion

5.1 Events

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

Table 1: Events Summary

Category	# of events
Total events	69
True Events	10
False events	59
Caused by mining related activity	0

It was found that:

- a) There were sixty-nine (69) total events recorded.
- b) There were ten (10) True events. Zero (0) of these were directly caused by mining related activity.
- c) Twenty (20) units that were previously dry, now had water present.
- d) Eight (8) units remained dry with no presence of water.
- e) Thirty five (35) units remained flowing throughout the month.

Note:

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

Table 2: Events Details

Event ID	Monitor	False Event (Y/N)	Event Start Date	Event Start Time	Event End Date	Event End Time	Event Duration Minutes	Event Duration Hrs/Mins	Ave. Turbidity (NTU)	Peak Turbidity (NTU)
HUN-2607-001	SE48T	Y	1/07/2026	12:23:00 AM	1/07/2026	8:13:00 AM	470	7:50	784.70	1501.1
HUN-2607-002	SE62T	Y	1/07/2026	4:36:01 AM	1/07/2026	7:00:01 AM	144	2:24	98.92	158.13
HUN-2607-003	ND14T	Y	1/07/2026	2:29:35 PM	1/07/2026	4:01:14 PM	92	1:31	89.85	253.13
HUN-2607-004	SE53T	Y	1/07/2026	10:18:01 PM	2/07/2026	4:06:02 AM	348	5:48	25.68	29.05
HUN-2607-005	SE53T	Y	2/07/2026	5:48:01 AM	3/07/2026	2:24:01 AM	1236	20:36	27.41	50.25
HUN-2607-006	SE03INV1	Y	3/07/2026	12:30:01 AM	5/07/2026	10:18:01 AM	3468	57:48	34.9	49.18
HUN-2607-007	SE53T	Y	3/07/2026	6:24:01 PM	3/07/2026	8:00:01 PM	96	1:36	25.64	25.96
HUN-2607-008	SE53T	Y	3/07/2026	8:36:01 PM	3/07/2026	11:00:02 PM	144	2:24	26.09	26.96
HUN-2607-009	SE53T	Y	4/07/2026	12:00:01 AM	4/07/2026	1:54:01 AM	114	1:54	26.41	27.53
HUN-2607-010	SE53T	Y	4/07/2026	3:06:01 AM	4/07/2026	6:06:02 AM	180	3:00	27.53	34.78
HUN-2607-011	SE53T	Y	4/07/2026	6:36:01 AM	4/07/2026	11:36:01 AM	300	5:00	43.62	71.54
HUN-2607-012	SE53T	Y	4/07/2026	12:36:01 PM	4/07/2026	1:48:01 PM	72	1:12	25.49	25.82
HUN-2607-013	SE53T	Y	4/07/2026	2:00:01 PM	4/07/2026	4:00:01 PM	120	2:00	25.42	25.77
HUN-2607-014	SE53T	Y	5/07/2026	7:06:02 PM	5/07/2026	8:48:02 PM	102	1:42	199.84	324.56
HUN-2607-015	SE53T	Y	6/07/2026	6:18:02 AM	6/07/2026	10:30:02 PM	972	16:12	58.78	93.99
HUN-2607-016	SE53T	Y	7/07/2026	3:30:01 PM	7/07/2026	9:48:01 PM	378	6:18	26.76	31.30

HUN-2607-017	SE53T	Y	7/07/2026	11:54:01 PM	8/07/2026	10:36:01 AM	642	10:42	37.69	49.87
HUN-2607-018	SE53T	Y	8/07/2026	10:54:01 AM	8/07/2026	12:06:01 PM	72	1:12	26.18	28.32
HUN-2607-019	SE53T	Y	8/07/2026	5:06:02 PM	8/07/2026	7:00:01 PM	114	1:53	597.48	1329.88
HUN-2607-020	SE53T	Y	8/07/2026	8:48:01 PM	9/07/2026	1:18:02 AM	270	4:30	68.85	103.53
HUN-2607-021	SE53T	Y	9/07/2026	1:36:01 AM	9/07/2026	8:30:02 AM	414	6:54	166.09	1060.96
HUN-2607-022	SE62T	Y	9/07/2026	6:06:00 AM	9/07/2026	8:06:00 AM	120	2:00	118.48	250.85
HUN-2607-023	SE62T	Y	9/07/2026	11:06:00 AM	9/07/2026	4:36:00 PM	330	5:30	94.89	127.47
HUN-2607-024	SE62T	Y	11/07/2026	4:36:01 AM	11/07/2026	6:00:01 AM	84	1:24	172.00	338.86
HUN-2607-025	SE62T	Y	11/07/2026	8:06:01 AM	11/07/2026	9:30:01 AM	84	1:24	130.19	262.21
HUN-2607-026	SE12INV	Y	12/07/2026	3:36:00 PM	12/07/2026	10:12:00 PM	396	6:36	32.01	35.41
HUN-2607-027	SE12INV	Y	13/07/2026	6:24:00 AM	13/07/2026	12:42:00 PM	378	6:18	32.09	36.39
HUN-2607-028	SE62T	Y	13/07/2026	8:36:01 AM	13/07/2026	10:36:01 AM	120	2:00	93.52	180.03
HUN-2607-029	SE03T	Y	13/07/2026	4:00:01 PM	13/07/2026	7:42:01 PM	222	3:42	28.13	30.13
HUN-2607-030	SE03T	Y	13/07/2026	8:12:01 PM	13/07/2026	9:48:01 PM	96	1:36	25.77	26.5
HUN-2607-031	SE03T	Y	13/07/2026	10:54:01 PM	14/07/2026	2:00:01 PM	906	15:06	28.76	31.57
HUN-2607-032	SE62T	Y	14/07/2026	1:36:01 AM	14/07/2026	3:00:01 AM	84	1:24	120.14	224.84
HUN-2607-033	SE62T	Y	14/07/2026	7:36:01 AM	14/07/2026	8:36:01 AM	60	1:00	861.14	1791.93
HUN-2607-034	SE62T	Y	14/07/2026	10:06:01 AM	14/07/2026	11:06:01 AM	60	1:00	428.96	841.73
HUN-2607-035	SE62T	Y	14/07/2026	2:39:50 PM	14/07/2026	4:04:41 PM	85	1:24	141.23	292.76
HUN-2607-036	SE62T	Y	14/07/2026	7:36:49 PM	14/07/2026	9:31:59 PM	115	1:55	125.06	267.24

HUN-2607-037	DB03T	Y	14/07/2026	10:15:00 PM	15/07/2026	9:39:53 AM	685	11:24	36.26	40.6
HUN-2607-038	SE62T	Y	14/07/2026	11:45:19 PM	15/07/2026	1:04:07 AM	79	1:18	161.97	323.93
HUN-2607-039	SE62T	Y	15/07/2026	11:10:13 AM	15/07/2026	12:29:01 PM	79	1:18	157.30	357.77
HUN-2607-040	DB03T	Y	15/07/2026	8:52:40 PM	16/07/2026	9:48:00 AM	775	12:55	578.4	679.15
HUN-2607-041	SE12INV	Y	16/07/2026	4:00:00 PM	16/07/2026	5:42:00 PM	102	1:42	87.58	156.04
HUN-2607-042	SE03INV1	N	16/07/2026	5:36:01 PM	16/07/2026	6:54:01 PM	78	1:18	26.45	27.16
HUN-2607-043	SE02T	N	16/07/2026	6:24:01 PM	16/07/2026	7:30:01 PM	66	1:06	28.81	32.38
HUN-2607-044	SE12T	Y	16/07/2026	6:42:01 PM	16/07/2026	8:24:01 PM	102	1:42	79.07	274.81
HUN-2607-045	SE05T	N	16/07/2026	7:24:03 PM	16/07/2026	8:54:03 PM	90	1:30	36.09	43.3
HUN-2607-046	SE59T	N	16/07/2026	7:42:01 PM	16/07/2026	9:54:01 PM	132	2:12	29.21	31.61
HUN-2607-047	SE61T	N	16/07/2026	8:00:01 PM	17/07/2026	12:30:01 AM	270	4:30	34	39.15
HUN-2607-048	SE52T	N	16/07/2026	8:06:01 PM	16/07/2026	11:42:01 PM	216	3:36	55.62	120.6
HUN-2607-049	SE34T	N	16/07/2026	8:24:01 PM	16/07/2026	10:36:01 PM	132	2:12	92.37	203.21
HUN-2607-050	SE03T	N	16/07/2026	9:48:01 PM	17/07/2026	2:06:01 AM	258	4:18	26.94	29.39
HUN-2607-051	SE03INV1	N	16/07/2026	10:00:01 PM	16/07/2026	11:54:01 PM	114	1:54	27.86	31.02
HUN-2607-052	DB03T	N	17/07/2026	12:39:00 AM	17/07/2026	5:24:00 AM	285	4:45	28.72	31.59
HUN-2607-053	ND07T	Y	17/07/2026	12:06:01 PM	18/07/2026	3:36:01 AM	930	15:30	267.69	926.4
HUN-2607-054	SE02T	Y	17/07/2026	1:58:00 PM	17/07/2026	3:17:00 PM	79	1:19	3661.4	5000
HUN-2607-055	SE02T	Y	17/07/2026	3:23:00 PM	17/07/2026	7:56:00 PM	273	4:33	1139.4	2093.4
HUN-2607-056	SE03INV1	Y	19/07/2026	12:12:01 PM	20/07/2026	12:00:01 PM	1428	23:48	32.95	40.39

HUN-2607-057	SN07T	Y	20/07/2026	8:36:03 AM	20/07/2026	10:00:01 AM	84	1:23	42.73	70.52
HUN-2607-058	SN07T	Y	20/07/2026	3:06:02 PM	20/07/2026	4:30:01 PM	84	1:23	78.59	116.39
HUN-2607-059	SN07T	Y	20/07/2026	6:12:02 PM	20/07/2026	8:00:01 PM	108	1:47	70.33	119.33
HUN-2607-060	SE11T	Y	22/07/2026	1:25:00 AM	22/07/2026	7:28:00 AM	363	6:03	82.54	134.54
HUN-2607-061	SE52T	Y	23/07/2026	4:12:01 PM	25/07/2026	9:07:00 AM	2455	40:54	114.81	192.32
HUN-2607-062	SE12T	Y	24/07/2026	11:55:00 PM	25/07/2026	9:55:00 AM	600	10:00	29.56	33.2
HUN-2607-063	SE06T	Y	26/07/2026	12:11:00 AM	26/07/2026	3:55:00 AM	224	3:44	71.37	97.25
HUN-2607-064	SE23T	Y	27/07/2026	11:31:19 AM	1/08/2026	1:36:31 PM	7325	122:05	39.48	310.7
HUN-2607-065	SE34T	Y	27/07/2026	3:42:01 PM	28/07/2026	10:24:01 AM	1122	18:42	2881.40	4000
HUN-2607-066	SE06T	Y	28/07/2026	6:12:01 PM	30/07/2026	11:54:01 AM	2502	41:42	89.11	143.13
HUN-2607-067	SE59T	Y	28/07/2026	10:07:48 PM	28/07/2026	11:08:25 PM	61	1:00	259.62	878.34
HUN-2607-068	SE11T	Y	24/07/2026	7:36:01 AM	24/07/2026	10:00:01 AM	144	2:24	152.29	236.63
HUN-2607-069	SE34T	Y	25/07/2026	12:15:00 AM	25/07/2026	1:39:00 AM	84	1:24	198.82	396.96

5.2 Event Assessment Outcomes

5.2.1 True Events

5.2.1.1 HUN-2607-042

SE03INV1

The turbidity exceedance event at monitoring location SE03INV1 occurred between 5:36 pm and 6:54 pm on 16 July 2026. A total of 7.3 mm of rainfall was recorded during the 24 hours preceding the event, providing a potential mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 3, turbidity increased above the 25 NTU trigger value, reaching an initial peak before declining sharply to below pre-event levels. Following this decline, turbidity recovered and a second exceedance event (HUN-2607-051) was recorded, during which turbidity increased to a peak of approximately 31 NTU. After the second peak, turbidity gradually receded towards baseline conditions, consistent with the settling and dispersion of suspended sediments.

