Huntly Bauxite Mine – WQMS Data Review

November 2025

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1. Executive Summary

This report, prepared by RARE Environmental Pty Ltd and SciDev Pty Ltd for Alcoa, provides an analysis of turbidity data collected from Water Quality Monitoring Systems (WQMS) deployed at the Huntly bauxite mining operations during November 2025. The primary objective of this analysis was to evaluate the quality of the data, identify potential "true" turbidity exceedance events, and support Alcoa's compliance reporting obligations under Schedule 1, Division 2, Clause 6 of the **Environmental Protection (Darling Range Bauxite Mining Proposal) Exemption Order 2023**.

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

Key findings include:

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

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

2. Scope

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

3. Introduction

3.1. Background

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

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

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

3.2. Monitoring requirements

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

> *a) runoff from a disturbance area enters the surrounding environment, resulting in surface water turbidity of at least 25 NTU for a duration of at least one hour; or*
>
> *b) a discharge from containment infrastructure includes, or November 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 November 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 November 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.

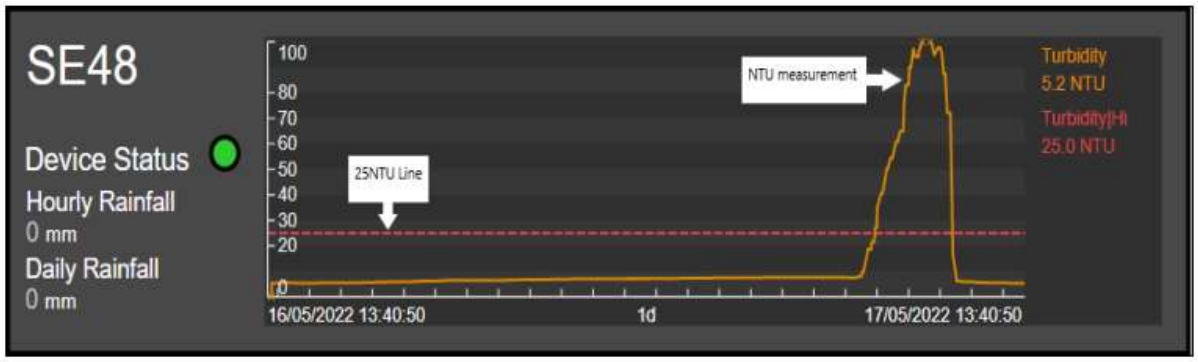


Figure 2 Typical 'false' exceedance event showing both a sharp incline and decline

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	5
False	94

Table 2 Events Details

Event ID	WQMS ID	Event Category	Start	End	Duration	Average Turbidity (NTU)	Peak Turbidity (NTU)
HUN-2511-001	DB02T	'False'	12/11/2025 2:36	12/11/2025 4:00	1 hr 30 min	31.80	39.27
HUN-2511-002	DB02T	'False'	25/11/2025 0:18	25/11/2025 3:30	3 hr 18 min	44.00	60.46
HUN-2511-003	FPWR1	'False'	9/11/2025 17:30	9/11/2025 20:54	3 hr 30 min	98.90	162.29
HUN-2511-004	FPWR1	Additional Investigation Required	10/11/2025 14:36	10/11/2025 16:36	2 hr 6 min	181.49	412.61
HUN-2511-005	FPWR1	Additional Investigation Required	11/11/2025 0:12	11/11/2025 1:48	1 hr 42 min	156.89	393.56
HUN-2511-006	FPWR1	Additional Investigation Required	11/11/2025 12:18	11/11/2025 13:30	1 hr 18 min	186.64	459.32
HUN-2511-007	FPWR1	'False'	11/11/2025 21:48	12/11/2025 1:48	4 hr 6 min	27.15	28.80
HUN-2511-008	FPWR1	Additional Investigation Required	12/11/2025 11:42	12/11/2025 12:42	1 hr 6 min	194.13	482.72
HUN-2511-009	ND04T	'False'	10/11/2025 10:12	10/11/2025 16:30	6 hr 24 min	37.43	82.07
HUN-2511-010	ND04T	'False'	10/11/2025 17:42	11/11/2025 5:30	11 hr 54 min	53.09	66.47
HUN-2511-011	ND04T	'False'	11/11/2025 6:54	11/11/2025 16:30	9 hr 42 min	51.48	85.03
HUN-2511-012	ND04T	'False'	12/11/2025 22:06	12/11/2025 23:00	1 hr 0 min	33.09	38.48

Event ID	WQMS ID	Event Category	Start	End	Duration	Average Turbidity (NTU)	Peak Turbidity (NTU)
HUN-2511-013	ND04T	'False'	14/11/2025 8:18	14/11/2025 10:00	1 hr 48 min	32.15	41.44
HUN-2511-014	ND04T	'False'	23/11/2025 16:54	23/11/2025 20:00	3 hr 12 min	35.81	59.79
HUN-2511-015	ND04T	'False'	23/11/2025 20:12	23/11/2025 21:48	1 hr 42 min	48.37	59.32
HUN-2511-016	ND04T	'False'	23/11/2025 23:06	24/11/2025 0:00	1 hr 0 min	32.02	34.21
HUN-2511-017	ND04T	'False'	24/11/2025 3:30	24/11/2025 6:30	3 hr 6 min	48.06	72.13
HUN-2511-018	ND04T	'False'	29/11/2025 22:30	30/11/2025 8:42	10 hr 18 min	76.00	123.55
HUN-2511-019	ND12T	'False'	10/11/2025 13:54	11/11/2025 03:18	13 hr 30 min	95.57	190.21
HUN-2511-020	ND12T	'False'	11/11/2025 10:48	12/11/2025 05:42	19 hr 0 min	135.93	290.32
HUN-2511-021	ND12T	'False'	12/11/2025 08:18	12/11/2025 10:24	2 hr 12 min	79.95	119.37
HUN-2511-022	ND12T	'False'	30/11/2025 01:30	30/11/2025 23:54	22 hr 30 min	29.87	40.49
HUN-2511-023	PD01T	'False'	07/11/2025 05:12	07/11/2025 06:18	1 hr 12 min	77.56	303
HUN-2511-024	PD01T	'False'	09/11/2025 18:48	09/11/2025 19:42	1 hr 0 min	42.21	48.64
HUN-2511-025	PD01T	'False'	12/11/2025 04:24	12/11/2025 05:18	1 hr 0 min	29.76	43.84
HUN-2511-026	PD01T	'False'	12/11/2025 13:00	12/11/2025 14:00	1 hr 6 min	168.43	421.3
HUN-2511-027	PD01T	'False'	14/11/2025 02:12	14/11/2025 03:24	1 hr 18 min	38.7	54.99
HUN-2511-028	PD01T	'False'	16/11/2025 15:30	16/11/2025 16:24	1 hr 0 min	230.14	426.65
HUN-2511-029	PD01T	'False'	19/11/2025 09:12	19/11/2025 10:36	1 hr 30 min	92.42	135.61
HUN-2511-030	SE03INV1	'False'	06/11/2025 14:06	11/11/2025 14:24	5 d 0 hr 24 min	74.2	324.33
HUN-2511-031	SE03INV1	'False'	11/11/2025 15:36	12/11/2025 14:12	22 hr 42 min	147.32	245.82
HUN-2511-032	SE03INV1	'False'	12/11/2025 15:36	13/11/2025 14:12	22 hr 42 min	211.73	344.71
HUN-2511-033	SE03INV1	'False'	13/11/2025 15:36	14/11/2025 14:42	23 hr 12 min	291.14	451.64

Event ID	WQMS ID	Event Category	Start	End	Duration	Average Turbidity (NTU)	Peak Turbidity (NTU)
HUN-2511-034	SE03INV1	'False'	14/11/2025 15:36	15/11/2025 14:06	22 hr 36 min	271.96	366.03
HUN-2511-035	SE03INV1	'False'	15/11/2025 16:12	23/11/2025 05:48	7 d 13 hr 42 min	127.97	500.17
HUN-2511-036	SE03INV1	'False'	23/11/2025 15:00	23/11/2025 21:24	6 hr 30 min	34.11	40.76
HUN-2511-037	SE03INV1	'False'	25/11/2025 12:00	30/11/2025 23:54	5 d 12 hr 0 min	75.55	158.2
HUN-2511-038	SE03INV3	'False'	12/11/2025 07:00	12/11/2025 08:00	1 hr 6 min	41.43	135.74
HUN-2511-039	SE03INV3	'False'	23/11/2025 11:54	23/11/2025 16:06	4 hr 18 min	96.29	423.98
HUN-2511-040	SE03INV3	'False'	23/11/2025 18:06	23/11/2025 19:00	1 hr 0 min	29.19	30.51
HUN-2511-041	SE03INV3	'False'	24/11/2025 01:00	24/11/2025 03:00	2 hr 6 min	257.48	729.51
HUN-2511-042	SE06T	'False'	02/11/2025 03:18	02/11/2025 10:18	7 hr 6 min	29.24	31.48
HUN-2511-043	SE06T	'False'	08/11/2025 13:54	08/11/2025 19:00	5 hr 12 min	28.26	29.68
HUN-2511-044	SE06T	'False'	09/11/2025 05:18	09/11/2025 12:12	7 hr 0 min	26.56	29.15
HUN-2511-045	SE06T	'False'	09/11/2025 13:36	10/11/2025 05:30	16 hr 0 min	50.28	100.16
HUN-2511-046	SE06T	'False'	18/11/2025 20:18	21/11/2025 12:48	2 d 16 hr 36 min	137.59	274.49
HUN-2511-047	SE09T	'False'	08/11/2025 00:00	08/11/2025 01:24	1 hr 30 min	27.47	30.14
HUN-2511-048	SE09T	Additional Investigation Required	08/11/2025 15:18	08/11/2025 20:18	5 hr 6 min	114.18	194.01
HUN-2511-049	SE09T	'False'	09/11/2025 04:30	09/11/2025 15:24	11 hr 0 min	122.4	216.43
HUN-2511-050	SE09T	'False'	12/11/2025 22:54	13/11/2025 00:30	1 hr 42 min	27.22	30.18
HUN-2511-051	SE09T	'False'	14/11/2025 04:00	14/11/2025 05:00	1 hr 6 min	367.48	1170.66
HUN-2511-052	SE09T	'False'	15/11/2025 20:18	15/11/2025 21:24	1 hr 12 min	57.95	156.08
HUN-2511-053	SE09T	'False'	16/11/2025 17:48	16/11/2025 19:06	1 hr 24 min	55.67	77.27

Event ID	WQMS ID	Event Category	Start	End	Duration	Average Turbidity (NTU)	Peak Turbidity (NTU)
HUN-2511-054	SE09T	'False'	16/11/2025 20:30	17/11/2025 03:00	6 hr 36 min	75.09	119.22
HUN-2511-055	SE09T	'False'	17/11/2025 03:36	17/11/2025 06:00	2 hr 30 min	91.02	194.31
HUN-2511-056	SE09T	'False'	17/11/2025 15:42	17/11/2025 19:12	3 hr 36 min	141.06	294.22
HUN-2511-057	SE09T	'False'	18/11/2025 04:36	18/11/2025 08:00	3 hr 30 min	385.4	1195.77
HUN-2511-058	SE09T	'False'	21/11/2025 01:59	21/11/2025 05:38	3 hr 44 min	169.47	336.34
HUN-2511-059	SE09T	'False'	21/11/2025 07:54	21/11/2025 09:28	1 hr 40 min	86.94	149.68
HUN-2511-060	SE12T	'False'	12/11/2025 12:06	17/11/2025 19:48	5 d 7 hr 48 min	72.22	336.64
HUN-2511-061	SE12T	'False'	23/11/2025 03:24	24/11/2025 21:06	1 d 17 hr 48 min	115.17	709.66
HUN-2511-062	SE12T	'False'	24/11/2025 23:06	25/11/2025 13:06	14 hr 6 min	40.86	55.01
HUN-2511-063	SE12T	'False'	25/11/2025 16:36	27/11/2025 00:54	1 d 8 hr 24 min	44.58	101.09
HUN-2511-064	SE12T	'False'	27/11/2025 06:00	29/11/2025 03:48	1 d 21 hr 54 min	40.87	78.43
HUN-2511-065	SE12INV	'False'	07/11/2025 13:12	08/11/2025 00:54	11 hr 48 min	66.02	146.24
HUN-2511-066	SE12INV	'False'	08/11/2025 09:18	11/11/2025 23:54	3 d 14 hr 42 min	142.42	207.64
HUN-2511-067	SE22T	'False'	06/11/2025 14:42	06/11/2025 21:00	6 hr 24 min	41.02	64.35
HUN-2511-068	SE22T	'False'	06/11/2025 23:24	07/11/2025 01:06	1 hr 48 min	108.11	154.34
HUN-2511-069	SE22T	'False'	07/11/2025 03:30	07/11/2025 04:24	1 hr 0 min	44.87	60.31
HUN-2511-070	SE22T	'False'	07/11/2025 14:48	07/11/2025 20:48	6 hr 6 min	57.82	89
HUN-2511-071	SE22T	'False'	08/11/2025 11:42	09/11/2025 01:36	14 hr 0 min	163.26	260.25
HUN-2511-072	SE22T	'False'	09/11/2025 09:54	09/11/2025 14:30	4 hr 42 min	155.75	283.12
HUN-2511-073	SE22T	'False'	09/11/2025 19:42	10/11/2025 12:00	16 hr 24 min	191.19	283.06
HUN-2511-074	SE22T	'False'	11/11/2025 04:54	11/11/2025 10:12	5 hr 24 min	84.58	302.88

