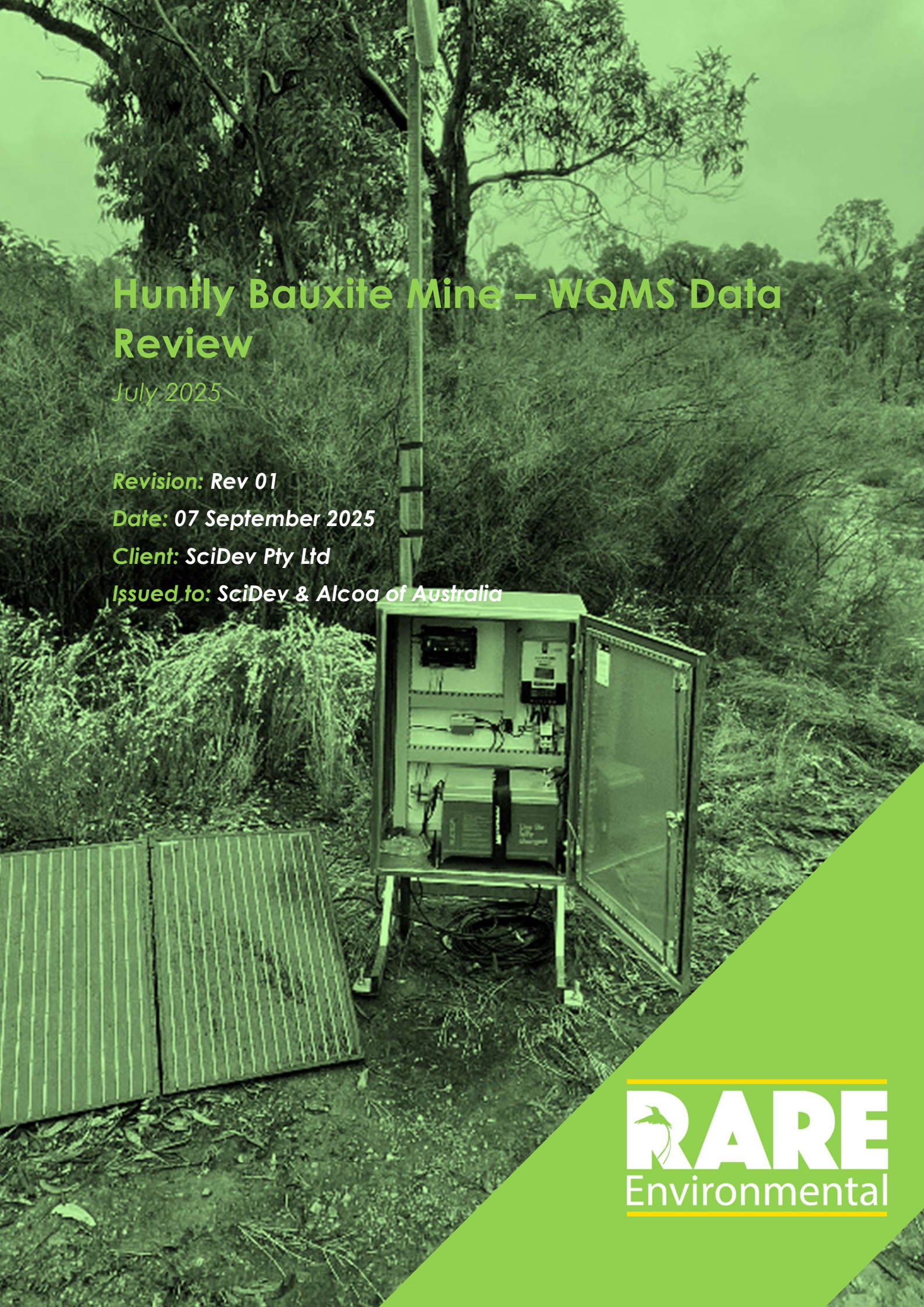

Huntly Bauxite Mine – WQMS Data Review

July 2025

Revision: ***Rev 01***

Date: ***07 September 2025***

Client: ***SciDev Pty Ltd***

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RARE Environmental

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Name	Michael Minter	Name	Georgia Duffy	Name	Georgia Duffy
Position	Env. Engineer	Position	Chemical Engineer	Position	Chemical Engineer
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RARE Environmental Pty Ltd
ABN 41617855017
110/117 Old Pittwater Rd
Brookvale NSW 2100 Australia
P: 0413 223 401
www.rare-enviro.com.au

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 (WQMSs) deployed at the Huntly bauxite mining operations during July 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:

- **True Events**: Zero "true" turbidity exceedance events were identified.
- **Further Investigation**: Nine events were flagged for further investigation.
- **False Events**: Fifty-eight 'false' events were identified, primarily attributed to factors such as debris accumulation, sensor obstructions, and water turbulence.
- **Excluded Units**: Seventeen WQMS units were 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 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 July 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 July 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 July 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.

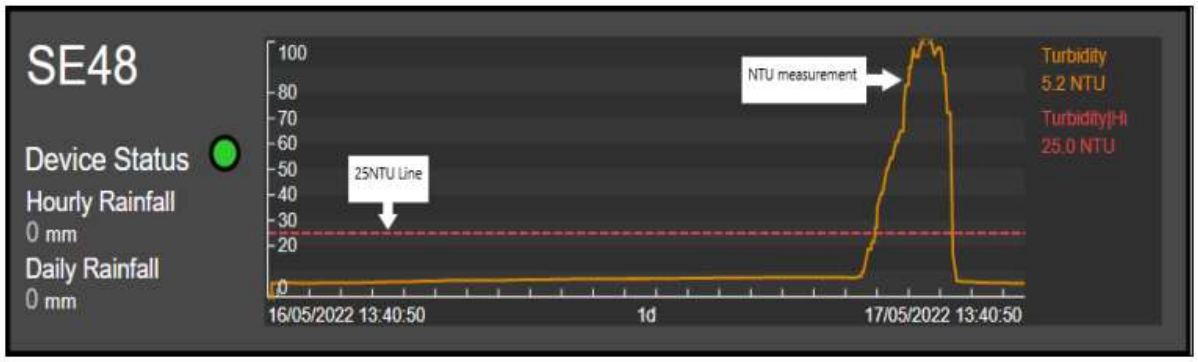

Figure 2 Typical 'false' exceedance event showing both a sharp incline and decline

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	9
False	58

Table 2 Events Details

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
HUN-2507-001	ND06T	'False'	9/07/2025 3:24	9/07/2025 5:42	2 hr, 18 min	253.39	126.34
HUN-2507-002	ND06T	'False'	10/07/2025 2:06	10/07/2025 5:00	2 hr, 54 min	616.86	224.72
HUN-2507-003	ND06T	'False'	10/07/2025 6:06	10/07/2025 8:00	1 hr, 54 min	493.21	206.26
HUN-2507-004	ND06T	'False'	11/07/2025 4:36	11/07/2025 7:30	2 hr, 54 min	885.76	330.04
HUN-2507-005	ND06T	'False'	14/07/2025 23:48	15/07/2025 1:48	2 hr, 0 min	1689.34	476.25
HUN-2507-006	ND06T	'False'	16/07/2025 4:36	16/07/2025 5:48	1 hr, 12 min	2032.88	559.91
HUN-2507-007	ND06T	'False'	16/07/2025 21:06	16/07/2025 22:48	1 hr, 42 min	965.08	242.92
HUN-2507-008	ND06T	'False'	19/07/2025 6:06	19/07/2025 8:30	2 hr, 24 min	97.48	67.69
HUN-2507-009	PD01T	'False'	23/07/2025 18:36	24/07/2025 0:54	6 hr, 17 min	111.48	53.20
HUN-2507-010	SE02T	'False'	6/07/2025 17:12	6/07/2025 18:12	1 hr	41.74	34.00
HUN-2507-011	SE02T	'False'	15/07/2025 10:36	15/07/2025 13:00	2 hr, 23 min	33.15	30.87
HUN-2507-012	SE02T	'False'	15/07/2025 15:06	15/07/2025 16:30	1 hr, 24 min	33.96	33.34
HUN-2507-013	SE02T	'False'	15/07/2025 20:06	16/07/2025 0:00	3 hr, 53 min	36.61	34.18
HUN-2507-014	SE02T	'False'	16/07/2025 1:06	16/07/2025 5:30	4 hr, 24 min	43.27	40.51
HUN-2507-015	SE02T	'False'	16/07/2025 7:36	16/07/2025 11:00	3 hr, 24 min	49.89	43.81
HUN-2507-016	SE02T	'False'	16/07/2025 13:36	16/07/2025 20:00	6 hr, 23 min	57.41	43.04

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
HUN-2507-017	SE02T	'False'	16/07/2025 21:06	17/07/2025 5:12	8 hr, 6 min	80.08	54.98
HUN-2507-018	SE02T	'False'	17/07/2025 6:06	17/07/2025 11:00	4 hr, 53 min	85.84	72.63
HUN-2507-019	SE02T	'False'	17/07/2025 11:36	17/07/2025 17:30	5 hr, 54 min	88.06	59.59
HUN-2507-020	SE02T	'False'	17/07/2025 18:06	20/07/2025 13:30	67 hr, 24 min	766.14	154.32
HUN-2507-021	SE03T	'False'	6/07/2025 19:30	7/07/2025 0:36	5 hr, 6 min	34.34	30.57
HUN-2507-022	SE03T	'False'	20/07/2025 18:18	21/07/2025 1:24	7 hr, 6 min	44.05	35.96
HUN-2507-023	SE03T	'False'	26/07/2025 9:30	26/07/2025 13:00	3 hr, 30 min	47.94	38.88
HUN-2507-024	SE03INV1	'False'	6/07/2025 19:24	7/07/2025 0:30	5 hr, 6 min	47.54	37.14
HUN-2507-025	SE03INV1	'False'	20/07/2025 16:48	20/07/2025 23:06	6 hr, 17 min	117.33	59.95
HUN-2507-026	SE03INV1	'False'	23/07/2025 20:30	24/07/2025 1:54	5 hr, 24 min	138.87	67.31
HUN-2507-027	SE03INV3	'False'	9/07/2025 0:00	10/07/2025 13:48	37 hr, 47 min	1496.26	1068.67
HUN-2507-028	SE03INV3	Additional Investigation Required	12/07/2025 4:06	12/07/2025 6:18	2 hr, 12 min	102.50	60.33
HUN-2507-029	SE05T	'False'	2/07/2025 23:06	3/07/2025 0:36	1 hr, 29 min	46.55	33.70
HUN-2507-030	SE05T	Additional Investigation Required	3/07/2025 2:06	3/07/2025 3:54	1 hr, 48 min	56.66	39.15
HUN-2507-031	SE05T	'False'	6/07/2025 16:30	6/07/2025 18:54	2 hr, 23 min	68.81	46.68
HUN-2507-032	SE05T	Additional Investigation Required	23/07/2025 17:00	23/07/2025 18:30	1 hr, 30 min	127.81	62.27
HUN-2507-033	SE05T	Additional Investigation Required	23/07/2025 20:12	23/07/2025 22:12	2 hr, 0 min	95.59	50.25
HUN-2507-034	SE06T	'False'	2/07/2025 15:12	2/07/2025 16:30	1 hr, 18 min	202.15	85.88
HUN-2507-035	SE06T	'False'	3/07/2025 1:30	4/07/2025 12:36	35 hr, 6 min	1519.88	778.02
HUN-2507-036	SE06T	'False'	4/07/2025 18:30	5/07/2025 15:18	20 hr, 47 min	952.26	270.68
HUN-2507-037	SE06T	'False'	8/07/2025 2:30	11/07/2025 9:30	79 hr, 0 min	79.99	53.15
HUN-2507-038	SE07T	'False'	2/07/2025 15:18	2/07/2025 16:48	1 hr, 29 min	74.38	35.54

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
HUN-2507-039	SE07T	'False'	2/07/2025 22:18	3/07/2025 1:48	3 hr, 30 min	166.28	70.45
HUN-2507-040	SE07T	'False'	11/07/2025 10:18	11/07/2025 12:00	1 hr, 41 min	27.60	26.81
HUN-2507-041	SE09T	'False'	1/07/2025 0:00	1/07/2025 4:12	4 hr, 12 min	78.20	53.06
HUN-2507-042	SE11T	'False'	27/07/2025 0:00	27/07/2025 16:00	15 hr, 59 min	4000.00	344.86
HUN-2507-043	SE12T	'False'	20/07/2025 15:30	20/07/2025 19:06	3 hr, 35 min	139.62	108.47
HUN-2507-044	SE12T	'False'	27/07/2025 20:00	27/07/2025 22:18	2 hr, 17 min	1890.86	530.99
HUN-2507-045	SE12T	'False'	31/07/2025 15:42	31/07/2025 16:42	1 hr	193.35	65.72
HUN-2507-046	SE48T	'False'	2/07/2025 15:24	2/07/2025 19:48	4 hr, 24 min	4000.00	1515.70
HUN-2507-047	SE48T	Additional Investigation Required	6/07/2025 9:24	6/07/2025 12:00	2 hr, 35 min	172.20	74.17
HUN-2507-048	SE48T	Additional Investigation Required	6/07/2025 18:12	6/07/2025 23:42	5 hr, 30 min	4000.00	1584.67
HUN-2507-049	SE51T	'False'	6/07/2025 19:18	6/07/2025 20:42	1 hr, 23 min	30.79	28.78
HUN-2507-050	SE51T	'False'	23/07/2025 21:18	24/07/2025 0:06	2 hr, 47 min	33.91	30.66
HUN-2507-051	SE52T	'False'	6/07/2025 18:18	6/07/2025 23:18	4 hr, 59 min	46.38	36.41
HUN-2507-052	SE52T	'False'	7/07/2025 11:06	7/07/2025 19:30	8 hr, 23 min	76.72	44.55
HUN-2507-053	SE52T	Additional Investigation Required	20/07/2025 15:12	21/07/2025 1:48	10 hr, 36 min	147.08	59.21
HUN-2507-054	SE52T	'False'	22/07/2025 19:36	22/07/2025 23:24	3 hr, 48 min	41.90	30.56
HUN-2507-055	SE52T	'False'	23/07/2025 17:18	24/07/2025 13:36	20 hr, 18 min	244.03	54.72
HUN-2507-056	SE52T	'False'	27/07/2025 15:48	27/07/2025 20:36	4 hr, 48 min	42.45	32.43
HUN-2507-057	SE59T	'False'	3/07/2025 2:41	3/07/2025 4:18	1 hr, 36 min	32.75	29.53
HUN-2507-058	SE59T	'False'	6/07/2025 19:35	6/07/2025 23:01	3 hr, 26 min	42.06	29.39
HUN-2507-059	SE59T	'False'	11/07/2025 16:04	12/07/2025 4:05	12 hr, 1 min	97.75	75.88
HUN-2507-060	SE59T	'False'	15/07/2025 16:20	15/07/2025 20:53	4 hr, 32 min	46.53	35.14

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
HUN-2507-061	SE59T	'False'	23/07/2025 21:38	24/07/2025 1:40	4 hr, 2 min	31.94	28.71
HUN-2507-062	SE60T	'False'	28/07/2025 8:06	28/07/2025 9:30	1 hr, 23 min	104.51	63.07
HUN-2507-063	SE60T	'False'	29/07/2025 6:06	31/07/2025 23:54	65 hr, 47 min	1472.08	216.64
HUN-2507-064	SE61T	'False'	2/07/2025 22:42	3/07/2025 5:42	7 hr, 0 min	65.99	40.10
HUN-2507-065	SE61T	Additional Investigation Required	6/07/2025 15:30	6/07/2025 22:00	6 hr, 30 min	42.88	36.00
HUN-2507-066	SE61T	Additional Investigation Required	20/07/2025 16:24	20/07/2025 20:36	4 hr, 12 min	46.51	35.44
HUN-2507-067	SE61T	'False'	23/07/2025 21:24	24/07/2025 9:00	11 hr, 36 min	88.66	46.99

5.2. Additional Investigation

Nine events were flagged for additional investigation.