The overall pattern of elevated turbidity, multiple peaks, and subsequent gradual recession is characteristic of a genuine environmental turbidity event associated with rainfall-driven runoff. While the brief decrease between the two exceedance events may reflect localised flow variability, temporary changes in suspended sediment concentrations, or minor sensor interference, the broader response remains coherent and consistent with natural environmental processes. Given the recorded rainfall and the characteristic turbidity response, the exceedance is considered to represent a genuine rainfall-induced turbidity event, rather than sensor malfunction.

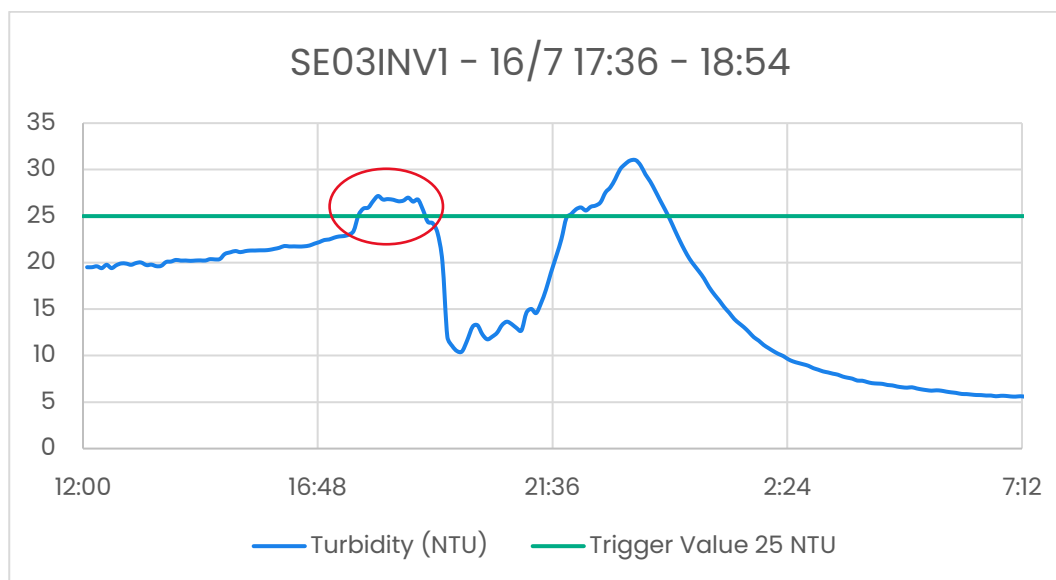


Figure 3 – SE03INV1 July 16th

Field notes provided by Alcoa are included below.

‘Local monitor SE03INV1 recorded a turbidity event exceeding 25NTU for >1 hour on the 16/07/2026. The event has a duration from 16/07 from 5:36 PM to 6:54 PM, totalling 1 hours and 18 minutes.

The average turbidity was 26.45 with a maximum of 27.16. There was 7.3mm of rainfall in the preceding 24 hours. The analysis of the data trends displays evidence of a true event due to the gradual incline and decline, presenting a bell curved trend.

A site inspection 20/07 identified the stream was clear and flowing, however, the turbidity sensor was impacted by debris and once cleaned, the turbidity dropped from 40.39 NTU to 1.86 NTU.

Catchment inspections identified no evidence of mining related contribution to the turbidity event.’

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

5.2.1.2 HUN-2607-043

SE02T

The turbidity exceedance event at monitoring location SE02T occurred between 6:24 pm and 7:30 pm on 16 July 2026. A total of 13.8 mm of rainfall was recorded during the 24 hours preceding the event, providing a clear mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 4, turbidity remained relatively stable at approximately 4 to 5 NTU throughout the early afternoon before gradually increasing from around 4:00 pm. The rate of increase accelerated during the evening, with turbidity exceeding the 25 NTU trigger value and reaching an initial peak of approximately 32 NTU. Following a brief decline, turbidity remained elevated and subsequently increased to a second peak of approximately 33 NTU. After the second peak, turbidity decreased steadily over several hours, gradually returning towards baseline conditions.

The observed response, characterised by a progressive rise in turbidity, multiple elevated peaks, and a smooth recession towards background levels, is consistent with the mobilisation, transport and subsequent settling of suspended sediments following rainfall-driven runoff. The short-term fluctuations observed between the two peaks likely reflect natural variability in flow conditions and sediment concentrations within the waterbody. Given the recorded 13.8 mm rainfall, the sustained turbidity response, and the gradual return to baseline conditions, the exceedance is considered to represent a genuine rainfall-induced turbidity event rather than sensor malfunction.

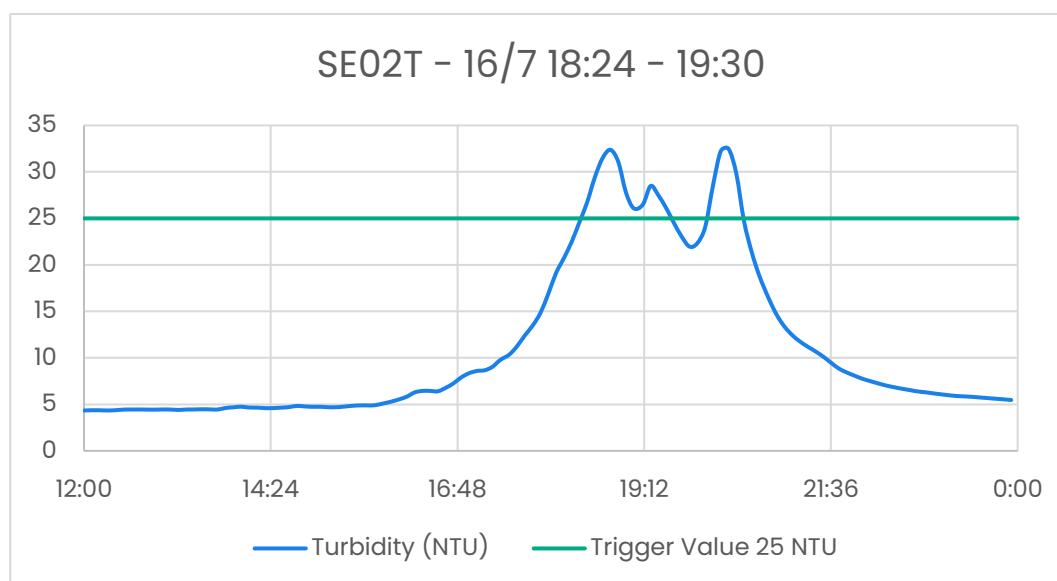


Figure 4 – SE02T July 16th

Field notes provided by Alcoa are included below.

‘Compliance turbidity monitoring site SE02T recorded a turbidity event exceeding 25 NTU for >1 hour on 16 July 2026.

The event was recorded on 16 July 2026 from 06:24 PM to 16 July 2026 07:30 PM, with a duration of 1 hour and 06 minutes. The average turbidity value during the event was 28.81, with a peak of 32.38. There was 13.8mm of rainfall recorded in the 24 hours preceding the event.

The data trend indicates turbidity NTU increased simultaneously with the rainfall, exceeded until rainfall ceased, then gradually declined back down to <5 NTU.

SE02T catchment was inspected and no evidence of mining related drainage concerns were observed.'

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

5.2.1.3 HUN-2607-045

SE05T

The turbidity exceedance event at monitoring location SE03T occurred between 7:24 pm and 8:54 pm on 16 July 2026. A total of 30 mm of rainfall was recorded during the 24 hours preceding the event, providing a strong mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 5, turbidity remained low and stable at approximately 1 to 2 NTU throughout the afternoon before increasing progressively from around 5:00 pm. The rate of increase accelerated during the evening, with turbidity exceeding the 25 NTU trigger value shortly after 7:00 pm. Following an initial peak of approximately 27 NTU, turbidity remained elevated and increased further, reaching two successive peaks of approximately 42 NTU and 43 NTU. After the second peak, turbidity declined steadily over several hours, gradually returning towards baseline conditions.

The observed response, characterised by a sustained increase in turbidity, multiple elevated peaks, and a smooth recession towards background levels, is consistent with the mobilisation, transport and subsequent settling of suspended sediments associated with rainfall-driven runoff. The fluctuations between the elevated peaks are indicative of natural variability in runoff inputs, flow conditions and sediment availability within the catchment, rather than instrumentation issues. Given the substantial antecedent rainfall (30 mm), the progressive rise in turbidity, the sustained period of elevated concentrations, and the gradual return to baseline conditions, the exceedance is considered to represent a genuine rainfall-induced turbidity event rather than sensor malfunction.

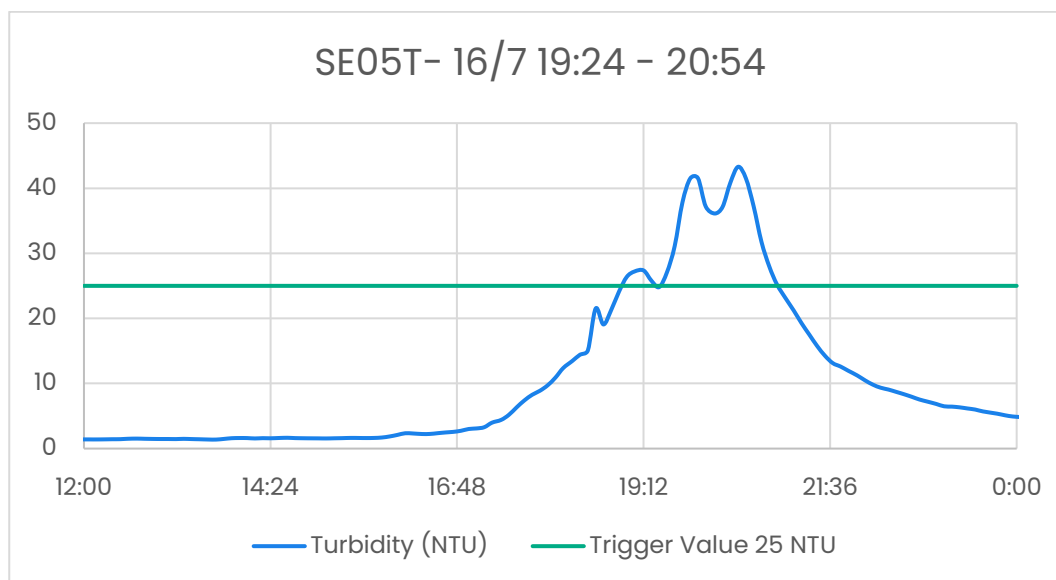


Figure 5 – SE02T July 16th

Field notes provided by Alcoa are included below.

