Annual Review – Wilpinjong Coal Mine

2025 Groundwater Compliance

Wilpinjong Coal Mine

1434 Ulan-Wollar Road Wilpinjong, NSW

Prepared by:

SLR Consulting Australia Pty Ltd

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Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	25 March 2026	L. Alegria	T. McIntyre	Hugo Marais

Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Wilpinjong Coal Mine (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.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

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Executive Summary

The annual groundwater review for Wilpinjong Coal Mine (WCM) contributes to the requirements of the Annual Review (AR) for WCM for the 2025 calendar year. It also contains the analysis and information required to address the relevant water licence conditions ‘water year’ 01 July 2024 - 30 June 2025. The report objectives are:

1 Reporting against the commitments in the WCM Groundwater Monitoring Program (GWMP) – 01 January 2025 to 31 December 2025.
2 Reporting against water licence conditions for WAL41862 – 01 July 2024 to 30 June 2025, with review of inferred inflows from water balance modelling and groundwater modelling.

Continuing the 2024 climatic trend, above average rainfall conditions prevailed for most of 2025, followed by below average conditions from October to December 2025. These conditions resulted in observed increases or stabilisation of groundwater levels across many alluvial and coal measures monitoring sites.

The following observations are made with respect to compliance triggers:

- Alluvium bores GWa3, GWa12, GWa14, and GWa15 have exceeded the lower depth-to-water trigger level during 2025. An inspection at these locations in response to this trigger exceedance was undertaken in November 2024 which identified that these sites contained sediment or were obstructed, rather than showing true dry conditions. These bores are recommended to be considered for replacement and documented in future updates to the GWMP.
- Coal measures bores GWc1, GWc3 and GWc5 have exceeded the EC trigger level during 2025.
  - GWc1 and GWc3 were replaced in November 2024 as both sites had large sumps which may have resulted in difficulties removing stagnant water from the bores to gain representative groundwater samples.
  - There are no observable EC levels changes in groundwater quality due to Wilpinjong operations at GWc5 (and GWc4). GWc5 would not have exceeded the EC trigger in 2025, considering the proposed level amendments in V6.0 of the GWMP (submitted but not yet approved).
- No pumping occurred from the WCPL supply borefield in 2025 and none of the cease-to-pump trigger levels were exceeded.

The shallow groundwater system assessment of modelled vs observed levels for 2025 indicates a good correlation between the timing and magnitude of predicted WCM impacts, often representing a subdued response to rainfall compared to pre-mining observations. Modelled deeper groundwater levels at the coal measures monitoring bores, generally continue to show a good correlation with the timing and magnitude of observed drawdown as result of mining.

As the last numerical model review was completed in early 2020 (SLR, 2020a), recent (2020-2025) climatic conditions are not captured in the model used for this AR, and the observed responses to recent climatic conditions during this time are therefore not represented in the groundwater model.

An updated version of the numerical groundwater model is undergoing independent peer review. This model has been developed in support of groundwater assessments associated with proposed future mining in EL 9399 and is calibrated using observation data up to

December 2023. Compared to the SLR (2020a) model, the updated model includes observed climate and stream flow series data between 2020 and 2023, an updated representation of Wilpinjong operations based on actual mining during this period (as approved under SSD-6764). This model will also be recalibrated to groundwater level observations and will better capture recently observed groundwater trends, suited to evaluating potential discrepancies between observed and model predicted groundwater impacts.

WCPL holds a groundwater licence for 3,121 ML/a under WAL 41862 for the Sydney Basin North Coast Groundwater Source. For the 2025-2026 water year the updated numerical model (SLR, 2025c) predicts an inflow of 877 ML/a while the water balance model estimates groundwater inflow of 1097 ML/a (SLR, 2026). Both these values are below WCPL's entitlement and compliant with licence conditions under WAL 41862.

WCPL holds a groundwater licence for 474 ML/a under WAL 21499 for the Wollar Creek Water Source to account for alluvial groundwater take. The SLR (2020a) numerical model predicts alluvial groundwater take of around 168 ML/year, this predicted take is below and compliant with the licence volume held by WCM.

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1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) was commissioned by Wilpinjong Coal Pty Ltd (WCPL) to conduct the groundwater component of the 2025 Annual Review for Wilpinjong Coal Mine (WCM).

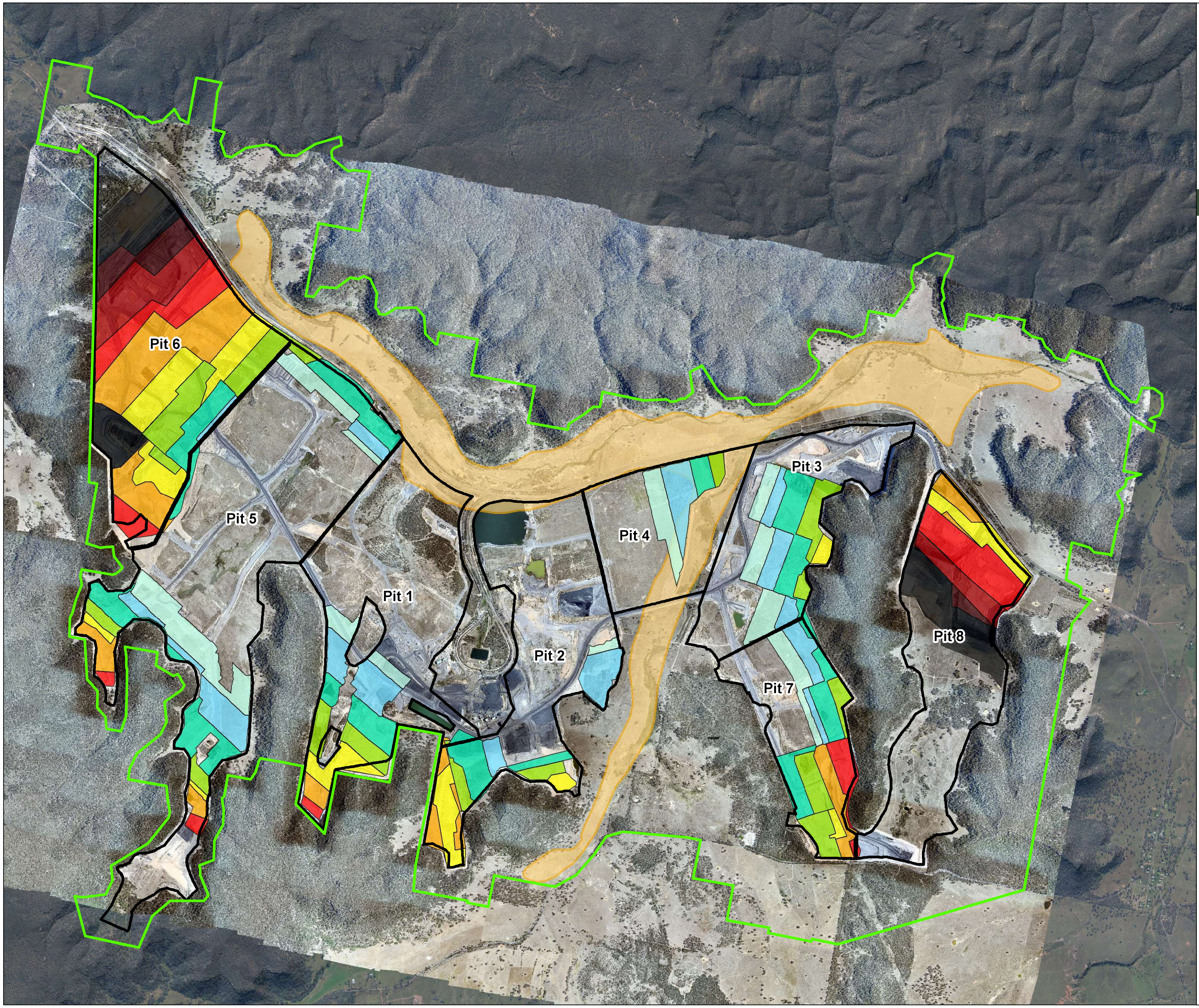
This report contributes to the requirements of the Annual Review (AR) for the WCM for the 2025 calendar year. It also contains the analysis and information required to address the relevant water licence conditions 'water year' 01 July 2024 - 30 June 2025. The report addresses two main objectives:

- Reporting against the commitments in the WCM Groundwater Monitoring Program (GWMP) – 01 January 2025 to 31 December 2025.
- Reporting against water licence conditions for WAL41862 – 01 July 2024 to 30 June 2025 with review of inferred inflows from water balance modelling and groundwater modelling.

