Wilpinjong Coal Mine

Annual Review 2025 – Surface Water Compliance

Wilpinjong Coal Pty Ltd

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Prepared by:

SLR Consulting Australia

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Making Sustainability Happen

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
0.3	23 March 2026	M. Silva	A. Skorulis N. Bosworth	

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Wilpinjong Coal Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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Executive Summary

This report documents the analysis and data considered for the review of flow and water quality trends at Wilpinjong Creek, Wollar Creek and Cumbo Creek near the Wilpinjong Coal Mine (WCM) to fulfil the surface water reporting requirements for the WCM 2025 Annual Review. The report is presented in three sections:

1. An overview of the volume and quality of discharge from the site under EPL 12425 including approved operational discharge from EPL Point 24 and EPL Point 30;
2. Analysis of flow and quality data from the Wilpinjong Creek and Cumbo Creek gauging stations, considering long-term rainfall trends, and licenced discharge from WCM.
3. Assessment of electrical conductivity (EC), pH, and turbidity observations at Wilpinjong, Cumbo and Wollar Creeks during 2025 in respect to baseline data (pre-mining as defined in the Surface Water Management Plan (SWMP)) as well as Water Quality Impact Assessment Criteria for downstream monitoring sites within Cumbo and Wilpinjong Creeks, as defined in the current SWMP.

Discharge under EPL12425 from EPL Point 24 (the RO Plant) occurred within the stipulated discharge limits throughout 2025. It is noted that no discharge occurred from EPL Point 30 in 2025.

Analysis of continuous data at the WCM gauging stations in 2025 indicated generally similar flow conditions at Cumbo Creek and Wilpinjong Creek gauging sites compared to 2024 in response to above average rainfall in 2024 and slightly above average rainfall in 2025 compared to below average rainfall conditions throughout 2023.

Within the reporting period, two Wilpinjong Creek downstream monitoring locations (WIL-D and WIL-D2) recorded exceedances of water quality monitoring criteria (pH upper limit). It is noted that the pH observations exceeding the upper trigger level for downstream Wilpinjong Creek may be within the normal range for pH at these locations. The 80th percentile pH from baseline data for these downstream sites is pH 7.9, which is above the established trigger level of pH 7.7.

A submitted but not yet approved version of the SWMP (from January 2025) has indicated that pH trigger levels at Wilpinjong Creek downstream monitoring sites should be updated to reflect downstream baseline data (pH 7.4 to 7.9) consistent with findings from a previous trigger exceedance investigation. This revised SWMP also indicates that pH trigger levels downstream of RO discharge at EPL Point 24 should reflect the EPL discharge limits when RO Plant discharge is higher than background flow in Wilpinjong Creek (as measured at WILGSU).

It is recommended that future assessments of pH consider these proposed revisions to the pH trigger levels to help evaluate whether trigger exceedances are likely to be adverse effects from Wilpinjong operations.

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Acronyms and Abbreviations

ANZECC	Australian and New Zealand Environment and Conservation Council
BOM	Bureau of Meteorology
CCGSU	Cumbo Creek upstream
CRD	cumulative rainfall departure
CWD	Clean water diversion
EC	electrical conductivity
EMW	Excess Mine Water
EPL	Environmental Protection Licence
LDP	Licenced Discharge Points
MC	Moolarben Coal
mg/L	milligrams per litre
ML	megalitres
NTU	Nephelometric Turbidity Units
pH	pH unit
RO	Reverse Osmosis
SWMP	Surface Water Management Plan
TARP	Trigger Action Response Plan
TSS	Total Suspended Solids
µS/cm	Micro-Siemens per centimetre
WCM	Wilpinjong Coal Mine
WCPL	Wilpinjong Coal Pty Limited
WILGSD	Wilpinjong Creek gauging station downstream
WILGSU	Wilpinjong Creek gauging station upstream

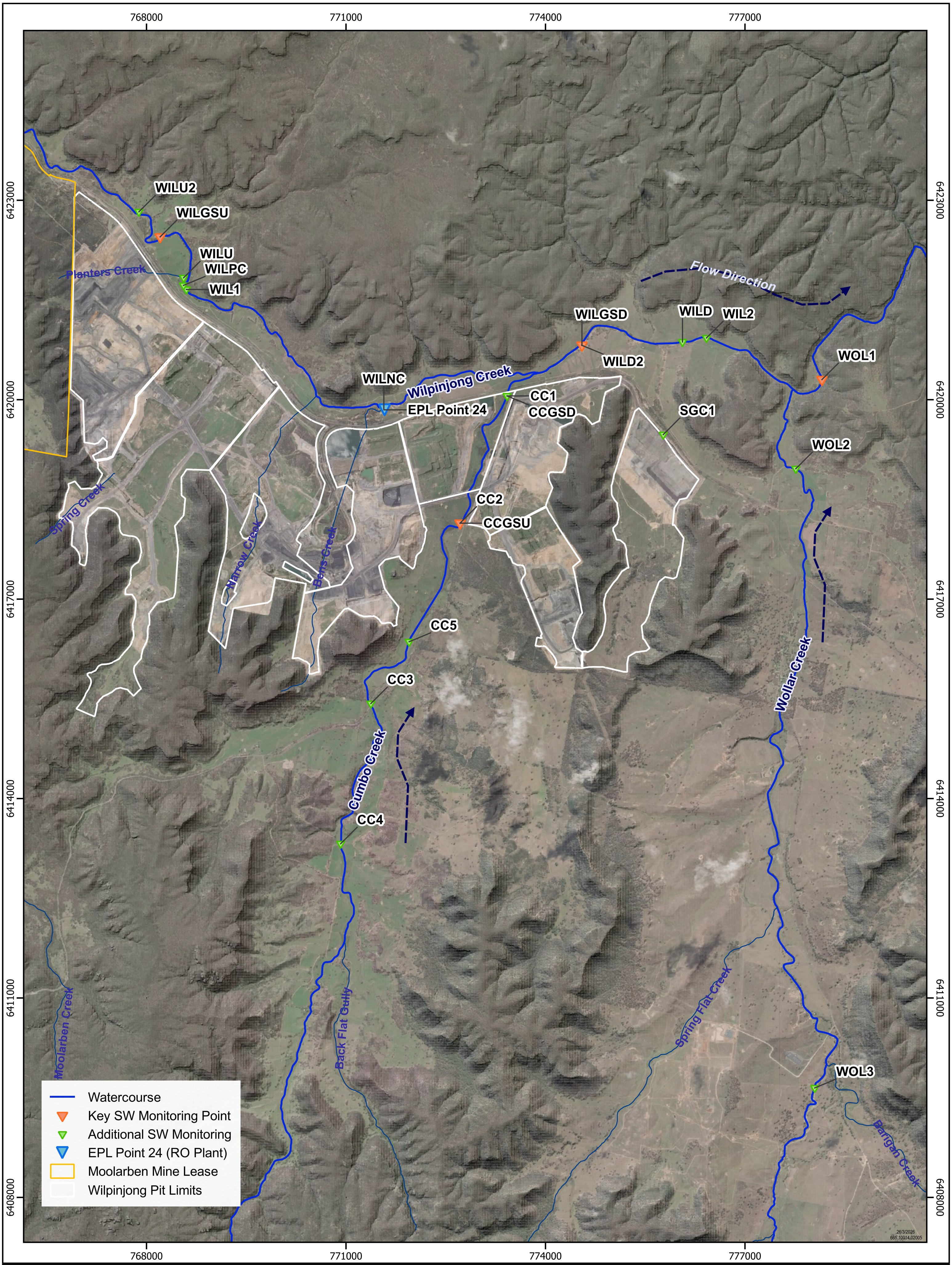
1.0 Introduction

1.1 Background

This report contains the analysis and information required for the 2025 Annual Review of flow and water quality trends at Wilpinjong Creek, Wollar Creek and Cumbo Creek near Wilpinjong Coal Mine (WCM). It serves as a supplementary document to the review of hydrogeological data conducted by SLR Consulting Pty Ltd (SLR) for the 2025 Groundwater Annual Review and 2024-25 Water Year Licensing Audit. This report presents information on the following items:

1. An overview of local climatic conditions experienced during 2025.
2. An overview of the volume and quality of water discharged from WCM during 2025 at the Licenced Discharge Points (LDPs) permitted under the Wilpinjong Coal Pty Limited (WCPL) Environmental Protection Licence (EPL) EPL12425.
3. Cause-and-effect analysis of data from the Wilpinjong Creek upstream (WILGSU) and downstream (WILGSD), and Cumbo Creek upstream (CCGSU) gauging stations, compared to the long-term rainfall trend and discharge from WCM and other regional mines.
4. Assessment of key water quality criteria at the local creeks during the 2024-2025 water year in respect to the baseline data (pre-mining, as defined in the Surface Water Management Plan (SWMP)), as well as Water Quality Impact Assessment Criteria for downstream monitoring sites within Cumbo and Wilpinjong Creeks, also defined in the current SWMP.

The Wilpinjong surface water quality monitoring, flow gauging stations and discharge locations are presented in **Figure 1**.



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Wilpinjong Coal Annual Review 2025
Surface water monitoring and discharge sites

FIGURE 1

2.0 Climate

Table 1 displays the monthly and annual rainfall records from 2016-2025 compared to the long-term averages at the Wollar (Barrigan St) BOM station. The annual total rainfall recorded in 2025 was 623 mm, which equates to 104% of the long-term average of 601.4 mm, representing a slightly above average rainfall year.

Table 2 presents the rainfall observed at the on-site rainfall gauge during 2025. Overall, rainfall recorded on-site at WCM is slightly lower than at the Wollar BOM station with a total for 2025 of 596.8 mm.

Variation in annual rainfall is a key influence on surface water flow and can influence water chemistry.