5.2.1. HUN-2507-028 Additional Investigation

The event, occurring between 4:06 and 6:18 on the 12th of July at SE03INV3 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'.

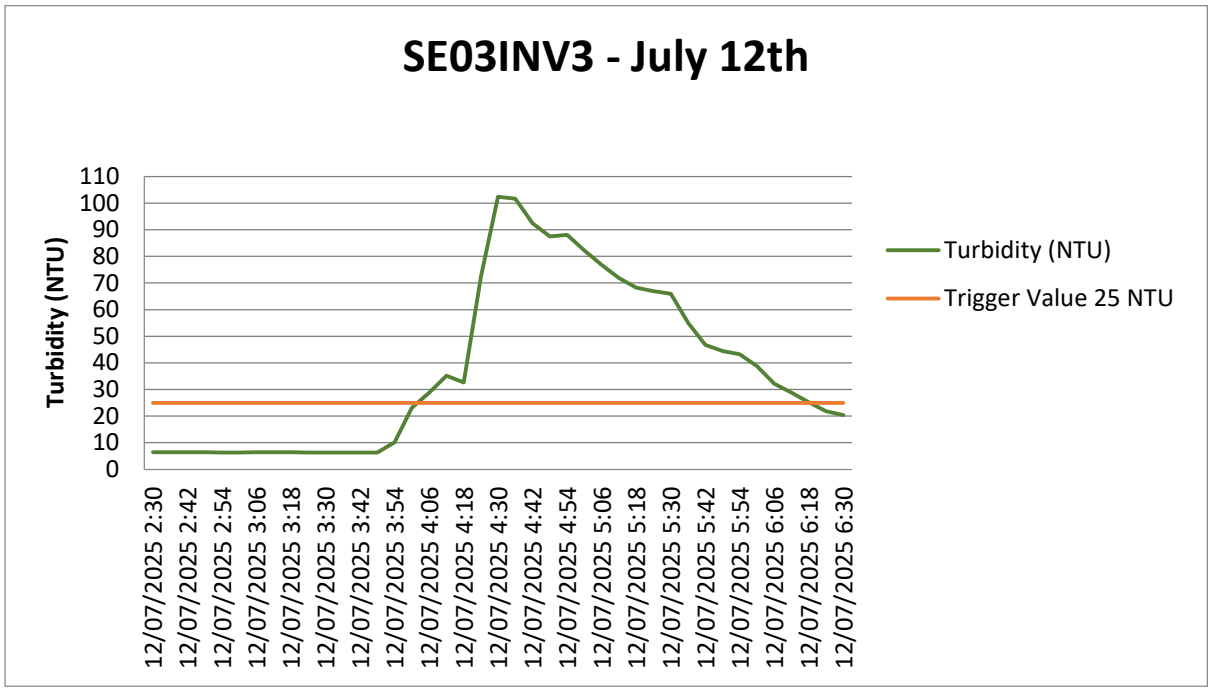

Figure 3 HUN-2507-028

Further investigation into the event and location has determined the following

- Rainfall occurred in the 12 hours prior to the event, a further 6.5mm of rain was recorded in the hours following the event during which time the turbidity levels returned to background levels.
- A large volume of leaf litter was observed in the stream bed with minimal signs of high flow events.

Field notes provided by Alcoa are included below.

"Data trend indicates false event likely caused by debris impacting the Lense. Relatively sharp incline and decline in turbidity values, followed by 2 sharp spikes immediately following the event. There was a further 6.5mm of rainfall recorded in the 3 hours following the event, during which time turbidity levels had returned to <1 NTU, indicating debris was flushed clear of the sensor. The site was inspected on 09/07/2025. Stream flow had commenced; however, water depth was insufficient to fully submerge the sensor. A substantial accumulation of leaf litter was observed in the stream bed."

Based on a high volume of leaf litter identified surrounding the probe, a return to baseline levels during ongoing rainfall events and no evidence of high flow events at the site this event is considered a false event. No additional investigation is required.

5.2.2. HUN-2507-030 Additional Investigation

The event, occurring between 2:06 and 3:54 on the 3rd of July at SE05T 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'.

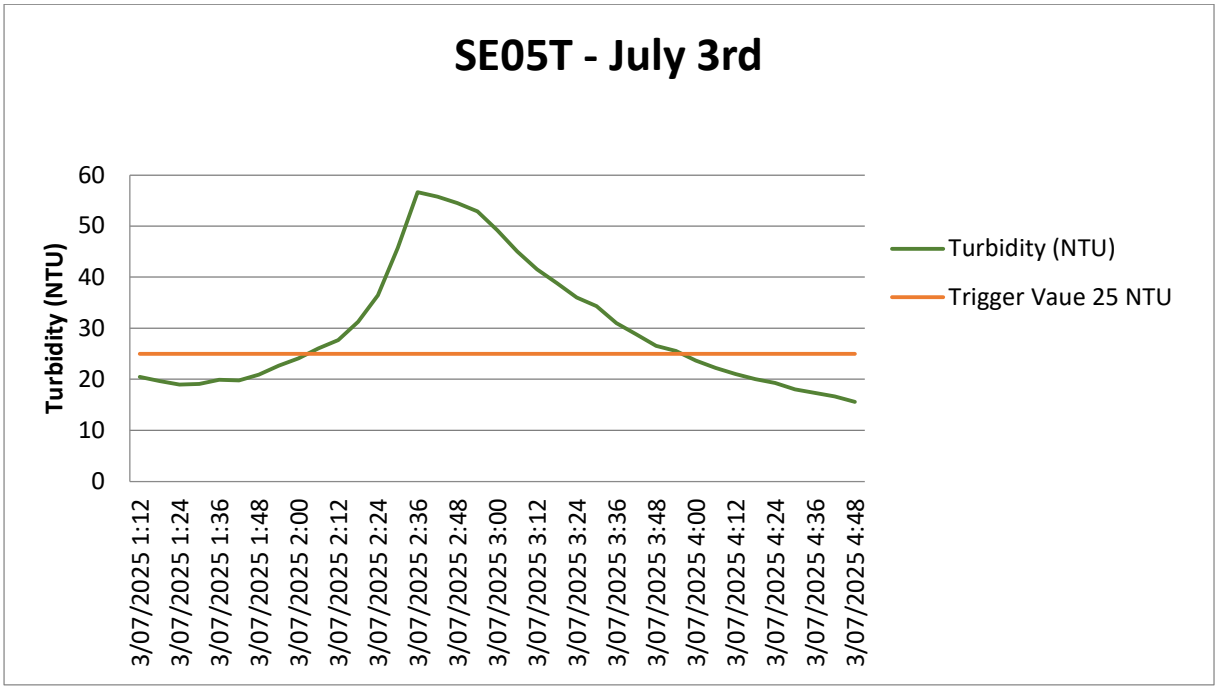

Figure 4 HUN-25-07-030

Further investigation into the event and location has determined the following

- Rainfall occurred in the 24 hours prior to the event
- The site was inspected on the day of the event with no signs of sedimentation mobilisation.
- Suspended organics were present within the sensor shroud likely causing false readings.

Field notes provided by Alcoa are included below.

"Compliance turbidity monitoring site SE05T recorded two turbidity events exceeding 25 NTU for >1 hour overnight, from 2 July 2025 to 3 July 2025, during a 40.4mm rain event. The first event was recorded from 2 July 2025 at 11:36 PM to 3 July 12:36 AM, with a duration of 1 hour and 30 minutes. The average turbidity value during the event was 33.7 NTU, with a peak of 46.55 NTU. There was 20.5mm of rainfall recorded in the 24 hours preceding the event. The second event was recorded on 3 July 2025, from 2:06 AM to 3:45 AM, with a duration of 1 hour and 48 minutes. The average turbidity value during the event was 39.15 NTU, with a peak of 56.66 NTU. There was 38.2mm of rainfall recorded in the 24 hours preceding the event.

The monitoring site was inspected on 3 July 2025. Visible suspended organic debris was present within the stream and settled on the sensor shroud, however the lens was not impacted. Turbidity value on arrival was 6.91 NTU, which dropped to 5.56 NTU after the lens was cleaned.

Data analysis shows a gradual incline and decline of both events which coincide with periods of intense rainfall.

The SE05T catchment inspection was completed in rehabilitation areas at Hill 1, 2, and 3. No drainage events were identified. Further inspection also included an inspection of the historical Doherty 3 drainage concern, which occurred on 22 June 2025, all temporary controls observed to be holding well, with no further evidence of sediment mobilisation visible."

Based on the presence of organics within the sensor shroud and no evidence of sediment build up or mobilisation at the site this event is considered a false event. No additional investigation is required.

5.2.3. HUN-2507-032 Additional Investigation

The event, occurring between 17:00 and 18:30 on the 23rd of July at SE05T 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'.

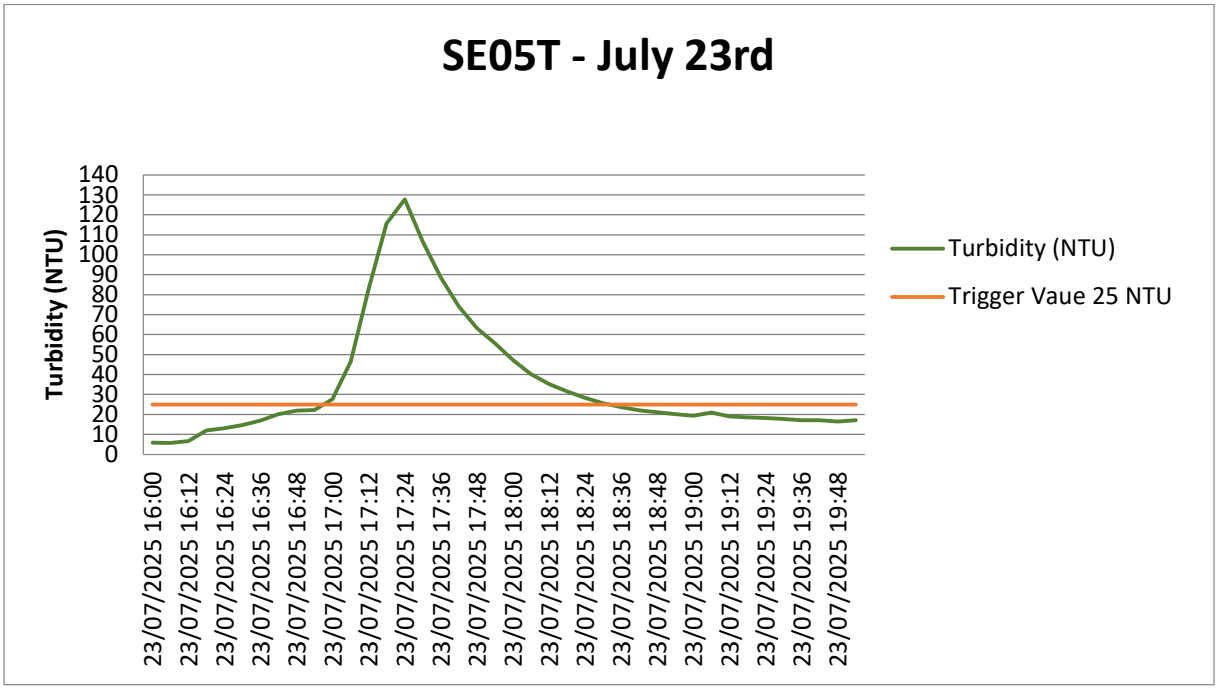

Figure 5 HUN-2507-032

Further investigation into the event and location has determined the following

- Rainfall occurred in the 24 hours prior to the event
- The site was inspected the day after the event where organic debris was identified suspended in the stream.
- Inspections of the catchment identified stormwater runoff had flowed beyond drainage rip lines and sediment screening installations, however further inspection of the flow path did not show signs of the runoff entering the stream.
- Similar events were not identified in other areas connected to the SE05T catchment.

Field notes provided by Alcoa are included below.

"Compliance turbidity monitoring site SE05T recorded two turbidity events exceeding 25 NTU for >1 hour on 23 July 2025.

The first event was recorded on 23 July 2025 at 5:00 PM to 6:30 PM, with a duration of 1 hour and 30 minutes. The average turbidity value during the event was 62.27 NTU, with a peak of 127.81 NTU. There was 14.6mm of rainfall recorded in the 24 hours preceding the event.

The second event was recorded on 23 July 2025 from 8:12 PM to 10:12 PM, with a duration of 2 hours. The average turbidity value during the event was 50.24 NTU, with a peak of 95.59 NTU. There was 23mm of rainfall recorded in the 24 hours preceding the event.

The monitoring site was inspected on 24 July 2025. Moderate stream turbidity was visible, with a measured reading of 9.42 NTU. Data analysis indicates a true trend; however, sharp

increases and high peak values suggest temporary interference, likely caused by organic debris.

Catchment inspections commenced on 24 July 2025 and indicated that stormwater runoff in the Doherty 2/3 rehabilitated pit had flowed beyond the drainage rip lines on the rehabilitation backslope area. This runoff overwhelmed the installed sediment screening and coir logs that had been installed following the Section 6 reportable event on 07 July 2025. This finding triggered the 24-hour reporting timeline.

Assessment of the stormwater flow path in the immediate vicinity indicated that water from the rehabilitated area had flowed eastward and downslope, into the roadside drainage associated with Kingsbury Drive, where it appeared to have stopped. There was no evidence of turbid water along the roadside, and the volume of flow did not appear sufficient to pass through the culvert. -

Alcoa completed assessment of other mining areas within the SE05T turbidity monitor catchment, including rehabilitation in Hill 1, 2, and 3. No drainage events were identified.

Alcoa does not consider the drainage event from the Doherty 2/3 area to have contributed to the turbidity exceedance recorded at the SE05T monitoring point."

Based on the field notes provided and inspections of adjacent sites without evidence of stormwater flows entering the catchment this event is considered a false event. No additional investigation is required.

5.2.4. HUN-2507-033 Additional Investigation

The event, occurring between 21:12 and 22:12 on the 23rd of July at SE05T 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'.