Event ID	WQMS ID	Event Category	Start	End	Duration	Average Turbidity (NTU)	Peak Turbidity (NTU)
HUN-2511-075	SE22T	'False'	11/11/2025 11:42	11/11/2025 17:00	5 hr 24 min	167.41	392.2
HUN-2511-076	SE22T	'False'	12/11/2025 00:42	12/11/2025 02:30	1 hr 54 min	736.92	870.24
HUN-2511-077	SE22T	'False'	12/11/2025 08:12	12/11/2025 09:30	1 hr 24 min	68.84	110.21
HUN-2511-078	SE22T	'False'	12/11/2025 10:24	12/11/2025 11:42	1 hr 24 min	62.74	105.5
HUN-2511-079	SE22T	'False'	12/11/2025 20:18	13/11/2025 00:06	3 hr 54 min	166.48	339.07
HUN-2511-080	SE22T	'False'	13/11/2025 03:24	13/11/2025 12:42	9 hr 24 min	554.34	1473.46
HUN-2511-081	SE22T	'False'	13/11/2025 12:54	14/11/2025 12:18	23 hr 30 min	360.63	1042.42
HUN-2511-082	SE22T	'False'	14/11/2025 12:42	15/11/2025 12:48	1 d 0 hr 12 min	495.24	986
HUN-2511-083	SE22T	'False'	15/11/2025 13:18	15/11/2025 21:48	8 hr 36 min	363.77	859.6
HUN-2511-084	SE22T	'False'	19/11/2025 13:30	19/11/2025 14:54	1 hr 30 min	274.92	433.6
HUN-2511-085	SE22T	'False'	27/11/2025 21:54	28/11/2025 03:54	6 hr 6 min	117.01	183.01
HUN-2511-086	SE22T	'False'	28/11/2025 15:12	28/11/2025 16:30	1 hr 24 min	80.61	137.29
HUN-2511-087	SE24T	'False'	04/11/2025 20:00	04/11/2025 23:30	3 hr 36 min	53.08	75.78
HUN-2511-088	SE24T	'False'	11/11/2025 11:12	11/11/2025 13:18	2 hr 12 min	64.26	378.36
HUN-2511-089	SE25T	'False'	06/11/2025 05:42	10/11/2025 15:30	4 d 9 hr 54 min	73.71	863.34
HUN-2511-090	SE34T	'False'	21/11/2025 05:18	22/11/2025 20:30	1 d 15 hr 18 min	38.33	58.46
HUN-2511-091	SE52T	'False'	13/11/2025 06:06	13/11/2025 07:30	1 hr 30 min	46.75	55.13
HUN-2511-092	SE52T	'False'	13/11/2025 10:06	13/11/2025 13:30	3 hr 30 min	52.13	58.74
HUN-2511-093	SE62T	'False'	03/11/2025 12:18	04/11/2025 08:30	20 hr 18 min	131.95	412.62
HUN-2511-094	SE62T	'False'	12/11/2025 23:36	13/11/2025 00:30	1 hr 0 min	42.44	50.84
HUN-2511-095	SE62T	'False'	13/11/2025 01:12	13/11/2025 02:06	1 hr 0 min	68.35	75.9

Event ID	WQMS ID	Event Category	Start	End	Duration	Average Turbidity (NTU)	Peak Turbidity (NTU)
HUN-2511-096	SE62T	'False'	13/11/2025 05:18	13/11/2025 06:12	1 hr 0 min	120.83	127.15
HUN-2511-097	SE62T	'False'	13/11/2025 10:06	13/11/2025 11:30	1 hr 30 min	136.42	139.22
HUN-2511-098	SE62T	'False'	15/11/2025 15:36	15/11/2025 17:24	1 hr 54 min	27.64	29.69
HUN-2511-099	SE62T	'False'	15/11/2025 19:18	15/11/2025 21:42	2 hr 30 min	25.72	26.48

5.2. Additional Investigation

Five events were flagged for additional investigation.

5.2.1. HUN-2511-004 Additional Investigation

The event, occurring between 14:36 and 16:36 on the 10th of November at FPWR1 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'.

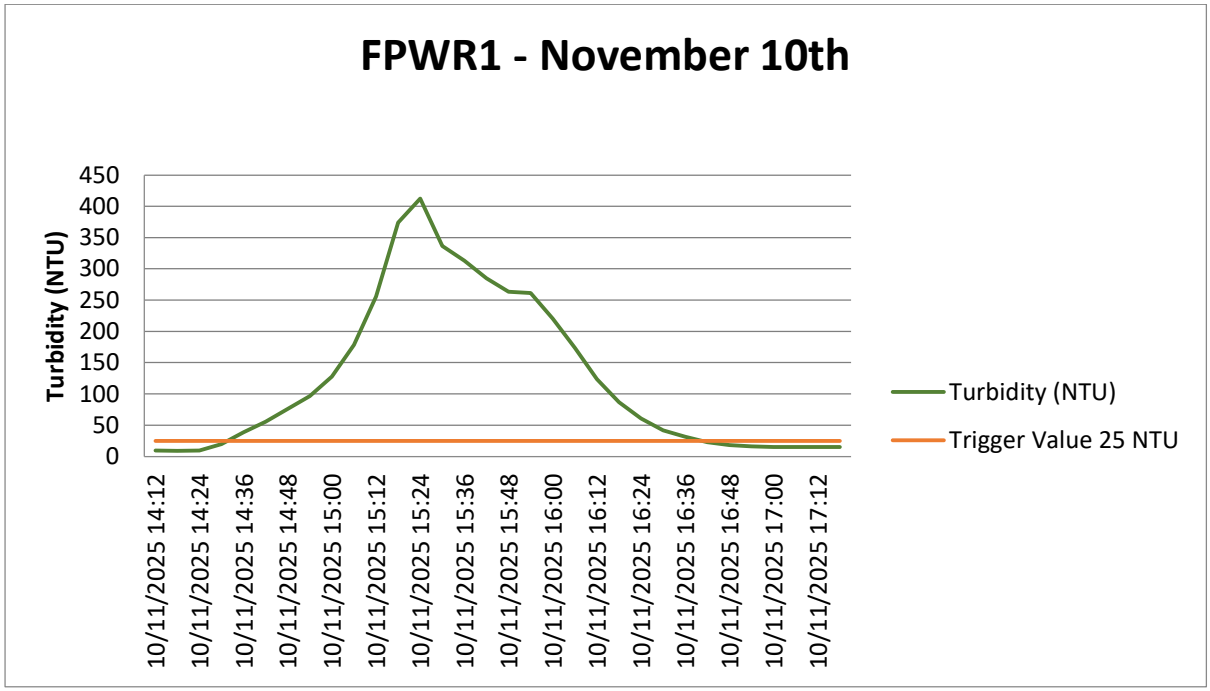


Figure 3 - HUN-2511-004

Further investigation into the event and location has determined the following

- The event occurred in the absence of rainfall in the preceding 24 hours.
- The monitoring site was inspected on 10/11/2025 following the exceedance; the stream was ponded and heavily vegetated, with the probe sitting on the stream bed.

Field notes provided by Alcoa are included below.

"The site was inspected on 9/11/2025. The sensor was partially out of water and the stream had ponded, with no connecting flow. The level float sensor fluctuated between 1 (flow) and 0 (dry) from 10/11/2025 to 12/11/2025, before showing the stream had fully dried up on 12/11/2025. This was verified in-field on 16/11/2025."

The FPWR1 turbidity exceedance on 10/11/2025 shows a sharp increase to elevated turbidity followed by a return toward baseline without any supporting rainfall. The follow-up inspection confirmed ponded conditions with the probe positioned on the stream bed .The low turbidity recorded at the inspection and the absence of rainfall support an equipment/setting-related event rather than a catchment-driven discharge. On this basis, the FPWR1 event is interpreted as a 'False' event, no additional investigation is required.

5.2.2. HUN-2511-005 Additional Investigation

The event, occurring between 00:12 and 01:48 on the 11th of November at FPWR1 does not exhibit the typical sharp, incline in turbidity levels however the initial spike and gradual return to baseline levels in pattern resembling a normal (Gaussian) distribution as shown Figure 4 below indicates a potential drainage event.

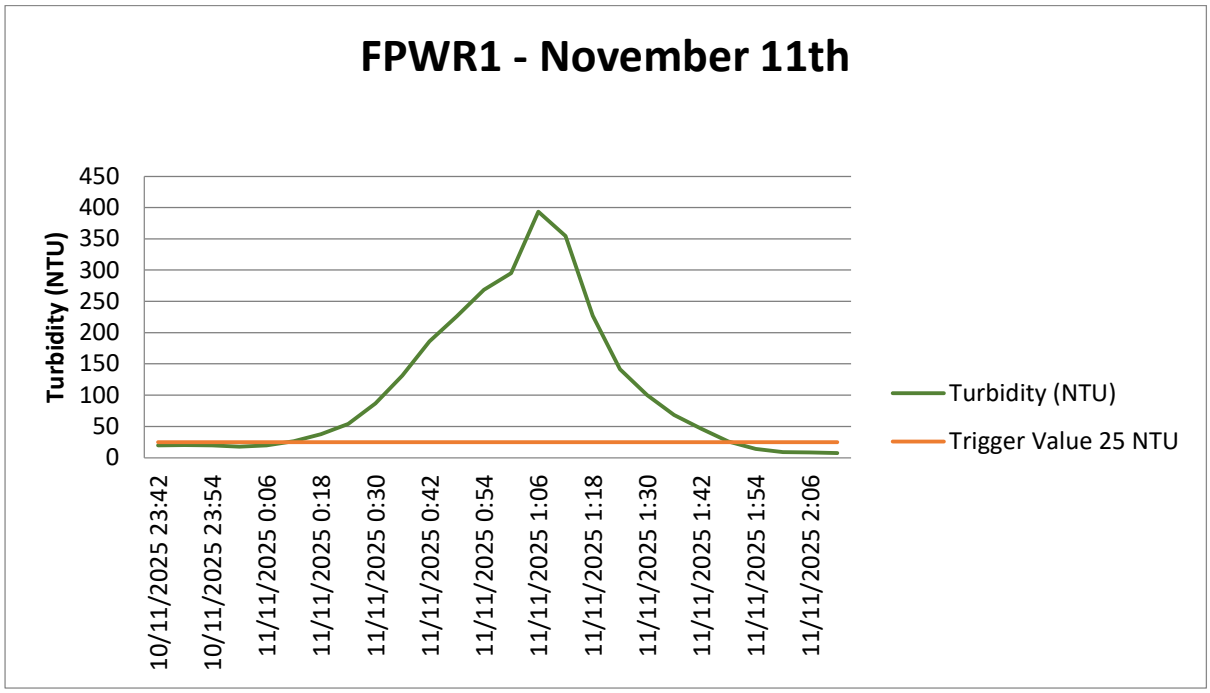


Figure 4 - HUN-2511-005

Further investigation into the event and location has determined the following

- The event occurred in the absence of rainfall in the preceding 24 hours.
- The monitoring site was inspected on 10/11/2025; the stream was ponded and heavily vegetated, with the probe sitting on the stream bed.

Field notes provided by Alcoa are included below.

"The site was inspected on 9/11/2025. The sensor was partially out of water and the stream had ponded, with no connecting flow. The level float sensor fluctuated between 1 (flow) and 0 (dry) from 10/11/2025 to 12/11/2025, before showing the stream had fully dried up on 12/11/2025. This was verified in-field on 16/11/2025."

The FPWR1 turbidity exceedance on 10/11/2025 shows a sharp increase to elevated turbidity followed by a return toward baseline without any supporting rainfall. The inspection confirmed ponded conditions with the probe positioned on the stream bed .The low turbidity recorded at the inspection and the absence of rainfall support an equipment/setting-related event rather than a catchment-driven discharge. On this basis, the FPWR1 event is interpreted as a 'False' event, no additional investigation is required.

5.2.3. HUN-2511-006 Additional Investigation

The event, occurring between 12:18 and 13:30 on the 11th of November at FPWR1 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'.