Table 1: BOM rainfall station 062032 - recent monthly and annual rainfall vs long term average (mm)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual +
Avg	**67.6**	**62**	**55.1**	**39.2**	**37.8**	**43.8**	**43.2**	**41.1**	**41.8**	**51.9**	**57.1**	**60.8**	**601.4**
2016	101.2	10.4	21.4	3.0	67.0	114.2	82.4	44.0	181.2	74.2	41.0	36.2	**776.2**
2017	13*	31.0	127.0	19.0	24.4	12.0	1.4	25.6	2.0	30.0	62.6	86.4	**421.4**
2018	13.4	66.2	41.4	47.0	12.6	22.0	6.5	25.5	51.0	48.5	44.4	117.6	**496.1**
2019	72.0	5.0	110.5	0.0	20.0	6.0	4.0	10.0	23.0	7.0	30.0	6.0	**293.5**
2020	37.0	151.0	110.2	118.0	35.0	31.3	86.0	36.0	75.7	128.0	21.5	149.3	**979.0**
2021	43.8	107.0	157.5	2.5	11.0	82.0	68.2	21.0	45.0	72.0	183.0	134.0	**927.0**
2022	169.0	17.0	139.5	65.0	38.0	14.5	109.0	100.5	94.5	126.0	85.0	31.0	**989.0**
2023	49.0	28.5	55.0	43.5	4.0	30.5	24.0	39.0	16.5	42.5	97.5	85.5	**515.5**
2024	88.5	39.5	71.0	73.9	63.5	81.5	60.0	42.5	36.0	52.0	103.0	68.0	**779.4**
2025	106.5	45.5	57.0	22.5	114.5	23.5	62	42.5	58.5	36.5	22.0	32.0	**623.0**

*No rainfall recorded at Wollar (Barrigan St). Rainfall from Bylong (Glenview) – 062107 used.

+Orange shading represents below average rainfall years whilst blue shading represents above average rainfall years.

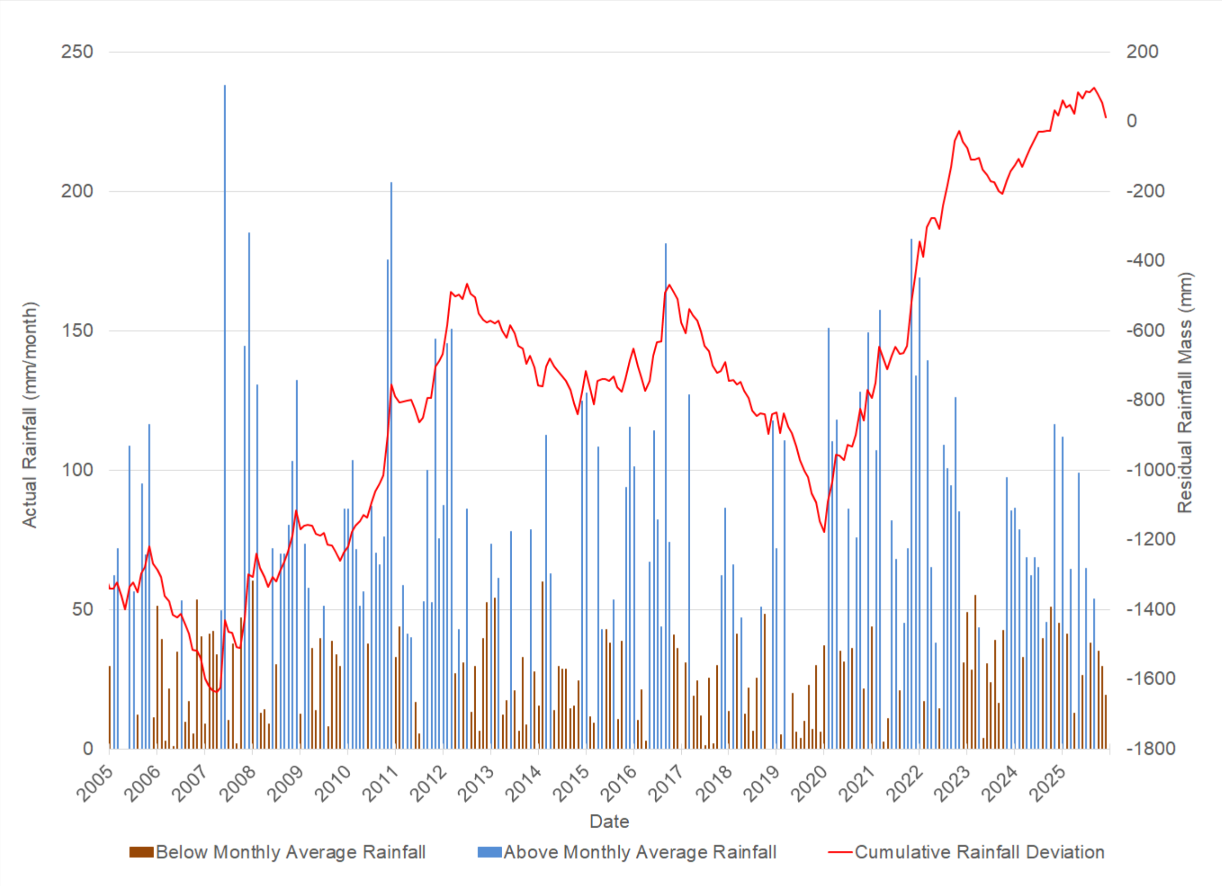
Table 2: Wilpinjong site rainfall data 2025

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2025	111.8	41.2	64.4	12.8	99	26.4	64.8	38.2	53.8	35.2	29.8	19.4	596.8

The cumulative rainfall departure (CRD) shows trends in actual rainfall over time relative to the long-term average and provides a historical record of relatively wet and dry periods. A positive slope in the CRD indicates periods of above average rainfall, while a negative slope indicates periods of below average rainfall. A level trace indicates rainfall conditions are equal to average rainfall conditions.

The CRD from the Wollar (Barrigan St) BOM station **Figure 2**, shows a decline in 2023 given the lower-than-average annual rainfall conditions. The last two months in 2023 see an increase in CRD consistent with higher rainfall in November and December with the upward trend continuing for 2024 reflecting the above-average rainfall conditions. For 2025, there is a notable negative slope from September when rainfall was consistently below average.

Figure 2: Monthly rainfall and Cumulative Rainfall Departure



3.0 Discharge quantity and Quality

The following sections present a summary of the licenced discharge of water from WCM under emergency and normal EPL discharge provisions.

3.1 Licensed Discharge

Under EPL 12425, WCM is allowed to discharge water from site to Wilpinjong Creek from the following locations (see **Figure 1**):

- EPL Point 24 - Product water from the RO treatment plant is discharged to Wilpinjong Creek. The daily discharge limit from the RO Plant is 6.5 ML/day. The EPL stipulates required monitoring of electrical conductivity (EC), pH, oil and grease, and total suspended solids (TSS).
- EPL Point 30 – Discharge from the Pit 8 clean water diversion (CWD) dam to the downstream reach of Slate Gully Creek before it enters Wilpinjong Creek. There is no daily discharge limit and the EPL reflects Wilpinjong Coal's position that the water quality (i.e., measured as turbidity) from the Pit 8 CWD dam is generally equal to or better than the receiving water in Wilpinjong Creek.

The following sections provide further detail on the EPL conditions at these discharge points, and an overview of the quality and volume of water discharged in 2025. The quality of discharged water will contribute to water quality observations in Wilpinjong Creek and may be relevant when assessing surface water compliance for 2025.

3.1.1 EPL Point 24 – RO Plant

WCM was historically approved to discharge up to 5 ML/day via the RO plant at EPL Point 24, which treats water from the on-site water retention dams. On 10 October 2022, EPL 12425 was updated to increase the discharge limit at EPL Point 24 to 6.5 ML/day. EPL 12425 specifies limits for the quality and monitoring frequency of water that may be discharged from this location (**Table 3**).

Table 3: EPL Point 24 – RO Plant Discharge Limits

Parameter	Unit of Measurement	Required Monitoring Frequency	Limit
EC	µS/cm	Continuous during discharge	500
Oil and Grease	mg/L	Weekly during any discharge	10.0
pH	pH unit	Continuous during discharge	6.5 – 8.5
TSS	mg/L	Weekly during any discharge	50
Discharge Vol.	ML	Continuous during discharge	6.5

The recent recorded discharge volumes and associated water quality (EC and pH) from the RO plant are presented in **Figure 3**, which presents daily mean values for discharge from continuous monitoring alongside the weekly laboratory samples (RO Discharge Lab) for EC and pH. The monitoring and reporting against EPL Point 24 limits (**Table 3**) in 2025 are summarised in **Table 4**.

Table 4: EPL Point 24 2025 Monitoring

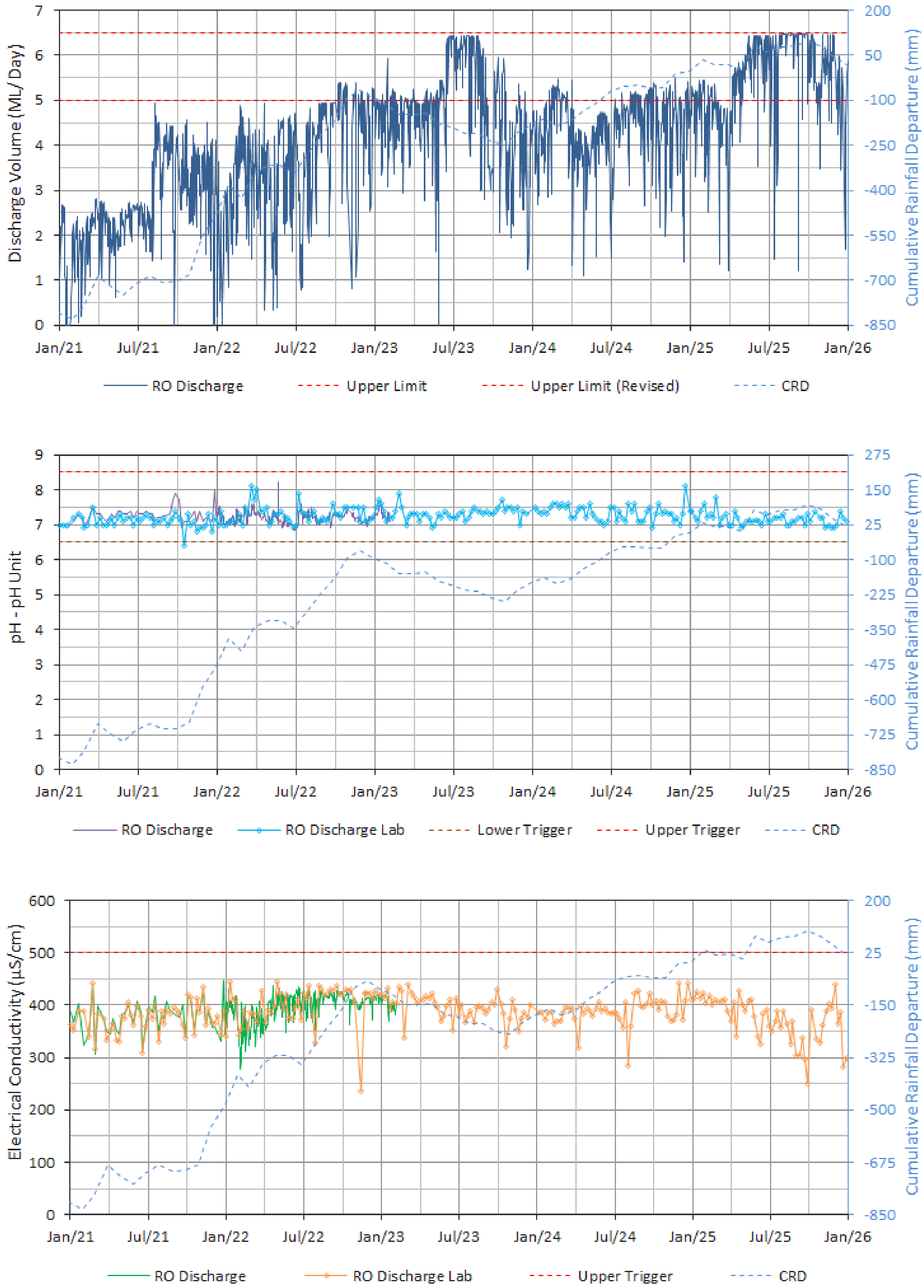
EPL Reporting Freq.	Comment	
	Monitoring Freq	Water Quality Limits
12x monthly reports completed in 2025	Parameters requiring continuous monitoring were collected 100% of the time from February to December 2025. Data provided to SLR for this review indicates that Oil and Grease and TSS samples were collected at the required frequency throughout 2025.	EPL Point 24 limits are not exceeded for any analytes during 2025.