‘Compliance turbidity monitoring site SE05T recorded a turbidity event exceeding 25 NTU for >1 hour on 16 July 2026.

The event was recorded on 16 July 2026 from 07:24 PM to 16 July 2026 08:54 PM, with a duration of 1 hour and 30 minutes. The average turbidity value during the event was 36.09, with a peak of 43.3. There was 30mm of rainfall recorded in the 24 hours preceding the event.

The data trend indicates turbidity NTU increased simultaneously with the rainfall, exceedance commenced after 30mm of rainfall and turbidity remained over 25 NTU until rainfall ceased, then gradually declined back down to <5 NTU.

SE05T catchment was inspected and no evidence of mining related drainage concerns were observed.’

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

5.2.1.4 HUN-2607-046

SE59T

The turbidity exceedance event at monitoring location SE59T occurred between 7:42 pm and 9:54 pm on 16 July 2026. A total of 30.6 mm of rainfall was recorded during the 24 hours preceding the event, providing a strong mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 6, turbidity remained relatively stable at approximately 3 to 5 NTU throughout much of the day before increasing progressively during the evening. A brief isolated spike was observed at approximately 5:00 pm, after which turbidity returned to the prevailing trend and continued to rise. Turbidity exceeded the 25 NTU trigger value shortly before 7:30 pm, reaching a peak of approximately 32 NTU. Following a minor decline, turbidity remained elevated above the trigger value for an extended period, with concentrations fluctuating between approximately 28 and 31 NTU before gradually decreasing. After falling below the trigger value, turbidity continued to recede steadily towards baseline conditions.

The overall response, characterised by a sustained rise in turbidity, an extended period of elevated concentrations, and a gradual recession towards background levels, is consistent with the mobilisation, transport and subsequent settling of suspended sediments associated with rainfall-driven runoff. The brief isolated spike observed prior to the main event may reflect a short-term localised disturbance or transient sensor interference; however, it does not detract from the broader and well-defined turbidity response. Given the substantial antecedent rainfall (30.6 mm), the prolonged duration of elevated turbidity, and the gradual return to baseline conditions, the exceedance is considered to represent a genuine rainfall-induced turbidity event rather than sensor malfunction.

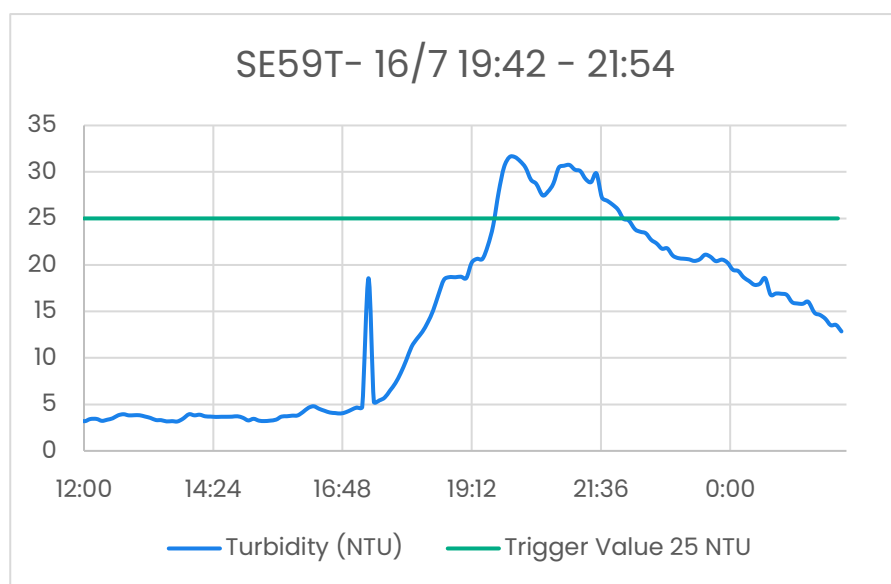


Figure 6 – SE59T July 16th

Field notes provided by Alcoa are included below.

‘Compliance turbidity monitoring site SE59T recorded a turbidity event exceeding 25 NTU for >1 hour on 16 July 2026.

The event was recorded on 16 July 2026 from 07:42 PM to 16 July 2026 09:54 PM, with a duration of 2 hour and 12 minutes. The average turbidity value during the event was 29.21, with a peak of 31.61. There was 30.6mm of rainfall recorded in the 24 hours preceding the event.

The data trend indicates turbidity NTU increased simultaneously with the rainfall, exceedance commenced after 30.6mm of rainfall and when rainfall ceased at 31.4mm, the turbidity gradually declined back down to <6 NTU.

SE59T catchment was inspected and no evidence of mining related drainage concerns were observed.'

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

5.2.1.5 HUN-2607-047

SE61T

The turbidity exceedance event at monitoring location SE61T occurred between 8:00 pm on 16 July 2026 and 12:30 am on 17 July 2026. A total of 30.6 mm of rainfall was recorded during the 24 hours preceding the event, providing a strong mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 7, turbidity remained low and stable at approximately 2 to 3 NTU throughout most of the afternoon before increasing gradually during the early evening. The rate of increase accelerated markedly after approximately 7:15 pm, with turbidity rapidly rising above the 25 NTU trigger value. Turbidity reached an initial peak of approximately 38 NTU, briefly fluctuated, and then increased to a maximum concentration of approximately 39 NTU. Following the peak, turbidity decreased progressively over several hours, falling below the trigger value shortly after midnight and continuing to decline towards baseline conditions.

The observed response, characterised by a rapid rise in turbidity, a sustained period of elevated concentrations, and a gradual recession towards background levels, is consistent with the mobilisation, transport and subsequent settling of suspended sediments associated with rainfall-driven runoff. Minor fluctuations observed near the peak are consistent with natural variations in flow conditions and suspended sediment concentrations rather than instrumentation issues. Given the substantial antecedent rainfall (30.6 mm), the pronounced and sustained turbidity response, and the progressive return to baseline conditions, the exceedance is considered to represent a genuine rainfall-induced turbidity event rather than sensor malfunction.

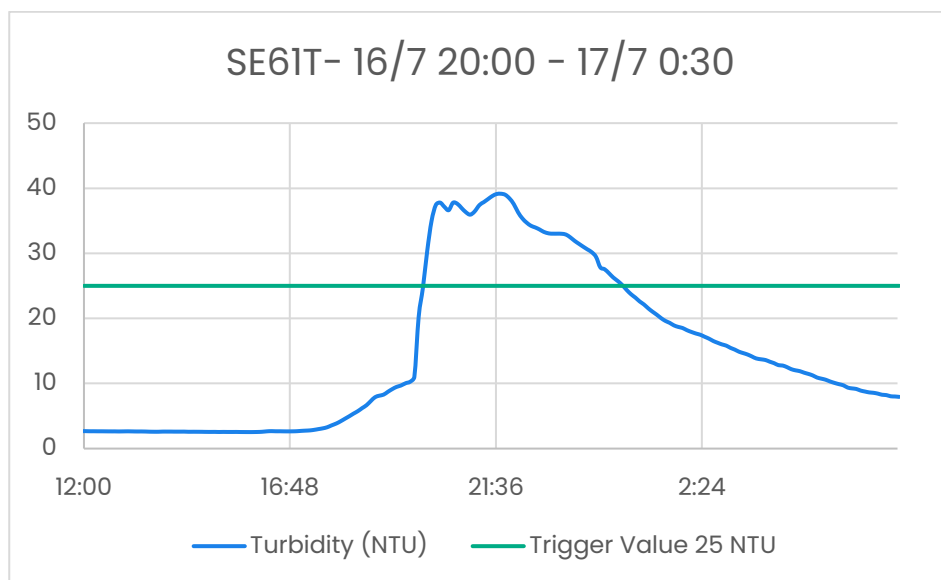


Figure 7 – SE02T July 16–17th

Field notes provided by Alcoa are included below.

‘Local turbidity monitoring site SE61T recorded a turbidity event exceeding 25 NTU for >1 hour on 16 July 2026.

The event was recorded on 16 July 2026 from 08:00 PM to 17 July 2026 12:30 AM, with a duration of 4 hours and 30 minutes. The average turbidity value during the event was 34, with a peak of 39.15. There was 30.6mm of rainfall recorded in the 24 hours preceding the event.

The data trend indicates turbidity NTU increased following a period of intense rainfall, declining gradually once the rainfall had ceased. The SE61T monitoring site was inspected 18 July 2026. The stream had strong flow, resulting in turbulent conditions in the stream zone. Organic debris and algae were identified on the sensor; the adjacent forest track was observed to be shedding water (run-off and groundwater) into the stream.

The SE61T catchment was inspected from 18 July 2026, and no evidence of mining related contributions were observed.’

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

5.2.1.6 HUN-2607-048

SE52T

The turbidity exceedance event at monitoring location SE52T occurred between 8:06 pm and 11:42 pm on 16 July 2026. A total of 30.6 mm of rainfall was recorded during the 24 hours

preceding the event, providing a strong mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 8, turbidity remained low throughout the late afternoon before increasing progressively from approximately 7:00 pm. The rate of increase accelerated markedly during the evening, with turbidity exceeding the 25 NTU trigger value shortly after 8:00 pm. Following the initial exceedance, turbidity continued to rise and exhibited several distinct peaks, reaching a maximum concentration of approximately 120 NTU at around 10:00 pm. Following the peak, turbidity decreased rapidly before transitioning to a more gradual recession. Turbidity fell below the trigger value shortly after midnight and continued to decline towards baseline conditions during the early hours of 17 July.

The observed response, characterised by a progressive rise in turbidity, multiple elevated peaks, a pronounced maximum concentration, and a gradual recession towards background levels, is consistent with the mobilisation, transport and subsequent settling of suspended sediments associated with rainfall-driven runoff. The multiple peaks likely reflect variations in runoff intensity, flow pathways, and sediment availability within the contributing catchment. Despite the magnitude of the response, the turbidity profile remains coherent and exhibits the characteristic rise-and-fall pattern expected from a genuine environmental event. Given the substantial antecedent rainfall (30.6 mm), the sustained period of elevated turbidity, and the gradual return towards baseline conditions, the exceedance is considered to represent a genuine rainfall-induced turbidity event rather than sensor malfunction.

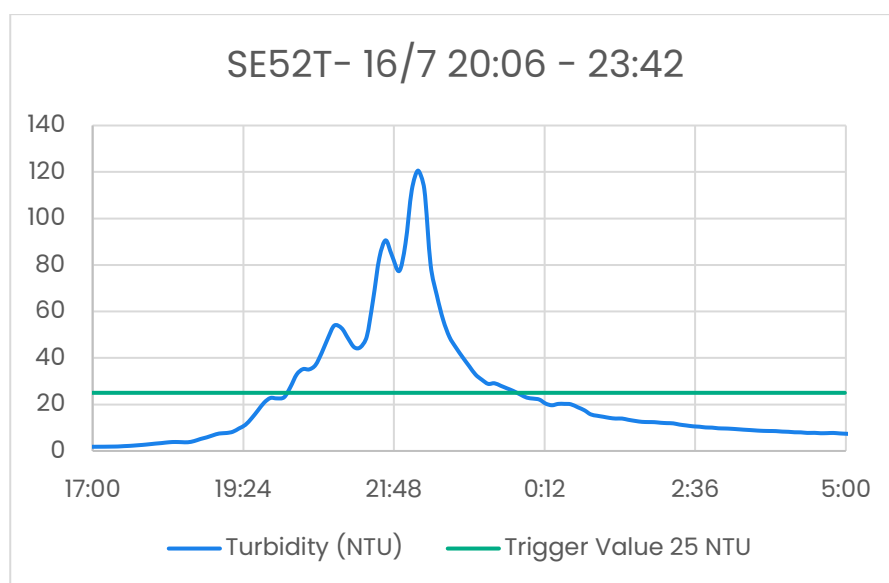


Figure 8 – SE52T July 16th

Field notes provided by Alcoa are included below.