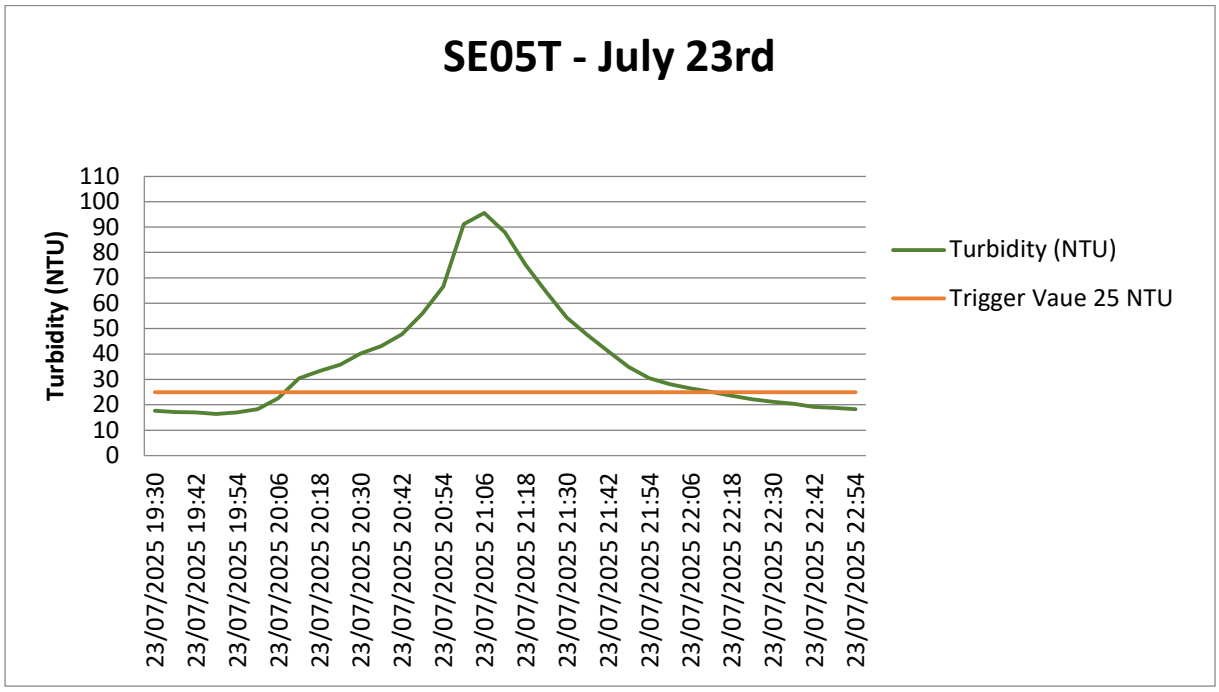

Figure 6 HUN25-07-033

Further investigation into the event and location has determined the following

- Rainfall occurred in the 24 hours prior to the event
- The site was inspected the day after the event where organic debris was identified suspended in the stream.
- Inspections of the catchment identified stormwater runoff had flowed beyond drainage rip lines and sediment screening installations, however further inspection of the flow path did not show signs of the runoff entering the stream.
- Similar events were not identified in other areas connected to the SE05T catchment.

"Compliance turbidity monitoring site SE05T recorded two turbidity events exceeding 25 NTU for >1 hour on 23 July 2025.

The first event was recorded on 23 July 2025 at 5:00 PM to 6:30 PM, with a duration of 1 hour and 30 minutes. The average turbidity value during the event was 62.27 NTU, with a peak of 127.81 NTU. There was 14.6mm of rainfall recorded in the 24 hours preceding the event.

The second event was recorded on 23 July 2025 from 8:12 PM to 10:12 PM, with a duration of 2 hours. The average turbidity value during the event was 50.24 NTU, with a peak of 95.59 NTU. There was 23mm of rainfall recorded in the 24 hours preceding the event.

The monitoring site was inspected on 24 July 2025. Moderate stream turbidity was visible, with a measured reading of 9.42 NTU. Data analysis indicates a true trend; however, sharp

increases and high peak values suggest temporary interference, likely caused by organic debris.

Catchment inspections commenced on 24 July 2025 and indicated that stormwater runoff in the Doherty 2/3 rehabilitated pit had flowed beyond the drainage rip lines on the rehabilitation backslope area. This runoff overwhelmed the installed sediment screening and coir logs that had been installed following the Section 6 reportable event on 07 July 2025. This finding triggered the 24-hour reporting timeline.

Assessment of the stormwater flow path in the immediate vicinity indicated that water from the rehabilitated area had flowed eastward and downslope, into the roadside drainage associated with Kingsbury Drive, where it appeared to have stopped. There was no evidence of turbid water along the roadside, and the volume of flow did not appear sufficient to pass through the culvert.

Alcoa completed assessment of other mining areas within the SE05T turbidity monitor catchment, including rehabilitation in Hill 1, 2, and 3. No drainage events were identified.

Alcoa does not consider the drainage event from the Doherty 2/3 area to have contributed to the turbidity exceedance recorded at the SE05T monitoring point."

Based on the field notes provided and inspections of adjacent sites without evidence of stormwater flows entering the catchment this event is considered a false event. No additional investigation is required.

5.2.5. HUN-2507-047 Additional Investigation

The event, occurring between 09:24 and 12:00 on the 6th of July at SE48T 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'.

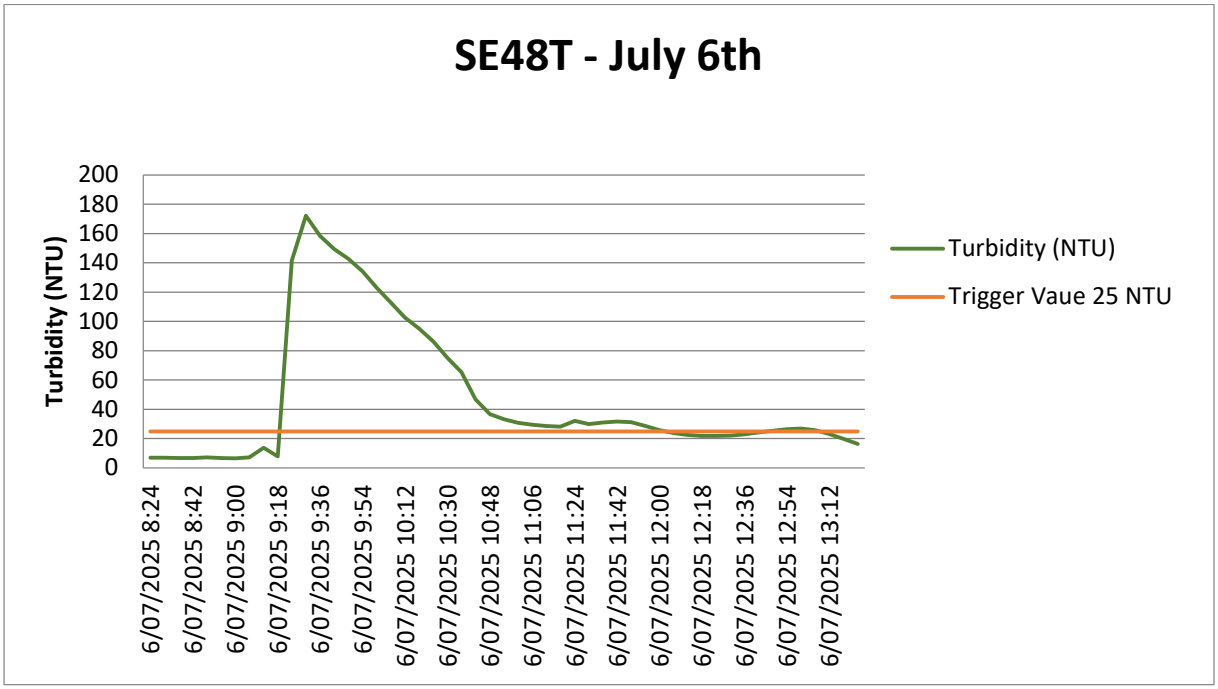

Figure 7 HUN-2507-047

Further investigation into the event and location has determined the following

- Rainfall did not occur in the 24 hours prior to the event
- The site was inspected the after the event and leaf litter surrounding the sensor is high indicative of a first flush. This is confirmed with records indicating the stream was still dry on the 3/07/2025.

"Float level reading was 1 at 11:48pm after the recorded event. The stream was inspected 10/07/2025 which confirmed the stream is now flowing, however is heavily impacted by debris and organic matter around sensor from first flush of rain. The turbidity reading was 3.5 NTU upon arrival."

Based on the field notes provided and inspections this is likely a first flush event with leaf litter triggering increased turbidity levels this event is considered a false event. No additional investigation is required.

5.2.6. HUN-2507-048 Additional Investigation

The event, occurring between 18:12 and 23:42 on the 6th of July at SE48T 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'.

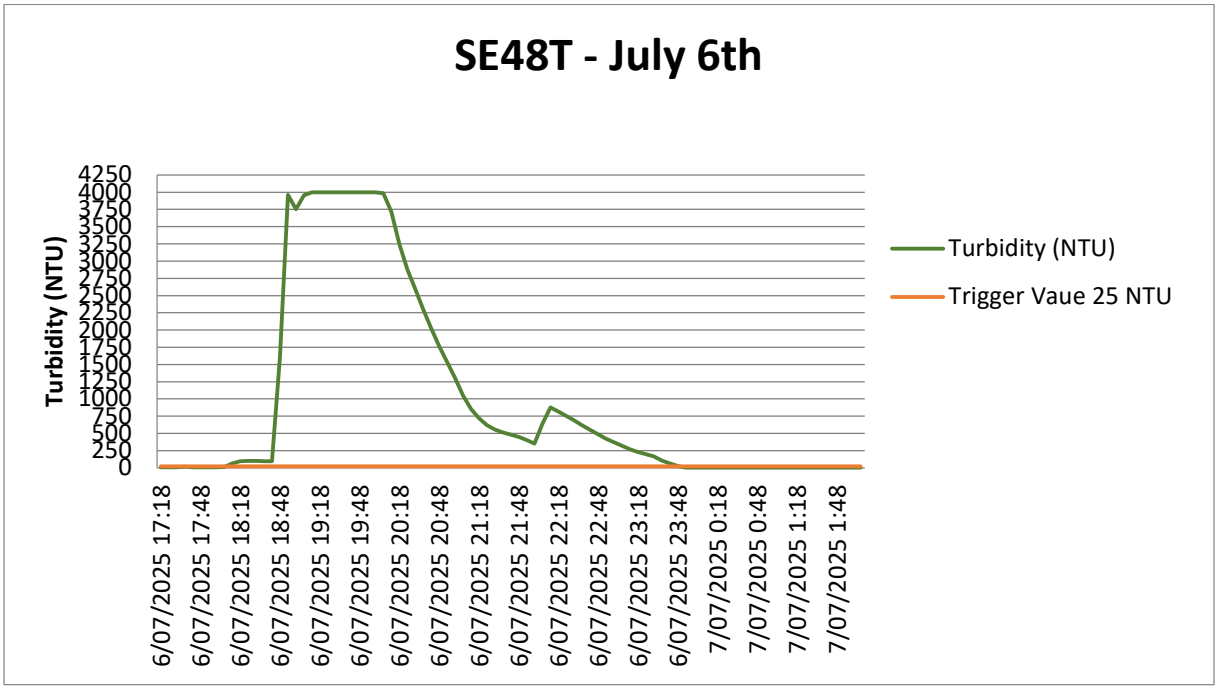

Figure 8 HUN-2507-048

Further investigation into the event and location has determined the following

- Rainfall did not occur in the 24 hours prior to the event
- The site was inspected after the event and leaf litter surrounding the sensor is high indicative of a first flush. This is confirmed with records indicating the stream was still dry on the 3/07/2025.

"Float level reading was 1 at 11:48pm after the recorded event. The stream was inspected 10/07/2025 which confirmed the stream is now flowing, however is heavily impacted by debris and organic matter around sensor from first flush of rain. The turbidity reading was 3.5 NTU upon arrival."

Based on the field notes provided and inspections this is likely a first flush event with increase leaf litter triggering increased turbidity levels this event is considered a false event. No additional investigation is required.

5.2.7. HUN-2507-053 Additional Investigation

The event, occurring between 15:12 on the 20th of July and finishing at 1:48 on the 21st of July at SE52T 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'.

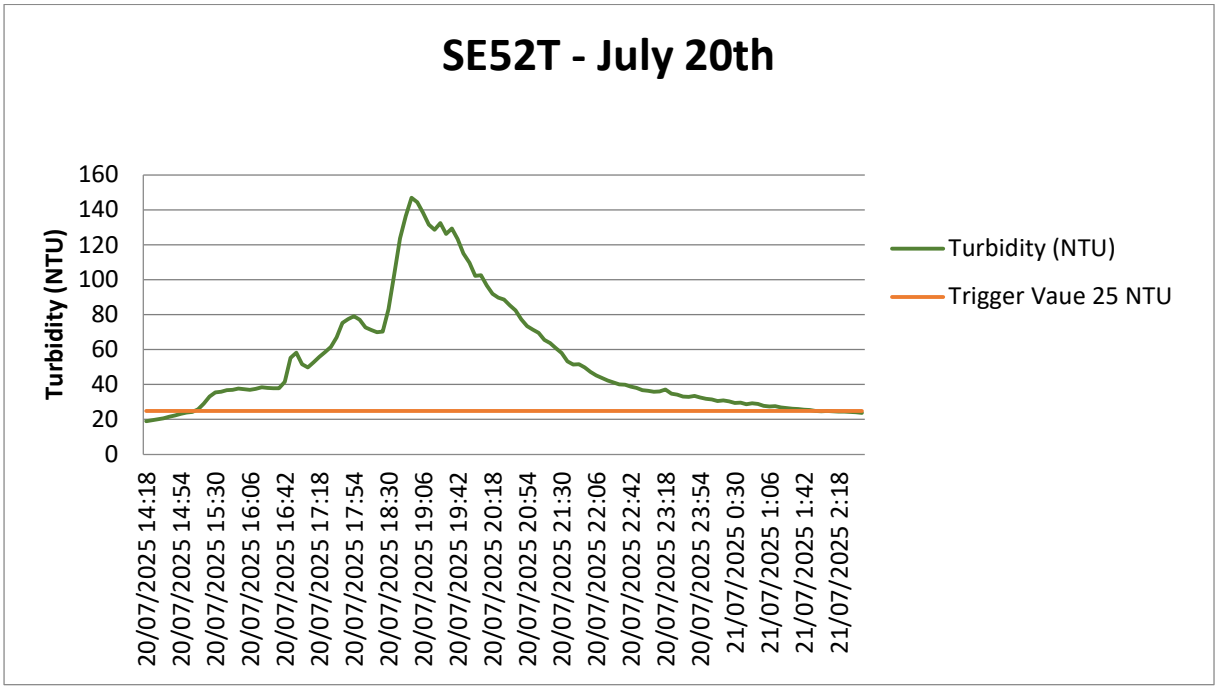

Figure 9 HUN-2507-053

Further investigation into the event and location has determined the following

- Rainfall did occur in the 24 hours prior to the event
- The site was inspected the day after the event, the stream was clear with no signs of sediment deposit indicative of a high flow event.
- Rainfall intensity increased after the event peak with turbidity levels retuning to baseline.
- The catchment was inspected and no signs of mining related contributions could be identified.