3.1.2 EPL Point 30 – Pit 8 CWD dam

WCM discharges surface water run-off captured above mining operations at EPL Point 30. This area above the mining operations is referred to as the Pit 8 clean water diversion (CWD) dam. The turbidity value measured in the discharge at EPL Point 30 should not exceed the turbidity value measured at the Wilpinjong Creek upstream gauging station (WILGSU). The water discharged from EPL Point 30 is captured rainwater and should therefore have a water quality (i.e. turbidity) that is equal to or better than the turbidity of the receiving water in Wilpinjong Creek. When there is no flow within Wilpinjong Creek at the upstream gauging station the value of turbidity measured at EPL Point 30 must not exceed 50 Nephelometric Turbidity Units (NTU), which is a ‘limit’ recommended in the ‘Blue Book’ (Soils and Construction Volume 1 – Managing Urban Stormwater – Landcom, 2004).

No discharge from EPL Point 30 occurred in 2025.

Figure 3: RO Plant discharge volume and quality in 2025



4.0 In-Stream Monitoring Data Review

Flow rates and water quality (pH and EC) are monitored continuously from two sites on Wilpinjong Creek (WILGSU and WILGSD) and one site on Cumbo Creek (CCGSU).

The locations of the gauging stations on Wilpinjong Creek are shown in **Figure 1**. The upstream site (WILGSU) is located northwest of WCM. The downstream site (WILGSD) is northeast of WCM, downstream of the RO Plant and downstream of the confluence of the Wilpinjong and Cumbo creeks. The Cumbo Creek upstream gauging station (CCGSU) is located approximately 400 m to the east of Pit 2 and approximately 800m upstream of Pit 4 which is now used for water storage and rehabilitation (**Figure 1**). Flow/discharge, EC, and pH are all monitored at these locations.

Real-time flow and water quality data is presented up to 31 December 2025.

4.1 Surface Water Flow

The following section presents and discusses daily flow data from the three continuous surface water monitoring gauges on Wilpinjong Creek (WILGSU and WILGSD) and Cumbo Creek (CCGSU). Observed flow trends are reviewed against rainfall data from the local rainfall station (Wollar, 062032) and discharge volumes throughout 2025.

The two Wilpinjong Creek gauging stations have been recording since January 2012. The catchment area reporting to the upstream site (WILGSU) is 86 km^2 while the downstream site has a catchment area of 216 km2. CCGSU on Cumbo Creek has been recording data since August 2015. **Figure 4** shows the flow data at these sites from late 2022 to the end of 2025 in comparison to the RO Plant discharge rate (EPL Point 24).

During 2025, flow at CCGSU fluctuated between <0.01 and 5.2 ML/day in response to rainfall events with an average flow of 0.23 ML/day. CCGSU was observed to flow for most of the year except for three brief periods in March, May, and from November to December.

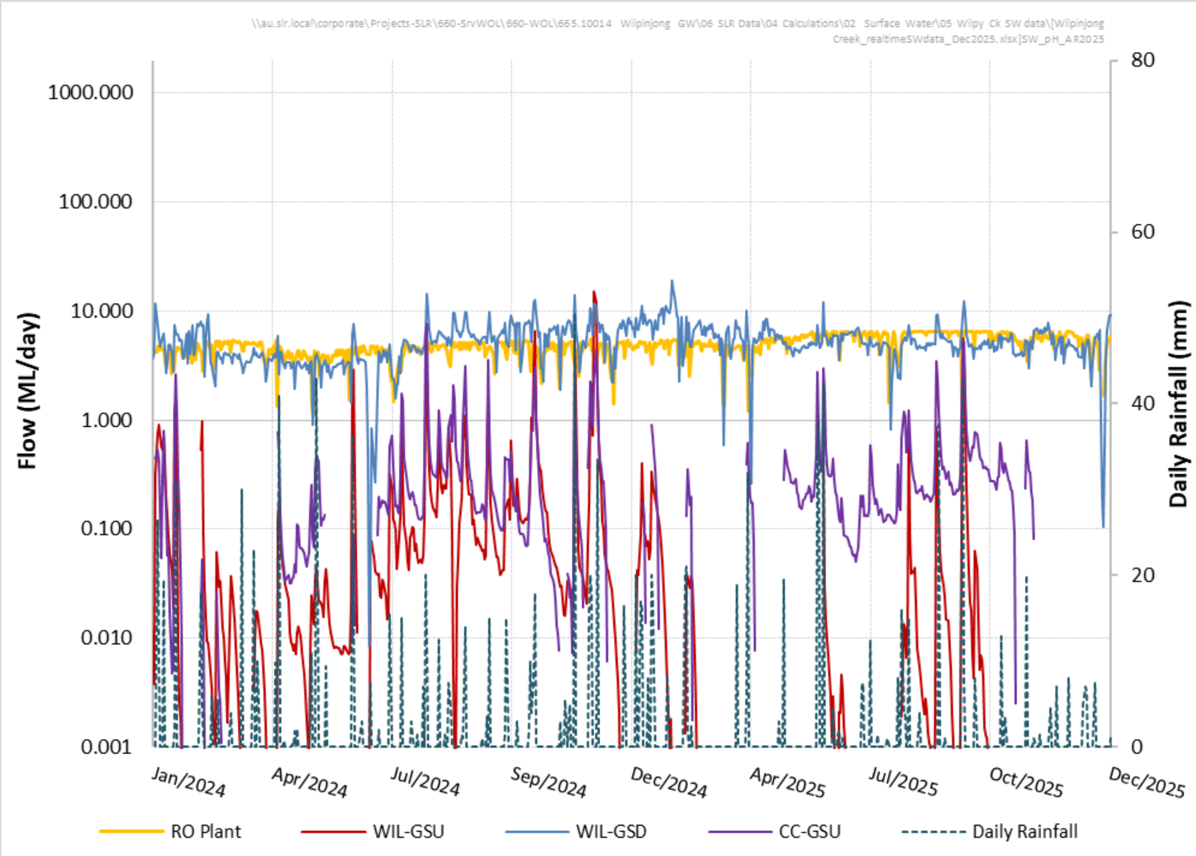
In 2025, flow at WILGSU ranged between <0.01 and 5.6 ML/day with an average of 0.04 ML/day, while WILGSD recorded flows from 0.2 to 19 ML/day at an average of 5.7 ML/day. Flow rates at WILGSD are directly influenced by RO Plant discharge volumes (**Section 3.1.1**)

Table 5 presents the calculated daily mean discharge rates at WILGSU, WILGSD and CCGSU for each year since 2013. The average daily flow rate of all creek monitoring points increased from 2019 through 2022, while WILGSU and CCGSU showed a reduction in daily averages from the 2023 to 2025 reporting periods, while WILGSD increased from 2024 to 2025.

Table 5: Calculated daily mean flow rate at Wilpinjong and Cumbo Creeks

Location ID	Average Daily Flow Rate (ML/day)												
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
WILGSU	0.16	0.03	0.24	2.8	0.002	0	0	5.2	5.1	25.8	1.1	0.3	0.04
WILGSD	0.27	0.22	0.39	5.7	5.9	0.73	0.008	6.0	10.0	70.0	6.3	5.0	5.7
CCGSU	No data		0.14	1.6	0.6	0.4	0.1	0.9	2.1	20.4	0.95	0.3	0.23

Figure 4: Continuous flow monitoring records (January 2024 – December 2025)



4.2 Water Quality

Water quality is monitored continuously at WILGSU, WILGSD and CCGSU, with a multi parameter water meter (sonde) measuring EC, pH (and temperature, which is not provided or assessed here).

4.2.1 Electrical Conductivity

EC monitoring data at WILGSU, WILGSD and CCGSU are provided in **Figure 5** and are generally influenced by the following factors:

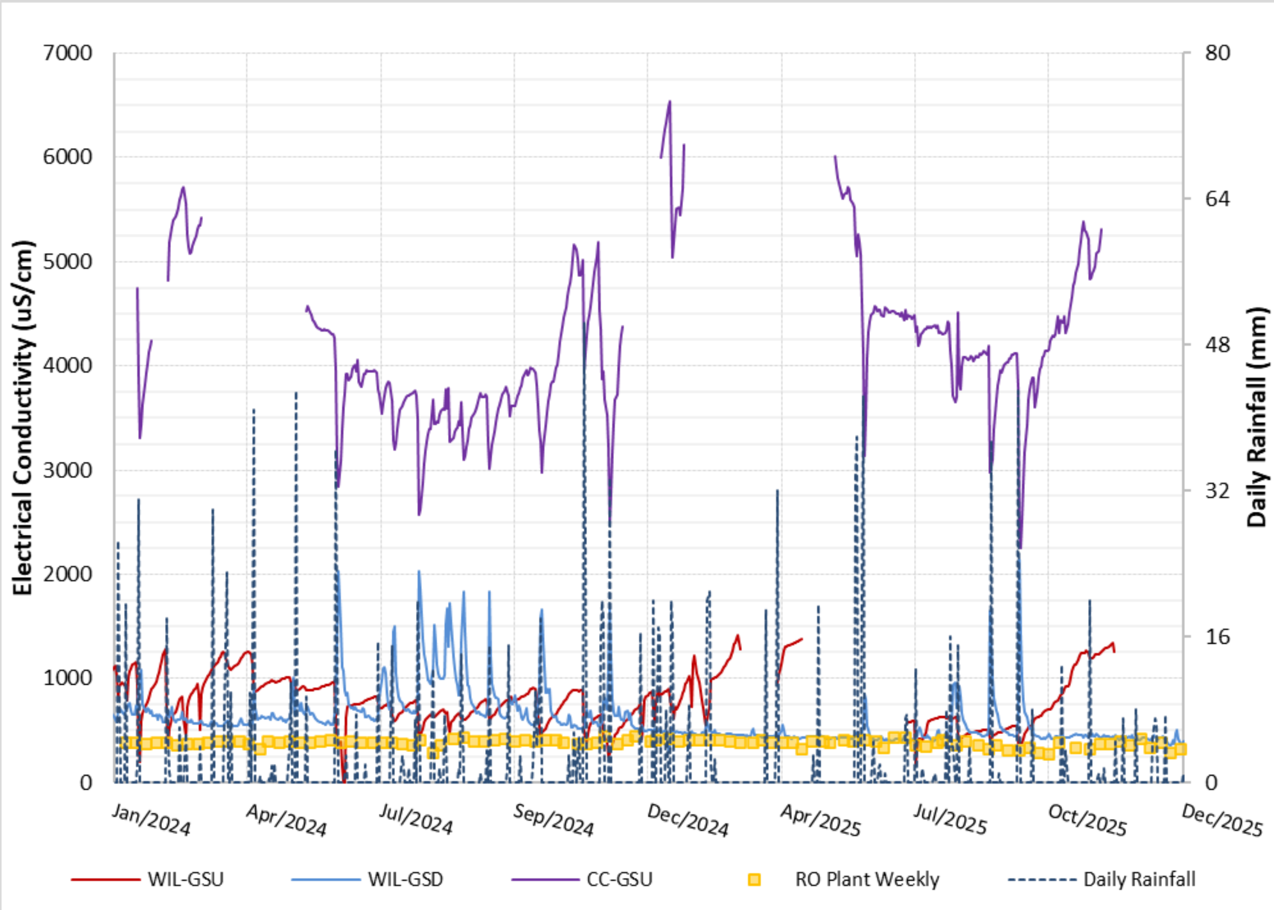
- WILGSU is most strongly influenced by the rainfall trend, with limited contribution identified from groundwater (baseflow). EC at WILGSU is therefore generally low (~1,000 to 2,000 µS/cm) and relatively consistent, with a minor inverse response to the rainfall trend (lower rainfall results in an increase in EC) likely resulting from increased evaporation and lower contribution of fresh water in periods of low rainfall.
- Flow at WILGSD is influenced by upstream flow from both Wilpinjong and Cumbo Creeks as well as the RO Plant discharge, which all have different EC values. EC at WILGSD is therefore variable and related to the primary source of flow at any point in time.
- Flow at CCSGU is likely to have a persistent groundwater contribution that is sourced from weathered Permian Coal Measures. In 2025, observations of EC are in the range between 3,000 µS/cm and 6,000 µS/cm but historically have been observed

higher than 8,000 µS/cm. Declines in EC are observed following large rainfall events, due to dilution effects.

In 2025 continuous monitoring at Cumbo Creek (CCGSU) shows generally stable EC in June (~4,500 µS/cm), with a slight decrease from July to September (~4,500-4,000 µS/cm) before increasing EC to ~5,000 µS/cm later in 2025. EC trends in 2025 are consistent with responses observed historically in CCGSU.

Both WILGSU and WILGSD displayed generally stable EC levels across 2025 of around 750 µS/cm upstream and 1,000 µS/cm downstream, with short-term fluctuations linked to changing flow conditions and inputs.

Figure 5: Continuous EC monitoring at WCM

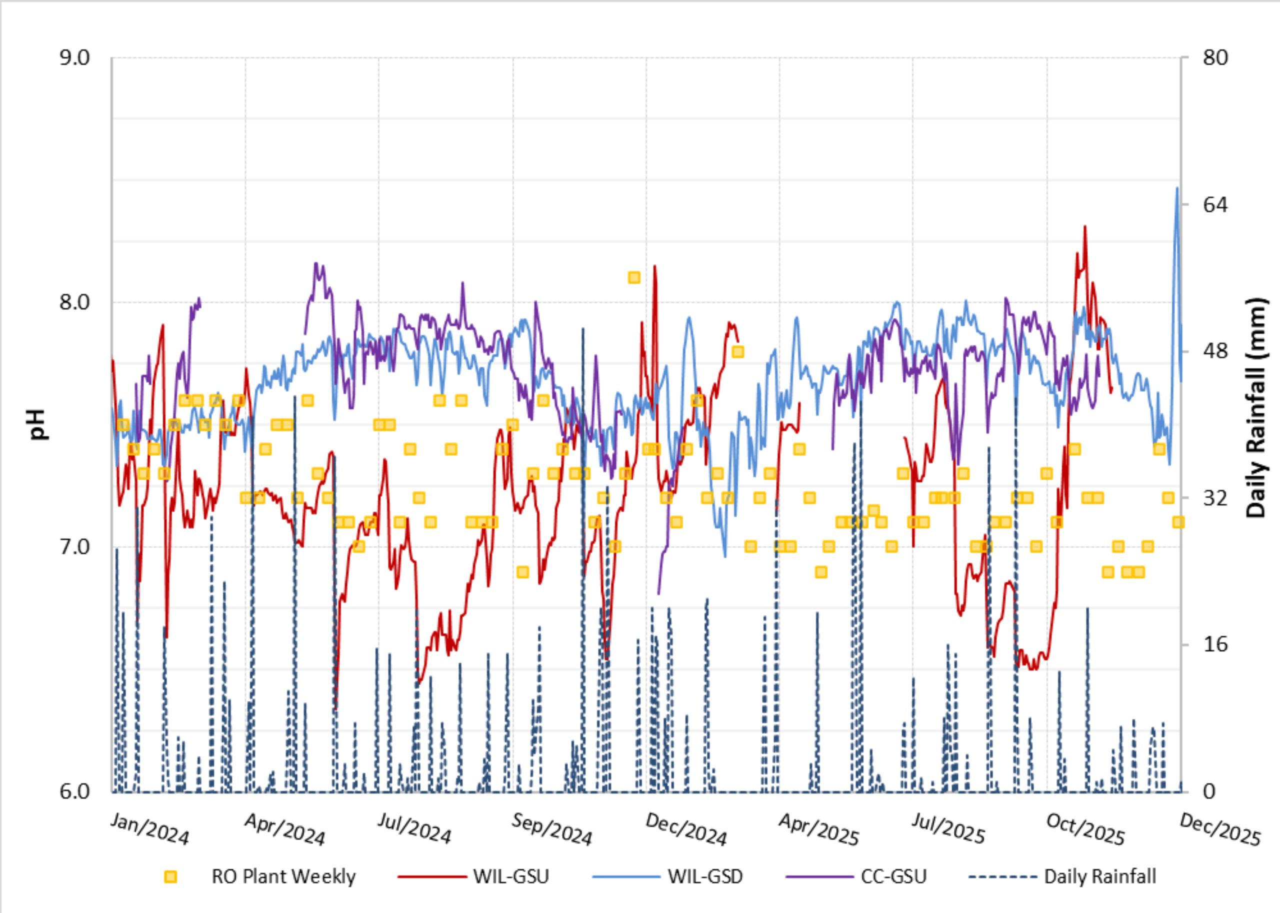


4.2.2 pH

pH at CCGSU is generally consistent throughout 2025, with pH ranging from pH 7 to 8.0, showing minor decreases following periods of higher rainfall, which has lower pH (**Figure 6**).

pH at both gauging stations on Wilpinjong Creek are different by about 1 pH unit and show some correlation to periods of rainfall (declining with higher rainfall periods). For most of 2025 the pH levels in Wilpinjong Creek show some variability that appears linked with periods of high rainfall. WILGSD varies from pH 6.9 to 8.4 and WILGSU varies from pH 6.5 to 8.3.

Figure 6: Continuous pH monitoring



5.0 Water Quality Analysis

The following sections review surface water quality data from monitoring sites specified in Section 8 of the Surface Water Management Plan (WCPL, 2017). This review has been conducted with respect to the 20th and 80th percentile values from baseline monitoring data (**Table 6**) (which was collected from 2004 to 2009, prior to the commencement of mining) and water quality impact assessment criteria (trigger levels), where defined (**Table 7**).

Section 5.1 provides an assessment of the 2025 water quality observations with respect to the impact assessment criteria, while **Sections** 5.2 to 5.6 comment on the 2025 observations with respect to the baseline water quality data.

Table 6: Summary of Baseline Water Quality Data – Local Creeks (WCPL, 2017)

Monitoring Site/Guideline		pH	EC (µS/cm)	Turbidity (NTU)
ANZECC (2000) Guideline Trigger Value	**Protection of Aquatic Ecosystems**	6.5-8.0	30-350	2-25
	Primary Industries (Livestock Drinking Water)	6-9	950	-
Wilpinjong Creek Upstream (Sites WIL-U2, WIL-U, WIL 1, WIL-PC)	Average	7	2,435	20
	Minimum	5.7	450	6
	Maximum	9	12,190	41
	No. Samples	49	49	5
	80th percentile	**7.7**	**4,066**	**24**
	20th percentile	**6.9**	**-**	**-**
Wilpinjong Creek Downstream (Sites WIL-NC, WIL-D2, WIL 2, WIL-D)	Average	8	3,531	22
	Minimum	6.7	680	4
	Maximum	9	7,450	70
	No. Samples	55	55	9
	80th percentile	**7.9**	**5,166**	**28**
	20th percentile	**7.4**	**-**	**-**
Cumbo Creek Upstream (Sites CC2, CC3, CC4, CC5)	Average	8	5,303	11
	Minimum	6.8	100	5
	Maximum	9	10,500	24
	No. Samples	70	70	15
	80th percentile	**8.2**	**6,750**	**16**
	20th percentile	**7.4**	**-**	**-**
Cumbo Creek Downstream (Site CC1)	Average	8	6,231	43
	Minimum	6.7	540	17
	Maximum	9	10,470	94
	No. Samples	27	27	6

Monitoring Site/Guideline		pH	EC (µS/cm)	Turbidity (NTU)
	80th percentile	**8.2**	**7,510**	**77**
	20th percentile	**7.52**	**-**	**-**
Wollar Creek (Sites WOL 1, WOL 2, WOL 3)	Average	8	2,311	16
	Minimum	6.5	90	2
	Maximum	8.4	6,540	37
	No. Samples	90	90	20
	80th percentile	**8.0**	**3,460**	**25**
	20th percentile	**7.4**	**-**	**-**

Where trigger levels are defined (**Table 7**) the review will identify any exceedances during 2025 and provide preliminary analysis.