‘Compliance turbidity monitoring site SE52T recorded a turbidity event exceeding 25 NTU for >1 hour on 16 July 2026.

The event was recorded on 16 July 2026 from 08:06 PM to 16 July 2026 11:42 PM, with a duration of 3 hour and 36 minutes. The average turbidity value during the event was 55.62, with a peak of 120.6. There was 30.6mm of rainfall recorded in the 24 hours preceding the event.

The data trend indicates turbidity NTU increased simultaneously with the rainfall, exceedance commenced after 30.6mm of rainfall and turbidity remained over 25 NTU with several rapid incline spikes until rainfall ceased, then gradually declined back down to <7 NTU. SE52T catchment was inspected and no evidence of mining related drainage concerns were observed.'

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

5.2.1.7 HUN-2607-049

SE34T

The turbidity exceedance event at monitoring location SE34T occurred between 8:24 pm and 10:36 pm on 16 July 2026. A total of 30.6 mm of rainfall was recorded during the 24 hours preceding the event, providing a strong mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 9, turbidity remained at low background concentrations of approximately 1 to 2 NTU throughout much of the afternoon and early evening before increasing rapidly from around 8:15 pm. Turbidity exceeded the 25 NTU trigger value shortly thereafter and continued to rise sharply, reaching a peak concentration of approximately 200 NTU at around 9:20 pm. Following the peak, turbidity declined rapidly before transitioning to a more gradual recession. Turbidity fell below the trigger value at approximately 10:36 pm and continued to decrease steadily towards baseline conditions during the early hours of 17 July.

The observed response, characterised by a rapid rise in turbidity, a pronounced peak concentration, and a progressive recession towards background levels, is consistent with the mobilisation, transport and subsequent settling of suspended sediments associated with rainfall-driven runoff. The smooth rise-and-fall pattern and gradual recovery following the peak are indicative of a genuine environmental response rather than instrumentation issues. Given the substantial antecedent rainfall (30.6 mm), the magnitude and shape of the turbidity response, and the sustained return towards baseline conditions, the exceedance is considered to represent a genuine rainfall-induced turbidity event rather than sensor malfunction.

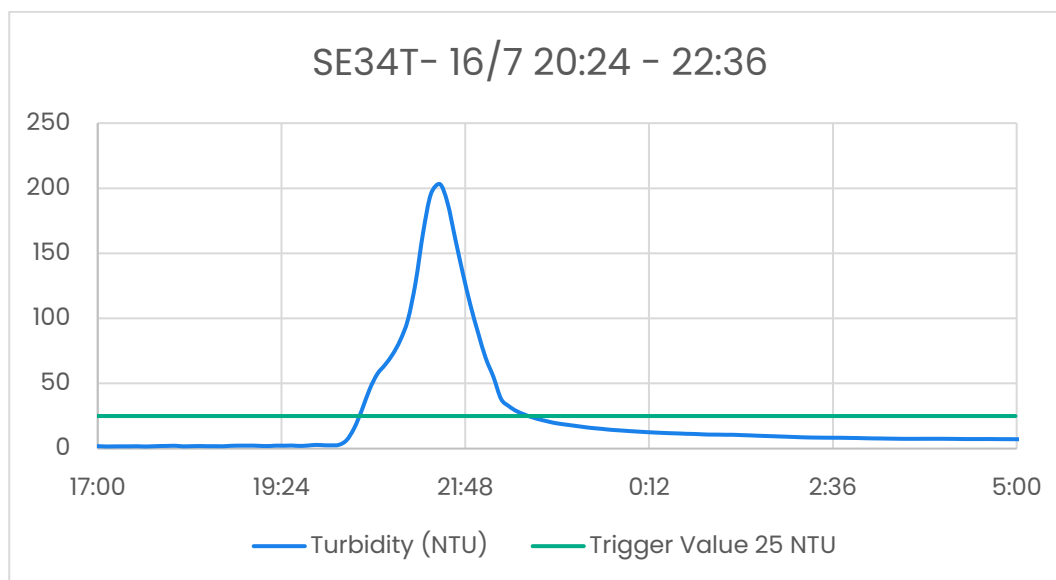


Figure 9 – SE34T July 16th

Field notes provided by Alcoa are included below.

‘Compliance turbidity monitoring site SE34T recorded a turbidity event exceeding 25 NTU for >1 hour on 16 July 2026. The event was recorded from 8:24 PM to 10:36 PM, with a duration of 2 hours and 12 minutes. The average turbidity during the event was 92.37 NTU, with a peak of 203.21 NTU. A total of 30.6 mm of rainfall was recorded in the 24 hours preceding the event. The monitoring site was inspected on 17 July 2026. Stream depth had increased significantly and heavy organic debris normally present within the stream bed had flushed through. The water column and sensor lens were clear at the time of inspection. A catchment inspection was also completed and no evidence of mining-related drainage concerns or contributions to the turbidity exceedance were identified.’

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

5.2.1.8 HUN-2607-050

SE03T

The turbidity exceedance event at monitoring location SE03T occurred between 9:48 pm on 16 July 2026 and 2:06 am on 17 July 2026. A total of 30.6 mm of rainfall was recorded during the 24 hours preceding the event, providing a strong mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 10, turbidity increased steadily from approximately 5 NTU during the evening, exceeding the 25 NTU trigger value shortly after 9:30 pm. Turbidity continued to rise, reaching an initial peak of approximately 29 NTU at around 10:30 pm. Following a minor decline, turbidity remained elevated above the trigger value for several hours, fluctuating between approximately 25 and 29 NTU. After approximately 2:00 am, turbidity fell below the trigger value and gradually receded towards baseline conditions, reaching approximately 11 NTU by 7:00 am.

The observed response, characterised by a gradual rise in turbidity, a sustained period of elevated concentrations above the trigger value, and a progressive recession towards background levels, is consistent with the mobilisation, transport and subsequent settling of suspended sediments associated with rainfall-driven runoff. The minor fluctuations observed during the elevated period are indicative of natural variability in flow conditions and suspended sediment concentrations rather than instrumentation issues. Given the substantial antecedent rainfall (30.6 mm), the extended duration of elevated turbidity, and the gradual return towards baseline conditions, the exceedance is considered to represent a genuine rainfall-induced turbidity event rather than sensor malfunction.

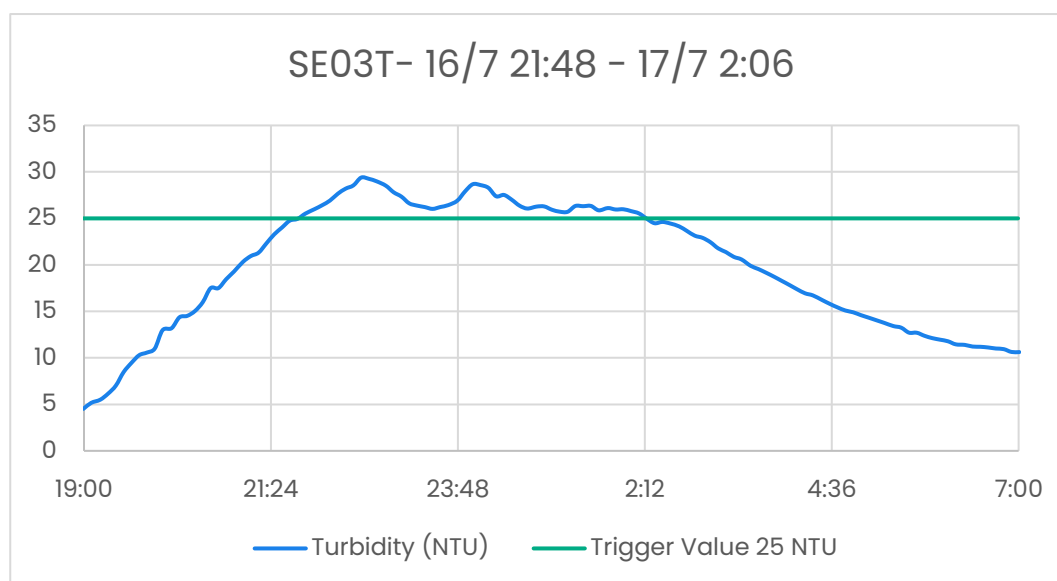


Figure 10 – SE03T July 16th

Field notes provided by Alcoa are included below.

'Local turbidity monitoring site SE03T recorded a turbidity event exceeding 25 NTU for more than 1 hour on 16 July 2026. The event was recorded from 9:48 PM to 17 July 2:06 AM with a duration of 4 hours and 18 minutes. The average turbidity value during the event was 26.94 NTU, with a peak of 30.6 NTU. There was 30.6mm of rainfall recorded in the 24 hours preceding the event.

The data trend shows a gradual incline and decline, coinciding with rainfall.

The SE03T site was inspected 20/07/2026. Cleaning the sensor resulted in only a minor reduction in turbidity from 3.26 NTU to 1.91 NTU, indicating the sensor was functioning

correctly. As the sensor is positioned below the water level and close to the stream bed, it may be susceptible to temporary interference from bed sediments during elevated flows.

Inspection of the surrounding catchment identified no evidence of mining-related impacts.'

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

5.2.1.9 HUN-2607-051

SE03INV1

The turbidity exceedance event at monitoring location SE03INV1 occurred between 10:00 pm and 11:54 pm on 16 July 2026. A total of 30.6 mm of rainfall was recorded during the 24 hours preceding the event, providing a strong mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 11, following the conclusion of the preceding exceedance event, turbidity declined to approximately 10 NTU before recovering and increasing steadily during the evening. Turbidity exceeded the 25 NTU trigger value shortly after 9:30 pm and continued to rise, reaching a peak concentration of approximately 31 NTU shortly before midnight. Following the peak, turbidity decreased progressively, falling below the trigger value at approximately 11:54 pm and continuing to recede towards baseline conditions during the early hours of 17 July 2026.

The observed response, characterised by a sustained increase in turbidity, a distinct peak concentration, and a gradual recession towards background conditions, is consistent with the mobilisation, transport and subsequent settling of suspended sediments associated with rainfall-driven runoff. The event formed part of a broader turbidity response observed following substantial rainfall and exhibits the characteristic rise-and-fall pattern expected of a genuine environmental turbidity event. Given the recorded 30.6 mm rainfall, the coherent turbidity response, and the gradual return towards baseline conditions, the exceedance is considered to represent a genuine rainfall-induced turbidity event rather than sensor malfunction.