"Compliance turbidity monitoring site SE52T recorded a turbidity event exceeding 25 NTU for >1 hour on 20 July 2025. ---The event was recorded on 20 July 2025, from 3:12 PM to 1:48 AM, with a duration of 10 hours and 36 minutes. The average turbidity value during the event was 59.21 NTU, with a peak of 147.07 NTU. There was 15.3mm of rainfall recorded in the 24 hours preceding the event. --The monitoring site was inspected on 21 July 2025. The stream was clear at the time of inspection. Data trend shows a distinct increase in turbidity values following 13.9mm of rainfall recorded in the preceding 5 hours. As rainfall intensity increased, turbidity values continued to rise before reaching a peak and declining in the hours following cessation of rainfall. ---The SE52T catchment was inspected, no mining related contributions to the turbidity exceedance were found. There are multiple areas of concern on forest tracks within the catchment, where forest track run off has been observed entering the forest and stream."

Based on the field notes provided and no signs of sediment deposit or mining related contributions in the catchment this event is considered a false event. No additional investigation is required.

5.2.8. HUN-2507-065 Additional Investigation

The event, occurring between 15:30 and 22:00 on the 6th of July 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 10 below. This criteria is in line with a typical true event as per the 'Turbidity Event Classification Guidelines'.

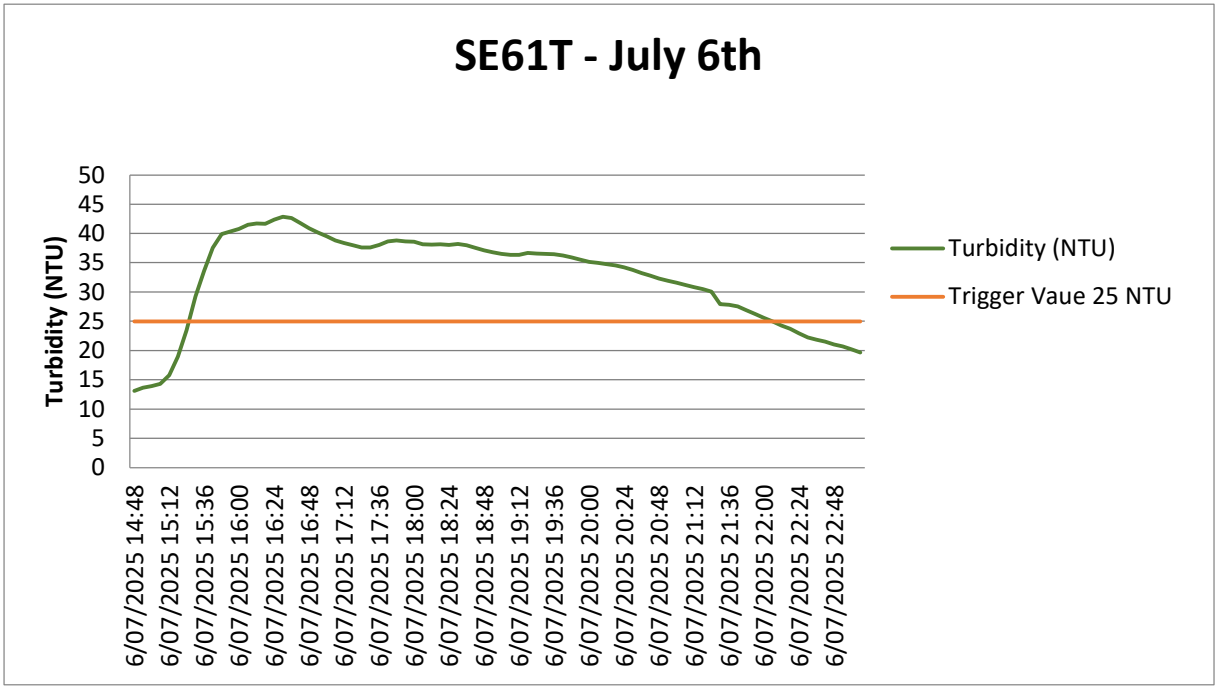

Figure 10 HUN2507-065

Further investigation into the event and location has determined the following

- Rainfall did occur in the 24 hours prior to the event
- The site was inspected after the event, the stream was clear with no signs of sediment deposit indicative of a high flow event.

"Local turbidity monitor SE61T recorded a Turbidity event on 6/07/2025 for 6 hours and 30 minutes, following 7.6mm of rain. A catchment inspection was completed of the surrounding pits and rehab zones. The investigation confirmed there was no areas of concern, and the exceedance was not mining related."

Based on the field notes provided and no signs of sediment deposit or mining related contributions in the catchment this event is considered a false event. No additional investigation is required.

5.2.9. HUN-2507-066 Additional Investigation

The event, occurring between 16:24 and 20:36 on the 20th of July 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'.

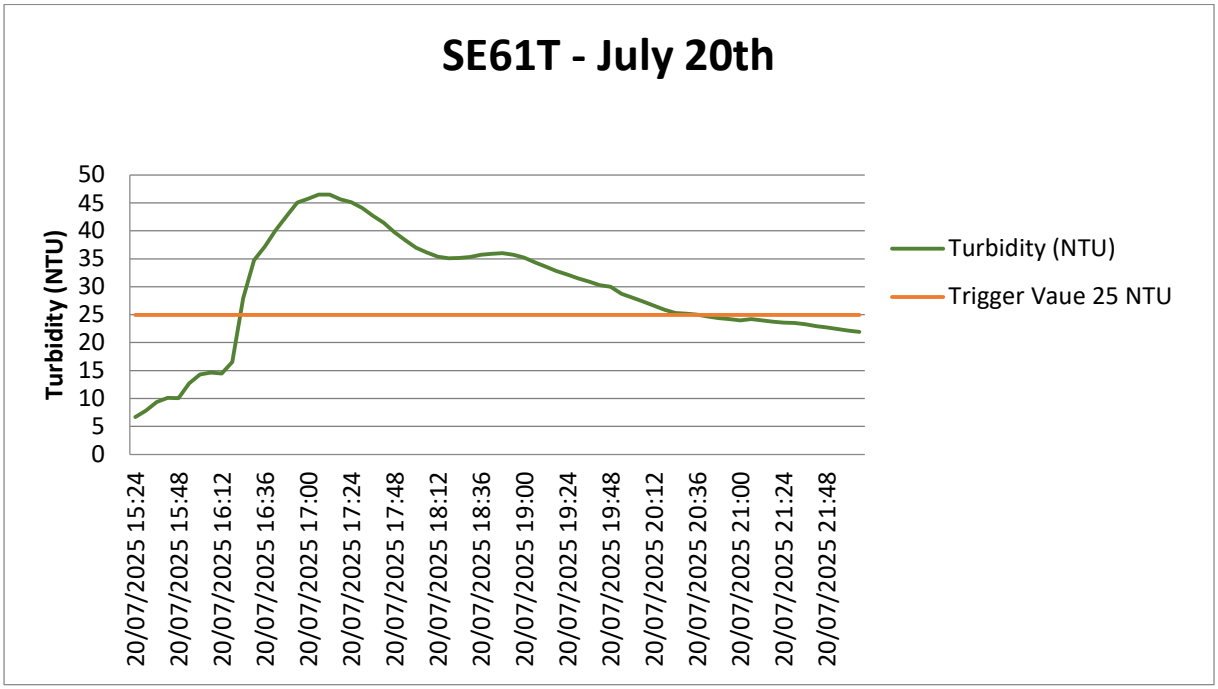

Figure 11 HUN-2507-066

Further investigation into the event and location has determined the following

- Rainfall did occur in the 24 hours prior to the event
- The site was inspected after the event, the stream was clear with no signs of sediment deposit indicative of a high flow event.

"Local turbidity monitor SE61T recorded a Turbidity event on 20/07/2025 for 4 hours and 12 minutes, following 16mm of rain. A catchment inspection was completed on 21/07/2025 of the surrounding pits and rehab zones. The investigation confirmed there was no areas of concern, and the exceedance was not mining related."

5.3. True Event(s)

Zero 'True' turbidity events were identified during the reporting period.

5.4. False Event(s)

Fifty-eight '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-2507-001	ND06T	This event is marked by a gradual increase and a Gradual decrease in turbidity. This is indicative of a false event.	Data analysis shows a gradual incline and decline, with very high peak, outside of rainfall period. Sensor has been intermittently partially out of water.
HUN-2507-002	ND06T	This event is marked by a step function increase in turbidity with a rapid return to background levels. This is indicative of a false event.	Data analysis shows a gradual incline and decline, with very high peak, outside of rainfall period. Sensor has been intermittently partially out of water.
HUN-2507-003	ND06T	This event is marked by a step function increase in turbidity with a rapid return to background levels. This is indicative of a false event.	Data analysis shows a gradual incline and decline, with very high peak, outside of rainfall period. Sensor has been intermittently partially out of water.
HUN-2507-004	ND06T	This event is marked by a step function increase in turbidity with a rapid return to background levels. This is indicative of a false event.	Data analysis shows a gradual incline and decline, with very high peak, outside of rainfall period. Sensor has been intermittently partially out of water.
HUN-2507-005	ND06T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Data analysis shows a gradual incline and decline, with very high peak, outside of rainfall period. Sensor has been intermittently partially out of water.
HUN-2507-006	ND06T	This event is marked by rapid increase and decrease in turbidity with multiple peaks. This is indicative of a false event.	Data analysis shows a gradual incline and decline, with very high peak, outside of rainfall period. Sensor has been intermittently partially out of water.
HUN-2507-007	ND06T	This event is marked by rapid increase and decrease in turbidity. This is indicative of a false event.	Data analysis shows a gradual incline and decline, with very high peak, outside of rainfall period. Sensor has been intermittently partially out of water.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2507-008	ND06T	This event is marked by a step function increase in turbidity with a rapid return to background levels. This is indicative of a false event.	Data analysis shows a gradual incline and decline, with very high peak, outside of rainfall period. Sensor has been intermittently partially out of water.
HUN-2507-009	PD01T	This event is marked by a gradual increase followed by a gradual decrease in turbidity with multiple peaks. This is indicative of a false event.	No field notes available
HUN-2507-010	SE02T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE02T recorded a turbidity event exceeding 25 NTU for >1 hour on 6 July 2025. The event was recorded on 6 July 2025, from 5:12 PM to 6:12 PM, with a duration of 1 hour. The average turbidity value during the event was 33.99 NTU, with a peak of 41.74 NTU. There was 16.2mm of rainfall recorded in the 24 hours preceding the event. The Huntly and Willowdale turbidity network have experienced site wide communications issues across telemetry platforms during July. SE02T has experienced intermittent connectivity as a result. In addition to this, fallen trees blocked access to the monitoring site for more than 2 weeks. This resulted in a delay in the identification of the event. The monitoring site was inspected on 20/07/2025. Algae and debris was built up around the sensor, turbidity value was 74.06 NTU on arrival which dropped to 2.14 NTU after the Lense was cleaned and repositioned. Data analysis shows a gradual incline in turbidity values, and after reaching a peak, turbidity values gradually declined as rainfall continued. A

Event ID	Monitor ID	Rationale	Field Notes
			further 15.4mm of rainfall was recorded in the 12 hours following cessation of the event, with no further exceedances recorded. The SE02T catchment was inspected on 6/06/2025. No mining related contribution to the turbidity exceedance was found.
HUN-2507-011	SE02T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-012	SE02T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-013	SE02T	This event is marked by a rapid increase and decrease in turbidity with multiple peaks. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of

Event ID	Monitor ID	Rationale	Field Notes
			events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-014	SE02T	This event is marked by a rapid increase and decrease in turbidity with multiple peaks. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-015	SE02T	This event is marked by a rapid increase and decrease in turbidity with multiple peaks. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-016	SE02T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring

Event ID	Monitor ID	Rationale	Field Notes
			pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-017	SE02T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-018	SE02T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-019	SE02T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical

Event ID	Monitor ID	Rationale	Field Notes
			influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-020	SE02T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-021	SE03T	This event is marked by a gradual increase followed by a gradual decrease in turbidity. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-022	SE03T	This event is marked by a gradual increase followed by a gradual decrease in turbidity. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical

Event ID	Monitor ID	Rationale	Field Notes
			influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-023	SE03T	This event is marked by a gradual increase followed by a gradual decrease in turbidity with multiple peaks. This is indicative of a false event.	Site inspection was delayed until 20/07/2025 due to a fallen tree across the access track. The sensor was found covered in organic debris and stream bed sediment. Turbidity reading on arrival was 74.06 NTU, which dropped to 2.14 NTU after the Lense was cleaned and repositioned. The overall data trend of events from 15/07/2025 to 20/07/2025 shows a recurring pattern of sharp, well defined intervals, suggesting a cyclical influence, potentially light. Turbidity values remained stable in the days following the sensor maintenance.
HUN-2507-024	SE03INV1	This event is marked by a gradual increase followed by a gradual 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 7/06/2025 for 5 hours and 6 minutes following 21.8mm of rainfall. The monitoring site was inspected on 9/07/2025, 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, no mining related impact was found. This included inspection of the adjacent Downes 12 rehabilitation pit and historic drainage event reported in September 2024 which showed no further impact to the adjacent forest or stream. Heavy forest track erosion was observed flowing into the stream from Solus Road, upstream of SE03T and SE03INV1.
HUN-2507-025	SE03INV1	This event is marked by a gradual increase followed by a gradual decrease	Local turbidity monitoring site SE03INV1 recorded a turbidity exceedance event on 20/07/2025 following 23mm of rainfall. --SE03INV1 was inspected on 21/07/2025 which identified

Event ID	Monitor ID	Rationale	Field Notes
		in turbidity with multiple peaks. This is indicative of a false event.	heavy leaf litter, sticks and debris covering the sensor. The turbidity reading pre-clean was 46.7 NTU and post-clean was 3.1 NTU. A Catchment Inspection confirmed no mining related contributions found.
HUN-2507-026	SE03INV1	This event is marked by multiple peaks. This is indicative of a false event.	SE03INV1 monitoring site was inspected on 24/07/2025. The stream was clear, water level low. Some leaf litter/debris was caught around the sensor, 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. No turbidity event recorded at downstream turbidity monitor SE03T
HUN-2507-027	SE03INV3	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	False data spikes caused by faulty sensor. Sensor repaired on 10/07/2025
HUN-2507-029	SE05T	This event is marked by a gradual increase followed by a gradual decrease in turbidity. This is indicative of a false event.	"Compliance turbidity monitoring site SE05T recorded two turbidity events exceeding 25 NTU for >1 hour overnight, from 2 July 2025 to 3 July 2025, during a 40.4mm rain event. The first event was recorded from 2 July 2025 at 11:36 PM to 3 July 12:36 AM, with a duration of 1 hour and 30 minutes. The average turbidity value during the event was 33.7 NTU, with a peak of 46.55 NTU. There was 20.5mm of rainfall recorded in the 24 hours preceding the event. The second event was recorded on 3 July 2025, from 2:06 AM to 3:45 AM, with a duration of 1 hour and 48 minutes. The average turbidity value during the event was 39.15 NTU, with