Table 7: Water Quality Impact Assessment Criteria (WCPL, 2017)

Creek	Monitoring Site	Parameter	Trigger
Wilpinjong Creek (Downstream)	WIL_NC, WIL_D2, WIL_D, WIL_2	EC	If recorded value at the monitoring site is greater than **3,440 µS/cm** for 3 consecutive readings
		Turbidity	If recorded value at the monitoring site is greater than **24 NTU** for 3 consecutive readings
		pH (lower)	If recorded value at the monitoring site is less than **6.9 pH** for 3 consecutive readings
		pH (upper)	If recorded value at the monitoring site is greater than **7.7 pH** for 3 consecutive readings
Cumbo Creek (Downstream)	CC1	EC	If recorded value at the monitoring site is greater than **7,510 µS/cm** for 3 consecutive readings
		Turbidity	If recorded value at the monitoring site is greater than **77 NTU** for 3 consecutive readings
		pH (lower)	If recorded value at the monitoring site is less than **7.5 pH** for 3 consecutive readings
		pH (upper)	If recorded value at the monitoring site is greater than **8.2 pH** for 3 consecutive readings

[1] Trigger is only considered to have been exceeded if the recorded value at a monitoring site is greater than (or less than for lower pH Trigger) all values from the upstream monitoring sites sampled on the same day. In the event that a single result is recorded above/below the 80th/20th percentile value, WCPL will undertake a preliminary investigation to ascertain whether the result was caused by an obvious anomaly or whether further testing is required.

5.1 Assessment with respect to SWMP (WCPL, 2017) water quality triggers

Table 8 identifies Water Quality Impact Assessment Criteria defined in the SWMP (WCPL, 2017) that have been exceeded during 2025. This assessment, in line with the SWMP (WCPL, 2017) has only considered triggers to be exceeded under the following circumstances:

- Trigger is only considered to be exceeded if recorded value at the monitoring site is greater than (or less than for lower pH trigger) for 3 consecutive readings.
- Trigger is only considered to have been exceeded if the recorded value at monitoring site is greater than (or less than for lower pH Trigger) all values from the upstream monitoring sites sampled on the same day.

Table 8: Exceedances of Water Quality Impact Assessment Criteria (WCPL, 2017)

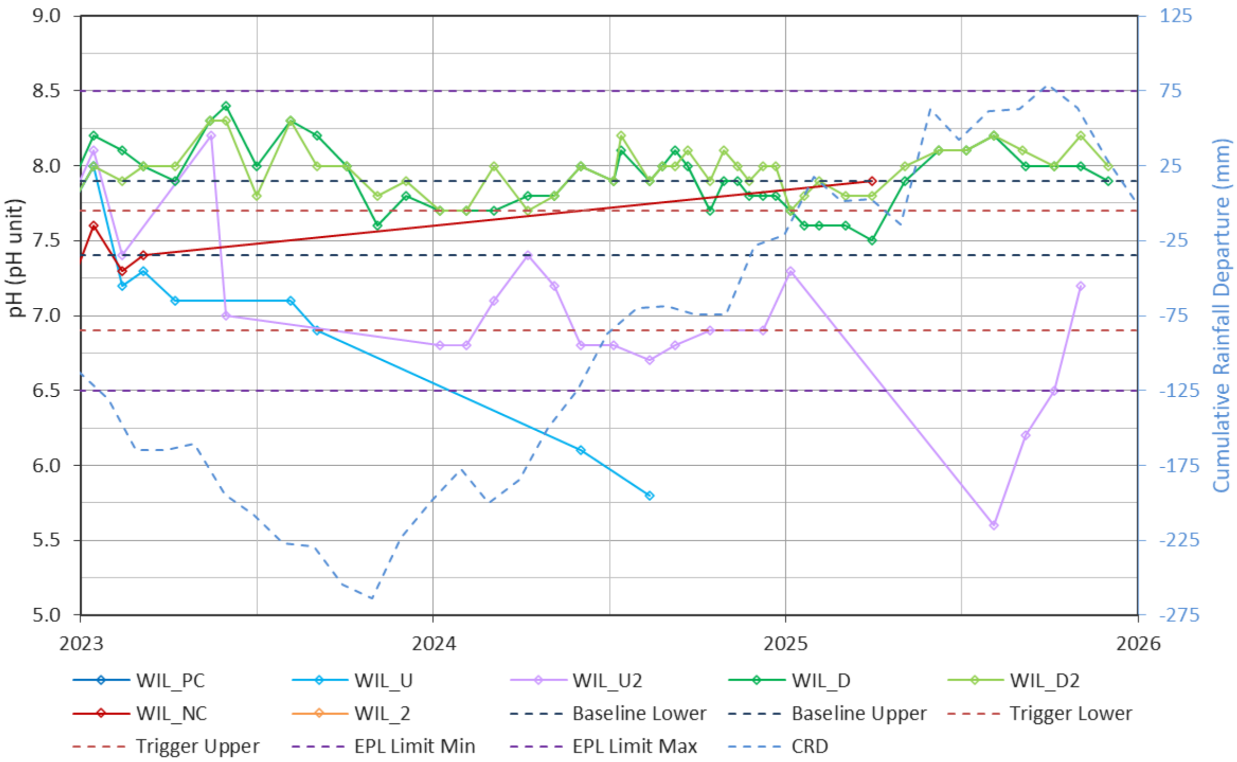
Creek	Site	Parameter	Trigger	Exceedance during 2025	Summary of Exceedance
Wilpinjong Creek (Downstream)	WIL-NC, WIL-D2, WIL-D, WIL-2	EC	3,440 µS/cm	No	
		Turbidity	24 NTU	No	
		pH (lower)	6.9 pH (7.4 pH proposed)	No	
		pH (upper)	7.7 pH (pH 7.9 proposed)	Yes	All observations from January to December 2025 are above the upper pH trigger, and above upstream pH observations (when available) at WIL-D2 during 2025. Observations are above the upper pH trigger at WIL-D from May to December 2025 See **Section 5.3.1.1**and **Figure 7**.
Cumbo Creek (Downstream)	CC1, CC-1-30m-up, CC-GS-D	EC	7,510 µS/cm	No	
		Turbidity	77 NTU	No	
		pH (lower)	7.5 pH	No	
		pH (upper)	8.2 pH	No	

During the 2025 assessment period, the identified trigger exceedances are upper pH trigger exceedances at Wilpinjong Creek (Downstream), as observed at WIL-D2 and WIL-D.

A review of possible and plausible drivers of this trigger exceedance is provided in **Section 5.3.1.1** while **Figure 7** shows time-series pH observations at all Wilpinjong Creek compliance monitoring sites to visualise the frequency and magnitude of 2025 trigger exceedances.

Baseline pH from Wilpinjong Creek downstream monitoring sites as well as pH limits discharge from EPL Point 24 (the RO Plant) are included in **Figure 7**. A submitted but not yet approved version of the SWMP (from January 2025) has indicated that pH trigger levels at Wilpinjong Creek downstream monitoring sites should be updated to reflect downstream baseline data (pH 7.4 to 7.9 – See Table 8 of the approved SWMP Peabody (2017)). This revised SWMP also indicates that pH trigger levels downstream of RO discharge at EPL Point 24 should reflect the EPL discharge limits when RO Plant discharge is higher than background flow in Wilpinjong Creek (as measured at WILGSU).

Figure 7: Wilpinjong Creek pH at compliance monitoring locations



5.2 Wilpinjong Creek Upstream

The reach defined as Wilpinjong Upstream (WCPL, 2017) is assessed using monitoring data from sites WIL-U2, WIL-U, WILGSU and WIL-PC **Table 6**). These sites are located along Wilpinjong Creek near the northwestern edge of the current and proposed WCM mining activity (**Figure 1**). **Figure 8** presents time series pH, EC and turbidity data for these monitoring locations.

5.2.1 pH

pH observations at the Wilpinjong Creek Upstream monitoring sites during 2025 are likely to be influenced by low flow conditions (Section 4.1) and average rainfall (Section 2.0). WIL_GS_U shows relatively stable and near neutral, with pH generally ranging from pH 6.7 to 7.6. WIL_GS_U likely holds water in drier periods as it is located near a weir constructed for flow measurements. Five pH observations were made at WIL_U2 in 2025, with lower pH (pH 5.6 to pH 6.5) observed in WIL_U2 from August to October while the January and November observations were near pH 7. No samples were collected at WIL_U or WIL_PC due to a lack of flow,

Near average rainfall, and subsequent lower flow conditions are considered to be the primary drivers of fluctuations in the pH observations at upstream Wilpinjong Creek monitoring sites.

5.2.2 Electrical Conductivity

EC observations at Wilpinjong Creek Upstream monitoring sites have shown considerable variation between 2006 and 2025 (<1,000 µS/cm to 6,000 µS/cm). EC is more elevated in historical observations (>4,000 µS/cm) at WIL-U, WIL-U2, and WIL-PC, and are observed to occur simultaneously with fresher observations at WIL-GS-U (~2,000 µS/cm). More saline observations earlier in the monitoring record may indicate some component of groundwater flow from the underlying Permian coal measures. Mining of the Ulan Seam within these coal measures at WCM and adjacent Moolarben will depressurise the coal measures to some extent and may reduce the more saline contribution to Wilpinjong Creek.

A notable freshening at all Wilpinjong Creek Upstream sites occurs in late 2020 to the end of 2022 (generally <750 µS/cm), in response to above average rainfall conditions. An increase in EC (to ~1,000 µS/cm) is observed during the below average (2023) and near average (2024 and 2025) rainfall and lower flow period of 2023 and 2025 (Section 4.1). EC observations at Wilpinjong Creek Upstream monitoring sites are well below the 80th percentile baseline (4,066 µS/cm) for all of 2025, largely below ~2,000 µS/cm, with no major spikes compared to earlier years.