While the commitments in the GWMP postdate the water licence conditions, the data presented to meet the GWMP commitments is relevant to addressing water licence conditions.

Open cut pit names and mining progression during 2025 is presented in **Figure 1**, which indicates that mining continued in Pit 6 and Pit 8 in 2025, while backfilling and rehabilitation occurred in areas where mining was completed (Pit 1, Pit 2 East, Pit 3, Pit 4, Pit 5 North, Pit 6 and Pit 7).

Groundwater monitoring bore locations are shown in **Figure 2** and the monitoring bores with established compliant trigger levels are summarised in **Table 5.**



WILPINJONG COAL
2025 GROUNDWATER COMPLIANCE

Open Cut Progression 2016-2025

FIGURE 1

- 2025 Mining Area
- 2024 Mining Area
- 2023 Mining Area
- 2022 Mining Area
- 2021 Mining Area
- 2020 Mining Area
- 2019 Mining Area
- 2018 Mining Area
- 2017 Mining Area
- 2016 Mining Area
- WEP DA Boundary
- Approved Pit Extent

Western Coalfield Geological Mapping

- Quaternary Alluvium

0 0.5 1 km

Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:52,000 at A4
Project Number:	665.10014
Date:	18-Mar-2026
Drawn by:	JH

SLR

H:\Projects-SLR\660-SrvWOL\660-WOL\665.10014 Wilpinjong GW\06 SLR Data\01 CADGIS\ArcGIS\GIS\66510014 F01 Open Cut Progression 2016-2025_001.mxd

1.1 Groundwater Tasks Undertaken in 2025

As part of an ongoing field investigation program initiated in 2024, one new groundwater monitoring location was constructed in June 2025 with the objective of providing baseline groundwater level, groundwater quality and aquifer parameter data prior to the development of the proposed future Wilpinjong operations (Pit 8 Extension Modification and Pits 9 and 10 Extension) (SLR 2025). Tasks associated with this, undertaken in 2025 are summarised below, while the overall field investigation program for 2024–2025 is presented in **Table 1**:

- Hydraulic Packer testing performed on borehole TRS077, targeting the Ulan Seam and the Illawarra Coal Measures (ICM) above the Ulan Seam (overburden).
- Standpipe piezometer installation at TRS077.
- Bore development of this newly installed standpipe piezometer.
- Installation and commissioning of a telemetry unit for remote groundwater level monitoring.

Table 1: New Groundwater Monitoring Locations for Proposed Future Mining

Hole ID	Date Constructed	Easting[1]	Northing[1]	Depth (mbgl)	Type	Groundwater Monitoring – Target Lithology	Hydraulic Testing – Type
SGN003A	24-07-2024	774737.3	6421005.4	31.8	SP	ICM (Illawarra Coal Measures) above Ulan Seam (overburden)	Slug testing
SGN003B	24-07-2024	774727.5	6421013.5	3.7	SP	Alluvium	Slug testing
SGN028	31-07-2024	775775.4	6420778.5	80.7	VWP	2x above Ulan Seam (overburden), 1x Ulan seam, 1x under Ulan Seam (Underburden)	Packer testing
SGN037A	13-12-2024	TBC		84	VWP	2x above Ulan Seam (overburden), 1x Ulan seam, 1x under Ulan Seam (Underburden)	Packer testing
SGN037B	02-12-2024	TBC		5	SP	Shallow standpipe in palaeochannel/ Alluvium	Slug testing
TRS095A	13-08-2024	779009.3	6418250.5	101.6	SP	under Ulan Seam (Underburden)	Slug testing
TRS095B	14-08-2024	779019.3	6418238.8	50	SP	Igneous rocks	Slug testing
TRS095C	16-08-2024	778991.5	6418252.5	3.4	SP	Alluvium/ shallow unconsolidated strata	Slug testing
TRS077	**06-06-2025**	**TBC**	**TBC**	**35.5**	**SP**	**Ulan seam**	**Packer testing**

TBC: To be completed.

[1] Projection: GDA94 / MGA Zone 55

1.2 Groundwater Monitoring

The WCM groundwater monitoring network has been in place since April 2006. Many paired monitoring bores have been drilled and installed along the Wilpinjong Creek alluvium, with a shallow bore screened in the alluvium (unconsolidated sediments) and a deeper bore screened across the target coal seam. Several additional monitoring bores were drilled in late 2013 around the periphery of the site, in Pit 8 and along Wollar Creek (**Figure 2**).

New and replacement groundwater monitoring locations installed since 2023, including those listed in **Section 1.1**, should be incorporated into the next revision of the GWMP to ensure their formal integration within the monitoring network, including associated monitoring frequencies and analytes consistent with the existing network.

The numerical modelling conducted for the Wilpinjong Coal Mine predicts minimal drawdown (approximately 1 m) in the shallow alluvial groundwater system along Wilpinjong Creek. Drawdowns are predicted to be less pronounced in the more distant alluvium associated with Wollar Creek to the east of WCM (Peabody, 2017). Numerical modelling predicts a substantial reduction in potentiometric head in the Illawarra Coal Measures near WCM due to depressurisation from cumulative mining activity (which includes WCM, Moolarben Coal and Ulan Coal operations). Accordingly, trigger levels for water levels in the coal measures are considered unwarranted or to be amended/replaced (Peabody, 2017) in future GWMP updates.

For monitoring bores with sufficient records, a brief cause-and-effect review of temporal changes in groundwater level and quality has been completed in **Section 1.4** and **1.5** respectively.

The hydrographs for additional selected alluvial and coal measures bores that demonstrate vertical gradients between the shallow and deeper aquifers through time are included in **Appendix A**.