Event ID	Monitor ID	Rationale	Field Notes
			a peak of 56.66 NTU. There was 38.2mm of rainfall recorded in the 24 hours preceding the event. The monitoring site was inspected on 3 July 2025. Visible suspended organic debris was present within the stream and settled on the sensor shroud, however the Lense was not impacted. Turbidity value on arrival was 6.91 NTU, which dropped to 5.56 NTU after the Lense was cleaned. Data analysis shows a gradual incline and decline of both events which coincide with periods of intense rainfall. The SE05T catchment inspection was completed in rehabilitation areas at Hill 1, 2, and 3. No drainage events were identified. Further inspection also included an inspection of the historical Doherty 3 drainage concern, which occurred on 22 June 2025, all temporary controls observed to be holding well, with no further evidence of sediment mobilisation visible."
HUN-2507-031	SE05T	This event is marked by multiple peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE05T recorded a turbidity event exceeding 25 NTU for >1 hour on 6 July 2025. The event was recorded on 6 July 2025, from 4:30 PM to 6:54 PM, with a duration of 2 hours and 24 minutes. The average turbidity value during the event was 46.68 NTU, with a peak of 68.81 NTU. There was 11.2mm of rainfall recorded in the 24 hours preceding the event. Data analysis shows an increase in turbidity values coinciding with a period of increasing rainfall intensity. Inspection of the SE05T catchment commenced on 7/07/2025, which included inspection of the Doherty 2/3 rehabilitated pit and areas of drainage concern. Site inspections identified that storm water

Event ID	Monitor ID	Rationale	Field Notes
			runoff had exited the drainage rip lines of the rehabilitation backslope area, overwhelmed the installed sediment screen and coir logs; releasing water into the immediately adjacent forest. The flow path of the storm water within the immediate vicinity was assessed. Water from the rehabilitation was observed to have travelled to the roadside drainage associated with Kingsbury Drive, where it appears to have stopped. There was no evidence of turbid water flow along the roadside, and it did not appear that sufficient flow was present to pass through the culvert. Alcoa completed assessment of other mining areas within the SE05T turbidity monitor catchment, including rehabilitation in Hill 1, 2, and 3. No drainage events were identified. Alcoa does not believe that the drainage event from Doherty 2/3 contributed to the turbidity exceedance event at the SE05T monitor.
HUN-2507-034	SE06T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspected on 04/07/2025, sensor found sitting in stream bed sediment and heavily burdened with organic debris. NTU on arrival 1238.5960, post clean NTU 2.9715.
HUN-2507-035	SE06T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspected on 04/07/2025, sensor found sitting in stream bed sediment and heavily burdened with organic debris. NTU on arrival 1238.5960, post clean NTU 2.9715.
HUN-2507-036	SE06T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	An exceedance notification for SE06T occurred on 04 July 2025 for 20 hours 48 minutes with 0.8 mm rainfall in preceding 24 hours. Site inspected on 05/07/2025, stream very shallow, clear and flowing. As stream is very shallow the sensor was impacted by stream bed sediment. NTU on arrival

Event ID	Monitor ID	Rationale	Field Notes
			492.6240 and post clean 7.4218 NTU. Due to erratic data trend and sediment observed on the sensor, likely indication of a false exceedance.
HUN-2507-037	SE06T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	An exceedance notification for SE06T occurred on 08 July 2025 for 79 hours and 0 minutes with 11.2 mm rainfall in preceding 24 hours. Site inspected on 11/07/2025, stream very shallow, clear and flowing. As stream is very shallow the sensor was impacted by stream bed sediment. NTU on arrival 68.46 NTU and post clean 0.64 NTU. Due to erratic data trend and sediment observed on the sensor, likely indication of a false exceedance.
HUN-2507-038	SE07T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Site inspected 3/07/2025. The stream began to flow after a long period of being dry, which flushed debris down stream.
HUN-2507-039	SE07T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspected 3/07/2025. The stream began to flow after a long period of being dry, which flushed debris down stream.
HUN-2507-040	SE07T	This event is marked by a gradual increase followed by a rapid decrease in turbidity. This is indicative of a false event.	Site inspected 24/07/2025. and 4/8/2025. The stream began to flow after a long period of being dry, which has continued to flush debris down stream. No rainfall received during the event.
HUN-2507-041	SE09T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspected on 1/07/2025, sensor partially out of water.
HUN-2507-042	SE11T	This event is marked by a gradual increase followed by a rapid decrease in turbidity. This is indicative of a false event.	No field notes available

Event ID	Monitor ID	Rationale	Field Notes
HUN-2507-043	SE12T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Stream commenced flowing on 27/07/2025
HUN-2507-044	SE12T	This event is marked by a gradual increase followed by a rapid decrease in turbidity. This is indicative of a false event.	Data analysis indicates false event caused by a build up of organic debris flushed past the sensor during initial stream flow.
HUN-2507-045	SE12T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Erratic data trend and no rainfall. Stream depth very low and the sensor was positioned very close to the stream bed. Sensor lens was only just submerged.
HUN-2507-046	SE48T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Site inspected on 3/07/2025. Stream is still dry, no sign of recent flow.
HUN-2507-049	SE51T	This event is marked by a gradual increase followed by a rapid decrease in turbidity. This is indicative of a false event.	Compliance turbidity monitoring site SE51T recorded a turbidity event exceeding 25 NTU for >1 hour on 6 July 2025. The event was recorded on 6 July 2025, from 7:18 PM to 8:42 PM, for a duration of 1 hour and 24 minutes. The average turbidity value during the event was 28.78 NTU, with a peak of 30.79 NTU. There was 21.8mm of rainfall recorded in the 24 hours preceding the event. The monitoring site was inspected on 08/07/2025. The stream was clear at the time of inspection, some organic debris was observed caught around the sensor. Data analysis shows a gradual incline in turbidity values which coincide with increasing rainfall intensity, followed by a gradual decline. There was a further 11.6mm of rainfall recorded in the 12 hours following cessation of the event, with no further

Event ID	Monitor ID	Rationale	Field Notes
			turbidity exceedances recorded. The SE51T catchment was inspected, no mining related contributions to the turbidity exceedances were found.
HUN-2507-050	SE51T	This event is marked by a gradual increase followed by a rapid decrease in turbidity with multiple peaks. This is indicative of a false event.	Compliance turbidity monitoring site SE51T recorded a turbidity event exceeding 25 NTU for >1 hour on 23 July 2025. The event was recorded from 23 July 2025 9:18 PM, to 24 July 12:06 AM, with a duration of 2 hours and 48 minutes. The average turbidity value during the event was 30.65 NTU, with a peak of 33.9 NTU. There was 25.6 mm of rainfall recorded in the 24 hours preceding the event. The monitoring site was inspected on 24/07/2025. The stream was clear at the time of inspection, turbidity reading on arrival 5.8NTU. Data analysis shows turbidity values gradually elevated above 25 NTU following 21.6mm of rainfall in the preceding 12.5 hours. The SE51T catchment was inspected, no mining related contributions to the turbidity exceedances were found.
HUN-2507-051	SE52T	This event is marked by a gradual increase followed by a gradual decrease in turbidity 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 6 July 2025. The event was recorded on 6 July 2025, from 6:18 PM to 11:18 PM, with a duration of 5 hours. The average turbidity value during the event was 36.41 NTU, with a peak of 46.38 NTU. There was 19.4mm of rainfall recorded in the 24 hours preceding the event.

Event ID	Monitor ID	Rationale	Field Notes
			The monitoring site was inspected on 7/07/2025, during another exceedance event which is listed below. Stream observations showed elevated turbidity, with a measured value of 57.12 NTU, indicating a significant concentration of suspended particulates within the water profile. Data analysis shows a gradual incline and decline in turbidity values coinciding with rainfall. The SE52T catchment was inspected, no mining related contributions to the turbidity exceedance were found. There 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-2507-052	SE52T	This event is marked by a gradual increase followed by a gradual decrease in turbidity 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 7 July 2025. The event was recorded on 7 July 2025, from 11:06 AM to 7:30 PM, with a duration of 8 hours and 12 minutes. The average turbidity value during the event was 44.55 NTU, with a peak of 76.72 NTU. There was 30.6mm of rainfall recorded in the 24 hours preceding the event. The monitoring site was inspected on 7/07/2025, during the exceedance event. Stream observations showed elevated turbidity, with a measured value of 57.12 NTU, indicating a significant concentration of suspended particulates within the water profile. Data analysis shows a gradual incline and decline in turbidity values coinciding with rainfall. The SE52T catchment was inspected, no mining related contributions to the turbidity exceedance were found. There are multiple areas of concern on forest tracks within the

Event ID	Monitor ID	Rationale	Field Notes
			catchment, where forest track run off has been observed entering the forest and stream.
HUN-2507-054	SE52T	This event is marked by a gradual increase followed by a gradual decrease in turbidity 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 22 July 2025. The event was recorded on 22 July 2025, from 7:36 PM to 11:24 PM, with a duration of 3 hours and 48 minutes. The average turbidity value during the event was 30.55 NTU, with a peak of 41.9 NTU. There was 14mm of rainfall recorded in the 24 hours preceding the event. The monitoring site was inspected on 24 July 2025, during another exceedance event which is listed below. Stream observations showed elevated turbidity, with a measured value of 25.47 NTU, indicating a significant concentration of suspended particulates within the water profile. Data analysis shows a gradual incline in turbidity values following 12mm of rainfall in the preceding 8 hours. Turbidity values then began to decline as and rainfall eased. The SE52T catchment was inspected, no mining related contributions to the turbidity exceedance were found. There 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-2507-055	SE52T	This event is marked by a rapid increase followed by a rapid decrease in turbidity 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 23 July 2025. The event was recorded from 23 July 2025 5:18 AM to 24 July, with a duration of 20 hours and 18 minutes. The average turbidity value during the event was 44.55 NTU, with a peak

Event ID	Monitor ID	Rationale	Field Notes
			of 76.72 NTU. There was 30.6mm of rainfall recorded in the 24 hours preceding the event. The monitoring site was inspected on 24 July 2025, during the exceedance event. Field observations confirmed visible turbidity in the stream, and the sensor was found to be impacted by organic debris. Data analysis indicates a rise in turbidity values following 12 mm of rainfall in the preceding 8 hours, with an erratic trend and very high peak likely influenced by debris interference. Although rainfall ceased at 1:35 AM, turbidity levels remained above 25 NTU until the debris was cleared during the inspection on 24 July 2025. The SE52T catchment was inspected, no mining related contributions to the turbidity exceedance were found. There 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-2507-056	SE52T	This event is marked by a gradual increase followed by a gradual decrease in turbidity 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 27 July 2025. The event was recorded on 27 July 2025 from 3:48 PM to 8:36 PM, with a duration of 4 hours and 48 minutes. The average turbidity value during the event was 32.43 NTU, with a peak of 42.45 NTU. There was 19.1mm of rainfall recorded in the preceding 24 hours. Catchment inspections commenced on 28 July 2025 and indicated that stormwater runoff in the Simpson 1 winterised pit had flowed beyond the drainage rip lines on the rehabilitation backslope area at two locations. This runoff exited the windrow present in two locations of the pit edge.

Event ID	Monitor ID	Rationale	Field Notes
			The first location flowed approximately 10m into the adjacent forest. The second area flowed approximately 15m into the adjacent forest. This finding triggered the 24-hour reporting timeline. Assessment of the stormwater flow path in the immediate vicinity indicated that water from the rehabilitated area had flowed eastward and downslope, where it appeared to have stopped. There was no evidence of turbid water or sediment travelling further downslope nor evidence of water entering the stream feeding SE52T. Alcoa does not consider the drainage event from the Simpson 1/2 area to have contributed to the turbidity exceedance recorded at the SE52T monitoring point. This assessment is based on the nature of the receiving environment which consists of a shallow stream with a naturally silty bed. The SE52T catchment inspection was completed, including Mica 3, 4, Downes 8, 9, 10, Douglas 3, Kisler 1,2,3,4,5,6, Mabbott 2 and surrounding haul road sumps. No other drainage events were identified. There 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-2507-057	SE59T	This event is marked by a gradual increase followed by a gradual decrease in turbidity. This is indicative of a false event.	Compliance turbidity monitoring site SE05T recorded two turbidity events exceeding 25 NTU for >1 hour overnight, from 2 July 2025 to 3 July 2025, during a 40.4mm rain event. The first event was recorded from 2 July 2025 at 11:36 PM to 3 July 12:36 AM, with a duration of 1 hour and 30 minutes. The average turbidity value during the event was 33.7 NTU,

Event ID	Monitor ID	Rationale	Field Notes
			with a peak of 46.55 NTU. There was 20.5mm of rainfall recorded in the 24 hours preceding the event. The second event was recorded on 3 July 2025, from 2:06 AM to 3:45 AM, with a duration of 1 hour and 48 minutes. The average turbidity value during the event was 39.15 NTU, with a peak of 56.66 NTU. There was 38.2mm of rainfall recorded in the 24 hours preceding the event. The monitoring site was inspected on 3 July 2025. Visible suspended organic debris was present within the stream and settled on the sensor shroud, however the Lense was not impacted. Turbidity value on arrival was 6.91 NTU, which dropped to 5.56 NTU after the Lense was cleaned. Data analysis shows a gradual incline and decline of both events which coincide with periods of intense rainfall. The SE05T catchment inspection was completed in rehabilitation areas at Hill 1, 2, and 3. No drainage events were identified. Further inspection also included an inspection of the historical Doherty 3 drainage concern, which occurred on 22 June 2025, all temporary controls observed to be holding well, with no further evidence of sediment mobilisation visible.
HUN-2507-058	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 6 July 2025. The event was recorded on 6 July 2025, from 7:30 PM to 11:00 PM, with a duration of 3 hours and 30 minutes. The average turbidity value during the event was 29.36 NTU, with a peak of 42.06 NTU. There was 22.3mm of rainfall recorded in 24 hours preceding event.