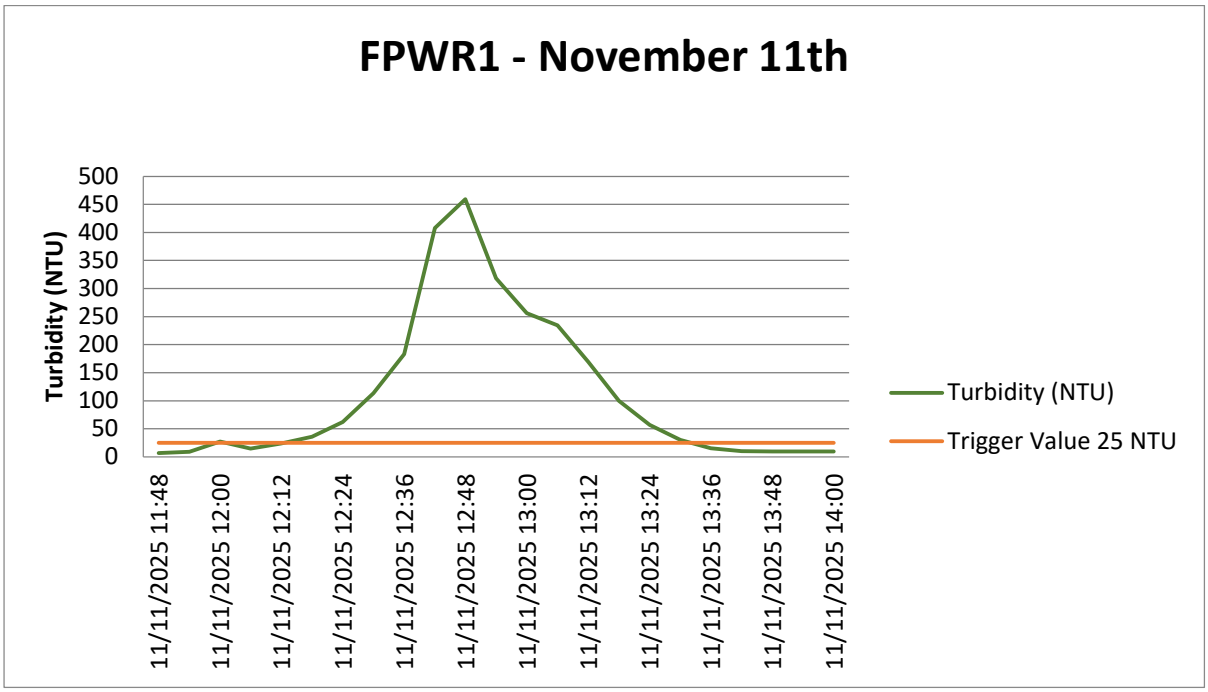


Figure 5 - HUN-2511-006

Further investigation into the event and location has determined the following

- The event occurred in the absence of rainfall in the preceding 24 hours.
- The monitoring site was inspected on 10/11/2025; the stream was ponded and heavily vegetated, with the probe sitting on the stream bed.

Field notes provided by Alcoa are included below.

"The site was inspected on 9/11/2025. The sensor was partially out of water and the stream had ponded, with no connecting flow. The level float sensor fluctuated between 1 (flow) and 0 (dry) from 10/11/2025 to 12/11/2025, before showing the stream had fully dried up on 12/11/2025. This was verified in-field on 16/11/2025."

The FPWR1 turbidity exceedance on 11/11/2025 shows a sharp increase to elevated turbidity followed by a return toward baseline without any supporting rainfall. The inspection on the 10/11/2025 confirmed ponded conditions with the probe positioned on the stream bed .The low turbidity recorded at the inspection and the absence of rainfall support an equipment/setting-related event rather than a catchment-driven discharge. On this basis, the FPWR1 event is interpreted as a 'False' event, no additional investigation is required.

5.2.4. HUN-2511-008 Additional Investigation

The event, occurring between 11:42 and 12:42 on the 12th of November at FPWR1 does not exhibit the typical sharp, incline in turbidity levels however the initial spike and gradual return to baseline levels in pattern resembling a normal (Gaussian) distribution as shown Figure 6 below indicates a potential drainage event.

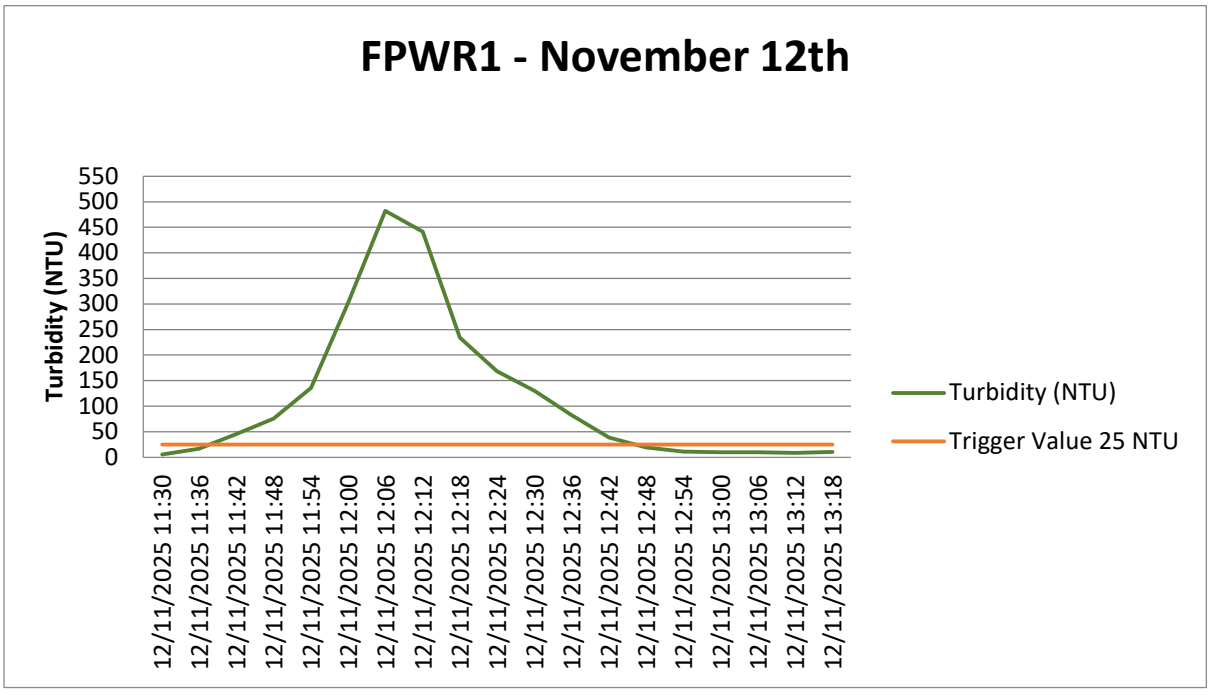


Figure 6 - HUN-2511-008

Further investigation into the event and location has determined the following

- The event occurred in the absence of rainfall in the preceding 24 hours.

- The monitoring site was inspected on 10/11/2025; the stream was ponded and heavily vegetated, with the probe sitting on the stream bed.

Field notes provided by Alcoa are included below.

"The site was inspected on 9/11/2025. The sensor was partially out of water and the stream had ponded, with no connecting flow. The level float sensor fluctuated between 1 (flow) and 0 (dry) from 10/11/2025 to 12/11/2025, before showing the stream had fully dried up on 12/11/2025. This was verified in-field on 16/11/2025."

The FPWR1 turbidity exceedance on 12/11/2025 shows a sharp increase to elevated turbidity followed by a return toward baseline without any supporting rainfall. The inspection on the 10/11/2025 confirmed ponded conditions with the probe positioned on the stream bed .The low turbidity recorded at the inspection and the absence of rainfall support an equipment/setting-related event rather than a catchment-driven discharge. On this basis, the FPWR1 event is interpreted as a 'False' event, no additional investigation is required.

5.2.5. HUN-2511-048 Additional Investigation

The event, occurring between 15:18 and 20:18 on the 8th of November at SE09T does not exhibit the typical sharp, incline in turbidity levels however the initial spike and gradual return to baseline levels in pattern resembling a normal (Gaussian) distribution as shown Figure 7 below indicates a potential drainage event.

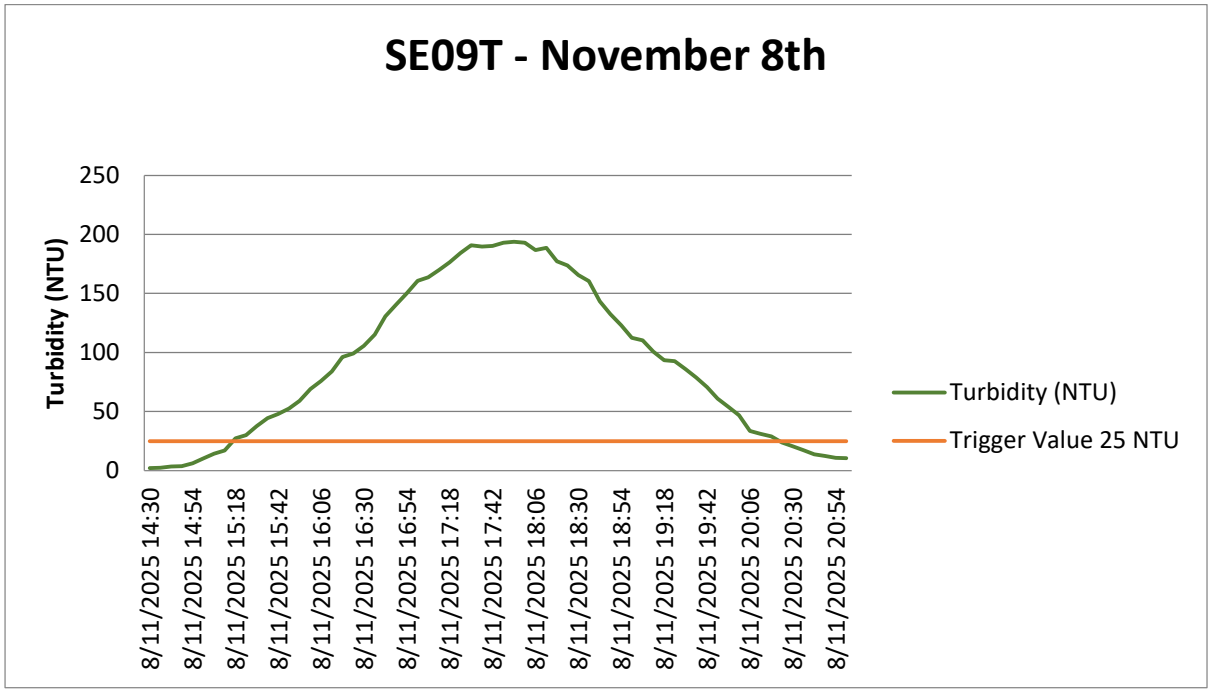


Figure 7 - HUN-2511-048

Further investigation into the event and location has determined the following

- The event occurred in the absence of rainfall in the preceding 24 hours.
- The monitoring site was inspected on 12/11/2025 and the stream level had dropped, resulting in the probe lens being out of the water.

Field notes provided by Alcoa are included below.

"Site inspected on 12/11/2025. Stream level had dropped, and a log had fallen on the end of the senor, causing the lens to be out of water."

The SE09T turbidity exceedance on 08/11/2025 shows a gradual climb to a peak followed by a gradual decline. No rainfall was recorded in the preceding 24 hours and the subsequent inspection confirmed the probe lens was out of the water due to low stream level and a log contacting the sensor. Partial exposure and obstruction can produce drifting or elevated readings that mimic a true event shape. On this basis, the SE09T event is interpreted as a 'False' event, no additional investigation is required.

5.3. True Event(s)

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

5.4. False Event(s)

Ninety-five '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-2511-001	DB02T	This event displays a short live spike with a step change return to baseline. This patter is consistent with a false event and is likely caused by baseline-effect.	Site Inspected on 13/11/2025 due to exceedance notification. The stream is clear and flowing, however the stream is heavily vegetated. Data analysis shows the turbidity trend rapidly spike and drop, indicating the sensor was likely impacted by the vegetation. No rainfall was received in the proceeding 24hs.
HUN-2511-002	DB02T	This event presents multiple irregular pulses above the trigger value and is likely influences by localised interference.	Site visited on 27/11/2025 and observed the stream was clear and flowing, however the stream was heavily vegetated. Data analysis of the event on the 25/11/2025 shows the turbidity trend rapidly spike and drop, indicating the sensor was likely impacted by the vegetation. 0.2 mm rainfall was received in the proceeding 24hs.
HUN-2511-003	FPWR1	This event presents as a single clean pulse with a rapid increase and decrease in turbidity. On this basis it is treated as false and likely influenced by localised interference.	The site was inspected on 9/11/2025. The sensor was partially out of water and the stream had ponded, with no connecting flow. The level float sensor fluctuated between 1 (flow) and 0 (dry) from 10/11/2025 to 12/11/2025, before showing the stream had fully dried up on 12/11/2025. This was verified in-field on 16/11/2025
HUN-2511-007	FPWR1	This event presents as a single clean pulse with a rapid increase and decrease in turbidity. On this basis it is treated as false and likely influenced by localised interference.	The site was inspected on 9/11/2025. The sensor was partially out of water and the stream had ponded, with no connecting flow. The level float sensor fluctuated between 1 (flow) and 0 (dry) from 10/11/2025 to 12/11/2025, before showing the stream had fully dried up on 12/11/2025. This was verified in-field on 16/11/2025
HUN-2511-009	ND04T	This event does not present as a single clean pulse and includes multiple	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and

Event ID	Monitor ID	Rationale	Field Notes
		irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	the sensor was above the water. Data trend spikes support false event due to sensor exposure from water depth dropping.
HUN-2511-010	ND04T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and the sensor was above the water. Data trend spikes support false event due to sensor exposure from water depth dropping.
HUN-2511-011	ND04T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and the sensor was above the water. Data trend spikes support false event due to sensor exposure from water depth dropping.
HUN-2511-012	ND04T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and the sensor was above the water. Data trend spikes support false event due to sensor exposure from water depth dropping.
HUN-2511-013	ND04T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and the sensor was above the water. Data trend spikes support false event due to sensor exposure from water depth dropping.
HUN-2511-014	ND04T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and the sensor was above the water. Data trend spikes support