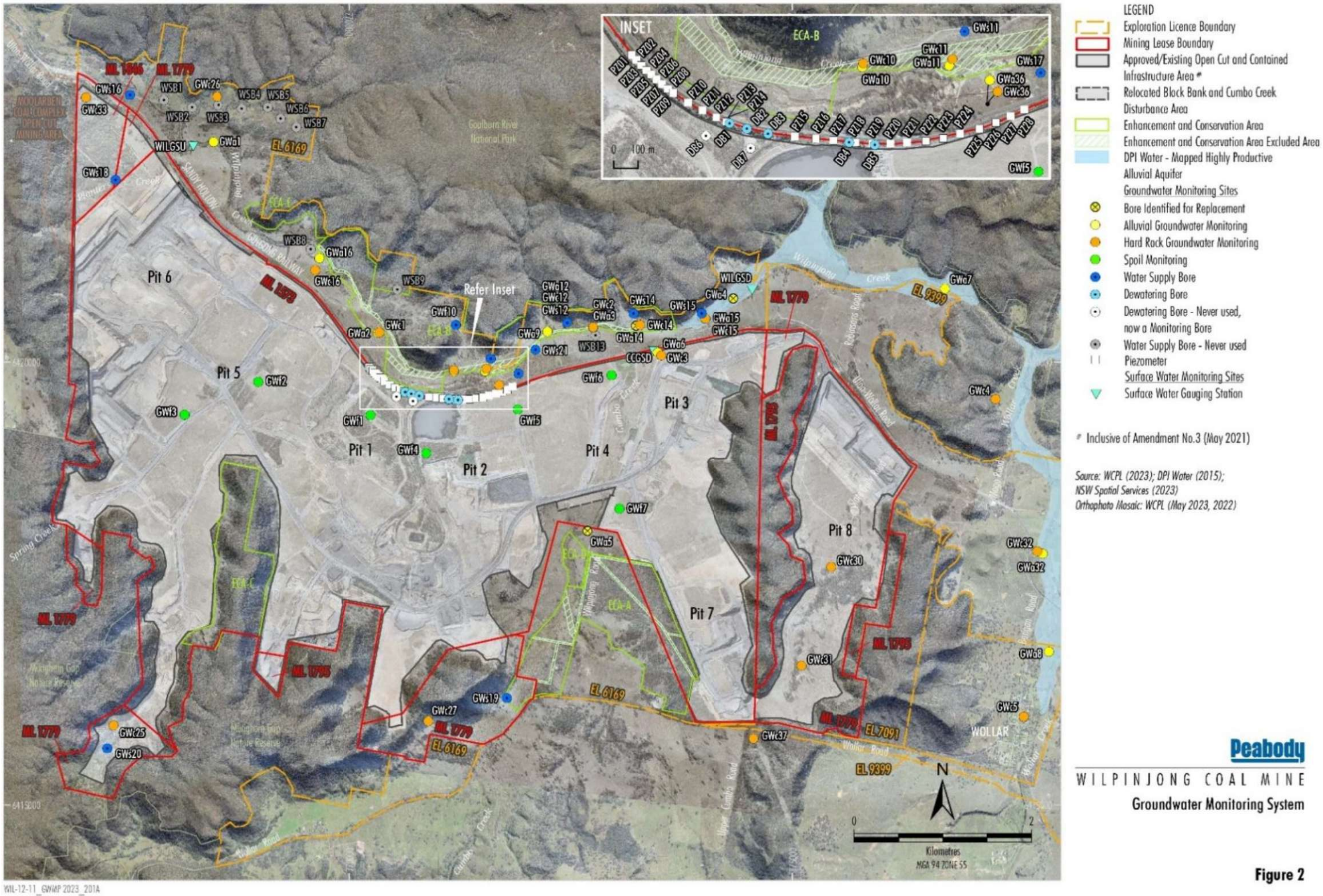


Figure 2 Groundwater Monitoring Locations at Wilpinjong Coal Mine

1.3 Climate Data

Table 2 displays monthly and annual rainfall compared to the long-term average (based on records from 1901 to 2025) at the Wollar (Barrigan St) BOM station for 2017-2025. Near average rainfall conditions were experienced in 2025, following above-average rainfall conditions in 2024. The annual total rainfall recorded in 2025 was 623.0 mm, 3% higher than the long-term average of 601.9 mm.

Table 3 presents the total rainfall observed by the on-site rainfall gauge in 2025. Overall, in 2025 rainfall recorded on-site at WCM is slightly lower than at the Wollar BOM station with a total of 596.8 mm.

Variation in annual rainfall has been identified as a key influence on groundwater levels and trends.

Table 2: BOM Rainfall Station 062032 (Wollar, Barrigan St) Rainfall Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg^	67.6	62.0	55.2	39.5	37.8	43.8	43.2	41.1	41.8	51.9	57.1	60.8	601.9
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	68.0	779.4
2025	106.5	45.5	57.0	22.5	114.5	23.5	62.0	42.5	58.5	36.5	22.0	32.0	623.0

^ Long-term average rainfall based on records from 1901 to 2025.
*** No rainfall recorded at Wollar (Barrigan St). Rainfall from Bylong (Glenview) – 062107 used.**

Table 3: Wilpinjong Site 24-hour Rainfall Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2019	54.8	7.4	108.8	0	17.6	10.6	2.6	10.2	23	5.6	22	3	265.6
2020	27.2	127	92	117	16	23.4	70	36.4	77.2	150.6	17.4	161.6	915.8
2021	52.6	126.6	159.8	1.8	9.4	84.4	66.6	25.4	44.2	40.8	249.2	81.4	942.2
2022	101.4	16	119.8	95	43.6	13	136.4	103.2	93.8	185.4	64	26.6	998.2
2023	48.6	24.6	64.6	47.8	2.8	28.8	23.2	29.6	18	36.2	94	59.4	477.6
2024	86.6	78.6	32.8	68.8	62.2	68.6	65	39.8	45.4	51	116.6	45	760.4
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 3)** increased for most of 2025, consistent with above average annual rainfall conditions, before decreasing in the last three months of the year (October to December). The upward trend in CRD has been observed since late 2023 and continued through 2024, reflecting above average rainfall conditions.

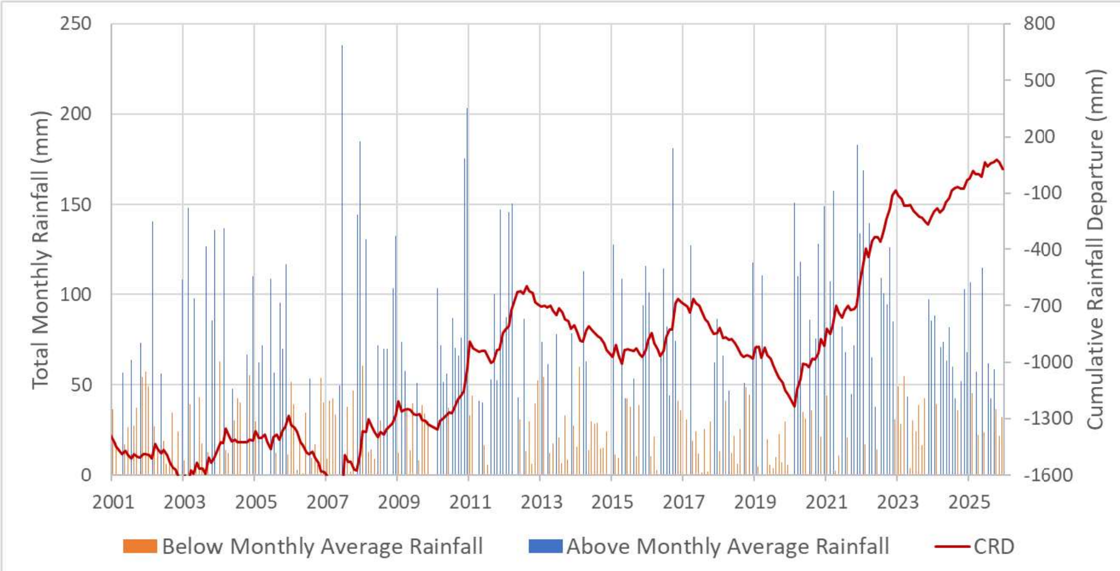


Figure 3: Monthly Rainfall and CRD

1.4 Groundwater Level Data

Figure 4 presents the groundwater hydrographs for alluvial bores near Wilpinjong Creek, in relation to the long-term rainfall trend. The average 2025 groundwater table in the alluvium varies between approximately 373 mAHD (at GWa2 in the west) and 355 mAHD (at GWa4 in the east) over approximately 4.0 km, with a hydraulic gradient of 0.475% (0.00475) towards the east.

The water table in the alluvium was generally stable at most bores throughout 2025, with a slight decrease towards the end of the year. This decrease is consistent with near average to below average rainfall conditions observed during the last three months of 2025, as indicated by the CRD, supporting the observation that rainfall is a dominant driver of recharge dynamics in the alluvial aquifer.

Figure 5 presents the groundwater hydrographs for all coal measures (Permian aged Illawarra Coal Measures) monitoring bores from the west (higher elevations) to the east (lower elevations), in relation to the cumulative rainfall departure (CRD) and also indicates the commencement of mining in each Pit.

The hydrographs show the expected response of drawdown varying with distance from mining activity. In 2025, groundwater levels in coal measures monitoring bores away from active mining is observed to be stable or increasing, while bores located closer to active mining indicates declining groundwater levels.