Event ID	Monitor ID	Rationale	Field Notes
			The monitoring site was inspected on 7/07/2025. Stream observations showed a dark appearance, with visible suspended organic debris from the surrounding forest. Turbidity value at the time of inspection was 21.7 NTU. Inspections of the adjacent stream banks showed some areas of pig activity, as well as some stream bed erosion. The surrounding forest was affected by a bushfire in November 2023. While some areas have shown strong signs of recovery, the immediate area around SE59T still has large patches of bare ground with limited regrowth. The SE59T catchment inspection was completed, no mining related contributions to the turbidity exceedance was found.
HUN-2507-059	SE59T	This event is marked by a gradual increase followed by a gradual decrease in turbidity with multiple peaks. This is indicative of a false event.	Data trend shows a gradual incline and decline, outside of rainfall period. The stream level has been fluctuating between periods of rainfall and the sensor has been observed out of water twice in the past 2 weeks. Ongoing fresh feral pig activity has also been observed. The level float sensor data was spiking for the duration of the event
HUN-2507-060	SE59T	This event is marked by multiple sporadic peaks. This is indicative of a false event.	Data trend shows a gradual incline and decline, outside of rainfall period. The event ceased as rainfall commenced, and turbidity values dropped from 44.5NTU to 9.8 within 6 minutes. The stream level has been fluctuating between periods of rainfall and the sensor has been observed out of water twice in the past 2 weeks. Ongoing fresh feral pig activity has also been observed. The level float sensor data was spiking for the duration of the event

Event ID	Monitor ID	Rationale	Field Notes
HUN-2507-061	SE59T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a false event.	Data trend shows a rapid spike in the data and then a gradual decline, indicating Debre likely impacted the sensor. A site inspection on the 24/072025 identified the stream level was low. The stream level has been fluctuating between periods of rainfall and the sensor has been observed out of water twice in recent weeks. Ongoing fresh feral pig activity has also been observed. The level float sensor data was 0 for the duration of the event.
HUN-2507-062	SE60T	This event is marked by a step function increase in turbidity with a rapid return to background levels. This is indicative of a 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 indicates sensor impacted by organic matter during commencement of stream flowing.
HUN-2507-063	SE60T	This event is marked by a rapid increase and decrease in turbidity. This is indicative of a 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 indicates sensor impacted by organic matter during commencement of stream flowing.
HUN-2507-064	SE61T	This event is marked by a gradual increase followed by a gradual decrease in turbidity with multiple peaks. This is indicative of a false event.	Local turbidity monitoring site SE61T recorded an exceedance on 2/07/2025 for 7 hours, following 18.4mm of rainfall in the preceding 24 hours. A catchment inspection was completed of the surrounding pits and rehab zones. The investigation confirmed there was no areas of concern and the exceedance was not mining related.
HUN-2507-067	SE61T	This event is marked by a gradual increase followed by a gradual	Local turbidity monitor SE61T recorded a Turbidity event on 23/07/2025 for 11 hours and 36 minutes, following 27.6 mm

Event ID	Monitor ID	Rationale	Field Notes
		decrease. This is indicative of a false event.	of rain. A catchment inspection was completed on 26/07/2025 of the surrounding pits and rehab zones. The investigation confirmed there was no areas of concern, and the exceedance was not mining related.

5.5. Excluded WQMS Units

Seventeen 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
FPWR1	01/07/2025-31/07/2025	Stream dry as of 1/01/2025. Monitor offline due to fault.
ND04T	01/07/2025-31/07/2025	Stream dry as of 1/01/2025
ND12T	01/07/2025-04/07/2025	equipment fault (data logger error) causing rapid data spikes from 01/07/2025-04/07/2025
PD02T	01/07/2025-31/07/2025	Awaiting water Corp approval to access Pipe head catchment
PD03T	01/07/2025-31/07/2025	Awaiting water Corp approval to access Pipe head catchment
SE03INV3	01/07/2025-09/07/2025	Stream commenced flowing on 9/07/2025
SE11T	01/07/2025-27/07/2025	Stream commenced flowing on 27/07/2025
SE12INV	01/07/2025-31/07/2025	Stream dry as of 5/11/2024
SE15T	01/07/2025-31/07/2025	Stream Dry as of 16/11/2024
SE22T	01/07/2025-31/07/2025	Stream dry as of 14/12/2024
SE23T	01/07/2025-28/07/2025	Stream commenced flowing on 28/07/2025
SE24T	01/07/2025-31/07/2025	Stream dry as of 2/11/2024
SE25T	01/07/2025-31/07/2025	Stream dry as of 2/11/2024
SE26T	01/07/2025-31/07/2025	Stream dry as of 15/10/2024
SE34T	01/07/2025-28/07/2025	Stream flowing on 28/07/2025
SE62T	01/07/2025-31/07/2025	Stream dry as of 28/12/2024, ponded water not yet flowing
SN07T	01/07/2025-31/07/2025	Stream dry as of 26/01/2025, ponded water not yet flowing

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-2507-001	ND12T	2//07/25	3/07/25	Equipment fault (data logger error) causing rapid data spikes 2//07/25-3/07/25. The fault was resolved on the 4/07/2025.
MD-2507-002	PD01T	12/07/2025	17/05/2025	Sensor reading fault code intermittently between 12/07/2025 & 17/05/2025.

MD-2507-003	SE03INV3	10/07/2025	10/07/2025	Sensor fault caused false data spikes, this was repaired on 10/07/2025.
MD-2507-004	SE03T	22/07/2025	22/07/2025	Sensor reading below calibration intermittently from 22/07/2025. Scheduled for assessment/repair.
MD-2507-005	SE07T	23/07/2025	29/07/2025	Sensor reading fault code intermittently between 23/07/2025 & 29/07/2025 due to system maintenance, fault assessed & repaired.
MD-2507-006	SE10T	3/07/2025	3/07/2025	Data gap due to system power failure.
MD-2507-007	SE10T	4/07/2025	4/07/2025	Data gap due to system power failure.
MD-2507-008	SE10T	21/07/2025	21/07/2025	Data gap due to system power failure.
MD-2507-009	SE34T	19/07/2025	31/07/2025	System Malfunction

6. Appendices

Appendix A. Huntly Raw WQMS Data

Date	Huntly WQMS Data – July 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
1/07/2025																	
2/07/2025														**1**	**1**	**2**	
3/07/2025														**1**	**1**		
4/07/2025															**1**		
5/07/2025																	
6/07/2025												**1**	**3**	**1**			
7/07/2025																	
8/07/2025															**1**		
9/07/2025					**1**												
10/07/2025					**2**												
11/07/2025					**1**											**1**	
12/07/2025																	
13/07/2025																	
14/07/2025					**1**												
15/07/2025												**3**					
16/07/2025					**2**							**3**					
17/07/2025												**3**					
18/07/2025																	
19/07/2025					**1**												
20/07/2025																	
21/07/2025																	
22/07/2025																	
23/07/2025										**1**				**2**			
24/07/2025																	
25/07/2025																	
26/07/2025																	
27/07/2025																	
28/07/2025																	
29/07/2025																	
30/07/2025																	
31/07/2025																	

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

Date	Huntly WQMS Data -July 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
1/07/2025	**1**																
2/07/2025									**1**						**1**		
3/07/2025													**1**				
4/07/2025																	
5/07/2025																	
6/07/2025									**2**		**1**		**1**		**1**		
7/07/2025											**1**						
8/07/2025																	
9/07/2025																	
10/07/2025																	
11/07/2025													**1**				
12/07/2025																	
13/07/2025																	
14/07/2025																	
15/07/2025													**1**				
16/07/2025																	
17/07/2025																	
18/07/2025																	
19/07/2025																	
20/07/2025				**1**							**1**				**1**		
21/07/2025																	
22/07/2025											**1**						
23/07/2025										**1**	**1**		**1**		**1**		
24/07/2025																	
25/07/2025																	
26/07/2025																	
27/07/2025			**1**	**1**													
28/07/2025											**1**			**1**			
29/07/2025														**1**			
30/07/2025																	
31/07/2025				**1**													

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

Date	Huntly WQMS Data – July 2025 - Events with turbidity > 25 NTU for an hour or more																
	SE22T	SE23T	SE25T	SE24T	SE03INV1	SE03INV3	SE24T										
1/07/2025																	
2/07/2025																	
3/07/2025																	
4/07/2025																	
5/07/2025																	
6/07/2025					**1**												
7/07/2025																	
8/07/2025																	
9/07/2025																	
10/07/2025																	
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19/07/2025																	
20/07/2025					**1**												
21/07/2025																	
22/07/2025																	
23/07/2025					**1**												
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26/07/2025																	
27/07/2025																	
28/07/2025																	
29/07/2025																	
30/07/2025																	
31/07/2025																	

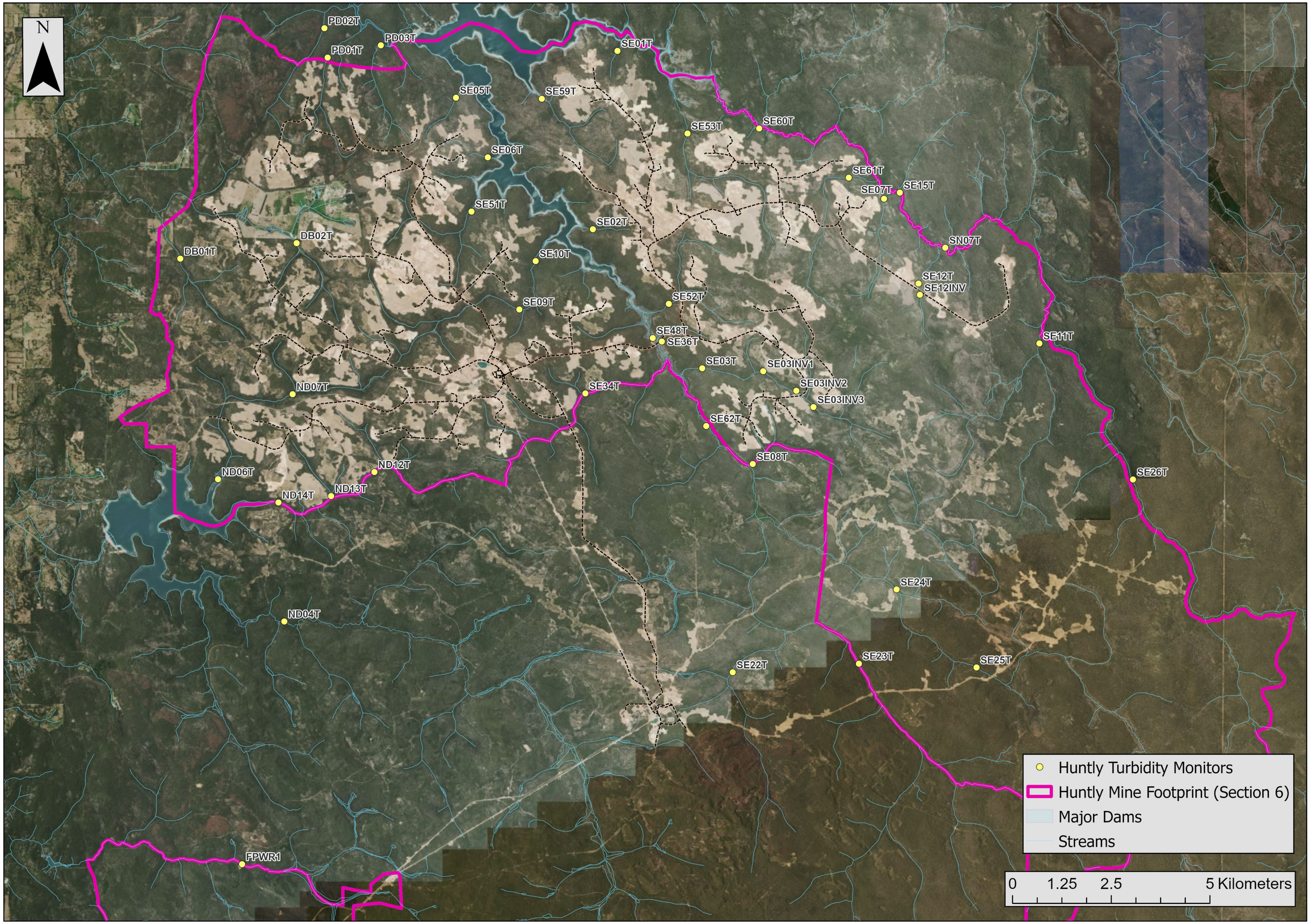
Note: False events have been annotated by **black** bold text. True events for further investigation are annotated by **red** bold text

Date	Huntly WQMS Data – July 2025 - Turbidity (Daily Average, NTU)																
	DB01T	DB02T	FPWR1	ND04T	ND06T	ND07T	ND12T	ND13T	ND14T	PD01T	SE01T	SE02T	SE03T	SE05T	SE06T	SE07T	SE08T
1/07/2025		3.30			7.57	1.03	6.81	4.20	1.03	2.29	0.06	2.22	11.15	16.34	3.67	12.36	1.15
2/07/2025		1.61			4.77	1.14	41.40	2.78	1.38	3.13	0.06	3.90	12.09	9.55	11.88	18.21	1.14
3/07/2025	1.84	2.01			5.58	2.29	43.14	0.47	4.18	5.62	0.06	5.01	16.08	11.01	421.91	7.09	1.14
4/07/2025	1.03	1.62			2.00	1.06	1.66	0.38	1.05	2.44		2.99	12.58	3.71	757.76	6.91	1.14
5/07/2025	1.03	1.64			1.62	1.00	1.55	1.65	0.91	0.97		3.09	12.76	3.96	200.88	11.67	1.16
6/07/2025	1.02	1.78			2.54	1.22	1.58	6.57	2.18	4.18	0.06	7.25	16.50	11.75	2.76	8.66	1.16
7/07/2025	1.01	2.13			3.03	1.36	6.34	0.41	2.04	3.24	0.06	4.05	19.75	8.61	5.40	0.08	1.13
8/07/2025	1.02	1.75			1.96	1.10	2.88	0.39	1.05	1.78	0.06	3.18	13.81	5.35	25.26	0.06	1.18
9/07/2025	1.02	1.75			17.66	1.04	1.77	0.42	0.94	1.78	0.06	3.31	12.50	5.96	43.50	0.06	1.21
10/07/2025	1.04	1.82			54.82	1.04	1.74	0.44	0.90	1.94	0.06	3.37	11.57	7.31	54.91	0.66	1.23
11/07/2025	1.04	1.86			51.39	1.03		0.44	0.91	2.28	0.06	3.61	10.04	10.33	25.98	9.33	1.23
12/07/2025	1.02	2.34			4.73	1.16	1.53	0.39	1.38		0.06	5.94	9.31	8.89	1.28	2.42	1.17
13/07/2025	1.04	2.78			8.46	1.09	1.53	0.41	1.05		0.06	7.52	7.72	6.72	0.81	0.06	1.18
14/07/2025	1.02	1.87			34.35	1.35	1.55	0.42	1.20		0.06	11.24	9.51	7.50	0.91	0.06	1.19
15/07/2025	1.03	1.97			45.71	1.10	1.53	0.41	1.05		0.06	21.54	7.89	9.23	1.00	0.06	1.20
16/07/2025	1.76	3.98			54.16	1.20	1.53	0.40	1.40		0.06	37.76	8.65	8.63	1.17	0.06	1.18
17/07/2025	1.03	2.92			6.46	1.09	1.54	0.44	1.00		0.06	58.51	13.04	9.53	1.13	0.06	1.20
18/07/2025	1.02	6.64			6.49	1.09	1.55	0.43	1.20	2.14	0.06	118.47	11.16	9.85	1.38	0.06	1.16
19/07/2025		2.04			16.85	1.11	1.56	0.45	1.04	2.05	0.06	177.27	8.21	9.22	1.46	0.06	1.20
20/07/2025	1.10	4.18			6.02	1.42	1.66	0.48	2.82	3.90	0.06	126.79	13.48	10.73	1.82	0.53	1.23
21/07/2025	1.04	4.23			2.46	1.33	1.66	0.48	1.51	3.04	0.06	4.49	17.03	5.93	1.59	0.06	1.20
22/07/2025	1.03	1.49			1.84	1.16	1.60	0.45	1.06	4.73		4.90	15.73	5.86	1.92	0.07	1.18
23/07/2025	1.07	1.63			2.36	1.35	1.66	0.52	2.54	17.78		7.64	0.42	15.70	2.49		1.22
24/07/2025	1.08	1.53			2.54	1.31	1.81	0.54	4.23	7.30	0.06	2.38	0.19	9.71	1.34		1.18
25/07/2025	1.08	1.52			1.71	1.16	1.67	0.50	1.24	1.77	0.06	1.56	0.01	6.14	1.97		1.23
26/07/2025	1.09	1.54			1.66	1.14	1.63	0.49	1.06	1.53	0.06	1.50	10.98	5.69	2.85		1.25
27/07/2025	1.10	1.61			2.22	1.32	1.70	0.54	2.36	4.17	0.06	2.47	0.01	9.11	2.43		1.24
28/07/2025	1.11	1.58			2.19	1.30	1.77	0.54	2.41	3.15	0.06	1.59	0.29	6.39	1.45		1.20
29/07/2025	1.17	1.58			1.79	1.16	1.70	0.50	1.17	1.93	0.06	1.46	0.25	5.08	1.88		1.22
30/07/2025	1.49	1.57			1.80	1.16	1.67	0.49	1.14	1.97	0.06	1.41	1.88	5.23	6.06		1.18
31/07/2025	1.52	1.60			1.81	1.16	1.67	0.50	1.03	2.06	0.06	1.48	1.04	5.38	10.20		1.21