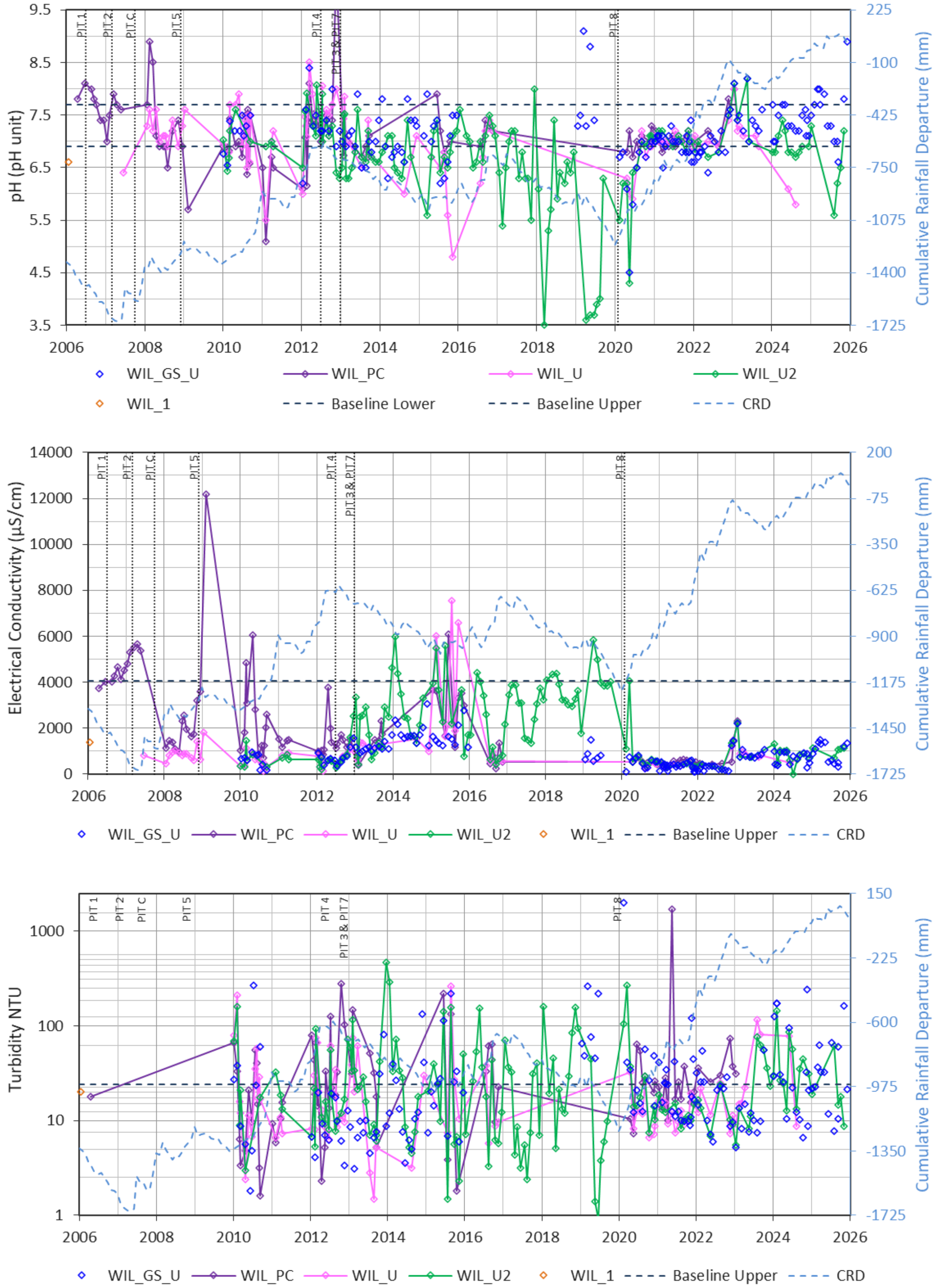
5.2.3 Turbidity

Turbidity observations at Wilpinjong Creek Upstream monitoring sites continuously fluctuate between 2010 and 2025, with observations ranging from 5 – 2,000 NTU and are above the 80th percentile baseline monitoring value (24 NTU) for around half of the observations. Turbidity observations with higher values generally appear to be associated with periods of below average rainfall, particularly periods after low and no-flow conditions.

During 2025, turbidity observations ranged from 7.7 – 162 NTU with an average of 38.7 NTU. This is within the range of historical observations but is above the baseline turbidity value of 24 NTU. Future investigation could be considered since turbidity has remained high throughout 2024 and 2025.

Flow conditions (influenced by rainfall trends) are considered to be the primary drivers of turbidity observations at Upstream Wilpinjong Creek monitoring sites. If no influence of operations from WCM or upstream Moolarben can be attributed to turbidity observations consistently reporting above the 80th percentile baseline value, future reviews, or updates of the SWMP could consider updating the baseline period to better capture fluctuations under normal conditions.

Figure 8: Time-series water quality for Wilpinjong Creek Upstream



5.3 Wilpinjong Creek Downstream

The creek reach defined as Wilpinjong Creek Downstream (WCPL, 2017) is assessed against water quality trigger levels at sites WIL-NC, WIL-D2, WIL-D and WIL-GS-D (**Table 7**). These sites are located along Wilpinjong Creek, adjacent to, or just downstream of the WCM mining operations and confluence with Cumbo Creek (for sites other than WIL-NC) (**Figure 1**). The full series of available data is shown in **Figure 9**.

5.3.1 pH

During 2025, pH observations at Wilpinjong Creek Downstream monitoring sites are above the upper trigger level (pH 7.7) for the majority of measurements at WIL-D and WIL-D2. pH observed at Wilpinjong Creek Upstream monitoring sites (WIL-U and WIL-U2) are lower than downstream observations (WIL-D and WIL-D2) for all of 2025, therefore breaching the upper pH trigger level as defined in the SWMP (WCPL, 2017) (Table 7).

WIL-NC was not monitored in 2025 as flow was not observed during sampling for the entire year. Observations at WIL-D and WIL-D2 ranged from pH 7.5 to pH 8.2 with an average of pH 7.9 in 2025.

Time series pH observations for 2025 at all compliance monitoring locations on Wilpinjong Creek are presented in **Figure 7**, above.

These pH exceedances at Wilpinjong Creek Downstream monitoring sites were documented and assessed by SLR (2023c) consistent with requirements of the surface water Trigger Action Response Plan (TARP) (Peabody, 2017 – Table 15).

5.3.1.1 Trigger Exceedance

The following points provide an evaluation of the pH trigger exceedance and consider whether it is likely related to WCM operations. These points draw on the detailed trigger investigation undertaken in SLR (2023c):

- Higher pH surface water is naturally occurring in the Wilpinjong area (Cumbo Creek and Wollar Creek). pH at downstream Wilpinjong Creek is also generally higher than upstream. Historical observations from 2007 and 2013/14 are also above pH 8.
- Discrepancy was identified between real-time datasets (WIL-GSD, **Figure 6**) and manual (monthly or rain event) pH observations (**Figure 7**). Variations in these datasets increase uncertainty when evaluating data and identifying potential mining effects.
- Cumbo Creek is likely influencing the water signature of Wilpinjong Creek (downstream of the confluence) and is likely contributing bicarbonate alkalinity to Wilpinjong Creek. Higher bicarbonate alkalinity is linked to higher pH at Wilpinjong (SLR, 2023c).
- There is no clear evidence of elevated levels in site water storages which could result in the seepage of mine water to Wilpinjong Creek. However, this possibility should remain a consideration.
- Higher pH surface water is present locally, outside the influence of WCM operations. The exceedance is therefore unlikely to pose a threat to the health of local ecosystems. Observations in 2023 of pH 8.6 at upstream Wollar Creek (WOL2), and ~pH 8.5 at upstream Cumbo Creek (CC-3) are consistent with available historical data.

As specified in the surface water annual review and SLR Trigger Exceedance assessment (2023c), baseline pH data collected for downstream Wilpinjong Creek sites have a 20th percentile value of pH 7.4 and an 80th percentile value of pH 7.9 (**Table 6**). Therefore, under normal conditions, pH observations are expected to be higher than pH 7.9, around 20% of the time, meaning a trigger level of pH 7.7 may be too low to meaningfully indicate a potential Wilpinjong Coal mining effect that justifies further investigation.

A submitted but not yet approved version of the SWMP (from January 2025) has indicated that pH trigger levels at Wilpinjong Creek downstream monitoring sites should be updated to reflect downstream baseline data (pH 7.4 to 7.9) based on the SLR (2023c) investigation. This revised SWMP also indicates that pH trigger levels downstream of RO discharge at EPL Point 24 should reflect the EPL discharge limits for pH (pH 6.5 - 8.5) when RO Plant discharge is higher than background flow in Wilpinjong Creek (as measured at WILGSU).

Under these proposed updates, the pH trigger level would not have been exceeded in 2025, noting that RO discharge was consistently higher than flow from Wilpinjong Creek upstream.

5.3.2 Electrical Conductivity

As discussed in **Section 4.2**, EC observations at Wilpinjong Creek Downstream monitoring sites are influenced by upstream flow from Wilpinjong Creek, flow from Cumbo Creek, discharge permissible under EPL 12425, and some contribution of groundwater baseflow. This has resulted in higher EC observations in periods of low flow, which is attributed to greater contributions from baseflow or Cumbo Creek flow. Also observed are longer periods of consistently low EC observations from 2016 to 2018 attributed to low EC RO Plant discharge.