Figure 6 presents the groundwater level in paired coal measures and alluvial bores along Wilpinjong Creek at GWa3/GWc2 and along Cumbo Creek at GWa6/GWc3. An upward hydraulic gradient from Permian strata to the Wilpinjong Creek alluvium is observed before mining started and would have provided a source of recharge to the alluvium and possible baseflow to Wilpinjong Creek.

Drawdown due to WCM operations reversed the historically observed upward gradient at some monitoring locations, with a downward gradient observed from the alluvium to the underlying coal measures from 2014 to 2023 (commencement of opencast mining).

Figure 6 also shows recovery in Permian strata in response to above average rainfall conditions from 2020 to 2022, returning to upward gradients from Permian to alluvial strata observed for some of 2023 and 2024. However, ongoing WCM operations, combined with near average rainfall conditions during 2025, may have re-established a downward hydraulic gradient from the alluvial aquifer towards the underlying coal measures.

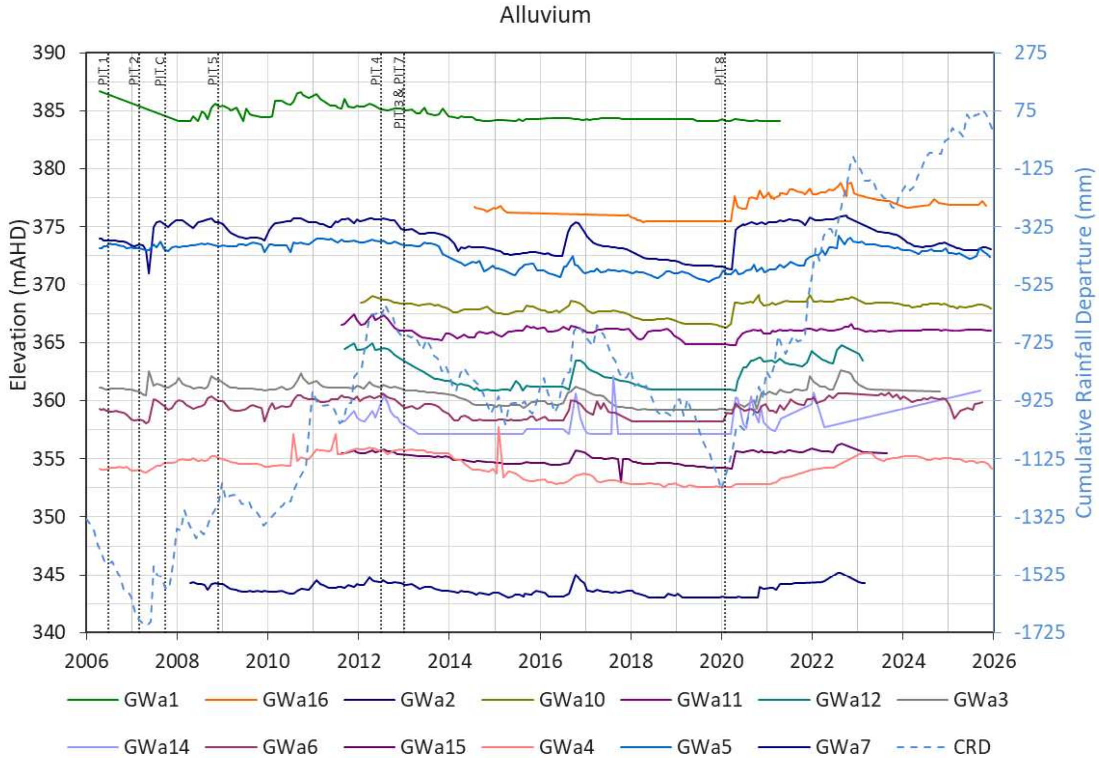


Figure 4: Transition in Alluvial Bore Groundwater Levels from West to East Along Wilpinjong Creek

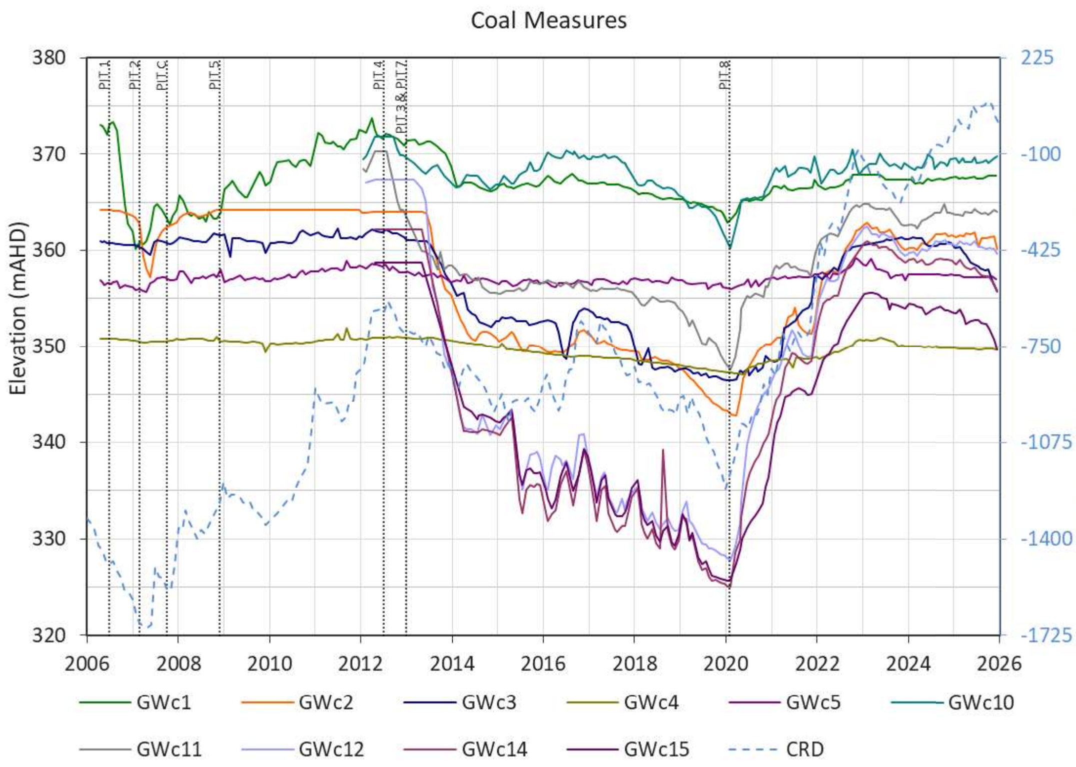
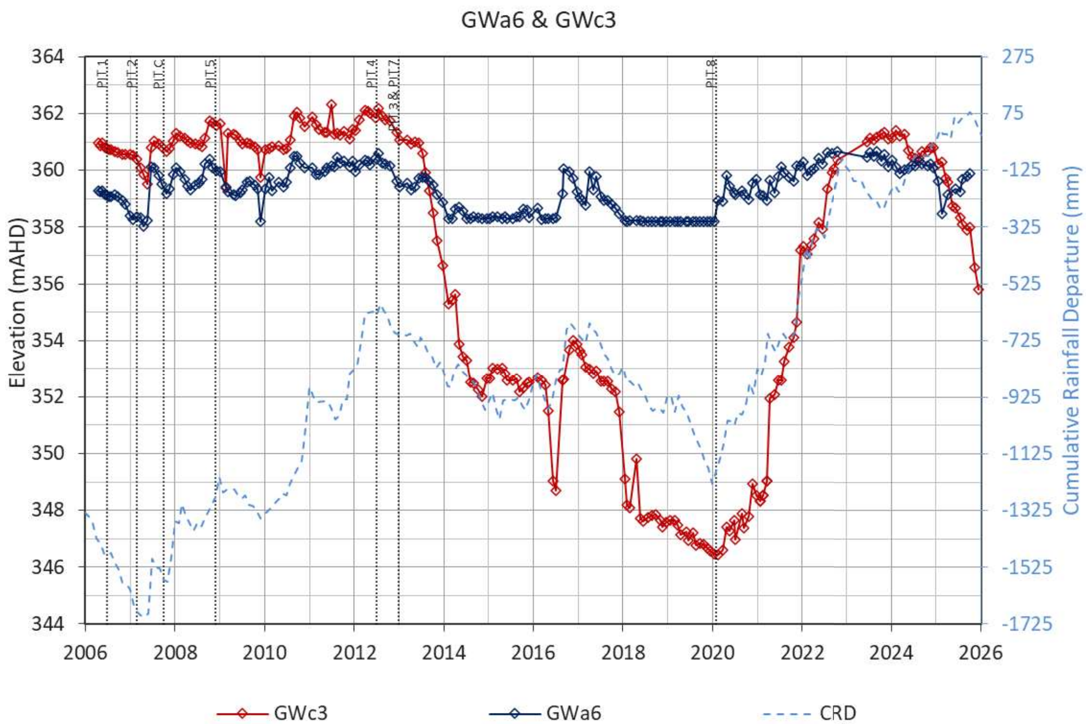