Date	Huntly WQMS Data – July 2025 - Turbidity (Daily Average, NTU)																
	SE09T	SE10T	SE11T	SE12T	SE12INV	SE15T	SE34T	SE36T	SE48T	SE51T	SE52T	SE53T	SE59T	SE60T	SE61T	SE62T	SN07T
1/07/2025	11.34	1.00		16.78				5.89	10.41	1.39	5.85	1.63	3.21	10.27	3.33		
2/07/2025	1.05	33.14		15.73				5.49	325.00	1.61	6.78	1.83	5.33	10.65	6.06		
3/07/2025	1.08	1.68		14.09				7.49	12.75	5.57	13.38	5.13	10.01	8.36	15.57		
4/07/2025	1.06	1.18		11.78				4.58	8.64	1.54	5.86	2.03	1.97	9.92	2.35		
5/07/2025	1.06	1.24		14.17				4.11	11.07	1.42	6.08	1.74	1.86	11.11	2.28		
6/07/2025	1.06	1.26		11.02				0.38	389.79	6.57	13.76	4.41	9.38	11.01	13.71		
7/07/2025	1.08	4.85		7.48				0.77	4.82	4.74	27.43	10.46	11.62	9.04	13.00		
8/07/2025	1.06	1.24		10.36				0.32	3.89	2.18	14.54	3.32	4.34	8.75			
9/07/2025	1.07	1.21		10.63				0.23	3.65	1.77	13.11	2.17	3.87	9.52			
10/07/2025	1.08	1.22		11.10				0.21	3.55	1.63	12.90	1.91	4.49	9.90			
11/07/2025	1.08	1.27		11.36				0.21	3.53	1.55	12.80	1.82	30.65	10.26	2.06		
12/07/2025	1.06	1.28		9.57				0.32	4.25	3.33	14.48	3.31	16.93	8.80	4.55		
13/07/2025	1.06	1.24		11.55				0.31	3.70	1.84	13.04	2.15	3.87	8.92	2.35		
14/07/2025	1.07	1.24		11.11				0.40	4.04	1.85	12.98	2.00	5.27	9.20	2.68		
15/07/2025	1.07	1.24		11.90				0.33	3.67	1.75	12.73	1.82	14.77	9.60	2.16		
16/07/2025	1.06	1.28		11.61				0.36	3.64	3.13	14.36	2.29	7.01	8.93	3.53		
17/07/2025	1.07	1.30		12.52				0.66	3.61	1.91	13.63	1.87	11.36	9.76	2.18		
18/07/2025	1.06	1.26		12.69				0.34	3.57	2.24	14.50	2.26	7.33	9.09	2.62		
19/07/2025	1.07	1.29		13.60				0.23	3.57	2.07	14.79	1.94	7.64	9.45	2.25		
20/07/2025	1.08	1.44		34.58				0.43	4.50	5.41	34.26	5.67	11.87	8.79	11.67		
21/07/2025	1.10	1.56		13.35				1.34	5.58	2.83	18.62	4.26	4.50	9.56	4.99		
22/07/2025	1.07	1.07		13.08				1.20	3.84	3.59	17.84	2.52	4.32	9.28	3.01		
23/07/2025	1.08	1.18		10.05				0.99	5.17	7.39	38.50	3.79	10.30	8.24	8.25		
24/07/2025	1.22	1.66		12.15				9.82	9.48	7.54	30.05	8.18	10.85	9.95	26.33		
25/07/2025	1.08	1.10		13.12				13.60	4.35	2.74	16.09	2.63	3.58	12.06	3.23		
26/07/2025	1.09	1.06		13.92				9.38	4.09	2.10	14.42	2.20	3.61	12.38	2.41		
27/07/2025	1.09	1.12	234.40	70.68				9.48	4.65	3.97	20.69	4.47	7.42	9.99	7.56		
28/07/2025	1.09	1.15	6.50	20.62				14.01	4.59	2.90	16.78	3.70	5.36	16.01	5.25		
29/07/2025	1.08	1.04	4.51	7.45				13.68	4.18	2.13	14.59	2.25	4.52	119.89	2.58		
30/07/2025	1.06	1.02	4.60	6.17				13.05	4.14	1.89	14.56	2.05	5.50	239.13	2.76		
31/07/2025	1.08	1.01	4.55	14.76				12.19	4.12	1.87	14.46	1.99	6.15	241.97	2.43		

Date	Huntly WQMS Data – July 2025 - Turbidity (Daily Average, NTU)																	
	SE22T	SE23T	SE25T	SE24T	SE03INV1	SE03INV3	SE24T											
1/07/2025					2.68													
2/07/2025					2.91													
3/07/2025					8.28													
4/07/2025					3.25													
5/07/2025					3.44													
6/07/2025					10.82													
7/07/2025					27.06													
8/07/2025					2.74													
9/07/2025					2.37	1160.39												
10/07/2025					2.18	531.96												
11/07/2025					2.08	4.29												
12/07/2025					4.98	10.38												
13/07/2025					2.80	0.36												
14/07/2025					7.40	0.37												
15/07/2025					2.76	0.33												
16/07/2025					3.39	0.28												
17/07/2025					2.80	0.33												
18/07/2025					3.22	0.32												
19/07/2025					3.22	0.36												
20/07/2025					20.01	0.52												
21/07/2025					13.17	0.51												
22/07/2025					3.92	0.41												
23/07/2025					16.48	0.65												
24/07/2025					10.23	0.70												
25/07/2025					2.93	0.48												
26/07/2025					2.64	0.47												
27/07/2025					4.39	0.55												
28/07/2025		27.11			3.22	0.53												
29/07/2025		15.57			2.69	0.45												
30/07/2025		15.22			2.74	0.40												
31/07/2025		13.53			2.86	0.41												

Appendix B. Huntly WQMS Locations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PD03T
PD01T
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SE02T
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DB01T
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SE12T
SE12INV
SE52T
SE09T
SE48T
SE36T
SE11T
SE03T
SE03INV1
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

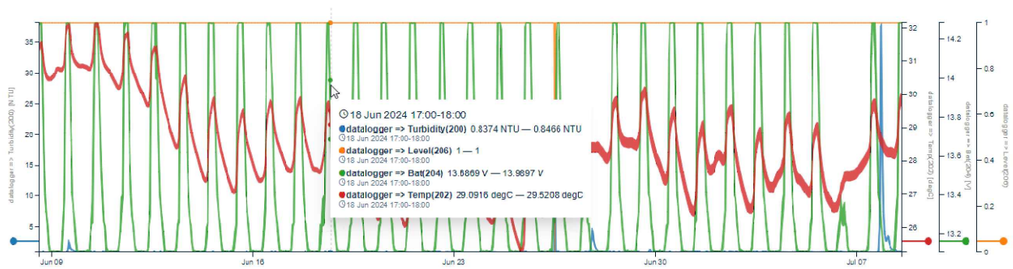
DATA INLET

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

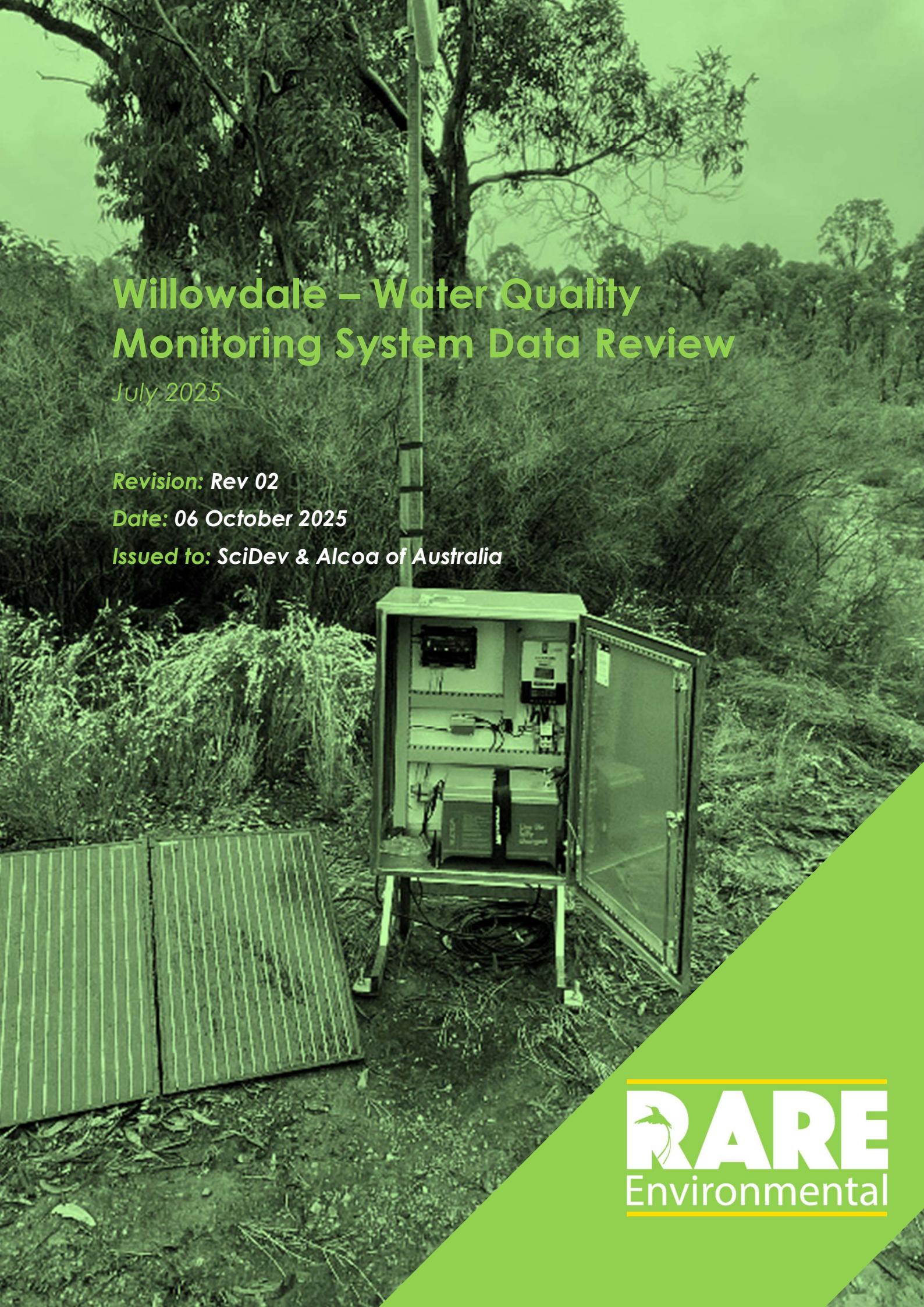
SHEET 1 OF 2

SCALE NTS OR AS SHOWN

DRAWING NO.
HI0090 - ALCOA WQMS

SHEET SIZE
A3

REV.
1



Willowdale – Water Quality Monitoring System Data Review

July 2025

Revision: ***Rev 02***

Date: ***06 October 2025***

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

RARE Environmental

Document Control

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Document History and Status						
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02	06/10/25	Amended with comments	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	06/10/25	Date	06/10/25	Date	06/10/25

RARE Environmental Pty Ltd
ABN 41617855017
110/117 Old Pittwater Rd
Brookvale NSW 2100 Australia
P: 0413 223 401
www.rare-enviro.com.au

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 (WQMSs) deployed at the Willowdale bauxite mining operations during July 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**: One 'False' events was identified, primarily attributed to factors such as debris accumulation, sensor obstructions, and water turbulence.
- **Further Investigation**: Two events were flagged for further investigation.
- **True Events**: Two "True" turbidity exceedance events were identified.
- **Excluded Units**: Two WQMS units were 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 July 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 July 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 July 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.

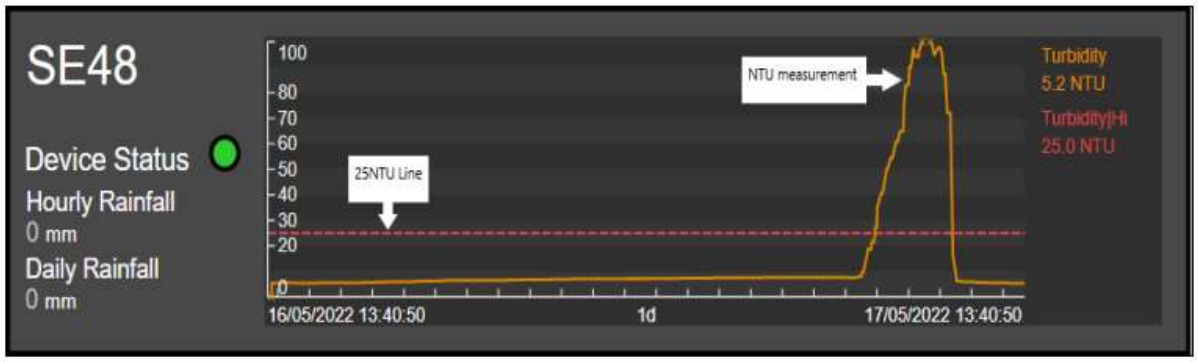


Figure 2 Typical 'false' exceedance event showing both a sharp incline and decline

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	2
False	1

Table 2 Events Details

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
WDL-2507-001	RHB2	'False'	26/07/2025 5:48	26/07/2025 10:12	4 hr, 23 min	1727.45	939.88
WDL-2507-002	RHB3	Addition investigation required	3/07/2025 1:45	3/07/2025 2:46	1 hr, 0 min	28.69	27.04
WDL-2507-003	RHB3	Addition investigation required	6/07/2025 17:26	6/07/2025 22:35	5 hr, 9 min	39.36	34.45

5.2. Additional Investigation

Two events were flagged for additional investigation

5.2.1. WDL-2507-002 Additional Investigation

The event, occurring between 1:45 and 2:46 on the 3rd of July 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.