Event ID	Monitor ID	Rationale	Field Notes
			false event due to sensor exposure from water depth dropping.
HUN-2511-015	ND04T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and the sensor was above the water. Data trend spikes support false event due to sensor exposure from water depth dropping.
HUN-2511-016	ND04T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and the sensor was above the water. Data trend spikes support false event due to sensor exposure from water depth dropping.
HUN-2511-017	ND04T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and the sensor was above the water. Data trend spikes support false event due to sensor exposure from water depth dropping.
HUN-2511-018	ND04T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	NDO4T site was visited on 01/12/2025 and stream has been ponded since 25/10/2025. The pond depth had dropped and the sensor was above the water. Data trend spikes support false event due to sensor exposure from water depth dropping.
HUN-2511-019	ND12T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 12/11/2025 due to exceedance notification. Stream is flowing and clear. Turbidity on arrival read 121.86 NTU and post clean significantly dropped to 1.88 NTU. Upon arrival the sensor was sitting above the water level and x2 spiders found in the sensor casing. No rainfall was received in the 24 hours proceeding the event.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-020	ND12T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 12/11/2025 due to exceedance notification. Stream is flowing and clear. Turbidity on arrival read 121.86 NTU and post clean significantly dropped to 1.88 NTU. Upon arrival the sensor was sitting above the water level and x2 spiders found in the sensor casing. No rainfall was received in the 24 hours proceeding the event.
HUN-2511-021	ND12T	This event shows a smooth, progressive increase in turbidity above the trigger value, which is more consistent with sensor drift. The event ends with an abrupt drop to near-zero which suggests a sensor condition change (e.g., probe exposure, disturbance, or cleaning). On this basis it is treated as false.	Site inspected on 12/11/2025. Stream level drop, sensor out of water. Turbidity reading on arrival 121.86 NTU which dropped to 1.88 NTU after sensor clean & reposition.
HUN-2511-022	ND12T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	ND12T site inspected on 02/12/2025, stream is flowing and clear. Turbidity NTU on arrival was 75.858 and post clean 1.7492 NTU and data trend is a steady incline, both indicating sensor was impacted by algae or organic debris.
HUN-2511-023	PD01T	This event presents as a single clean pulse with a rapid increase and decrease in turbidity. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 13/11/25 due to exceedance notification. Stream was clear and flowing, however was heavily impacted by vegetation (reeds on sensor). No rainfall was received in the 24 hrs proceeding the even.
HUN-2511-024	PD01T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 13/11/25 due to exceedance notification. Stream was clear and flowing, however was heavily impacted by vegetation (reeds on sensor). No rainfall was received in the 24 hrs proceeding the even.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-025	PD01T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 13/11/25 due to exceedance notification. Stream was clear and flowing, however was heavily impacted by vegetation (reeds on sensor). No rainfall was received in the 24 hrs proceeding the even.
HUN-2511-026	PD01T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 13/11/25 due to exceedance notification. Stream was clear and flowing, however was heavily impacted by vegetation (reeds on sensor). No rainfall was received in the 24 hrs proceeding the even.
HUN-2511-027	PD01T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025, stream level and flow are low, and the sensor is becoming impacted by organic debris and stream bank vegetation.
HUN-2511-028	PD01T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025, stream level and flow are low, and the sensor is becoming impacted by organic debris and stream bank vegetation.
HUN-2511-029	PD01T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025, stream level and flow are low, and the sensor is becoming impacted by organic debris and stream bank vegetation.
HUN-2511-030	SE03INV1	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	SE03INV1 site visited on 01/12/2025 and stream is very shallow and clear. Sensor is only partially submerged due to stream depth and was heavily impacted by red algae.

Event ID	Monitor ID	Rationale	Field Notes
			Turbidity reading on arrival 146.6 NTU, post clean significantly dropped to 0.57 NTU.
HUN-2511-031	SE03INV1	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	SE03INV1 site visited on 01/12/2025 and stream is very shallow and clear. Sensor is only partially submerged due to stream depth and was heavily impacted by red algae. Turbidity reading on arrival 146.6 NTU, post clean significantly dropped to 0.57 NTU.
HUN-2511-032	SE03INV1	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	SE03INV1 site visited on 01/12/2025 and stream is very shallow and clear. Sensor is only partially submerged due to stream depth and was heavily impacted by red algae. Turbidity reading on arrival 146.6 NTU, post clean significantly dropped to 0.57 NTU.
HUN-2511-033	SE03INV1	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	SE03INV1 site visited on 01/12/2025 and stream is very shallow and clear. Sensor is only partially submerged due to stream depth and was heavily impacted by red algae. Turbidity reading on arrival 146.6 NTU, post clean significantly dropped to 0.57 NTU.
HUN-2511-034	SE03INV1	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	SE03INV1 site visited on 01/12/2025 and stream is very shallow and clear. Sensor is only partially submerged due to stream depth and was heavily impacted by red algae. Turbidity reading on arrival 146.6 NTU, post clean significantly dropped to 0.57 NTU.
HUN-2511-035	SE03INV1	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	SE03INV1 site visited on 01/12/2025 and stream is very shallow and clear. Sensor is only partially submerged due to stream depth and was heavily impacted by red algae. Turbidity reading on arrival 146.6 NTU, post clean significantly dropped to 0.57 NTU.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-036	SE03INV1	This event is characterised by a gradual increase followed by a gradual decrease. This pattern is consistent with a false event and may reflect probe/baseline effects.	SE03INV1 site visited on 01/12/2025 and stream is very shallow and clear. Sensor is only partially submerged due to stream depth and was heavily impacted by red algae. Turbidity reading on arrival 146.6 NTU, post clean significantly dropped to 0.57 NTU.
HUN-2511-037	SE03INV1	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	SE03INV1 site visited on 01/12/2025 and stream is very shallow and clear. Sensor is only partially submerged due to stream depth and was heavily impacted by red algae. Turbidity reading on arrival 146.6 NTU, post clean significantly dropped to 0.57 NTU.
HUN-2511-038	SE03INV3	This event presents as a single clean pulse with a rapid increase and decrease in turbidity. On this basis it is treated as false and likely influenced by localised interference.	SE03INV3 was inspected on 01/12/2025 and stream is dry. The stream was observed as shallow during site visit on 07/11/2025. The incline and decline spikes in data trend indicate false events due to inadequate stream depth for stream analysis.
HUN-2511-039	SE03INV3	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	SE03INV3 site inspected on 01/12/2025 and stream is dry. The stream was observed as shallow during site visit on 07/11/2025. The incline and decline spikes in data trend indicate false events due to inadequate stream depth for sensor analysis.
HUN-2511-040	SE03INV3	This event is characterised by a long period of elevated turbidity with slow drift/step changes. This pattern is consistent with changing probe conditions (e.g., ponding/drying and intermittent exposure) and/or fouling/bed contact, rather than a	SE03INV3 site inspected on 01/12/2025 and stream is dry. The stream was observed as shallow during site visit on 07/11/2025. The incline and decline spikes in data trend indicate false events due to inadequate stream depth for sensor analysis.

Event ID	Monitor ID	Rationale	Field Notes
		runoff event. On this basis the event is treated as false.	
HUN-2511-041	SE03INV3	This event shows a sustained plateau with gradual drift over many hours, followed by an abrupt drop to near-zero reading. The extended plateau and "reset" behaviour is likely due to sensor exposure in shallow/ponded conditions and/or fouling. On this basis the event is treated as false.	SE03INV3 site inspected on 01/12/2025 and stream is dry. The stream was observed as shallow during site visit on 07/11/2025. The incline and decline spikes in data trend indicate false events due to inadequate stream depth for sensor analysis.
HUN-2511-042	SE06T	This event is characterised by a sustained, near-constant elevation with several minor peaks. This pattern is consistent with a false event and may reflect probe/baseline effects.	Data shows a very minor continuous gradual increase over the previous 7 days. The data exceeded over 25NTU on the 02/11 @3:18 am The site was inspected on the 02/11 @ 10:12am, and the stream was clear (>5NTU) and flowing. Heavy algae growth was noted to be covering the sensor, which had been developing over the previous week. The sensor was cleaned, which reduced the NTU to 0.6.
HUN-2511-043	SE06T	This event is characterised by a sustained, near-constant elevation with several minor peaks. This pattern is consistent with a false event and may reflect probe/baseline effects.	Site inspected on 12/11/2025. Stream depth is very low and heavily burdened by natural sediment/organic debris, accumulation is impacting the lens.
HUN-2511-044	SE06T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 12/11/2025. Stream depth is very low and heavily burdened by natural sediment/organic debris, accumulation is impacting the lens.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-045	SE06T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 12/11/2025. Stream depth is very low and heavily burdened by natural sediment/organic debris, accumulation is impacting the lens.
HUN-2511-046	SE06T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream depth is very low and heavily burdened by natural sediment/organic debris, accumulation is impacting the lens. 172.09 NTU on arrival, which dropped to 0.46 NTU after the sensor was cleaned and repositioned.
HUN-2511-047	SE09T	This event is characterised by a gradual increase followed by a gradual decrease with multiple irregular pulses above the trigger value. This pattern is consistent with a false event and may reflect probe/baseline effects.	Site inspected on 12/11/2025. Stream level had dropped, and a log had fallen on the end of the senor, causing the lens to be out of water.
HUN-2511-049	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 12/11/2025. Stream level had dropped, and a log had fallen on the end of the senor, causing the lens to be out of water.
HUN-2511-050	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor.
HUN-2511-051	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor. The log has now been removed.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-052	SE09T	This event shows two rapid steps in turbidity followed by an immediate return to baseline. Based on the irregular shape and return behaviour, it is treated as a false event likely influenced by localised sensor interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor. The log has now been removed.
HUN-2511-053	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor. The log has now been removed.
HUN-2511-054	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor. The log has now been removed.
HUN-2511-055	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor. The log has now been removed.
HUN-2511-056	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor. The log has now been removed.
HUN-2511-057	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor. The log has now been removed.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-058	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor. The log has now been removed.
HUN-2511-059	SE09T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 21/11/2025. Stream level drop, sensor out of water. A log was leaning up against the sensor, pushing the sensor out of water and causing debris to accumulate around the sensor. The log has now been removed.
HUN-2511-060	SE12T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 12/11/2025. The stream was slowly flowing and very shallow. Due to shallow stream, the turbidity sensor is positioned above the water level. No rainfall was received in the 24 hours proceeding the event.
HUN-2511-061	SE12T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 24/11/2025, stream is flowing and very shallow. Due to the shallow stream depth the sensor is only partially submerged and therefore recording false data. Data trend shows spikes of inclines and declines which also indicates false data due to stream shallow stream depth.
HUN-2511-062	SE12T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 03/12/2025, stream is flowing and very shallow. Due to the shallow stream depth the sensor is only partially submerged and therefore recording false data. Data trend shows spikes of inclines and declines which also indicates false data due to stream
HUN-2511-063	SE12T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 03/12/2025, stream is flowing and very shallow. Due to the shallow stream depth the sensor is only partially submerged and therefore recording false data. Data trend shows spikes of inclines and declines which also indicates false data due to stream

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-064	SE12T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 03/12/2025, stream is flowing and very shallow. Due to the shallow stream depth the sensor is only partially submerged and therefore recording false data. Data trend shows spikes of inclines and declines which also indicates false data due to stream
HUN-2511-065	SE12INV	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 10/11/2025 and the stream level was very low and insufficient depth to submerge the sensor.
HUN-2511-066	SE12INV	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 12/11/2025 and confirmed the stream is dry. The level float sensor did not change due to being impacted by sediment/debris. The float was serviced and corrected on 24/11/25.
HUN-2511-067	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site visited on 07/11/2025. Stream is flowing clear and very shallow. On arrival, sensor was partially above stream due to shallow depth. No rainfall event preceding or during this event.
HUN-2511-068	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site visited on 07/11/2025. Stream is flowing clear and very shallow. Sensor is partially above stream due to shallow depth. No rainfall event during the preceding 24 hours or during this turbidity event.
HUN-2511-069	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 12/11/2025. The stream was slowly flowing, clear and very shallow. Due the water level dropping, the sensor was positioned partially above the stream which is likely resulting in the turbidity spikes. The sensor was cleaned and repositioned but still partially above the low level stream.
HUN-2511-070	SE22T	This exceedance is characterised by drift/erratic behaviour with abrupt	Site inspected 12/11/2025. The stream was slowly flowing, clear and very shallow. Due the water level dropping, the