Figure 5: Coal Measures Bore Groundwater Levels



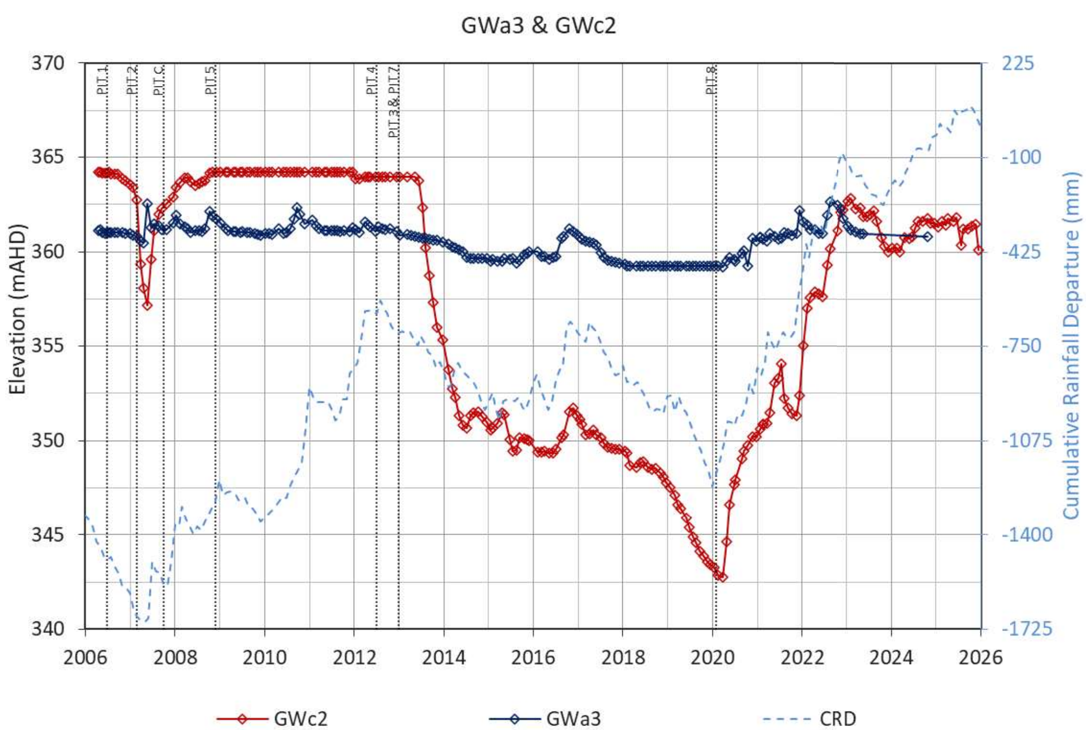


Figure 6: Example Hydrographs showing Vertical Gradient between Permian and Alluvial Strata.

1.5 Groundwater Quality Data

Groundwater electrical conductivity (EC) statistics have been computed for select alluvial and coal measures monitoring bores using a total of 116 measurements from January 2025 until December 2025 (**Table 4**). These bores were selected to provide coverage across a large portion of the Wilpinjong mine extent and include paired installations at the same locations to monitor both alluvium and coal measures.

The lowest mean salinity in the alluvial monitoring bores is 1,049 µS/cm at GWa2, whereas the highest mean salinity is 9,348 µS/cm at GWa5. The lowest mean salinity in the coal measures monitoring bores is 1,208 µS/cm at GWc2, whereas the highest mean is 5,483 µS/cm at GWc5.

Box and whisker plots of alluvial and coal measures EC observations are also presented in **Figure 7**. These plots enable visual comparison of water quality differences between coal measures and alluvial sites and are presented from upstream to downstream along Wilpinjong Creek, when applicable.

Overall, groundwater from alluvial monitoring sites is more saline than groundwater from coal seam monitoring sites. This suggests that the alluvial waters sourced from the Permian sediments (i.e. an upward gradient is observed) may be seasonally concentrated through evapotranspiration or evaporation.

Table 4: Groundwater Electrical Conductivity Statistics in 2025

Alluvium Monitoring Bores	Mean (µS/cm)	Std. Dev (µS/cm)	Coal Monitoring Bores	Mean (µS/cm)	Std. Dev (µS/cm)	Location
GWa1	N/A	N/A	-	-	-	North of Pit 6: Far west
GWa2	1,049	52	**GWc1**	3,207	210	North of Pit 1
GWa3	N/A	N/A	**GWc2**	1,208	23	North of Pit 4
GWa4	1,914	173	-	-	-	North-east of Pit 3
GWa5	9,348	908	-	-	-	South of Pit 4 on Cumbo Ck
GWa6	5,004	196	**GWc3**	3,660	451	Northern end of Cumbo Ck
GWa7	N/A	N/A	**GWc4**	2,381	15	North-east of Slate Gully
GWa8	1,905	74	**GWc5**	5,483	54	Wollar: SE of Slate Gully

N/A - no data / bore dry

The highest salinities recorded occur near Cumbo Creek to the south of Pit 4 and at the northern end of Cumbo Creek north-east of Pit 4 near Wilpinjong Creek. The lowest salinities recorded are along Wilpinjong Creek from Pit 1 to Pit 4, upstream of the Cumbo Creek junction, and on Wollar Creek.

Temporal variations in groundwater salinity in the alluvium and coal seam bores have been plotted with rainfall residual mass and indicating the commencement of mining in each pit (**Figure 8** and **Figure 9**). Alluvial sites have a large variability in salinities, from very high with large fluctuations to near fresh and stable that bear some relationship with rainfall and flow within the creeks. The salinities in the coal measures monitoring bores are generally more stable and does not seem to respond to seasonal variations.