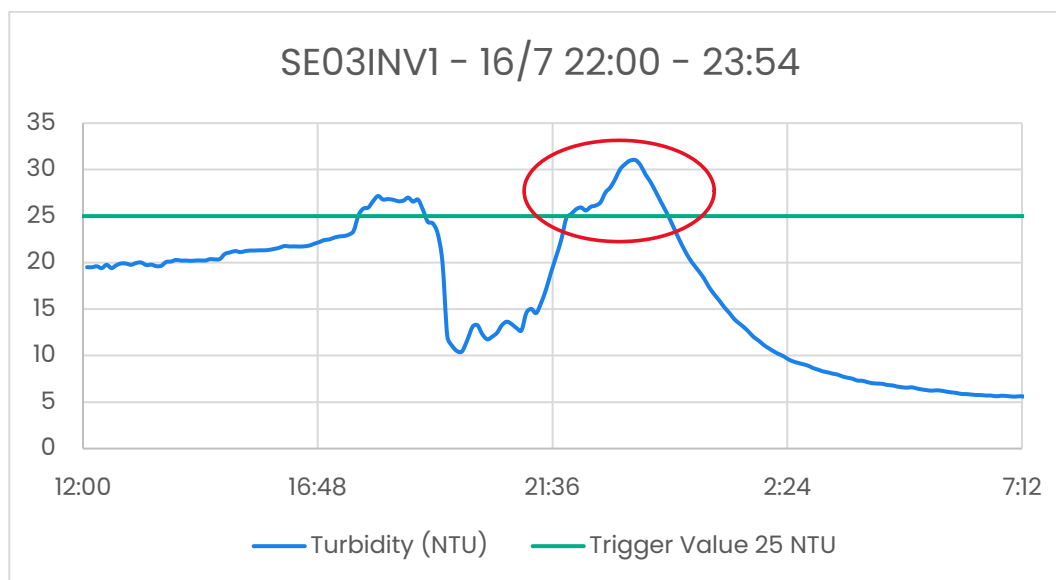


Figure 11 – SE03INV1 July 16th

Field notes provided by Alcoa are included below.

‘Local monitor SE03INV1T recorded a turbidity event exceeding 25NTU for >1 hour on the 16/07/2026. The event has a duration from 16/07 from 10:00 PM to 11:54 PM, totalling 1 hours and 54 minutes.

The average turbidity was 27.86 with a maximum of 31.02. There was 30.6mm of rainfall in the preceding 24 hours. The analysis of the data trends displays evidence of a true event due to the gradual incline and decline, presenting a bell curved trend.

A site inspection on 20/07 identified the stream was clear and flowing, however, the turbidity sensor was impacted by debris and once cleaned, the turbidity dropped from 40.39 NTU to 1.86 NTU.

Catchment inspections identified no evidence of mining related contribution to the turbidity event.’

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

5.2.1.10 HUN-2607-052

DB03T

The turbidity exceedance event at monitoring location DB03T occurred between 12:39 am and 5:24 am on 17 July 2026. A total of 31.4 mm of rainfall was recorded during the 24 hours preceding the event, providing a strong mechanism for increased sediment mobilisation and transport within the monitored waterbody.

As shown in Figure 12, turbidity increased progressively from background levels of approximately 6 to 8 NTU during the evening of 16 July 2026. The rate of increase accelerated after midnight, with turbidity exceeding the 25 NTU trigger value shortly after 1:00 am. Turbidity continued to rise steadily, reaching a peak concentration of approximately 32 NTU at around 2:45 am. Following the peak, turbidity gradually decreased and fell below the trigger value shortly after 5:00 am. Concentrations continued to decline throughout the morning, trending towards baseline conditions.

The observed response, characterised by a gradual rise in turbidity, a sustained peak period, and a smooth recession towards background levels, is consistent with the mobilisation, transport and subsequent settling of suspended sediments associated with rainfall-driven runoff. Minor fluctuations observed during the rising and falling limbs of the event are consistent with natural variability in flow conditions and suspended sediment concentrations and do not indicate instrument malfunction. Given the substantial antecedent rainfall (31.4 mm), the coherent turbidity response, and the gradual return towards baseline conditions, the exceedance is considered to represent a genuine rainfall-induced turbidity event rather than sensor malfunction.

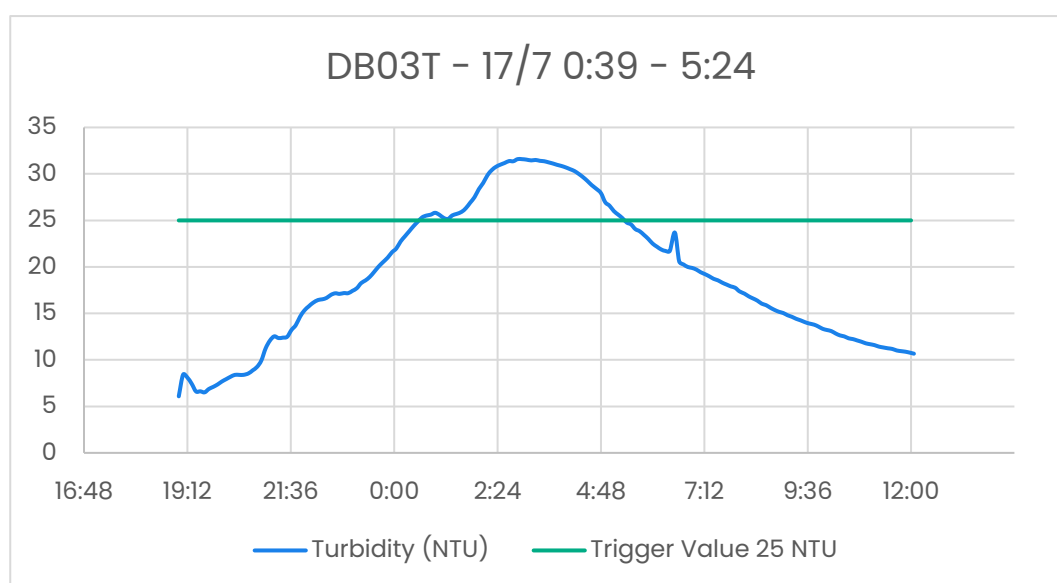


Figure 12 – DB03T July 17th

Field notes provided by Alcoa are included below.

‘Compliance turbidity monitoring site DB03T recorded a turbidity event exceeding 25 NTU for >1 hour on 17 July 2026. The event was recorded on 17 July 2026 from 12:39 AM to 17 July 2026 5:24 AM, with a duration of 4 hours and 45 minutes. The average turbidity was 28.72, with a peak of 31.59. There was 31.4mm rainfall recorded in the 24 hours preceding the event.

The data trend indicates a gradual increase and decreases in turbidity aligned with a rainfall event. DB03T monitoring site was inspected on 21 July 2026. The stream was observed to be clear and flowing.

The DB03T catchment was inspected, and no evidence of mining related contribution or drainage control failure was identified.'

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

5.2.2 False Event(s)

Fifty-nine (59) 'False' events were identified during the reporting period. Rationale on potential causes is summarised below.