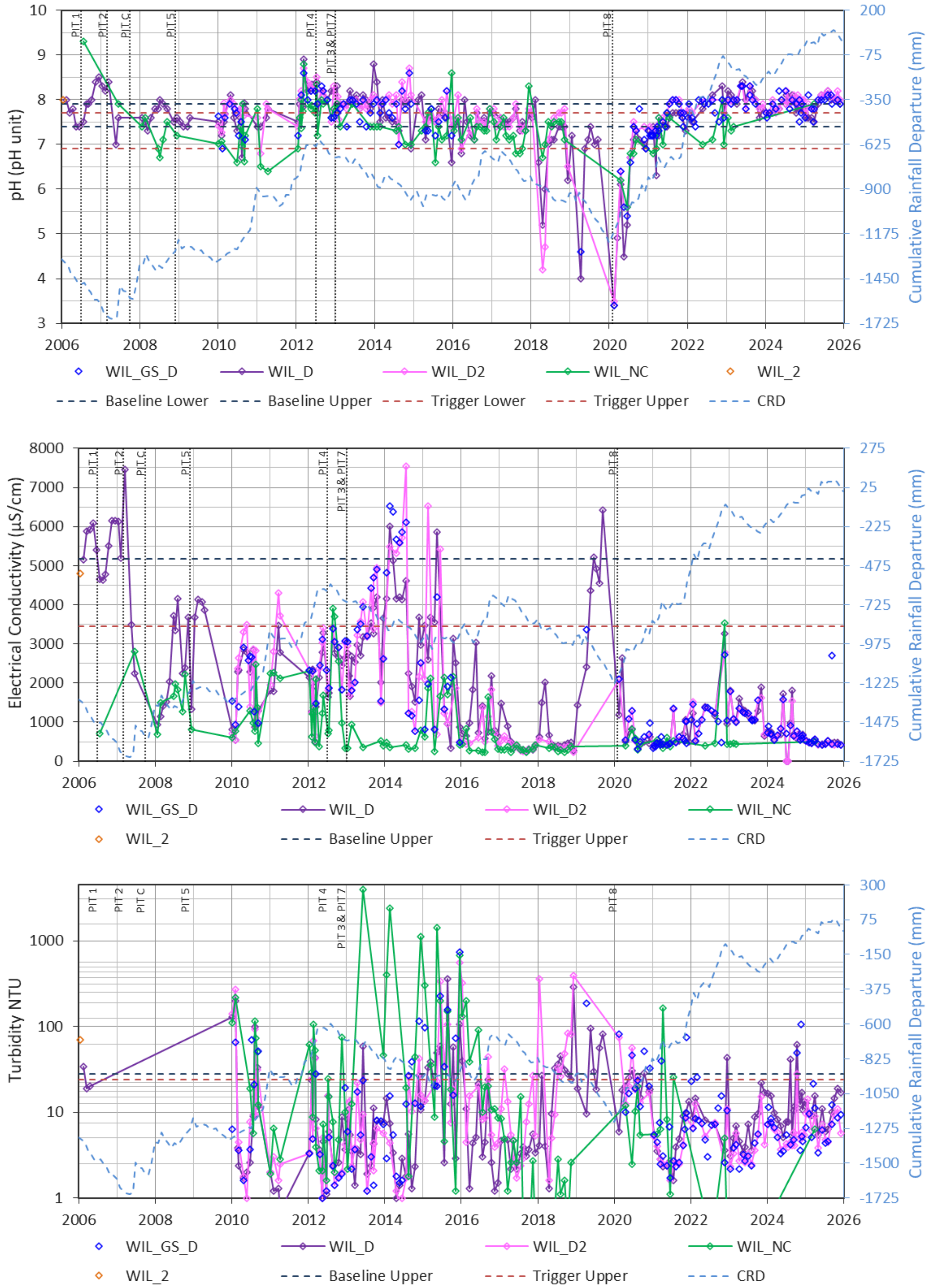
In 2025, EC observations are generally between 500-2,000 µS/cm and all observations are below the trigger level.

5.3.3 Turbidity

Turbidity observations at monitoring sites in the Wilpinjong Creek downstream sites show some variability from 2010 to 2025 (1-1,000 NTU) (**Figure 9**), with a minor inverse relationship to the rainfall trend (i.e. higher than average rainfall can result in lower turbidity)..

During 2025, turbidity observations at Wilpinjong Creek Downstream monitoring sites are generally below the 80th percentile baseline (28 NTU) and trigger level (24 NTU).

Figure 9: Time-series water quality for Wilpinjong Creek Downstream



5.4 Cumbo Creek Upstream

The creek reach defined as Cumbo Creek Upstream (WCPL, 2017) is assessed using monitoring data from sites CC2, CC3, CC-GS and CC-GS-U **(Table 6**). These sites are located along Cumbo Creek to the south of WCM **(Figure 1**). **Figure 10** presents time series pH, EC and turbidity data for these monitoring locations.

5.4.1 pH

pH observations at Cumbo Creek Upstream have been relatively stable from 2015 through 2025. The farthest upstream site, CC-3, has reported observations of around pH 8.3 over 2015-2025 while CC-2 and CC-GS-U were closer to pH 8. In 2025, pH observations at CC-2 and CC-GS-U were recorded within the 20th and 80th percentile baseline value whilst CC-3 showed more alkaline readings; this is consistent with observations since 2015 and earlier historical observations.

5.4.2 Electrical Conductivity

EC observations at Cumbo Creek Upstream show considerable variation for the entire period of monitoring (<1,000 µS/cm to ~10,000 µS/cm) but are generally brackish to saline. Freshening may occur following increases in the long-term rainfall trend as is seen in late 2016, and again from mid-2021 to the end of 2022, with the inverse observed in periods of low rainfall.

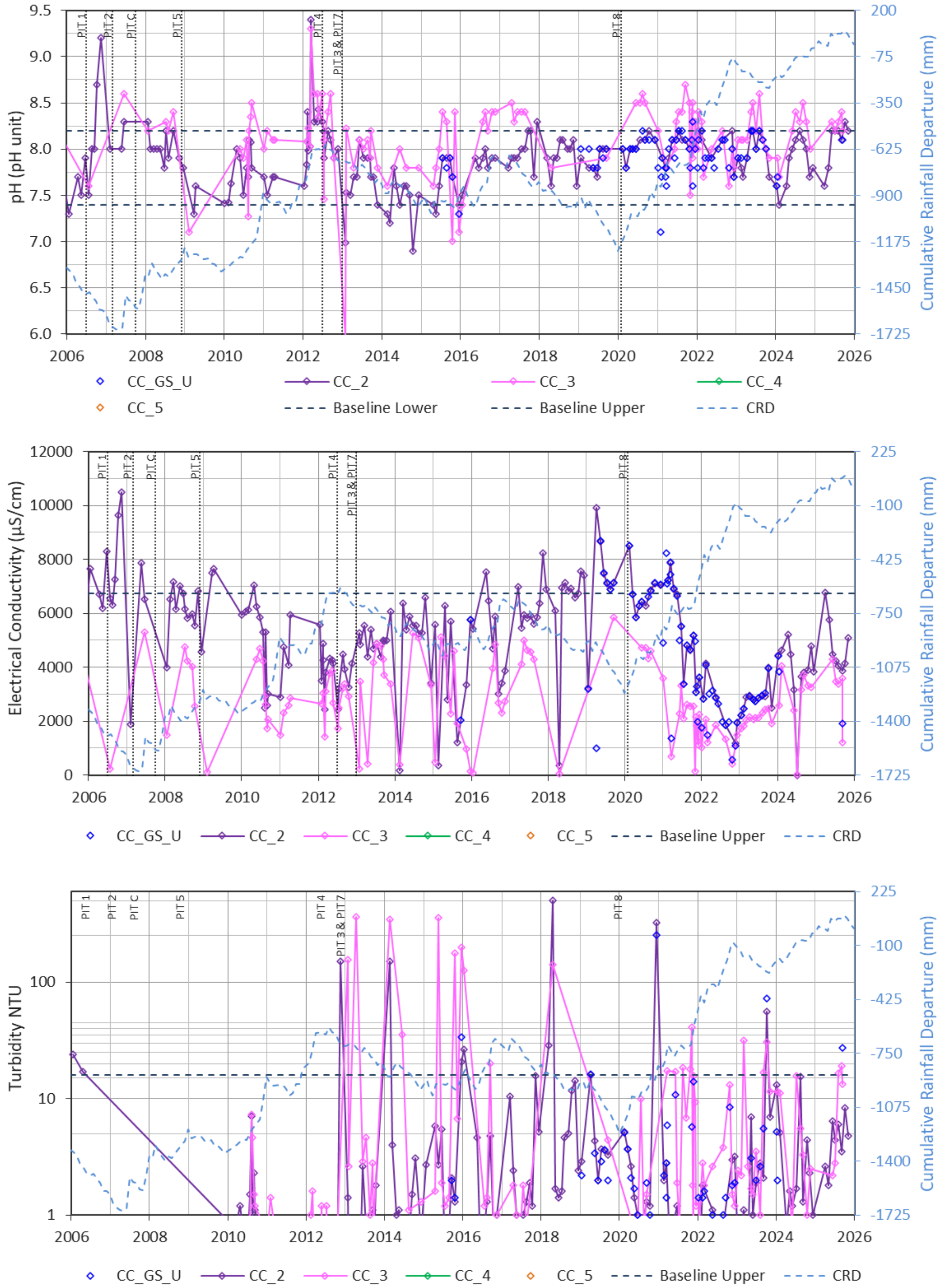
During 2025 EC observations continued to show an increasing EC trend that began in 2023. This is likely driven by a return to below average (2023), near average (2024), and above average (2025) rainfall conditions which may result in a greater proportion of groundwater discharge to Cumbo Creek compared to 2022 observations in high rainfall conditions. 2025 observations at all sites remain below the 80th percentile baseline (6,750 µS/cm).

A combination of rainfall, subsequent flow and ongoing baseflow contributions are considered to be the primary drivers of EC observations at Cumbo Creek monitoring sites.

5.4.3 Turbidity

Turbidity observations at Cumbo Creek Upstream monitoring sites in 2025 are below the 80th percentile baseline value for data collected from 2004 to 2009 (16 NTU) with exception of CC-2 and CC-GS-U observations for August and September, which reached a maximum of 27.2 NTU observed at CC-GS-U in September 2025. Below average rainfall for August and subsequent above average rainfall for September 2025 might be considered the main driver of the higher turbidity observed during this period, with a “first flush” effect after a dryer period in August.

Figure 10: Time-series water quality for Cumbo Creek Upstream



5.5 Cumbo Creek Downstream

The reach defined as Cumbo Creek Downstream is assessed against water quality trigger levels at site CC1, CC-GS-D, and CC-1-(up 30 m) (**Table 7**). These sites are located close to the confluence of the Wilpinjong and Cumbo Creeks and are near the northern extent of the WCM mining operations (**Figure 1**). No samples were taken at the alternate downstream Cumbo Creek site, CC-1-(up 30 m) during 2025. Access can be unsafe to this site, and sampling is frequently unsuccessful due to a lack of observable surface flow. It is therefore, not considered further in this analysis.

5.5.1 pH

From 2015 to early 2019, pH observations at Cumbo Creek Downstream monitoring sites were consistently below the trigger level defined in the SWMP (WCPL, 2017) at a level of around pH 7 (Figure 11). They were also generally lower than pH observations from Cumbo Creek Upstream monitoring sites (Figure 10).

Throughout 2025 both monitoring sites, CC-1, and CC-GS-D, were generally within the pH trigger level limits (pH 8.2), with one observation below the lower pH trigger level (pH 7.5) at the Cumbo Creek downstream sites in April 2025, when a pH of 7.3 was registered for both CC-1 and CC-GS-D.