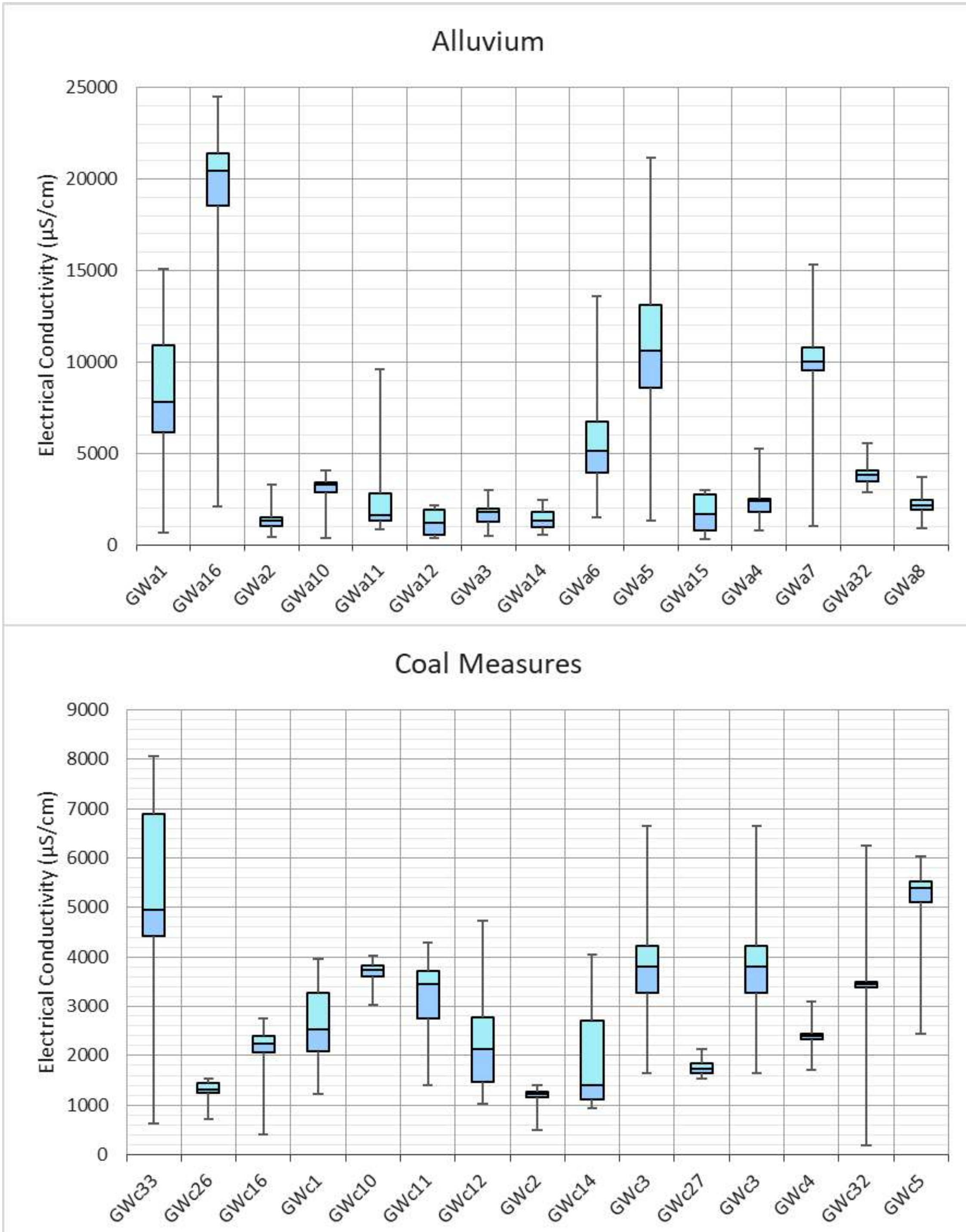


Figure 7: Box Plots for Electrical Conductivity in Alluvium and Coal Measures Monitoring Bores

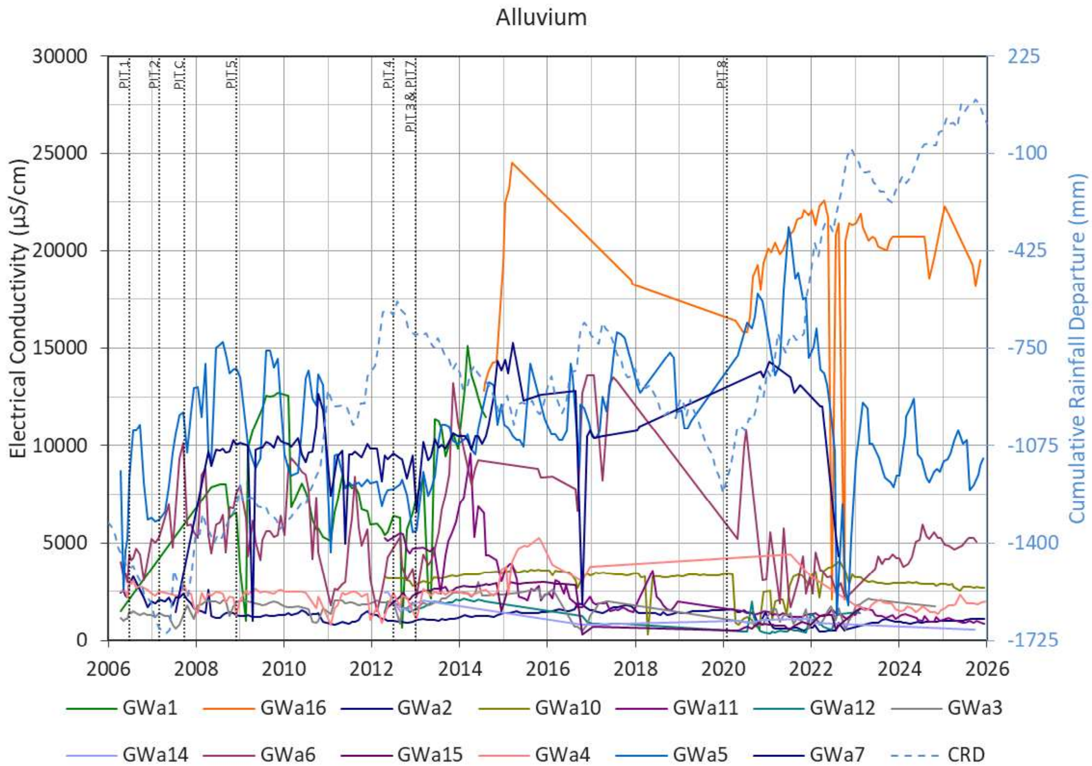


Figure 8: Alluvial Bore Groundwater Electrical Conductivity

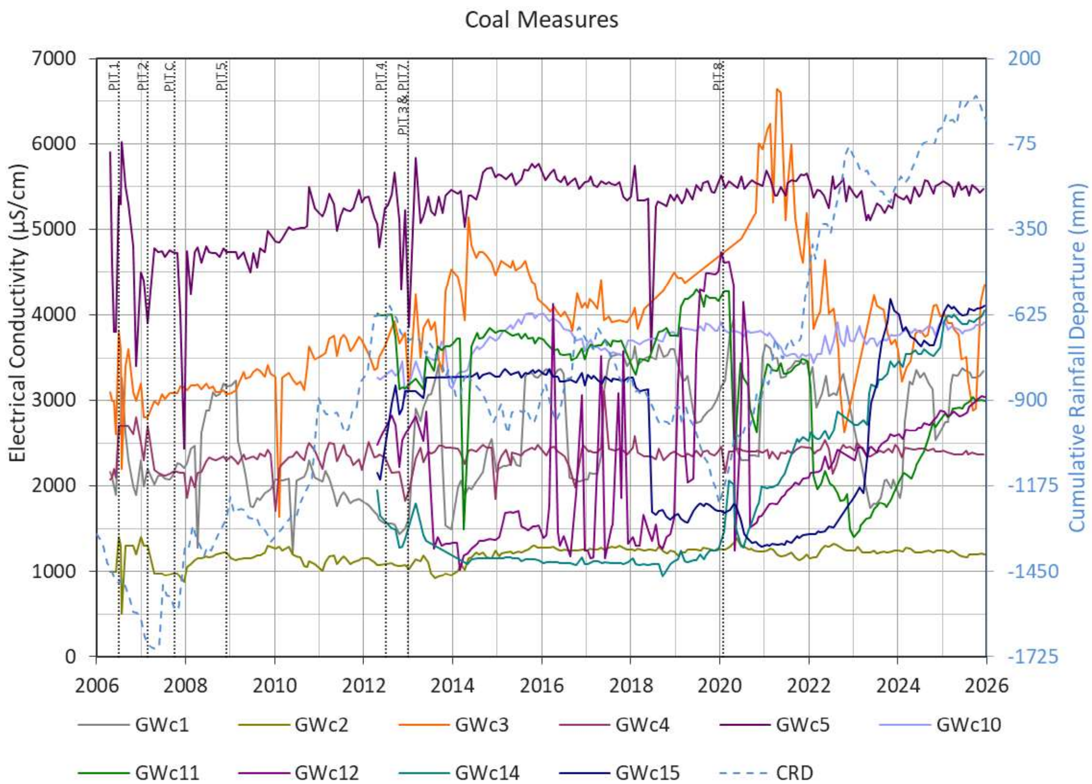


Figure 9: Coal Measures Bore Groundwater Electrical Conductivity

2.0 Trigger Compliance

The following section addresses the compliance of groundwater level and groundwater quality observations in relation to trigger levels during the 2025 reporting period.