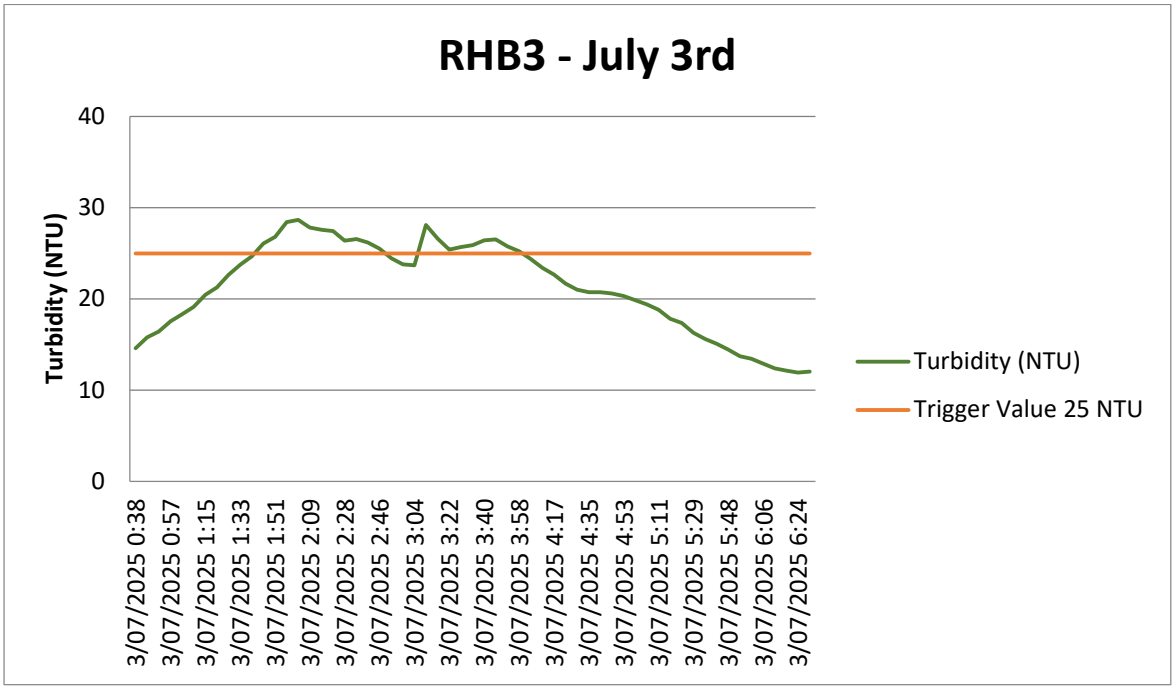


Figure 3 WDL-2507-002

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.

"On 5 August 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. On 7 August 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 August 2025, a visual inspection of the Walrus stream crossing was conducted. 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 June 2025. Further analysis of previous rain events showed increased turbidity after this forest track was re-opened. Of note, on 20 June 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."

Based on the inspection and field notes provided, this event is deemed to be a 'True' event however based on the identified erosion of Irrawaddy stream crossing it is considered a non-mining related event.

5.2.2. WDL-2507-003 Additional Investigation

The event, occurring between 17:26 and 22:35 on the 6th of July 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 4 below indicates a potential drainage event.

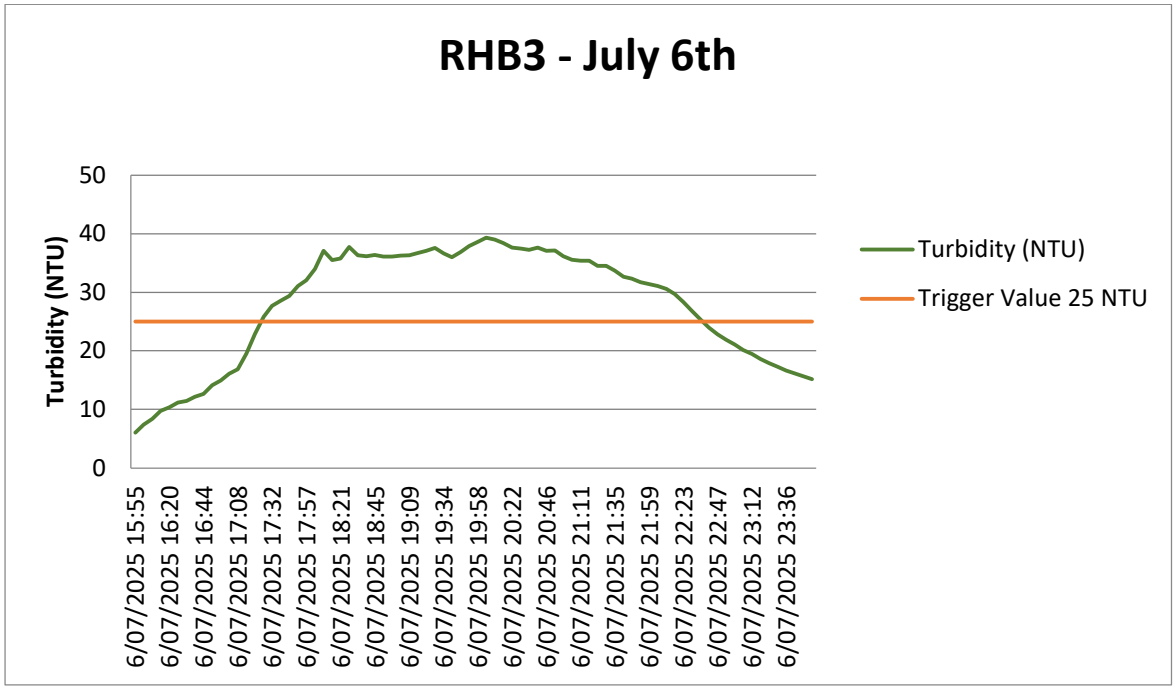


Figure 4 WDL-2507-003

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.

"On 5 August 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. On 7 August 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 August 2025, a visual inspection of the Walrus stream crossing was conducted. 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 June 2025. Further analysis of previous rain events showed increased turbidity after this forest track was re-opened. Of note, on 20 June 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."

Based on the inspection and field notes provided, this event is deemed to be a 'True' event however based on the identified erosion of Irrawaddy stream crossing it is considered a non-mining related event.

5.3. True Event(s)

Two potential 'True' turbidity events were identified during the reporting period. Both events occurred at RHB3, the first occurred on the 3rd of July and the second on the 6th of July. Inspection of the site identified the events are non-mining related and are the result of erosion of Irrawaddy stream crossing.

5.4. False Event(s)

One ‘False’ event was 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-2507-001	RHB2	This event is marked by a rapid increase in turbidity with multiple peaks. This is indicative of a false event.	The exceedingly high turbidity values during this time period and the sudden start and stop of the high turbidity readings indicate that this is turbidity event is likely due to a fault with the monitoring equipment. No rainfall was recorded in the 24 hours leading up to the event. 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
HV07	01/07/2025-21/07/2025	Stream started out dry in July 2025, however a puddle formed at the monitor location on 14/07/2025 and the stream began to flow 21/07/2025.
HV49T	01/07/2025-05/07/2025	Stream dry. Equipment faulty between 24/05/2025 and 05/07/2025. No data available during this period.

5.6. Missing Data

Periods of missing data are detailed in Table 3.

Table 5 Missing Data Summary

Missing Data ID	Unit	Start	End	Comments
MD-2507-01	HV49T	05/07/2025	31/07/2025	System in Fault

6. Appendices

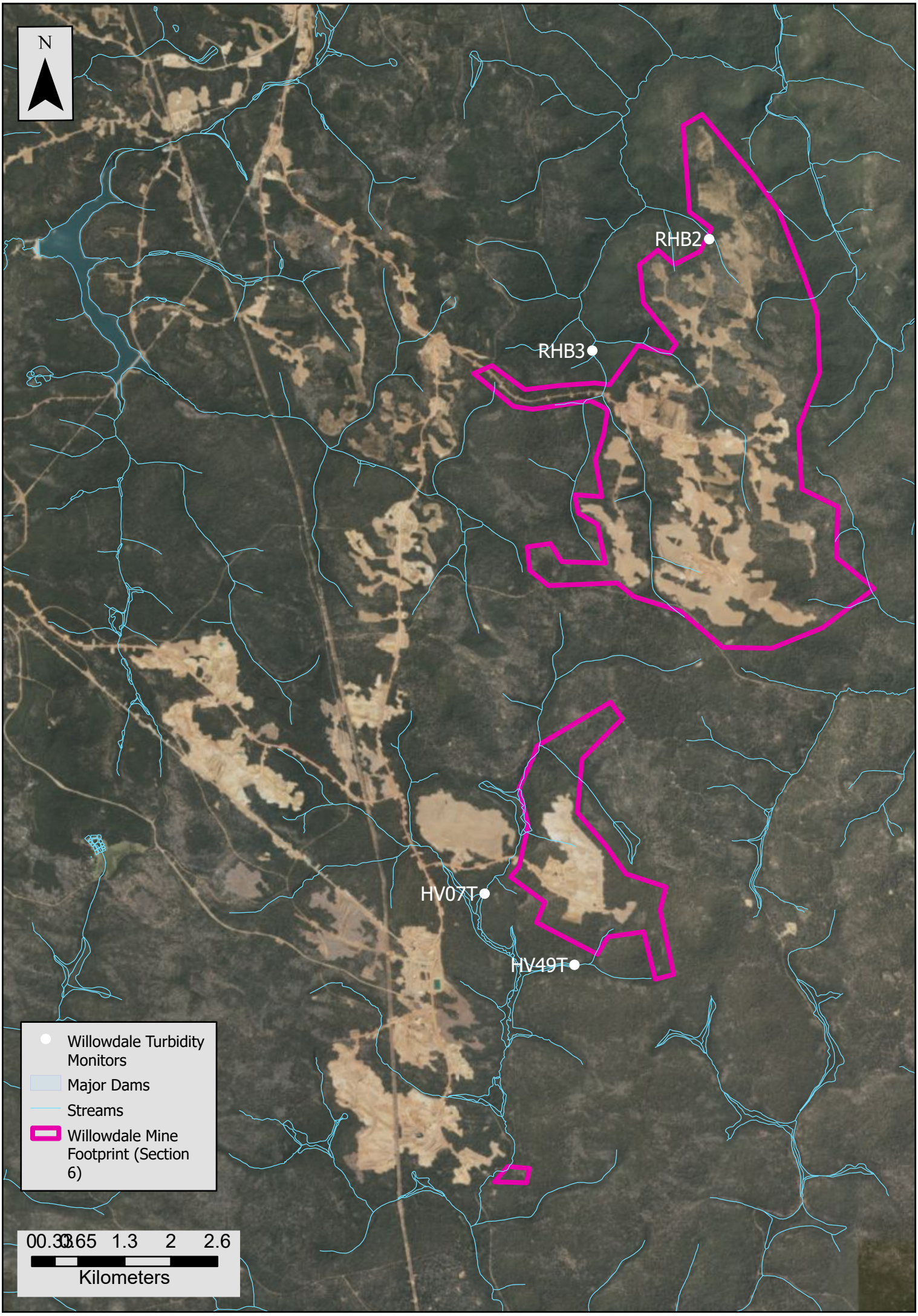
Appendix A. Willowdale Raw WQMS Data

Date	Willowdale WQMS Data - July 2025 - Events with turbidity > 25 NTU for an hour or more			
	HV07T	HV49T	RHB2	RHB3
1/07/2025				
2/07/2025				
3/07/2025				1
4/07/2025				
5/07/2025				
6/07/2025				1
7/07/2025				
8/07/2025				
9/07/2025				
10/07/2025				
11/07/2025				
12/07/2025				
13/07/2025				
14/07/2025				
15/07/2025				
16/07/2025				
17/07/2025				
18/07/2025				
19/07/2025				
20/07/2025				
21/07/2025				
22/07/2025				
23/07/2025				
24/07/2025				
25/07/2025				
26/07/2025			1	
27/07/2025				
28/07/2025				
29/07/2025				
30/07/2025				
31/07/2025				

Date	Willowdale WQMS Data - July 2025 – Daily Average Turbidity (NTU)			
	HV07T	HV49T	RHB2	RHB3
1/07/2025			0.23	1.33
2/07/2025			0.64	1.71
3/07/2025			0.45	8.93
4/07/2025			2.27	1.86
5/07/2025		4.25	0.24	1.61
6/07/2025			1.38	10.63
7/07/2025			0.91	7.64
8/07/2025			0.64	2.74
9/07/2025			0.95	2.06
10/07/2025			0.73	1.79
11/07/2025			0.80	1.68
12/07/2025			0.75	3.77
13/07/2025			0.82	1.85
14/07/2025			3.23	2.66
15/07/2025			0.74	1.79
16/07/2025			0.70	2.07
17/07/2025			2.39	1.64
18/07/2025			4.69	2.27
19/07/2025			1.60	1.66
20/07/2025			5.80	4.71
21/07/2025	1.23		4.70	2.71
22/07/2025	0.99		0.73	1.89
23/07/2025	0.94		4.31	4.23
24/07/2025	0.93		1.78	3.05
25/07/2025	0.95		0.98	1.88
26/07/2025	1.50		259.74	1.75
27/07/2025	2.52		0.86	3.27
28/07/2025	1.34		0.38	2.32
29/07/2025	0.97		0.33	1.78
30/07/2025	1.05		1.48	1.75
31/07/2025	1.00		0.39	1.70

* - 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

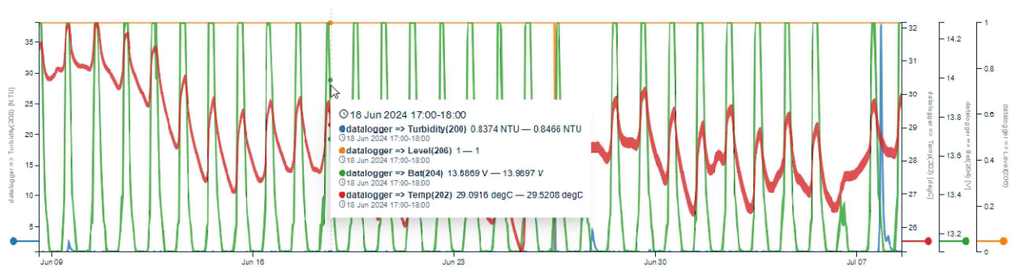
DATA INLET

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

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