Event ID	Monitor ID	Rationale	Field Notes
		transitions. This pattern is consistent with probe exposure/partial submergence in shallow or ponded conditions (and/or local fouling/bed contact), rather than a true turbidity/runoff event. On this basis it is treated as false.	sensor was positioned partially above the stream which is likely resulting in the turbidity spikes. The sensor was cleaned and repositioned but still partially above the low level stream.
HUN-2511-071	SE22T	This exceedance is characterised by drift/erratic behaviour with abrupt transitions. This pattern is consistent with probe exposure/partial submergence in shallow or ponded conditions (and/or local fouling/bed contact), rather than a true turbidity/runoff event. On this basis it is treated as false.	Site inspected 12/11/2025. The stream was slowly flowing, clear and very shallow. Due the water level dropping, the sensor was positioned partially above the stream which is likely resulting in the turbidity spikes. The sensor was cleaned and repositioned but still partially above the low level stream.
HUN-2511-072	SE22T	This exceedance is characterised by drift with a gradual climb, rapid return to baseline and subsequent spike. This pattern is consistent with probe exposure/partial submergence in shallow or ponded conditions (and/or local fouling/bed contact), rather than a true turbidity/runoff event. On this basis it is treated as false.	Site inspected 12/11/2025. The stream was slowly flowing, clear and very shallow. Due the water level dropping, the sensor was positioned partially above the stream which is likely resulting in the turbidity spikes. The sensor was cleaned and repositioned but still partially above the low level stream.
HUN-2511-073	SE22T	This event includes multiple irregular pulses above the trigger value. On this	Site inspected 12/11/2025. The stream was slowly flowing, clear and very shallow. Due the water level dropping, the sensor was positioned partially above the stream which is

Event ID	Monitor ID	Rationale	Field Notes
		basis it is treated as false and likely influenced by localised interference.	likely resulting in the turbidity spikes. The sensor was cleaned and repositioned but still partially above the low level stream.
HUN-2511-074	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 12/11/2025. The stream was slowly flowing, clear and very shallow. Due the water level dropping, the sensor was positioned partially above the stream which is likely resulting in the turbidity spikes. The sensor was cleaned and repositioned but still partially above the low level stream.
HUN-2511-075	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 12/11/2025. The stream was slowly flowing, clear and very shallow. Due the water level dropping, the sensor was positioned partially above the stream which is likely resulting in the turbidity spikes. The sensor was cleaned and repositioned but still partially above the low level stream.
HUN-2511-076	SE22T	This exceedance is characterised by drift/erratic behaviour with abrupt transitions. This pattern is consistent with probe exposure/partial submergence in shallow or ponded conditions (and/or local fouling/bed contact), rather than a true turbidity/runoff event. On this basis it is treated as false.	Site inspected 12/11/2025. The stream was slowly flowing, clear and very shallow. Due the water level dropping, the sensor was positioned partially above the stream which is likely resulting in the turbidity spikes. The sensor was cleaned and repositioned but still partially above the low level stream.
HUN-2511-077	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected 12/11/2025. The stream was slowly flowing, clear and very shallow. Due the water level dropping, the sensor was positioned partially above the stream which is likely resulting in the turbidity spikes. The sensor was cleaned and repositioned but still partially above the low level stream.
HUN-2511-078	SE22T	This event includes multiple irregular pulses above the trigger value. On this	Stream depth is very low and insufficient to submerge the sensor. Depth is also below a level for the float sensor to

Event ID	Monitor ID	Rationale	Field Notes
		basis it is treated as false and likely influenced by localised interference.	measure that flow is present, and is reading 0=dry since 10/11/2025. Stream is still flowing through the upstream culvert. False events are being recorded due to the lens being partially out of water. The unit is scheduled to be relocated to a deeper section of the stream.
HUN-2511-079	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Stream depth is very low and insufficient to submerge the sensor. Depth is also below a level for the float sensor to measure that flow is present, and is reading 0=dry since 10/11/2025. Stream is still flowing through the upstream culvert. False events are being recorded due to the lens being partially out of water. The unit is scheduled to be relocated to a deeper section of the stream.
HUN-2511-080	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Stream depth is very low and insufficient to submerge the sensor. Depth is also below a level for the float sensor to measure that flow is present, and is reading 0=dry since 10/11/2025. Stream is still flowing through the upstream culvert. False events are being recorded due to the lens being partially out of water. The unit is scheduled to be relocated to a deeper section of the stream.
HUN-2511-081	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Stream depth is very low and insufficient to submerge the sensor. Depth is also below a level for the float sensor to measure that flow is present, and is reading 0=dry since 10/11/2025. Stream is still flowing through the upstream culvert. False events are being recorded due to the lens being partially out of water. The unit is scheduled to be relocated to a deeper section of the stream.
HUN-2511-082	SE22T	This event includes multiple irregular pulses above the trigger value. On this	Stream depth is very low and insufficient to submerge the sensor. Depth is also below a level for the float sensor to

Event ID	Monitor ID	Rationale	Field Notes
		basis it is treated as false and likely influenced by localised interference.	measure that flow is present, and is reading 0=dry since 10/11/2025. Stream is still flowing through the upstream culvert. False events are being recorded due to the lens being partially out of water. The unit is scheduled to be relocated to a deeper section of the stream.
HUN-2511-083	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Stream depth is very low and insufficient to submerge the sensor. Depth is also below a level for the float sensor to measure that flow is present, and is reading 0=dry since 10/11/2025. Stream is still flowing through the upstream culvert. False events are being recorded due to the lens being partially out of water. The unit is scheduled to be relocated to a deeper section of the stream.
HUN-2511-084	SE22T	This exceedance is characterised by drift/erratic behaviour with abrupt transitions. This pattern is consistent with probe exposure/partial submergence in shallow or ponded conditions (and/or local fouling/bed contact), rather than a true turbidity/runoff event. On this basis it is treated as false.	Stream depth is very low and insufficient to submerge the sensor. Depth is also below a level for the float sensor to measure that flow is present, and is reading 0=dry since 10/11/2025. Stream is still flowing through the upstream culvert. False events are being recorded due to the lens being partially out of water. The unit is scheduled to be relocated to a deeper section of the stream.
HUN-2511-085	SE22T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Sensor and unit moved to the opposite side of the culvert on the 26/11 to access deeper water. Water is still very shallow and is quite stagnant and impacted by organic matter. Site visited on the 1/12/2025 and the sensor was above water level. Water not flowing through the culvert. Water level to low to reposition. Data spikes indicate false event with no rainfall.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-086	SE22T	This exceedance is characterised by drift/erratic behaviour with abrupt transitions. This pattern is consistent with probe exposure/partial submergence in shallow or ponded conditions (and/or local fouling/bed contact), rather than a true turbidity/runoff event. On this basis it is treated as false.	SE22T site visited on 01/12/2025 and stream is shallow, ponded and stagnant. Due to shallow stream depth the sensor is not submerged therefore false event.
HUN-2511-087	SE24T	This exceedance is characterised by drift/erratic behaviour with abrupt transitions. This pattern is consistent with probe exposure/partial submergence in shallow or ponded conditions (and/or local fouling/bed contact), rather than a true turbidity/runoff event. On this basis it is treated as false.	Site inspected on 07/11/2025, stream has ponded. Sensor was dry on removal from flow cell, therefore above the stream depth. No rainfall event during the preceding 24 hours or during this turbidity event.
HUN-2511-088	SE24T	This event presents as a single clean pulse with a rapid increase and decrease in turbidity. On this basis it is treated as false and likely influenced by localised interference.	The site was inspected on 7/11/2025 and the stream was ponded and stagnant. The site was inspected again on 16/11/2025 and the stream was dry. Float sensor data recorded dry on 12/11/2025 at 19:42. Event attributed to the drying stream, lens partially out of water and impacted by debris.
HUN-2511-089	SE25T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Stream is ponded and stagnant, and water depth is not sufficient to submerge the sensor.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-090	SE34T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	SE34T site inspected on 27/11/2025 and 01/12/2025 and stream observed flowing and clear. Organic debris observed caught around sensor on arrival. Data trend is a steady incline with a steep decline indicating organic debris impacted sensor.
HUN-2511-091	SE52T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Site inspected on 15/11/2025. Stream level drop, sensor partially out of water. Stream level is very low.
HUN-2511-092	SE52T	This event shows a sustained plateau above the trigger value followed by a sharp drop. This pattern is consistent with sensor condition effects or transient interference. The event is treated as false.	Site inspected on 15/11/2025. Stream level drop, sensor partially out of water. Stream level is very low.
HUN-2511-093	SE62T	This event includes multiple irregular pulses above the trigger value. On this basis it is treated as false and likely influenced by localised interference.	Data trend indicates false event, sharp incline and decline with erratic trend. Site inspected on 7/11/2025, stream level has dropped significantly. Water is present and the sensor is submerged, however water is becoming stagnant and significant tannins present. Sensor likely impacted by organic debris. Turbidity data shows additional periods of elevated turbidity values following this event however values remain below 25NTU.
HUN-2511-094	SE62T	This exceedance is characterised by drift/erratic behaviour with abrupt transitions. This pattern is consistent with probe exposure/partial	Site inspected on 16/11/2025, the stream is ponded and stagnant, heavy tannins present.

Event ID	Monitor ID	Rationale	Field Notes
		submergence in shallow or ponded conditions (and/or local fouling/bed contact), rather than a true turbidity/runoff event. On this basis it is treated as false.	
HUN-2511-095	SE62T	This exceedance is characterised by drift/erratic behaviour with abrupt transitions. This pattern is consistent with probe exposure/partial submergence in shallow or ponded conditions (and/or local fouling/bed contact), rather than a true turbidity/runoff event. On this basis it is treated as false.	Site inspected on 16/11/2025, the stream is ponded and stagnant, heavy tannins present.
HUN-2511-096	SE62T	This event shows a sustained plateau above the trigger value followed by a sharp drop, rather than a smooth rise and recession. This pattern is consistent with sensor condition effects or transient interference. The event is treated as false.	Site inspected on 16/11/2025, the stream is ponded and stagnant, heavy tannins present.
HUN-2511-097	SE62T	This event shows a sustained plateau above the trigger value followed by a sharp drop, rather than a smooth rise and recession. This pattern is consistent with sensor condition effects or transient interference. The event is treated as false.	Site inspected on 16/11/2025, the stream is ponded and stagnant, heavy tannins present.

Event ID	Monitor ID	Rationale	Field Notes
HUN-2511-098	SE62T	This event is characterised by a sustained, near-constant elevation just above the trigger with limited structure. This pattern is consistent with probe baseline/conditioning effects rather than a true runoff response. Treated as false.	Site inspected on 16/11/2025, the stream is ponded and stagnant, heavy tannins present.
HUN-2511-099	SE62T	This event is characterised by a sustained, near-constant elevation just above the trigger with limited structure. This pattern is consistent with probe baseline/conditioning effects rather than a true runoff response. Treated as false.	Site inspected on 16/11/2025, the stream is ponded and stagnant, heavy tannins present.

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	12/11/2025-30/11/2025	Stream dry as of 12/11/2025 at 1:34 PM
ND14T	02/11/2025-30/11/2025	Sensor reading fault code from 2/11/2025. Maintenance inspection on 13/11/2025 did not identify the issue. Unit scheduled for parts replacement on 3/12/2025.
PD02T	01/11/2025-30/11/2025	Awaiting Water Corp approval to access Pipe head catchment area
PD03T	01/11/2025-30/11/2025	Awaiting Water Corp approval to access Pipe head catchment area
SE01T	01/11/2025-30/11/2025	Unit removed from the field on 18/09/2025 due to DBCA prescribed burns. Awaiting DBCA approval to access for reinstatement once prescribed burns are completed.
SE07T	01/11/2025-30/11/2025	Unit removed from the field on 18/09/2025 due to DBCA prescribed burns. Awaiting DBCA approval to access for reinstatement once prescribed burns are completed.
SE11T	3/11/2025-30/11/2025	Stream dry as of 3/11/2025 at 2:48 AM
SE12T	01/11/2025-06/11/2025	Site visited on the 6/11/2025, Modem was powered off Device was in safety mode. No data recorded to 6/11/2025
SE12INV	12/11/2025-30/11/2025	Stream dry as of 12/11/2025
SE15T	1/11/2025-30/11/2025	Unit removed from the field on 18/09/2025 due to DBCA prescribed burns. Awaiting DBCA approval to access for reinstatement once prescribed burns are completed.
SE23T	101/11/2025-30/11/2025	Stream dry as of 3/10/2025 at 1:42 PM
SE24T	12/11/2025-30/11/2025	Stream dry as of 12/11/2025
SE25T	12/11/2025-30/11/2025	Stream dry as of 12/11/2025
SE26T	01/11/2025-30/11/2025	Stream dry as of 28/09/2025 (dry stream false events omitted)
SE53T	01/11/2025-30/11/2025	Unit removed from the field on 18/09/2025 due to DBCA prescribed burns. Awaiting DBCA approval to access for reinstatement once prescribed burns are completed.
SE60T	01/11/2025-30/11/2025	Unit removed from the field on 18/09/2025 due to DBCA prescribed burns. Awaiting DBCA approval to access for reinstatement once prescribed burns are completed.
SE61T	01/11/2025-30/11/2025	Unit removed from the field on 18/09/2025 due to DBCA prescribed burns. Awaiting DBCA approval to access for reinstatement once prescribed burns are completed.