Table 3: False Events Rationale

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-001	SE48T	The event is marked with erratic behaviour, with frequent, rapid fluctuations. This is indicative of a false event	Review of the Turbidity data trend shows readings reading consistently less than 2 NTU, followed by a sudden spikes to 250 NTU before returning back to less than 2 NTU. The trend indicates temporary interference from passing debris rather than an increase in turbidity. The sensor also displays a malfunction error code during the event, further supporting the interference from debris.
HUN-2607-002	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity	SE62T site visited on 01 July 2026 and stream flowing. Level float switched to flowing on 30/06/2026 at 7:48:01 PM. There was minimal rainfall of 0.8 mm in the preceding 24 hours of this exceedance. The data trend has rapid incline and decline spikes supporting organic debris impact during initial flush for the stream.
HUN-2607-003	ND14T	This event is marked progressively increasing turbidity, interspersed with several abrupt spikes and fluctuations. This is indicative of a false event.	Data trend indicates false event, sharp incline and decline indicating debris impacting the lens.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-004	SE53T	The event is marked by a continue low turbidity. This is indicative of a false event	Review of the turbidity data identified a gradual increase in turbidity values over a three day period, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-005	SE53T	This event is marked continue low turbidity, interspersed with several abrupt spikes and fluctuations. This is indicative of a false event.	Review of the turbidity data identified a gradual increase in turbidity values over a three day period, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-006	SE03INV1	This event is marked a continue increase in turbidity with two abrupt decrease due to a data gap the end of this event is not seen. This is indicative of a false event.	Data trend indicates false event, with a very slow/progressive build over the 24 hour period prior to the event, with no rainfall within this period. The monitoring site was inspected on 5/07/2026, the sensor was heavily impacted by algae/biofilm on the lens.
HUN-2607-007	SE53T	This event is marked progressively increasing turbidity, with fluctuations. This is indicative of a false event.	Review of the turbidity data identified a gradual increase in turbidity values over a three day period, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-008	SE53T	This event is marked progressively increasing turbidity, with fluctuations. This is indicative of a false event.	Review of the turbidity data identified a gradual increase in turbidity values over a three day period, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-009	SE53T	The event is marked by a continue low turbidity. This is indicative of a false event	Review of the turbidity data identified a gradual increase in turbidity values over a three day period, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-010	SE53T	The event is marked by a continue low turbidity. This is indicative of a false event	Review of the turbidity data identified a gradual increase in turbidity values over a three day period, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-011	SE53T	This event is marked continue low turbidity, with abrupt increase and then a rapid decrease in turbidity. This is indicative of a false event.	Review of the turbidity data identified a sharp incline in turbidity values over a two hour period, indicating the sensor may have been impacted by passing debris. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-012	SE53T	This event is marked progressively increasing turbidity, with fluctuations and a rapid decrease. This is indicative of a false event.	Review of the turbidity data identified a gradual increase in turbidity values, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-013	SE53T	The event is marked with several irregular oscillations. This is indicative of a false event	Review of the turbidity data identified a gradual increase in turbidity values, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-014	SE53T	The event is marked by a rapid increase in turbidity followed by a rapid decrease. This is indicative of a false event.	Review of the turbidity data identified a sharp incline in turbidity values over a 10 minute period, indicating the sensor may have been impacted by passing debris. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-015	SE53T	The event is marked with several irregular oscillations. This is indicative of a false event	Review of the turbidity data identified a sharp incline in turbidity values, followed by a sharp drop to below 25 NTU. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-016	SE53T	The event is marked by a continue low turbidity. This is indicative of a false event	Review of the turbidity data identified a gradual increase in turbidity values, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-017	SE53T	The event is marked with several irregular oscillations. This is indicative of a false event	Review of the turbidity data identified a gradual increase in turbidity values, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-018	SE53T	This event is marked by an increase rapid and decrease in turbidity with two sporadic peaks. This is indicative of a false event.	Review of the turbidity data identified a gradual increase in turbidity values, indicating the sensor may have been impacted by sediment or algae build up. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-019	SE53T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Review of the turbidity data identified a sharp incline in turbidity values, followed by a sharp drop to below 25 NTU. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-020	SE53T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Review of the turbidity data identified a sharp incline in turbidity values, followed by a sharp drop to below 25 NTU. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-021	SE53T	This event is marked by a rapid increase and decrease in turbidity with multiple sporadic peaks. This is indicative of a false event.	Review of the turbidity data identified a sharp incline in turbidity values, followed by a sharp drop to below 25 NTU. Further investigation during a site inspection on 11/07/2026 identified a fallen tree had landed directly on the sensor and turbidity reading improved once the sensor was repositioned.
HUN-2607-022	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity. This is indicative of a false event.	SE62T site visited on 10/07/2026, after concerns of event notification and previous drainage event. Data from events seems very strange, in steps every 30 minutes and uniform. Investigations identified the wiper for the sensor runs every 30 minutes, aligning perfectly with the event data. Wiper must be smudging or slightly blocking the sensor.
HUN-2607-023	SE62T	This event is marked a series of abrupt step increases to a peak and step decreases in turbidity. This is indicative of a false event.	SE62T site visited on 10/07/2026, after concerns of event notification and previous drainage event. Data from events seems very strange, in steps every 30 minutes and uniform. Investigations identified the wiper for the sensor runs every 30 minutes, aligning perfectly with the event data. Wiper must be smudging or slightly blocking the sensor.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-024	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.
HUN-2607-025	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.
HUN-2607-026	SE12INV	This event is marked by a minor oscillations in turbidity. This is indicative of a false event.	SE12INV site was visited on 12/07/2026. Stream observed flowing, very shallow and clear. The turbidity sensor and float sensor were both partially submerged due to initial stream flush and shallow stream depth. Leaf litter also observed heavily impacting the stream bed contributing to false event.
HUN-2607-027	SE12INV	This event is marked by a minor oscillations in turbidity. This is indicative of a false event.	SE12INV site was visited on 12/07/2026. Stream observed flowing, very shallow and clear. The turbidity sensor and float sensor were both partially submerged due to initial stream flush and shallow stream depth. Leaf litter also observed heavily impacting the stream bed contributing to false event. SE12INV visited again on 19/07/2026 observing very shallow stream and still impacted with leaf litter.
HUN-2607-028	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-029	SE03T	The event is marked by a continue low turbidity. This is indicative of a false event	The SE03T site was inspected 20/07/2026. Identified the stream level is low and clear, with built up sediment on the stream bed. The sensor was cleaned, slightly dropping turbidity from 3.26 NTU to 1.91 NTU. The sensor is positioned under the water level and close the stream bed, making it susceptible to interference from stream bed sediments. No rainfall was received in the preceding 24 hours.
HUN-2607-030	SE03T	This event is marked by oscillations in turbidity. This is indicative of a false event.	The SE03T site was inspected 20/07/2026. Identified the stream level is low and clear, with built up sediment on the stream bed. The sensor was cleaned, slightly dropping turbidity from 3.26 NTU to 1.91 NTU. The sensor is positioned under the water level and close the stream bed, making it susceptible to interference from stream bed sediments. No rainfall was received in the preceding 24 hours.
HUN-2607-031	SE03T	This event is marked by a minor oscillations in turbidity. This is indicative of a false event.	The SE03T site was inspected 20/07/2026. Identified the stream level is low and clear, with built up sediment on the stream bed. The sensor was cleaned, slightly dropping turbidity from 3.26 NTU to 1.91 NTU. The sensor is positioned under the water level and close the stream bed, making it susceptible to interference from stream bed sediments. No rainfall was received in the preceding 24 hours.
HUN-2607-032	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-033	SE62T	This event is marked a rapid increases and rapid decreases in turbidity. This is indicative of a false event.	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.
HUN-2607-034	SE62T	This event is marked a rapid increases and rapid decreases in turbidity. This is indicative of a false event.	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.
HUN-2607-035	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.
HUN-2607-036	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.
HUN-2607-037	DB03T	This event is marked a rapid increases and rapid decreases in turbidity. This is indicative of a false event.	The DB03T site was inspected 21/07/2026. The stream was flowing and clear. On arrival turbidity read 4.42 NTU and post clean 3.15 NTU. Review of the turbidity trend shows a rapid data spike from 4.92 NTU to 33.13 NTU within 15 minutes, indicating the sensor was likely temporarily impacted by passing debris. No rainfall was received in the preceding 24 hours.
HUN-2607-038	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-039	SE62T	This event is marked a series of abrupt step increases and rapid decreases in turbidity	SE62T site visited on 16/07/2026 and the sensor assessed to have a faulty wiper. Sensor replaced and turbidity readings stabilise to <2 NTU.
HUN-2607-040	DB03T	This event is marked a rapid increases and rapid decreases in turbidity with multiple sporadic peaks. This is indicative of a false event.	The DB03T site was inspected 21/07/2026. The stream was flowing and clear. On arrival turbidity read 4.42 NTU and post clean 3.15 NTU. Review of the turbidity trend shows a rapid data spike from reading on average 7NTU, spiking to 200 NTU within 5 minutes, indicating the sensor was likely temporarily impacted by passing debris. No rainfall was received in the preceding 24 hours.
HUN-2607-041	SE12INV	This event is marked a rapid increases and rapid decreases in turbidity with multiple sporadic peaks. This is indicative of a false event.	SE12INV site was visited on 19 July 2026 due to a turbidity NTU exceedance of 25NTU for >1 hour. Stream is flowing but very shallow and the sensor and surrounding stream was heavily impacted with leaf litter due to initial stream flush, triggering a false event. Data trend of rapid incline and decline spiked data also supports organic debris impact.
HUN-2607-044	SE12T	This event is marked a rapid increases and rapid decreases in turbidity with multiple sporadic peaks. This is indicative of a false event.	SE12T site was visited on 19 July 2026 due to a turbidity NTU exceedance of 25NTU for >1 hour. Stream is flowing but very shallow and the sensor was heavily impacted with leaf litter and bark due to initial stream flush, triggering a false event. Data trend of rapid incline and decline spiked data also supports organic debris impact.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-053	ND07T	This event is marked by a rapid increase and decrease with multiple oscillations in turbidity. This is indicative of a false event.	ND07T site was visited on 18 July 2026 due to a turbidity NTU exceedance of 25NTU for >1 hour. The ND07T exceedance commenced more than 16 hours after rainfall had ceased. The data trend shows erratic fluctuations and very high turbidity values, with a near-vertical decline to baseline immediately following sensor cleaning. This response indicates the exceedance was attributable to false readings caused by debris accumulation on the sensor.
HUN-2607-054	SE02T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Review of the turbidity data trend displays a sharp incline from 2.52 NTU, to NTU >1000 within 5 minutes. The trend continues to spike and drop to below 25 NTU. The erratic trend indicates the sensor was likely impacted by debris. When the sensor ceases spiking, turbidity consistently reads <15 NTU.
HUN-2607-055	SE02T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Review of the turbidity data trend displays a sharp incline from 10 NTU to NTU >1000 within 5 minutes. The trend continues to spike and drop to below 25 NTU. The erratic trend indicates the sensor was likely impacted by debris. When the sensor stops spiking, turbidity consistently reads <15 NTU.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-056	SE03INV1	This event is marked by a progressive increase in turbidity, and a rapid decrease in turbidity. This is indicative of a false event.	Local monitor SE03INV1T recorded a turbidity event exceeding 25NTU for >1 hour on the 19/07/2026. The event has a duration from 19/07 from 12:12PM to 20/07 12:00 PM, totalling 23 hours and 48 minutes. The average turbidity was 32.95 with a maximum of 40.39. There was 40.39mm of rainfall in the preceding 24 hours. A site inspection on 20/07 identified the stream was clear and flowing, however, the turbidity sensor was impacted by debris and once cleaned, the turbidity dropped from 40.39 NTU to 1.86 NTU. The data trend shows a gradual rise followed by a sudden drop to below 25 NTU, coinciding when the sensor was cleaned. This event is considered false.
HUN-2607-057	SN07T	This event is marked a series of abrupt step increases and decreases in turbidity. This is indicative of a false event.	SN07T site visited on 23/07/2026 and the stream was not flowing. Water was observed ponded within the rocky stream bed at the sensor location resulting in elevated turbidity NTU readings.
HUN-2607-058	SN07T	This event is marked a series of abrupt step increases and rapid decreases in turbidity. This is indicative of a false event.	SN07T site visited on 23/07/2026 and the stream was not flowing. Water was observed ponded within the rocky stream bed at the sensor location resulting in elevated turbidity NTU readings.
HUN-2607-059	SN07T	This event is marked by a rapid increase and decrease in turbidity with two sporadic peaks. This is indicative of a false event.	SN07T site visited on 23/07/2026 and the stream was not flowing. Water was observed ponded within the rocky stream bed at the sensor location resulting in elevated turbidity NTU readings.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-060	SE11T	This event is marked by a rapid increase and gradual decrease in turbidity. This is indicative of a false event.	Review of the turbidity data trend displays a sharp incline from <15 NTU to >120 NTU, then the monitor displays a fault error, which is consistent with debris temporary interfering with the sensor. Once spiking ceased, turbidity consistently reads <15 NTU, indicating normal stream conditions. No rainfall was received in the preceding 24 hours.
HUN-2607-061	SE52T	This event is marked by a rapid increase and decrease with several irregular oscillations. This is indicative of a false event.	A review of the turbidity data identified a spiking trend, with readings exceeding 120 NTU before subsequently displaying a malfunction error message. The site was inspected 27/07/2026, identifying built up debris was directly impacting the sensor and once cleaned, turbidity readings dropped to below 2 NTU. No rainfall was received in the 24 hours preceding this event.
HUN-2607-062	SE12T	This event is marked by a gradual increase and rapid decrease in turbidity. This is indicative of a false event.	The SE12T monitoring site was visited 25/07/2026. The stream was clear and slowly flowing. Built up debris was impacting the sensor and once cleaned, turbidity values dropped from 33 NTU to less than 2 NTU. No rain was received in the preceding 24 hours.
HUN-2607-063	SE06T	This event is marked by a rapid increase and decrease with several irregular oscillations. This is indicative of a false event.	Review of the turbidity data trend displays a sharp incline from <15 NTU to >70 NTU within 15 minutes, followed by repeated spikes and sudden drops in NTU. The erratic pattern is consistent with debris temporary interfering with the sensor. Once spiking ceased, turbidity consistently reads <10 NTU, indicating normal stream conditions. No rainfall was received in the preceding 24 hours.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-064	SE23T	This event is marked with a rapid increases and gradual decreases in turbidity	Site inspected on 1/08/2026. Ponded water is present but the stream is not flowing. The turbidity and level sensors are submerged but water level has been fluctuating. The turbidity sensor was removed for cleaning which reduced the turbidity value from 39.79NTU to 9.56 NTU.
HUN-2607-065	SE34T	This event is marked by a rapid increase and decrease with several irregular oscillations. This is indicative of a false event.	SE34T site visited on 28 July 2026. The stream depth has dropped significantly and sensor face only partially in the water. Turbidity reduced from 3524.1832 NTU to 1.744 NTU post clean.
HUN-2607-066	SE06T	This event is marked by a rapid increase and decrease with several irregular oscillations. This is indicative of a false event.	SE06T site was visiting on 30/07/2026. Due to the very shallow, clear stream, the turbidity sensor is being impacted by stream bed sediment. Once the sensor was cleaned the turbidity reduced from 118.7985 NTU to 0.8387 NTU.
HUN-2607-067	SE59T	This event is marked by a rapid increase and decrease with several irregular oscillations. This is indicative of a false event.	SE59T site visited on 30/07/2026. Stream was fast flowing with turbulence immediately upstream of turbidity sensor due to water cascading down through rock stream bed. Downstream of sensor, stream is flowing clear and observed organic debris caught on log within the stream. SE59T data trend is a rapid incline followed by erratic data spikes then to rapidly decline, supporting sensor likely impacted by organic debris. There was no rainfall across this turbidity exceedance.