5.5.2 Electrical Conductivity

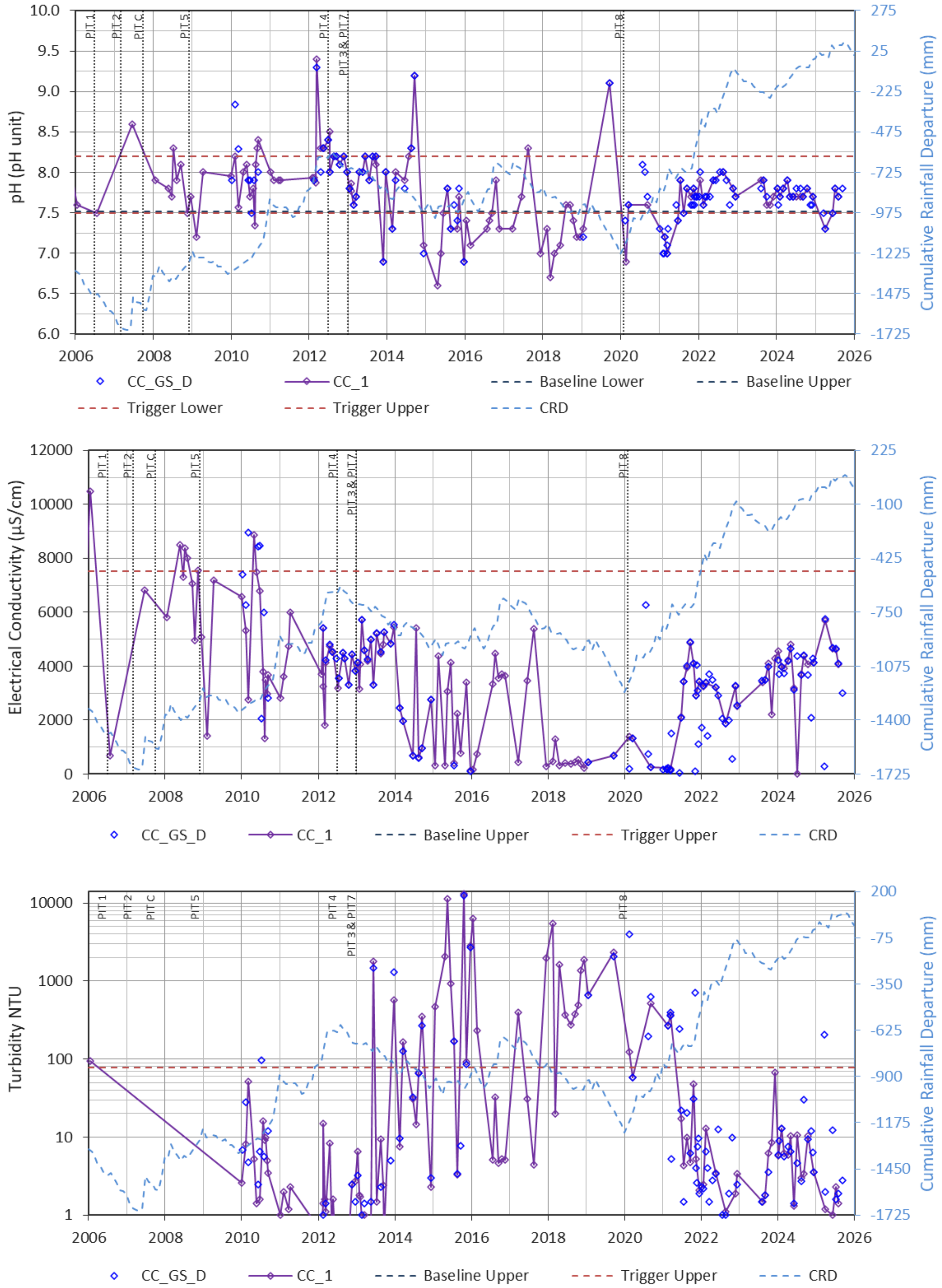
EC observations at Cumbo Creek Downstream monitoring sites show considerable variation from 2015 through 2025 (<1,000 µS/cm to ~6,400 µS/cm) but have not recorded an observation above the trigger level since 2015 (7,510 µS/cm).

During 2025, EC observations at Cumbo Creek Downstream monitoring sites are well below the trigger level (7,510 µS/cm) with readings reaching a maximum of 5,760 µS/cm.

5.5.3 Turbidity

Turbidity observations at Cumbo Creek Downstream monitoring sites in 2025 were below the trigger level (77 NTU) except a single observation of 205 NTU at CC_GS_D in March 2025

Figure 11: Time-series water quality for Cumbo Creek Downstream



5.6 Wollar Creek

Wollar Creek is assessed using monitoring data from sites WOL1 and WOL2 (Figure 1). The sites are located along Wollar Creek to the east and south of WCM, with WOL1 located downstream of the confluence between Wilpinjong and Wollar Creeks. The Wollar Creek monitoring sites are located approximately 5 km from the current extent of the WCM mining activity.

5.6.1 pH

pH observations at Wollar Creek have been relatively stable from 2015 through 2025. WOL-1 and WOL-2 observations have been marginally higher than the 80th percentile value (pH 8.0), with a range of pH 7.9 to 8.3 in WOL-1 and pH 7.7 to 8.1 seen in WOL-2.

The observations at both sites are generally consistent with observations from previous years though WOL-2 has shown a general increase in pH since 2015, with 2025 values higher than generally observed in historical data at approximately pH 8.0.

5.6.2 Electrical Conductivity

EC observations at both Wollar Creek monitoring locations show some influence from rainfall as well as baseflow from more saline groundwater.

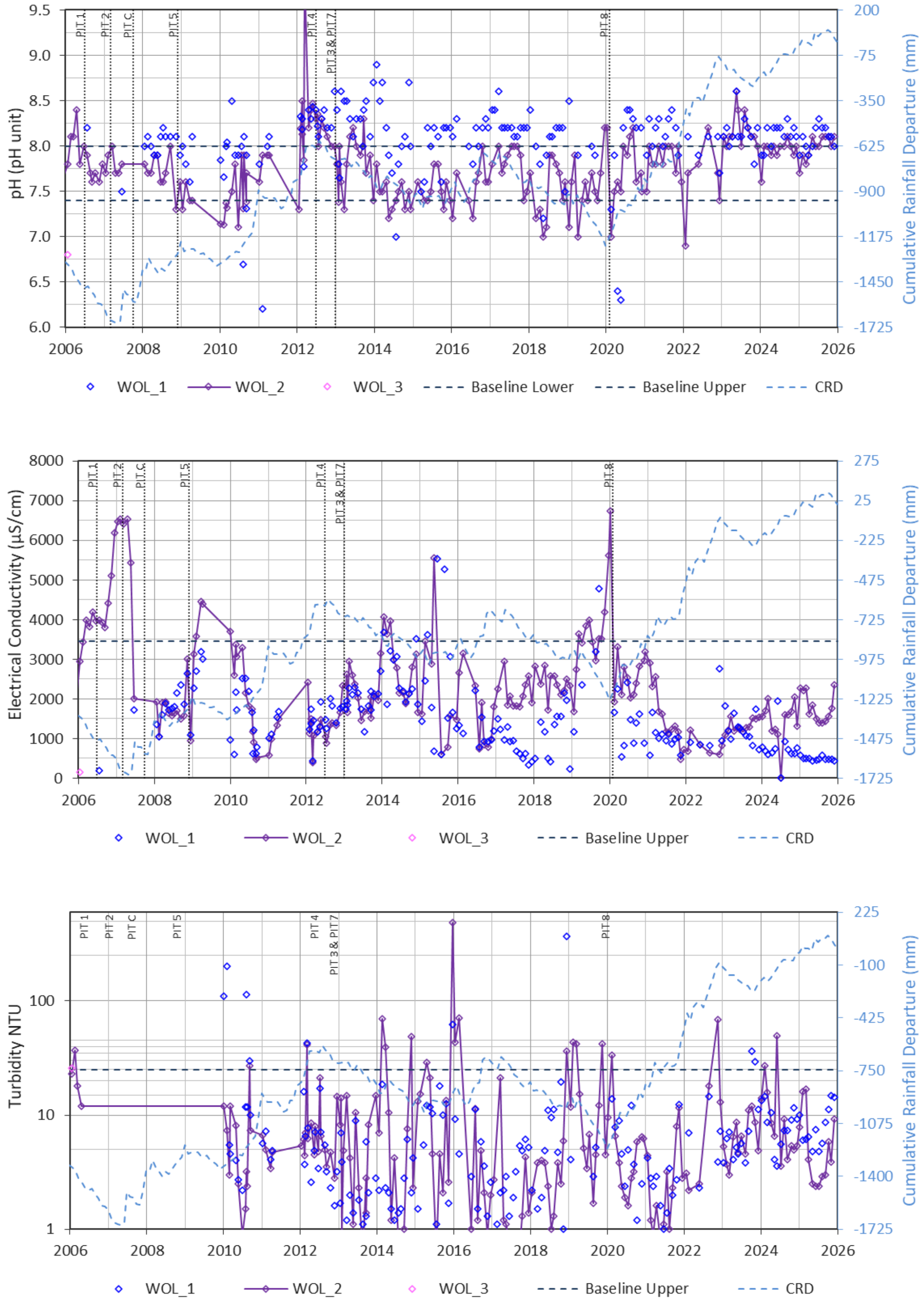
In 2025, all EC observations are below the 80th percentile baseline values (<3,500 µS/cm).

5.6.3 Turbidity

Turbidity observations at Wollar Creek monitoring sites have been relatively stable from 2015 through 2025 and have generally been recorded below the 80th percentile of baseline data collected from 2004-2009 (25 NTU).

Turbidity observations during 2025 at Wollar Creek monitoring sites were below the 80th percentile baseline (25 NTU). Overall, turbidity readings for 2025 are consistent with observations for the entire monitoring period (2006-2025).

Figure 12: Time-series water quality for Wollar Creek



6.0 Recommendations

The only TARP exceedances experienced in 2025 are that associated with pH observations above the trigger level in the Wilpinjong Creek Downstream monitoring locations.

SLR completed the preliminary investigation of the pH trigger exceedances within the WCM surface water monitoring network (SLR, 2023c) at Wilpinjong Creek downstream sites, consistent with the trigger action response plan (TARP) for surface water quality (SWMP Table 15 – WCPL, 2017).

The submitted but not yet approved version of the SWMP (from January 2025) has indicated that pH trigger levels at Wilpinjong Creek downstream monitoring sites should be updated to reflect downstream baseline data (pH 7.4 to 7.9) consistent with findings from SLR (2023c). This revised SWMP also indicates that pH trigger levels downstream of RO discharge at EPL Point 24 should reflect the EPL discharge limits when RO Plant discharge is higher than background flow in Wilpinjong Creek (as measured at WILGSU).

It is recommended that future assessments of pH consider these proposed revisions to the pH trigger levels to help evaluate whether trigger exceedances are likely to be adverse effects from Wilpinjong operations.

7.0 References

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