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-2511-001	SE12INV1	01/11/2025	06/11/2025	Data gap due to system malfunction
MD-2511-002	SE34T	13/11/2025	19/11/2025	System fault

6. Appendices

Appendix A. Huntly Raw WQMS Data

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

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

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

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

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

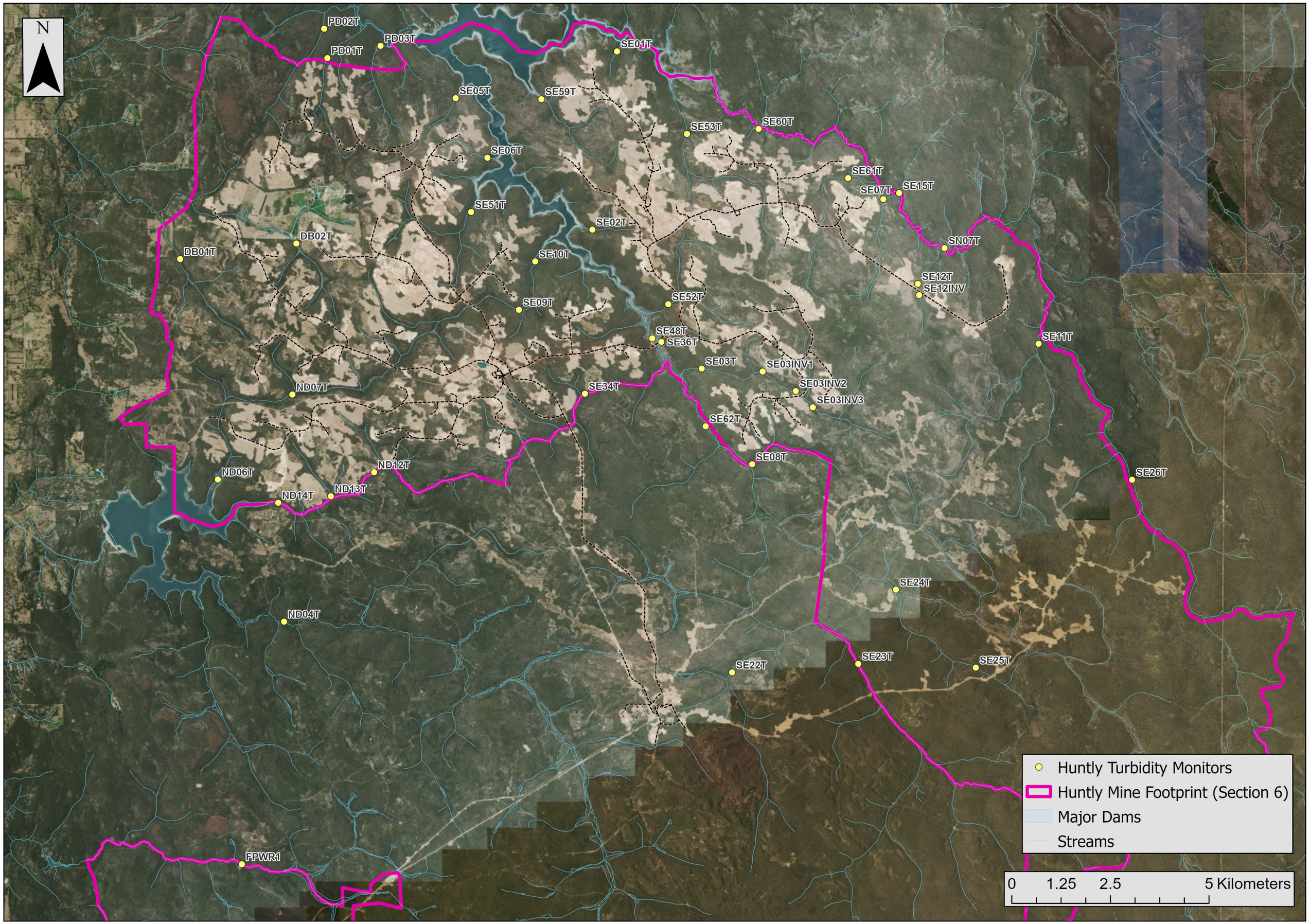
Note: False events have been annotated by **black** bold text. True events are annotated by **red** bold text

Date	Huntly WQMS Data – November 2025 - Turbidity (Daily Average, NTU)																
	DB01T	DB02T	FPWR1	ND04T	ND06T	ND07T	ND12T	ND13T	ND14T	PD01T	SE01T	SE02T	SE03T	SE05T	SE06T	SE07T	SE08T
1/11/2025	0.97	1.59	3.95	1.39	2.25	0.68	2.2	0.32	1.24	4.37		1.72	2.95	8.76	14.11		1.31
2/11/2025	0.98	1.52	2.12	1.16	1.76	0.53	2.25	0.33		4.23		1.54	1.94	8.89	12.43		1.65
3/11/2025	0.97	1.67	3.58	0.93	1.98	0.51	2.35	0.3		4.43		1.6	1.78	9.56	0.79		3.24
4/11/2025	0.97	3.34	3.51	0.9	2.16	0.55	2.65	0.3		4.52		1.82	1.75	9.95	1.86		7.86
5/11/2025	0.97	1.5	2.42	1.33	2.39	0.53	3.19	0.29		6.11		1.84	1.68	10.61	1.72		4.61
6/11/2025	0.96	1.46	2.36	2.2	2.5	0.53	3.4	0.29		8.5		1.91	1.79	11.26	4.3		8.13
7/11/2025	0.97	2.44	12.6	4.6	2.52	0.55	5.22	0.3		34.15		2.15	1.89	11.53	8.05		4.11
8/11/2025	0.97	3.38	7.2	7.69	2.69	0.52	8.31	0.37		10.98		2.19	1.82	10.67	22.33		1.03
9/11/2025	0.96	4.6	48.81	9.2	3.92	0.49	7.12	0.3		9.98		2.48	1.79	10.96	30.47		1.02
10/11/2025	0.96	1.79	23.54	28.55	2.5	0.48	49.17	0.29		10.05		2.45	1.77	11.28	20.2		1
11/11/2025	0.96	2.32	32.5	36.53	2.87	0.48	93.82	0.28		11.72		2.54	1.84	10.93	6.07		1
12/11/2025	0.96	9.97	27.84	11.53	2.25	0.47	36.53	0.27		18.91		2.66	1.83	10.92	11.02		1
13/11/2025	0.97	1.96		5.07	1.82	0.49	1.92	0.29		13.26		2.94	1.79	10.92	3.01		1.01
14/11/2025	0.97	1.36		13.54	2.26	0.51	2.05	0.29		12.11		3.18	1.86	10.81	1.27		1.02
15/11/2025	0.98	1.38		1.97	2.43	0.5	2.24	0.29		4.49		3.29	1.87	10.36	2.67		1.05
16/11/2025	0.98	1.5		4.93	2.69	0.48	2.71	0.29		22.86		3.42	1.91	9.31	5.94		1.06
17/11/2025	0.97	1.36		4.82	2.65	0.43	2.84	0.29		5.37		3.51	1.98	9.47	6.95		1.04
18/11/2025	0.96	1.37		1.01	2.42	0.45	2.56	0.28		5.38		3.75	1.87	9.91	20.88		1.05
19/11/2025	0.95	1.4		1.13	2.7	0.48	3.18	0.31		14.98		4.28	2.22	10.13	39		1.07
20/11/2025	0.95	1.39		1.17	2.91	0.37	3.01	0.29		18.82		3.89	1.81	10.33	211.33		1.07
21/11/2025	0.95	1.43		7.14	3.02	0.37	3.63	0.3		4.64		4.27	1.8	7.44	115.3		1.08
22/11/2025	0.95	1.43		5.24	3.17	0.39	3.9	0.33		1.45		6.29	1.83	5.63	0.78		1.18
23/11/2025	0.96	1.94		24.33	4.01	0.6	2.68	0.41		1.85		4.97	3.14	6.72	0.88		1.46
24/11/2025	0.98	6.89		9.04	2.29	0.44	4.15	0.31		2.26		4.1	2.11	6.27	0.85		1.37
25/11/2025	0.96	7.49		1.28	1.77	0.41	6.04	0.28		1.54		4.24	2.2	6.65	1.08		2.42
26/11/2025	0.96	2.69		1.03	5.24	0.41	9.04	0.29		1.77		4.47	2.26	7.43	5.48		1.9
27/11/2025	0.97	1.65		1.03	2.01	0.42	12.04	0.29		1.99		4.95	2.21	8	7.32		2.21
28/11/2025	0.98	1.39		1.02	3.25	0.43	15.58	0.29		1.96		5.2	2.21	8.58	1.42		2.3
29/11/2025	0.97	1.4		4.76	2.15	0.43	19.26	0.29		2.68		5.44	2.22	7.95	1.57		3.76
30/11/2025	0.96	1.36		33.22	3.36	0.38	29.45	0.28		4.85		5.81	2.17	9.47	2.37		5.27

Date	Huntly WQMS Data – November 2025 - Turbidity (Daily Average, NTU)																
	SE09T	SE10T	SE11T	SE12T	SE12INV	SE15T	SE34T	SE36T	SE48T	SE51T	SE52T	SE53T	SE59T	SE60T	SE61T	SE62T	SN07T
1/11/2025	1.04	1			3.15		0.6	1.78	3.69	3.28	4.43		9.4			2.27	7.66
2/11/2025	1.06	0.91					0.63	1.84	3.6	1.98	3.6		5.35			4.37	7.66
3/11/2025	1.06	0.9					0.59	2.21	3.56	2.03	3.9		5.82			67.95	7.66
4/11/2025	1.06	0.92					0.57	2.26	3.62	2.02	4.48		7.27			52.29	7.66
5/11/2025	1.04	0.91					0.6	2.29	3.69	2.01	4.92		7.67			7.93	7.45
6/11/2025	1.04	0.92		5.31	24.45		0.54	1.86	3.64	2.02	5.54		8.21			3.6	7.64
7/11/2025	2.3	0.97		5.68	41.04		0.58	2.19	3.81	1.97	6.66		7.01			1.68	7.66
8/11/2025	28.96	0.93		8.86	99.33		0.59	1.4	3.62	2.07	6.51		7.07			1.55	7.66
9/11/2025	58.94	0.97		10.51	147.24		0.56	0.05	3.38	2.04	8.34		6.45			1.65	7.65
10/11/2025	6.92	0.93		13.64	156.76		0.63	0.08	3.43	2.05	12.74		8.02			1.86	7.66
11/11/2025	5.99	0.94		16.76	120.11		0.78	0.16	3.53	2.06	7.59		8.44			2.19	7.66
12/11/2025	5.78	0.92		33.33			1.35	0.33	3.66	2.11	4.29		9.27			3.89	7.66
13/11/2025	5.65	0.97		82.74				0.14	3.74	2.03	14.86		10.12			45.13	7.65
14/11/2025	23.2	0.95		85.53				0.18	3.82	2.09	4.13		8.77			2.46	7.63
15/11/2025	4.18	0.96		60.95				0.16	4.11	2.09	3.31		8.05			10.61	7.65
16/11/2025	16.8	20.85		66.64				0.12	5.64	2.04	3.79		7.29			4.07	7.65
17/11/2025	42.72	23.77		63.1				0.14	6.5	2.1	4.03		9.6			3.98	7.65
18/11/2025	64.65	0.97		1.31				0.17	3.81	2.12	4.38		8.71			3.96	7.65
19/11/2025	2.62	0.97		1.37				0.19	4.77	2.13	3.45		12.44			3.25	7.64
20/11/2025	3.34	0.95		1.43			17.89	0.17	3.62	2.15	3.74		10.09			2.69	7.65
21/11/2025	45.34	14.33		1.58			28.3	0.21	3.66	2.01	4.36		8.43			2.67	7.65
22/11/2025	1.05	1		5.16			40.2	0.41	3.73	2.52	5.28		8.79			2.44	7.64
23/11/2025	1.22	1.29		125.55			5.35	0.26	4.22	3.87	7.21		11.18			4.2	7.63
24/11/2025	1.05	0.99		81.06			5.28	0.4	3.54	1.98	5.72		13.68			4.6	7.64
25/11/2025	1.05	20.08		49.5			1.5	0.37	3.53	2.05	5.13		13.88			5.36	7.64
26/11/2025	1.05	0.96		36.07			1.35	0.42	3.55	2.01	5.09		8.05			5.21	7.65
27/11/2025	1.06	0.97		36.95			1.38	0.49	3.61	2.07	4.77		2.86			5.15	7.64
28/11/2025	1.05	1.07		42.49			1.76	0.47	3.74	2	4.64		3.44			4.81	7.65
29/11/2025	1.04	1.02		22.88			2.04	0.43	3.99	2.08	4.24		4.26			4.11	7.65
30/11/2025	1.03	1.04		19.89			2.29	0.61	4.11	2.08	3.47		5.32			4.56	7.64