Event ID	Monitor	SciDev Rationale	Alcoa Field Comments
HUN-2607-068	SEIIT	This event is marked a series of abrupt step increases and rapid decreases in turbidity. This is indicative of a false event.	Site inspected on 25/07/2026 and the stream was dry again. False event recorded due to sensor being out of water. The level float sensor changed from 1 (flow) to 0 (dry) on 24/07/2026 at 10:00. The turbidity sensor continued to read high due to dry conditions and sunlight interference.
HUN-2607-069	SE34T	This event is marked by a rapid increase and decrease with several irregular oscillations. This is indicative of a false event.	SE34T site visited on 28 July 2026. The stream depth has dropped significantly, and sensor face only partially in the water. Turbidity reduced from 3524.1832 NTU to 1.744 NTU post clean. Analysis of the Turbidity data trend shows a large spike and drop in turbidity values (<2 NTU to >100 NTU with 5 minutes) that's consistent with a false event. When the Data stops spiking, turbidity reading consistently read <2 NTU.

5.2.3 Excluded WQMS Units

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

Table 4: Excluded WQMS Units

WQMS ID	Comment
FPWR1	Stream dry as of 12/11/2025
SE04T	New monitoring site installed 20/11/2025, stream dry at time of installation.
SE12INV	Stream dry as of 12/11/2025
SE15T	Equipment reinstated on 12/02/2026, the stream was dry at the time of installation.
SE22T	Stream dry as of 1/12/2025
SE24T	Stream dry as of 12/11/2025
SE25T	Stream dry as of 12/11/2025
SE26T	Stream dry as of 28/09/2025

5.2.4 Missing Data

Periods of missing data are detailed in Table 5.

Table 5: Missing Data Summary

WQMS ID	Data Notes
DB02T	Data gap from 15/7/2026 8:57AM to 16/7/2026 12:43PM, 18/7/2026 5:56AM to 19/7/2026 7:59AM, 22/7/2026 4:40AM to 23/7/2026 12:46PM, 26/7/2026 3:48AM to 27/7/2026 7:45AM
DB03T	Data gap from 3/7/2026 6:29AM to 4/7/2026 11:40AM, 4/7/2026 1:41PM to 7/7/2026 9:30AM
ND07T	Installation completed on 16/7//2026
ND012T	Started flowing 8/7
SE02T	Sensor Fault 18/7/2026 2:11AM to 21/7/2026 23:56
SE03INV1	Datataker power issues 5/7/2026 10:26AM to 10/7/2026 11:02AM
SE06T	Data gap from 12/7/2026 3:55PM to 13/7/2026 8:47AM, 13/7/2026 3:36PM to 14/7/2026 8:57AM, 14/7/2026 3:36PM to 15/7/2026 9:06AM, 17/7/2026 2:40PM to 18/7/2026 8:36AM, 18/7/2026 3:57PM to 19/7/2026 8:29AM, 19/7/2026 3:56PM to 20/7/2026 8:29AM and 20/7/2026 4:11PM to 21/7/2026 9:06AM.
SE09T	Data gap from 3/7/2026 10:58PM to 4/7/2026 10:11AM, 6/7/2026 4:06AM to 11:34AM, 6/7/2026 8:57PM to 7/7/2026 10:07AM
SE10T	Data gap from 8/7/2026 11:39AM to 2:33PM, 15/7/2026 2:15AM to 16/7/2026 12:54
SE11T	Data gap from 1/7/2026 12:00AM to 7/7/2026 2:36PM, 8/7/2026 3:50AM to 6:05AM
SE12INV	Flowed from 11/7/2026 to 30/7/2026 Data gap 28/7/2026 11:24PM to 29/7/2026 4:06AM
SE23T	Data gap 1/7/2026 12:00AM to 22/7/2026 12:01AM
SE48T	Data gap from 8/7/2026 3:34AM to 6:47AM

6. Huntly Raw WQMS Data

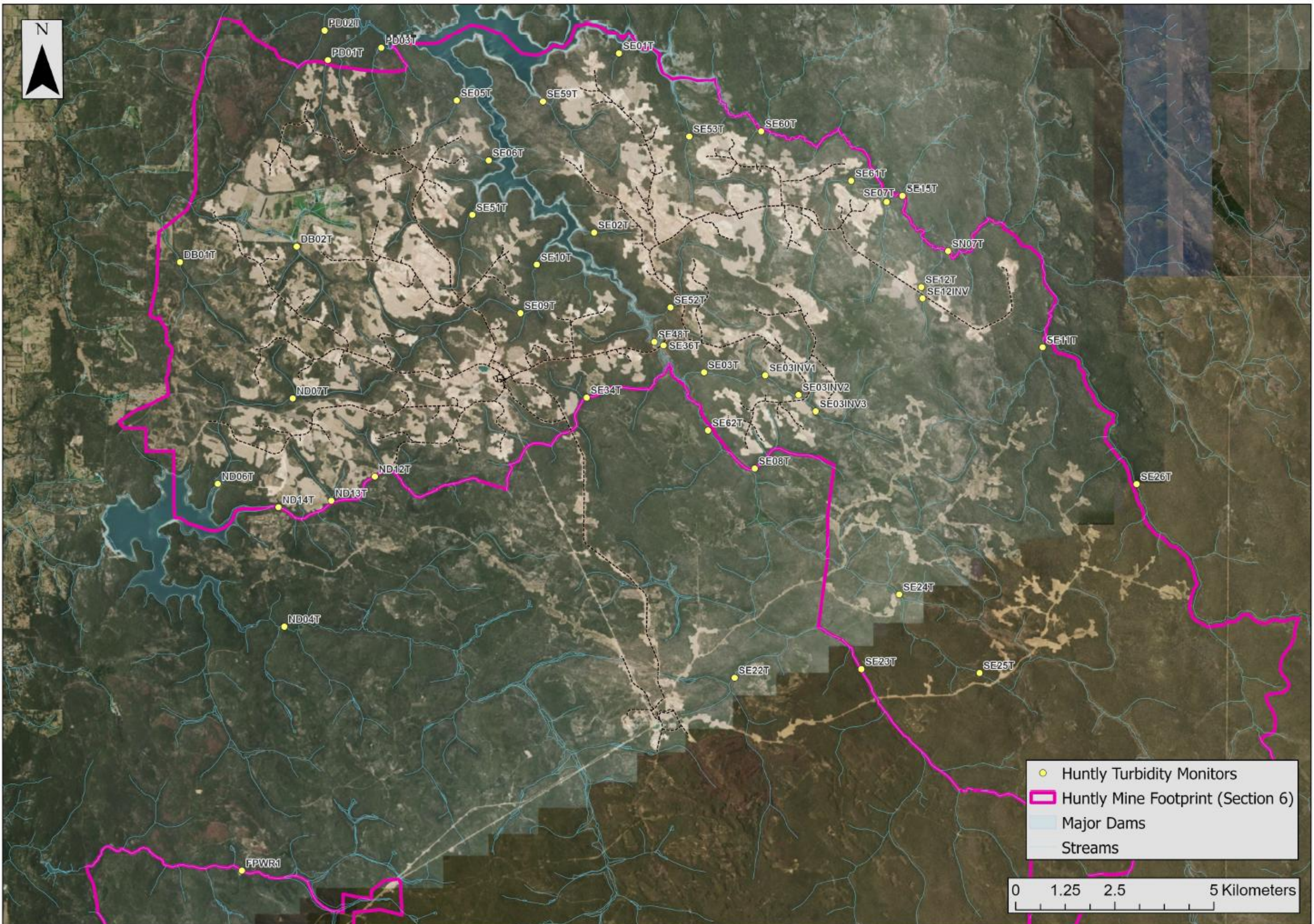
Date	Huntly WQMS Data – July 2026 - Events with turbidity > 25 NTU for an hour or more											
	DB01T	DB02T	DB03T	FPWR1	ND06T	ND07T	ND12T	ND13T	ND14T	PD01T	PD02T	PD03T
1/07/2026									1xFalse			
2/07/2026												
3/07/2026												
4/07/2026												
5/07/2026												
6/07/2026												
7/07/2026												
8/07/2026												
9/07/2026												
10/07/2026												
11/07/2026												
12/07/2026												
13/07/2026												
14/07/2026			1xFalse									
15/07/2026			1xFalse									
16/07/2026												
17/07/2026			1xFalse			1xFalse						
18/07/2026												
19/07/2026												
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28/07/2026												
29/07/2026												
30/07/2026												
31/07/2026												

Huntly WQMS Data – July 2026 - Events with turbidity > 25 NTU for an hour or more												
Date	SE01T	SE02T	SE03INV1	SE03INV3	SE03T	SE04T	SE05T	SE06T	SE07T	SE08T	SE09T	SE10T
1/07/2026												
2/07/2026												
3/07/2026				1xFalse								
4/07/2026												
5/07/2026												
6/07/2026												
7/07/2026												
8/07/2026												
9/07/2026												
10/07/2026												
11/07/2026												
12/07/2026												
13/07/2026					3xFalse							
14/07/2026												
15/07/2026												
16/07/2026		1xTrue		2xTrue	1xTrue		1xTrue					
17/07/2026		2xFalse										
18/07/2026												
19/07/2026				1xFalse								
20/07/2026												
21/07/2026												
22/07/2026												
23/07/2026												
24/07/2026												
25/07/2026												
26/07/2026								1xFalse				
27/07/2026												
28/07/2026								1xFalse				
29/07/2026												
30/07/2026												
31/07/2026												

Huntly WQMS Data – July 2026 - Events with turbidity > 25 NTU for an hour or more												
Date	SE11T	SE12T	SE12INV	SE15T	SE23T	SE24T	SE25T	SE26T	SE34T	SE36T	SE48T	SE51T
1/07/2026											1xFalse	
2/07/2026												
3/07/2026												
4/07/2026												
5/07/2026												
6/07/2026												
7/07/2026												
8/07/2026												
9/07/2026												
10/07/2026												
11/07/2026												
12/07/2026			1xFalse									
13/07/2026			1xFalse									
14/07/2026												
15/07/2026												
16/07/2026		1xFalse	1xFalse						1xTrue			
17/07/2026												
18/07/2026												
19/07/2026												
20/07/2026												
21/07/2026												
22/07/2026	1xFalse											
23/07/2026												
24/07/2026	1xFalse	1xFalse										
25/07/2026									1xFalse			
26/07/2026												
27/07/2026					1xFalse				1xFalse			
28/07/2026												
29/07/2026												
30/07/2026												
31/07/2026												

Huntly WQMS Data – July 2026 - Events with turbidity > 25 NTU for an hour or more							
Date	SE52T	SE53T	SE59T	SE60T	SE61T	SE62T	SN07T
1/07/2026		1xFalse				1xFalse	
2/07/2026		1xFalse					
3/07/2026		2xFalse					
4/07/2026		5xFalse					
5/07/2026		1xFalse					
6/07/2026		1xFalse					
7/07/2026		2xFalse					
8/07/2026		3xFalse					
9/07/2026		1xFalse				2xFalse	
10/07/2026							
11/07/2026						2xFalse	
12/07/2026							
13/07/2026						1xFalse	
14/07/2026						6xFalse	
15/07/2026						1xFalse	
16/07/2026	1xTrue		1xTrue		1xTrue		
17/07/2026							
18/07/2026							
19/07/2026							
20/07/2026							3xFalse
21/07/2026							
22/07/2026							
23/07/2026	1xFalse						
24/07/2026							
25/07/2026							
26/07/2026							
27/07/2026							
28/07/2026			1xFalse				
29/07/2026							
30/07/2026							
31/07/2026							