2.1 Trigger Exceedance Rationale

2.1.1 Groundwater Level Triggers

Numerical modelling conducted for WCM (SLR, 2020a and HydroSimulations, 2015b) predicts minimal drawdown (approximately 1 m) to the alluvial groundwater system along Wilpinjong Creek, and less in the more distant alluvial aquifers associated with Wollar Creek.

Trigger levels have been established for alluvial monitoring bores at 1 m below the minimum recorded water level during the baseline period. Three consecutive monthly exceedances (or two successive quarterly exceedances) of the lower threshold will trigger an investigation (Peabody, 2017).

An alluvium monitoring bore that has indicated a head of less than 1 m prior to the approach of Wilpinjong Mining has a trigger level set at the base of the bore **(Table 5**). These monitoring bores could go dry without necessarily exceeding the predicted 1 m drawdown. A statistical analysis on the number of dry observations at these bores is recommended within the GWMP (Peabody, 2017) to determine whether more dry days are occurring than under normal climatic variation.

2.1.2 Groundwater Quality Triggers

Water quality data from April 2006 to December 2009 were analysed at alluvium and coal monitoring bores to develop trigger levels for EC and pH. An exceedance of a quality trigger level on three consecutive monthly (or two consecutive quarterly) observations will result in the initiation of the groundwater impact investigation protocol found in the WCM Groundwater Trigger Action Response Plans (TARPs) in Section 8 of the GWMP (Peabody, 2017), that considers that:

- EC trigger levels are based on 80th percentile values from the baseline monitoring period.
- The 20th and 80th percentile values for pH measured at Wilpinjong monitoring locations between April 2006 and December 2009 fall within the ANZECC and ARMCANZ (2000) default guidelines for pH of 6.5 to 8. As such, these guidelines are used as triggers at all coal and alluvial monitoring sites.

Table 5 presents the trigger levels from the GWMP (Peabody, 2017). Time series charts showing groundwater level, electrical conductivity (EC) and pH in comparison with the trigger levels can be found in **Appendix B.**

Table 5: WCPL (2017) Groundwater Level and Quality Trigger Levels

Monitoring Site	Aquifer Type	Groundwater Level		Groundwater Quality		
		Trigger RWL (mAHD)	Trigger Depth (mbgl)	EC (µS/cm)	pH min	pH max
GWa1	Alluvium	No Trigger[1]		12,272	6.5	8
GWa2	Alluvium	372.4	3.8	2,280		

Monitoring Site	Aquifer Type	Groundwater Level		Groundwater Quality		
		Trigger RWL (mAHD)	Trigger Depth (mbgl)	EC (µS/cm)	pH min	pH max
GWa3	Alluvium	Dry[2]		1,970		
GWa4	Alluvium	Dry[2]		2,596		
GWa5	Alluvium	371.4	2.6	13,926		
GWa6	Alluvium	N/A#		6,720		
GWa7	Alluvium	No Trigger[1]		10,126		
GWa8	Alluvium	Dry[2]		2,898		
GWa10	Alluvium	366.1	4.5	N/A#	N/A#	N/A#
GWa11	Alluvium	Dry[2]				
GWa12	Alluvium	361.3	4.3			
GWa14	Alluvium	Dry[2]				
GWa15	Alluvium	Dry[2]				
GWc1	Coal	N/A#		2,844	6.5	8
GWc2	Coal			1,290		
GWc3	Coal			3,304		
GWc4	Coal			2,412 (2,440)[3]		
GWc5	Coal			4,798 (5,560)[3]		

Not applicable – No trigger defined in GWMP (Peabody, 2017)

[1] GWa1 and GWa7 both had 'dry' observations prior to mining. No effective trigger level could be developed for these bores.

[2]Historical observations at these groundwater bores have indicated SWLs that represent less than 1 m of head in the bore. Therefore, these bores could go dry without indicating a mining effect that exceeds the predicted 1 m drawdown.

[3]Revised groundwater quality triggers GWc4 and GWc5 have been included in an updated version of the GWMP (Version 6 – submitted September 2024). Historical trigger exceedances at GWc4 and GWc5 are most likely representative of natural variation in EC (independent of mining). The trigger levels are to be updated based on the 80th percentile EC for the entire monitoring record (up to 2023).

2.2 Trigger Exceedance Summary

Table 6 presents trigger level exceedances for the 2025 AR monitoring period. No statistical analysis has been completed for the 2025 period, with each bore assessed qualitatively considering historical responses to rainfall and nearby mining.

Table 6: Groundwater Trigger Level Exceedances in 2025

Bore	Trigger Level Exceedance in 2025 Observations			
	Minimum RWL (mAHD)	EC	pH min	pH max
GWa1	N/A#	nd* Dry through 2023, 2024 and 2025		
GWa2	N	N	N	N
GWa3	Y (bore dry from June 2023 to Dec 2025 except Oct '24)	nd* Dry through 2025		
GWa4	N	N	N	N
GWa5	N	N	N	N

Bore	Trigger Level Exceedance in 2025 Observations			
	Minimum RWL (mAHD)	EC	pH min	pH max
GWa6	N	N	N	N
GWa7	N/A#	nd* Dry through 2023, 2024 and 2025		
GWa8	N	N	N	N
GWa10	N	N/A#	N/A#	N/A#
GWa11	N			
GWa12	Y (bore dry since March 2023 to Dec 2025)			
GWa14	Y (bore dry since May 2022 to Dec 2025, except for Sept 2025)			
GWa15	Y (bore dry since Oct 2023 to Dec 2025			
GWc1	N/A#	Y (Trigger exceedance May to Dec 2025)	N	N
GWc2		N	N	N
GWc3[1]		Y (Trigger exceedance Jan to Jul 2025)	N	N
GWc4		N	N	N
GWc5		Y (EC obs above trigger since 2010)	N	N

N/A# = No trigger defined, Y= Yes (trigger exceedances recorded), N= No (trigger exceedances not recorded) nd* = no data/ bore dry.

[1]GWc3 exceeded the upper EC trigger level from January to July 2025, dropped in August, and remained above the trigger level in November and December 2025.

2.3 Groundwater Level Trigger Exceedances

The following section discusses trigger exceedances in alluvial monitoring bores during the 2025 AR monitoring period (**Table 6**), to identify whether their cause can be attributed to a climatic or mining effect. If a mining effect is likely, further investigation may be required as per the GWMP (Peabody, 2017). All graphs showing the water levels within each monitoring bore and their associated trigger levels are presented in **Appendix B**.

2.3.1 Alluvial Bores

Alluvial monitoring locations GWa3, GWa12, GWa14 and GWa15 exceeded groundwater level triggers in 2025.

2.3.1.1 GWa3

GWa3 was reported as dry throughout 2025, which is an exceedance of the minimum groundwater level trigger.

The following points provide a brief discussion of the exceedance at GWa3:

- The final depth to water observation before GWa3 was reported dry in June 2023 was 3.9 mbtoc, while previous measured total depths of the well were 5.65 mbtoc. This indicated that well integrity may have been compromised and dry observations may not be representative of actual groundwater conditions.
- GWa3 has been dry throughout 2023 and 2024 except for the October 24, 2024 observation which reported a depth to water of 4.05 mbtoc (metres below top of casing (360.81 m AHD)
- A downhole camera survey was completed on October 17, 2024, which measured a total depth of 4.96 mbtoc (~0.5 m shallower than previously measured) and identified roots and coarse gravel within the screened interval of the well. GWa3 was then developed/ purged, which removed some of the gravel material and resulted in a post-development total depth of 5.15 mbtoc.
- The field report on this site investigation (SLR, 2024c) found that GWa3 did not meet minimum construction requirements for the following reasons:
    - GWa3 has manually cut screens which may allow sediment into the well and are wide enough for roots to grow into the well.
    - Development was not able to clear the well to its previously measured total depth.
- GWa3 was observed as dry in November and December 2024 observations, but field notes stated that some water was present in the bore - but that this was insufficient to collect a representative sample.