Date	Huntly WQMS Data – November 2025 - Turbidity (Daily Average, NTU)																	
	SE22T	SE23T	SE24T	SE25T	SE26T	SE03INV1	SE03INV3											
1/11/2025	3.99		2.8	6.11		3.08	1.09											
2/11/2025	5.38		2.81	7.28		3.72	0.84											
3/11/2025	7.49		2.7	8.04		6.08	0.72											
4/11/2025	10.47		11.49	10.45		7.11	1.08											
5/11/2025	10.31		9.09	16.47		12.18	0.69											
6/11/2025	24.15		3.86	32.04		24.2	0.83											
7/11/2025	31.43		4.08	59.27		46.02	0.62											
8/11/2025	95.93		4.02	65.29		63.19	0.46											
9/11/2025	77.49		4.46	80.04		77.33	1.6											
10/11/2025	98.64		5.72	97.28		101.04	3.87											
11/11/2025	63.92		11.54	10.46		111.82	5.8											
12/11/2025	101.04					188.35	9.88											
13/11/2025	346					239.52	5.71											
14/11/2025	468.53					275.89	5.88											
15/11/2025	393.08					212.37	5.96											
16/11/2025	11.23					129.46	5.83											
17/11/2025	6.38					87.03	5.64											
18/11/2025	6.16					115.53	5.64											
19/11/2025	23.07					75.13	5.91											
20/11/2025	6.49					115.28	5.75											
21/11/2025	6.63					224.84	5.6											
22/11/2025	6.53					146.56	6.44											
23/11/2025	8.88					24.12	25.45											
24/11/2025	6.37					8.96	31.04											
25/11/2025	7.12					25.02	5.52											
26/11/2025	6.55					53.45	8.49											
27/11/2025	12.99					53.9	8.68											
28/11/2025	28.9					76.77	5.75											
29/11/2025	6.21					90.57	6.09											
30/11/2025	7.49					124.92	5.88											

Appendix B. Huntly WQMS Locations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PD03T
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SE10T
SE12T
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SE11T
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SE03INV1
SE03INV2
SE03INV3
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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

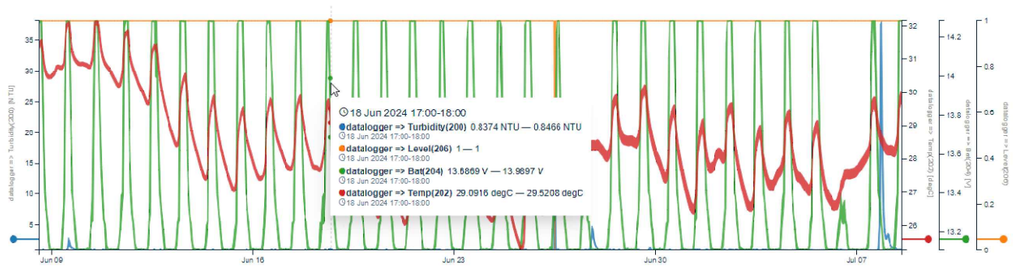
DATA INLET

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
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SCIDEV

TITLE
IOT TURBIDITY MONITORING STATION
SITE LAYOUT
GENERAL ARRANGEMENT

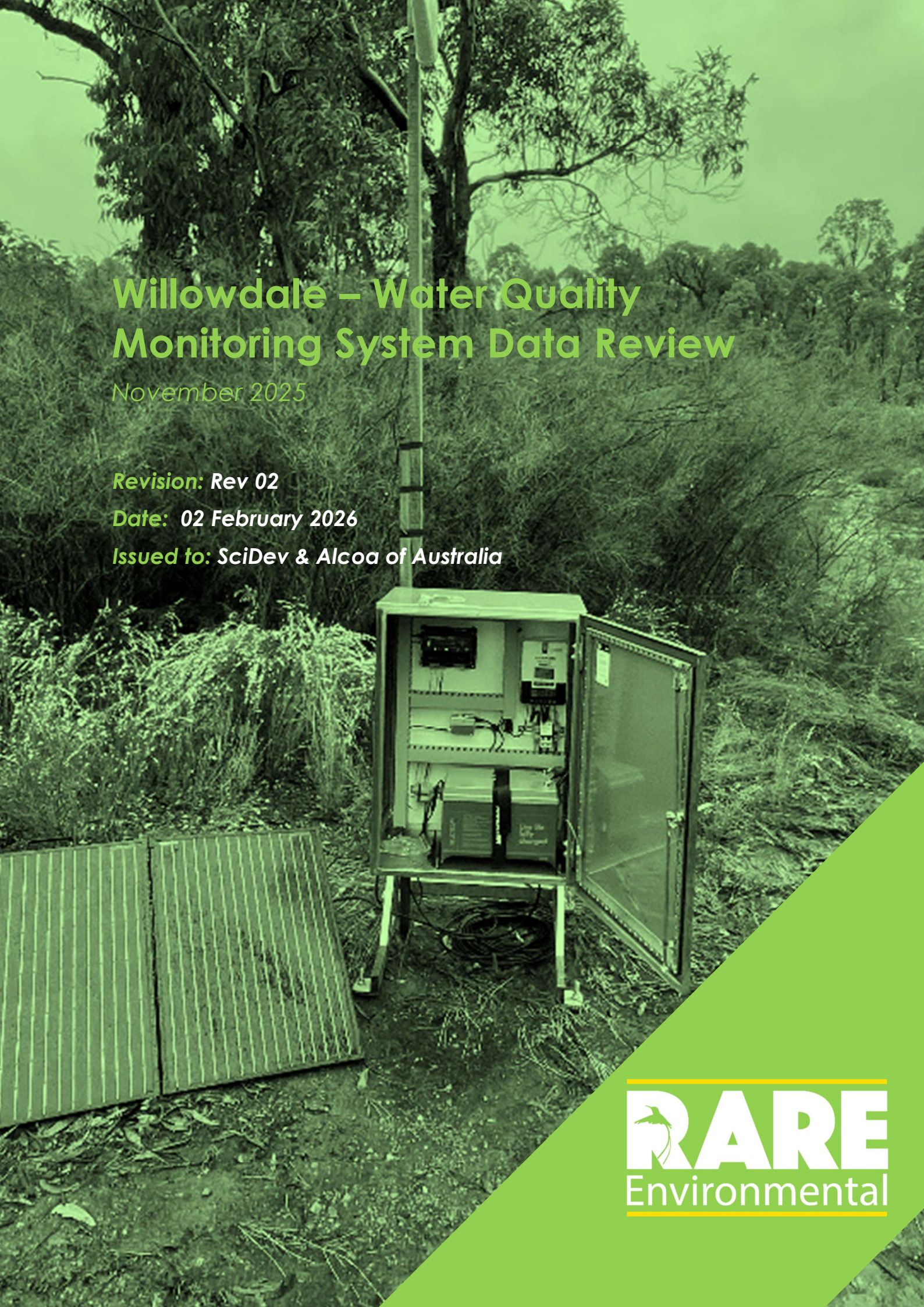
SHEET 1 OF 2

SCALE NTS OR AS SHOWN

DRAWING NO.
HI0090 - ALCOA WQMS

SHEET SIZE
A3

REV.
1



Willowdale – Water Quality Monitoring System Data Review

November 2025

Revision: ***Rev 02***

Date: ***02 February 2026***

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

RARE Environmental

Document Control

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Client Reference	PO002447

Document History and Status						
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01	09/01/2026	Issued to client	MM	GD	GD	Alcoa
02	02/02/2026	Amended with client 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	02/02/2026	Date	02/02/2026	Date	02/02/2026

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Infrastructure Sustainability Council MEMBER

Contents

1. Executive Summary

This report, prepared by RARE Environmental Pty Ltd and SciDev Pty Ltd for Alcoa, provides an analysis of turbidity data collected from Water Quality Monitoring Systems (WQMS) deployed at the Willowdale bauxite mining operations during November 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**: Five 'False' events were identified, primarily attributed to transient local interference
- **Further Investigation**: One event was flagged for further investigation.
- **True Events**: One "True" turbidity exceedance event was identified.
- **Excluded Units**: One WQMS unit was temporarily excluded from the analysis due to invalid data caused by equipment faults or environmental interference.

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

2. Scope

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

3. Introduction

3.1. Background

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

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

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

3.2. Monitoring requirements

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

> *a) runoff from a disturbance area enters the surrounding environment, resulting in surface water turbidity of at least 25 NTU for a duration of at least one hour; or*
>
> *b) a discharge from containment infrastructure includes, or November 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 November 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 November 2025, focusing on the identification and classification of "true" turbidity exceedance events based on Alcoa's Turbidity Event Classification Guidelines.

3.5. Exclusions

This report is not intended as:

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

3.6. Abbreviations

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

4. Methodology

4.1. WQMS Locations

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

4.2. Data Review

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

4.2.1. True Turbidity Exceedance Events

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

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

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

4.2.2. False Turbidity Exceedance Events

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

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

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

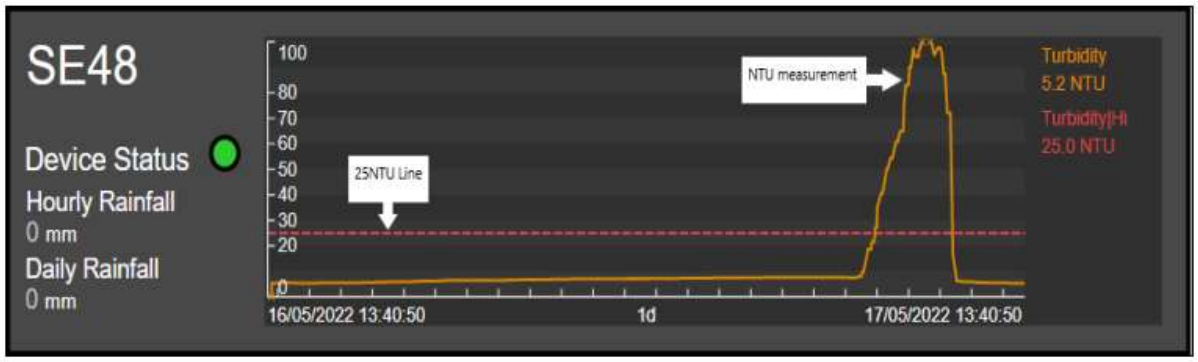


Figure 2 Typical 'false' exceedance event showing both a sharp incline and decline

4.2.3. Missing Data

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

5. Results and Discussion

5.1. Events

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

Table 1 Events Summary

Category	# of events
Flagged for further investigation	1
False	5

Table 2 Events Details

Event ID	WQMS ID	Event Category	Start	End	Duration	Peak Turbidity (NTU)	Average Turbidity (NTU)
WDL-2511-001	RHB3	Additional Investigation Required	5/11/2025 17:38	5/11/2025 18:45	1hrs, 12mins	33.49	30.39
WDL-2511-002	HV07T	'False'	9/11/2025 14:26	9/11/2025 16:16	1hrs, 55mins	806.18	70.82
WDL-2511-003	HV07T	'False'	9/11/2025 16:28	9/11/2025 17:34	1hrs, 12mins	1378.63	586.98
WDL-2511-004	HV07T	'False'	9/11/2025 19:36	10/11/2025 0:45	5hrs, 15mins	49.03	33.94
WDL-2511-005	RHB2	'False'	25/11/2025 5:34	25/11/2025 6:58	1hrs, 30mins	33.95	32.88
WDL-2511-006	RHB2	'False'	25/11/2025 7:23	25/11/2025 10:43	3hrs, 26mins	35.26	30.91

5.2. Additional Investigation

One event was flagged for additional investigation

5.2.1. WDL-2511-001 Additional Investigation

The event, occurring between 17:38 and 18:45 on the 5th of November at RHB3 does not exhibit the typical sharp, incline in turbidity levels however the initial spike and gradual return to baseline levels in pattern resembling a normal (Gaussian) distribution as shown in Figure 3 below indicates a potential drainage event.

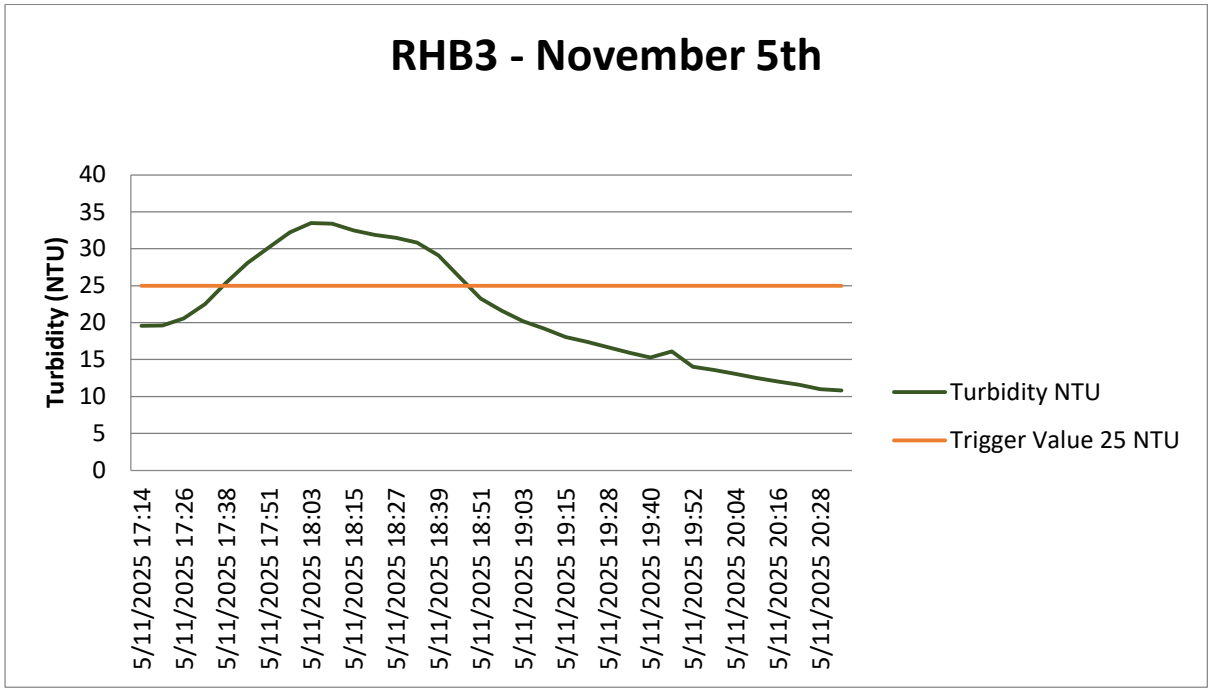


Figure 3 - WDL-2511-001

Further investigation into the event and location has determined the following

- The stream was inspected on 07/11/2025 at 11:30 AM and was flowing and clear, with no signs of turbid water or sediment deposition at the monitor location.
- A catchment investigation did not identify any mining-related potential sources of turbidity.
- A recently reopened forest track running alongside the stream upstream of the monitor was observed to have multiple locations where runoff discharges into the stream, representing a plausible non-mining source of sediment mobilisation during rainfall/runoff conditions.