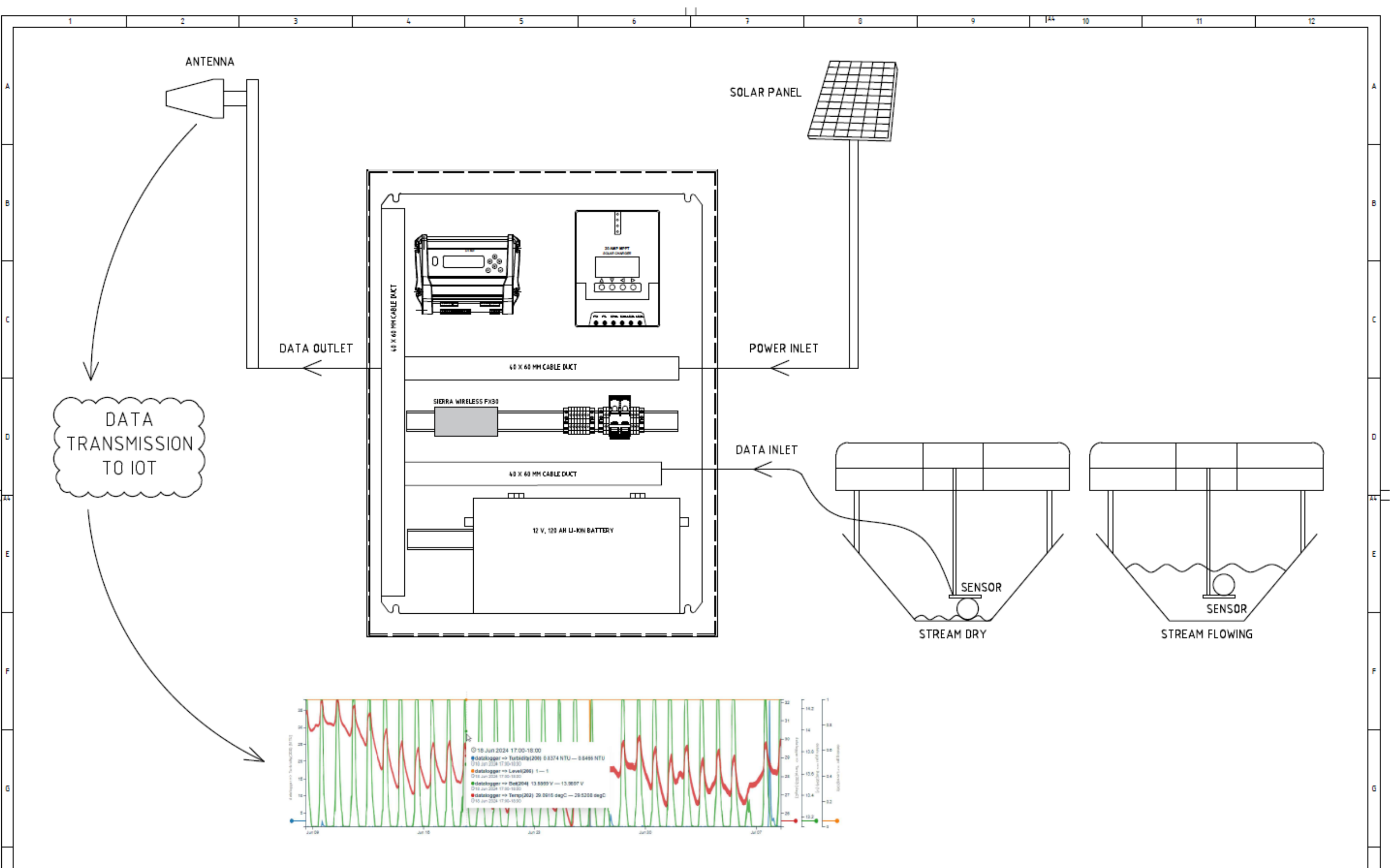
Appendix A Huntly WQMS Locations



- Huntly Turbidity Monitors
- ▬ Huntly Mine Footprint (Section 6)
- ▬ Major Dams
- ▬ Streams

0 1.25 2.5 5 Kilometers

Appendix B WQMS General Arrangement



								 ALL DIMENSIONS IN MILLIMETRES UNO. LEVELS ARE IN METRES ON AHD UNO. DO NOT SCALE DRAWING IF IN DOUBT - ASK TOLERANCES ISO2768-m UNO. © SCIDEV	CLIENT	NSW - BUILDING G, 22 POWERS RD, SEVEN HILLS, NSW 2147 (02) 0305 5357 WA - 512, 1A QUEEN ST FREEMANTLE WA 6160 (08) 6245 9043 waterservices@scidev.com.au www.scidev.com.au		TITLE		SHEET SIZE A3 REV. 1
						IOT TURBIDITY MONITORING STATION SITE LAYOUT GENERAL ARRANGEMENT								
0	ISSUE FOR APPROVAL	05.07.2024	A.K.	S.A.	A.K.	A.K.	SHEET 1 OF 2					DRAWING NO.		
REV.	REMARKS	DATE	DESIGNED	DRAWN	CHECKED	APPROVED	SCALE NTS OR AS SHOWN					HI0090 - ALCOA WQMS		
1	2	3	4		5		6					7	8	

WQMS Data Review

Willowdale Bauxite Mine

JULY 2026



Document Control

Document Control			
Rev.	Data Analysis	Approved By	Date
A	Wendy Spinner	Nick O'Reilly	28/8/2026
0	Wendy Spinner	Nick O'Reilly	29/9/2026

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1. Executive Summary

SciDev conducted an analysis of turbidity data collected from Water Quality Monitoring Systems (WQMS) operating across Alcoa's Willowdale bauxite mining operations during July 2026. The purpose of this assessment was to evaluate data quality and support compliance with the *Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023*.

Turbidity data were reviewed in accordance with Alcoa's Turbidity Event Classification Guidelines, with a focus on identifying any events where turbidity exceeded 25 NTU for at least one hour.

Key outcomes of the analysis were:

- **Excluded Units:** Zero (0) WQMS units were excluded from the analysis due to invalid data caused by equipment faults or environmental interference.
- **False Events:** Zero (0) turbidity exceedance events were identified.
- **True Events:** Zero (0) true turbidity exceedance events were identified.

Data gaps associated with system outages, maintenance activities, and unexpected shutdowns were also identified and documented to ensure transparency in reporting.

Overall, no turbidity exceedance events were recorded during July 2026. Consequently, no event classification assessment was required, and there was no evidence of turbidity impacts attributable to mining activities.

2. Scope

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

3. Introduction

3.1 Background

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

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

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

3.2 Monitoring Requirements

Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023 specifies that a drainage incident occurs when:

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

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

3.3 Water Quality Management System (WQMS)

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

Each WQMS unit consists of the following components:

Aquas SMR10 Turbidity Probe

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

Data Taker DT82 Logger

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

Float Switch

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

3.4 Purpose

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

3.5 Exclusions

This report is not intended as:

An assessment of the WQMS network or Alcoa's compliance with relevant legislation and requirements.

An evaluation of the suitability of the trigger levels or event classification procedures adopted by Alcoa.

3.6 Abbreviations

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

4. Methodology

4.1 WQMS Locations

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

4.2 Data Review

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

4.2.1 True Turbidity Exceedance Events

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

A sharp, sudden incline in turbidity levels.

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



Figure 1 Typical 'True' exceedance event.

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

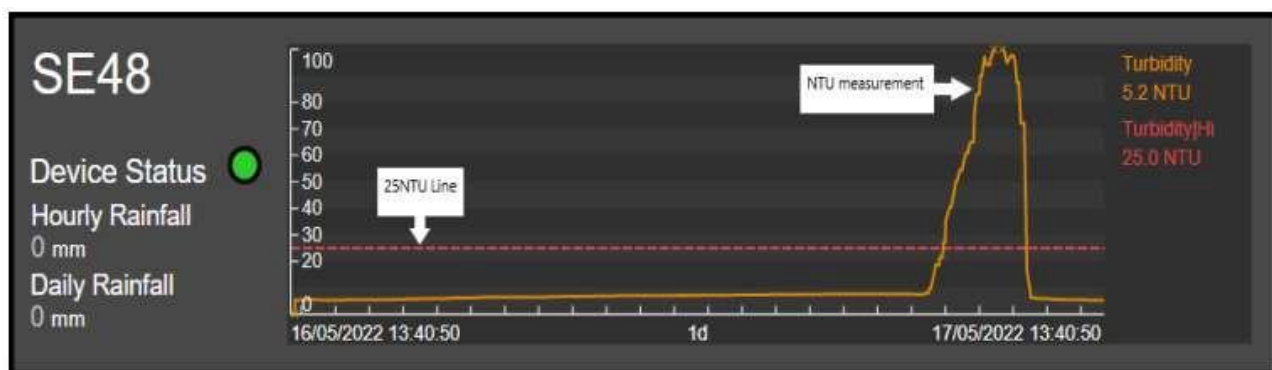


Figure 2 Typical 'false' exceedance event.

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 1: Events Summary

Category	# of events
Total events	0
True events	0
False events	0
Caused by mining related activity	0

It was found that:

- a. There were Zero (0) events.
- b. One (1) unit that was previously dry, now has water present
- c. Three (3) units remained flowing throughout the month.

Note:

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

5.2 Event Assessment Outcomes

5.2.1 True Events

Zero true events occurred during the reporting period.

5.2.2 False Event(s)

Zero (0) 'False' events were identified during the reporting period.

5.2.3 Excluded WQMS Units

Zero (0) WQMS Units were excluded from analysis due to inaccurate data. Alcoa confirmed the invalidity of data recorded from these units and provided commentary on the condition of each.

Table 4: Excluded WQMS Units

WQMS ID	Status	Comment

5.2.4 Missing Data

Periods of missing data are detailed in Table 5.

Table 5: Missing Data Summary

WQMS ID	Data Notes
HV07T	04/07/2026 6:20AM to 10:50AM, due to battery failure.

Appendix A Willowdale Raw WQMS Data

Willowdale WQMS Data – July 2026 - Events with turbidity > 25 NTU for an hour or more				
Date	HV07T	HV49T	RHB2	RHB3
1/07/2026				
2/07/2026				
3/07/2026				
4/07/2026				
5/07/2026				
6/07/2026				
7/07/2026				
8/07/2026				
9/07/2026				
10/07/2026				
11/07/2026				
12/07/2026				
13/07/2026				
14/07/2026				
15/07/2026				
16/07/2026				
17/07/2026				
18/07/2026				
19/07/2026				
20/07/2026				
21/07/2026				
22/07/2026				
23/07/2026				
24/07/2026				
25/07/2026				
26/07/2026				
27/07/2026				
28/07/2026				
30/07/2026				
31/07/2026				

Appendix B Willowdale WQMS Locations



RHB2●

RHB3●

HV07T●

HV49T●

- Willowdale Turbidity Monitors
- Major Dams
- Streams
- Willowdale Mine Footprint (Section 6)

0 0.3 0.65 1.3 2 2.6
Kilometers

Appendix C WQMS General Arrangement