Field notes provided by Alcoa are included below.

"Stream inspected on 07/11/2025 at 11:30am. Stream flowing and clear at the time of the inspection with no signs of turbid water or sediment deposition at the monitor location. A catchment investigation was undertaken which did not identify any mining related potential sources of turbidity. As previously identified, a recently reopened forest tracks was found to have multiple locations of water runoff into the stream. The forest track runs alongside the stream and upstream from the monitor. No other potential sources of turbidity were identified within the catchment. Event classified as a true, non-mining related event."

The RHB3 event on 05/11/2025 is consistent with a short-duration turbidity exceedance that was not associated with any observable turbidity or sediment deposition at the monitoring location. Catchment investigations identified no mining-related sources, while runoff pathways from a recently reopened forest track adjacent to the stream provide a credible

mechanism for increased turbidity in the stream. With no alternative sources identified, the event is interpreted as a rainfall/runoff response originating from non-mining disturbance and is classified as True.

5.3. True Event(s)

One 'True' turbidity event was identified during the reporting period at site RHB3, occurring on 5 November 2025.

5.4. False Event(s)

Five 'False' event were identified during the reporting period. Rationale on potential causes is summarised in table 3 below.

Table 3 False Events Rationale

Event ID	Monitor ID	Rationale	Field Notes
WDL-2511-002	RHB2	This event shows a sustained plateau above the trigger followed by a sharp drop, rather than a smooth rise and recession. This pattern is consistent with a false event and likely influenced by localised sensor effects or transient interference.	Stream inspected on 25/11/2025 at 10:45am. The stream was flowing and clear at the time of inspection however the water is becoming very shallow. Debris was found to have caught on the black protective cap of the sensor lens and on the sensor wiper. Algae had started building up on the sensor but not to a great extent. The debris was removed and the sensor cleaned. The probe was returned to the stream and turbidity readings returned to <1 NTU. Events classified as false events.
WDL-2511-003	HV07T	This event includes a short-lived spike with an immediate return to baseline. This pattern is consistent with a false event and is likely caused by transient local interference (e.g., debris, probe knock, or air entrainment).	Stream inspected on 10/11/2025 at 11:45am. At the time of inspection the stream was not flowing, there was just a large puddle remaining at the monitor location. The probe was no longer submerged as the water level had dropped. There was some scum forming on the water surface. The probe was cleaned and returned to the puddle at a deeper depth so it was completely submerged. The puddle is expected to dry out further in the coming weeks. From 10/11/2025 this site is considered dry. These events are considered false events.
WDL-2511-004	HV07T	This event shows an abrupt step-change to very high turbidity with a plateau-like period, followed by a rapid return toward baseline. This pattern is consistent with a false event and likely caused by transient local interference (probe disturbance/fouling).	Stream inspected on 10/11/2025 at 11:45am. At the time of inspection the stream was not flowing, there was just a large puddle remaining at the monitor location. The probe was no longer submerged as the water level had dropped. There was some scum forming on the water surface. The probe was cleaned and returned to the puddle at a deeper depth so it was completely submerged. The puddle is expected to dry out further in the coming weeks. From 10/11/2025 this site is considered dry. These events are considered false events.

WDL-2511-005	HV07T	This event does not present as a single clean pulse and includes multiple irregular pulses above the trigger rather than a smooth rise and recession. On this basis it is treated as false and likely influenced by localised interference.	Stream inspected on 10/11/2025 at 11:45am. At the time of inspection the stream was not flowing, there was just a large puddle remaining at the monitor location. The probe was no longer submerged as the water level had dropped. There was some scum forming on the water surface. The probe was cleaned and returned to the puddle at a deeper depth so it was completely submerged. The puddle is expected to dry out further in the coming weeks. From 10/11/2025 this site is considered dry. These events are considered false events.
WDL-2511-006	RHB2	This event is characterised by a sustained, near-constant elevation just above the trigger with limited pulse structure. This pattern is consistent with a false event and may reflect probe/baseline effects rather than a true runoff response.	Stream inspected on 25/11/2025 at 10:45am. The stream was flowing and clear at the time of inspection however the water is becoming very shallow. Debris was found to have caught on the black protective cap of the sensor lens and on the sensor wiper. Algae had started building up on the sensor but not to a great extent. The debris was removed and the sensor cleaned. The probe was returned to the stream and turbidity readings returned to <1 NTU. Events classified as false events.

5.5. Excluded WQMS Units

One WQMS Unit was 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 3 Excluded WQMS Units

Unit	Dates/	Comments
HV07T	10/11/2025-30/11/2025	Stream no longer flowing from 10/11/2025. Probe installed in bucket of deionised water 15/11/2025.

5.6. Missing Data

Periods of missing data are detailed in Table 5.

Table 4 Missing Data Summary

Missing Data ID	Unit	Start	End	Comments
MD-2511-001	RHB3	16/11/2025 20:42	17/11/2025 1:26	Missing Data

6. Appendices

Appendix A. Willowdale Raw WQMS Data

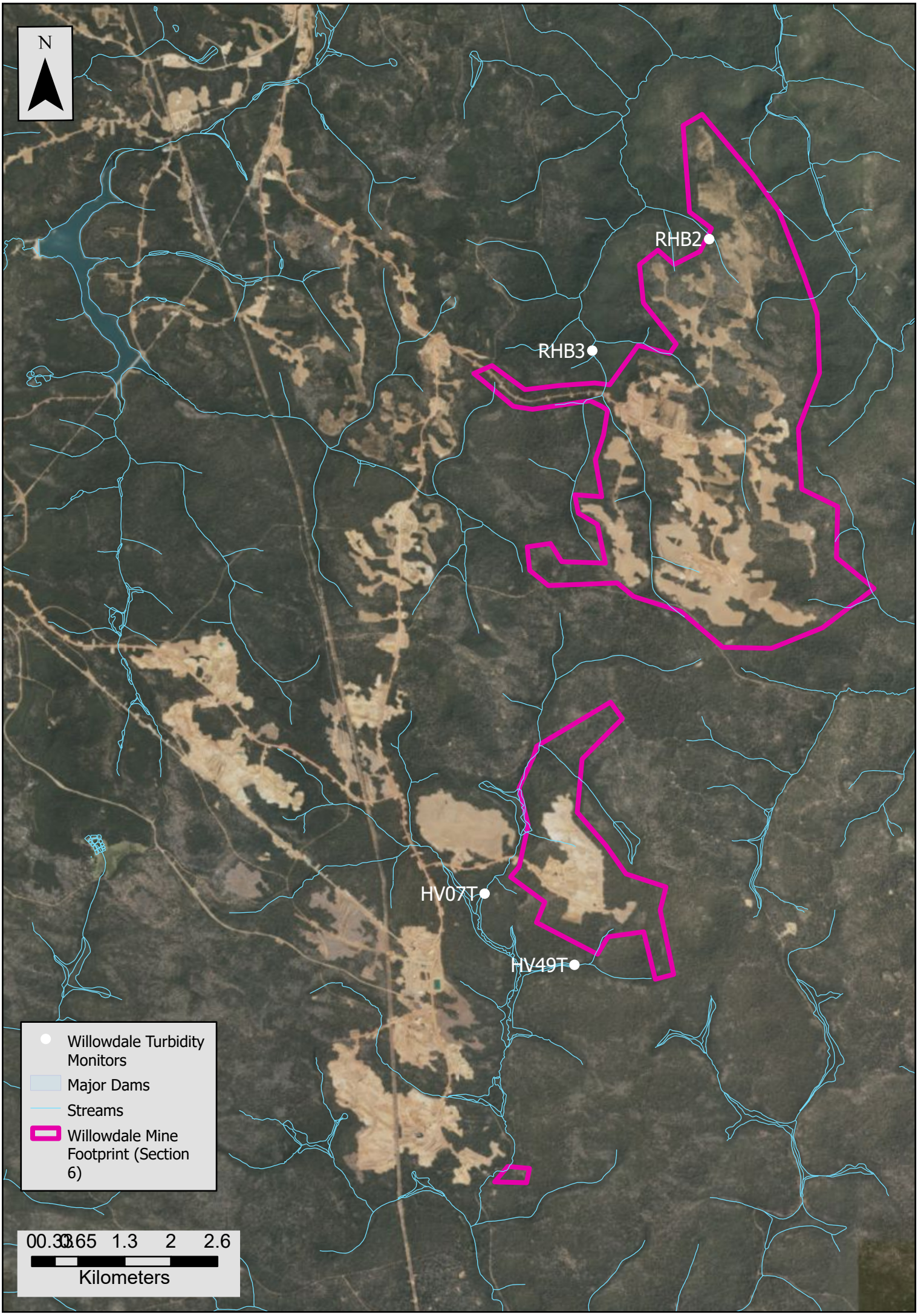
Date	Willowdale WQMS Data - November 2025 - Events with turbidity > 25 NTU for an hour or more			
	HV07T	HV49T	RHB2	RHB3
1/11/2025				
2/11/2025				
3/11/2025				
4/11/2025				
5/11/2025				**1**
6/11/2025				
7/11/2025				
8/11/2025				
9/11/2025	3			
10/11/2025				
11/11/2025				
12/11/2025				
13/11/2025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

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

Date	Willowdale WQMS Data - November 2025 – Daily Average Turbidity (NTU)			
	HV07T	HV49T	RHB2	RHB3
1/11/2025	1.10	0.64	1.87	2.18
2/11/2025	1.05	0.67	0.39	1.74
3/11/2025	1.00	0.66	1.01	1.86
4/11/2025	1.04	0.66	0.46	1.97
5/11/2025	0.99	0.63	1.34	7.51
6/11/2025	1.25	0.61	3.41	2.39
7/11/2025	1.03	0.65	0.33	1.86
8/11/2025	1.69	0.66	0.32	1.81
9/11/2025	**49.10**	0.62	0.33	1.79
10/11/2025	6.05	0.60	0.94	4.20
11/11/2025		0.59	2.65	1.70
12/11/2025		0.67	1.29	1.74
13/11/2025		0.65	0.37	2.65
14/11/2025		0.62	3.89	1.85
15/11/2025		0.65	2.72	1.92
16/11/2025		0.63	0.36	2.64
17/11/2025		1.76	0.35	1.65
18/11/2025		0.61	0.30	1.42
19/11/2025		0.58	0.30	1.44
20/11/2025		0.58	0.30	1.48
21/11/2025		0.63	1.12	1.52
22/11/2025		15.57	0.34	1.56
23/11/2025		0.67	0.56	1.62
24/11/2025		0.96	4.74	1.70
25/11/2025		0.73	9.45	1.53
26/11/2025		0.80	0.63	1.76
27/11/2025		1.14	2.76	1.93
28/11/2025		0.65	1.05	1.94
29/11/2025		0.68	0.60	1.61
30/11/2025		2.00	0.43	1.57

* - 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

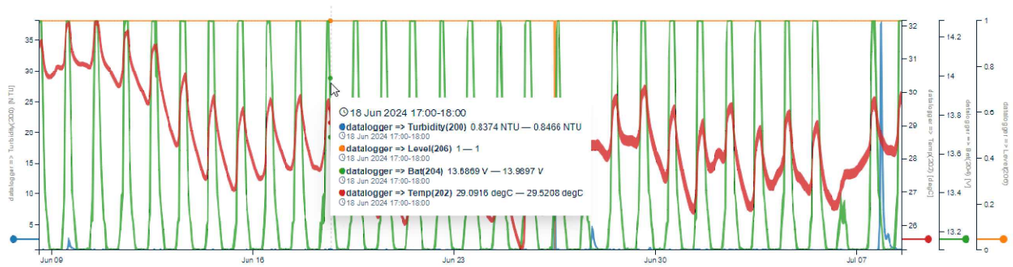
DATA INLET

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.

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SCIDEV

TITLE
IOT TURBIDITY MONITORING STATION
SITE LAYOUT
GENERAL ARRANGEMENT

SHEET 1 OF 2

SCALE NTS OR AS SHOWN

DRAWING NO.
HI0090 - ALCOA WQMS

SHEET SIZE
A3

REV.
1