Consistent with the 2024 Annual Review (SLR, 2025b), GWa3 will be considered for replacement and/or decommissioning in 2026, with the value of alluvial monitoring at this location to be assessed as part of a broader review of the groundwater monitoring network.

Prior to replacement/decommissioning, 2026 monitoring should record total well depth and depth to water (where water is present but insufficient for sampling). Alternate methodologies could be considered for sampling locations where there is consistently insufficient water to sample with the current methodology (e.g. loa flow peristaltic pump and tubing).

2.3.1.2 GWa12

GWa12 was reported as dry throughout 2025. The consecutive dry observations from March 2023 to December 2025 are an exceedance of the minimum groundwater level trigger.

The following points provide a brief discussion of the exceedance at GWa12:

- The final depth to water observation before GWa12 was reported dry in March 2023 was 3.3 mbtoc, while previous measured total depths of the well were 5.85 mbtoc. This indicated that well integrity may have been compromised and dry observations may not be representative of actual groundwater conditions.
- A downhole camera survey was completed on October 17, 2024, which measured a total depth of 3.72 mbtoc (~1.1 m shallower than previously measured) and noted a bailer was stuck in the well. This bailer was recovered and GWa12 was then developed. The total depth of GWa12 post development was 5.5 mbtoc with a depth to water of 4.48 mbtoc.
- The field report on this site investigation (SLR, 2024c) found that GWa12 did not meet minimum construction requirements as it has manually cut screens which may allow sediment into the well and are wide enough for roots to grow into the well.

Consistent with the 2024 Annual Review (SLR, 2025b), GWa12 will be considered for replacement and/or decommissioning in 2026. The value of alluvial monitoring at this location should be assessed as part of a broader review of the groundwater monitoring network.

Prior to potential replacement/decommissioning, 2026 monitoring should record total well depth and depth to water (where water is present but insufficient for sampling). Alternate methodologies could be considered for sampling locations where there is consistently insufficient water to sample with the current methodology.

2.3.1.3 GWa14

GWa14 was reported dry throughout 2025. Persistent dry observations from May 2022 to December 2025, except for September 2025, represent an exceedance of the minimum groundwater level trigger.

The following points provide a brief discussion of the exceedance at GWa14:

- The final depth to water observation before GWa14 was reported dry in March 2023 was 4.42 mbtoc, while previous measured total depths of the well were 4.96 mbtoc. This indicated that well integrity may have been compromised and dry observations may not be representative of actual groundwater conditions.
- Dry observations from 2022 to 2025 were not consistent with observations in 2021 and early 2022 which showed some response to above average rainfall events. It is noted that other nearby alluvial/ shallow bores (e.g. GWa3 – See **Appendix B**) also recovered to a greater extent in response to above average rainfall from 2020 to 2022 while there has been limited response at GWa14. An exception occurred in September 2025, when an increase in groundwater level was observed to values comparable to those recorded following a rainfall event in 2021 and 2022; however, this was a single isolated observation.
- A downhole camera survey was completed on October 17, 2024, which measured a total depth of 4.8 mbtoc (close to the previously measured total depth), but noted a bailer was stuck in the well. This bailer was unable to be recovered and GWa14 was subsequently attempted to be developed, with the total depth post development depth 4.85 mbtoc, indicating some removal of silt from the base of the well but not the stuck bailer.
- The field report on this site investigation (SLR, 2024c) found that GWa14 did not meet minimum construction requirements as it has manually cut screens which may allow sediment into the well and are wide enough for roots to grow into the well. The bailer found in the well was also unable to be removed, limiting the ability to develop the well and complete future sampling.

Consistent with the 2024 Annual Review (SLR, 2025b), GWa14 will be considered for replacement and/or decommissioning in 2026. The value of alluvial monitoring at this location should be assessed as part of a broader review of the groundwater monitoring network.

Prior to potential replacement/decommissioning, 2026 monitoring should record total well depth and depth to water (where water is present but insufficient for sampling). This information may be useful to help understand local aquifer saturation. Water quality sampling should not be attempted while the bailer remains stuck in the well as the data collected may be compromised.

2.3.1.4 GWa15

GWa15 was reported as dry throughout 2025. The consecutive dry observations from October 2023 to December 2025 are an exceedance of the minimum groundwater level trigger.

The following points provide a brief discussion of the exceedance at GWa15:

- The final depth to water observation before GWa15 was reported dry in October 2023 was 2.8 mbtoc, while previous measured total depths of the well were 4.07 mbtoc. This indicated that well integrity may have been compromised and dry observations may not be representative of actual groundwater conditions.
- A downhole camera survey was completed on October 17, 2024, which measured a total depth of 3.89 mbtoc (close to the previously measured total depth), but noted two bailers were stuck in the well. These bailers were not recovered, and the development hose was unable to reach the base of the well. No sediment was able to be removed from the base of GWa15.
- The field report on this site investigation (SLR, 2024c) found that GWa15 did not meet minimum construction requirements as it has manually cut screens which may allow sediment into the well and found that roots were growing into the well through the screens. The bailers found in the well were also unable to be removed, limiting the ability to develop the well and complete future sampling.

Consistent with the 2024 Annual Review (SLR, 2025b), GWa15 will be considered for replacement and/or decommissioning in 2026. The value of alluvial monitoring at this location should be assessed as part of a broader review of the groundwater monitoring network.

Prior to potential replacement/decommissioning, 2026 monitoring should record total well depth and depth to water (where water is present but insufficient for sampling). This information may be useful to help understand local aquifer saturation. Water quality sampling should not be attempted while the bailer remains stuck in the well as the data collected may be compromised.

2.4 EC Trigger Exceedances

The following section discusses the EC trigger exceedances summarised in **Table 6** based on the time series plots in **Appendix B.**

2.4.1 Alluvial Bores

No exceedances of the EC trigger value were observed at alluvial monitoring bores during the 2025 AR monitoring period.

2.4.2 Coal Measures Bores

Exceedances of the EC trigger value at coal monitoring bores in 2025 occurred at GWc1, GWc3, GWc4, and GWc5 (**Appendix B** and **Table 6**). The trigger exceedances for EC observed at GWc1, GWc3, GWc4 and GWc5 appear to be occurring independently of climatic and groundwater level influences.

2.4.2.1 GWc1

EC at GWc1 has exceeded the trigger values from May 2025 to December 2025. GWc1 has periodically exceeded its trigger value in 2008-9, 2013, 2015-16, 2017-19, early 2020, 2021-22 and mid-2024. The obvious feature of the EC data for GWc1 are the sudden step increases and decreases of around 700-1500 µS/cm which result in fluctuations above and below the trigger value. There is no obvious pattern of elevated EC in relation to CRD with elevated EC occurring during above average, below average, and average rainfall conditions. However, the pattern of fluctuation suggests a definite step change in hydraulic conditions that occurs and then reverses. The following points provide potential mechanisms for the observed step changes in EC at GWc1 that have been discussed in previous data reviews (SLR, 2023c and 2024b):

- Occasional influxes of groundwater from the overlying alluvium, which has lower EC and higher head than the coal measures at this location (GWa2) may drive the observed changes in EC.
- Periodic lateral flow from backfilled WCM open cut mining areas could also drive the observed step changes in EC. EC observed within spoil monitoring bore GWf3 is approximately 3,500-4,500 µS/cm, which is similar to the EC observed at GWc1 when it is exceeding the trigger level. GWf3 is within backfilled Pit 5 and not directly adjacent to GWc1 but serves as a useful proxy for groundwater quality within spoil that may be adjacent/seeping to GWc1.
- Downhole camera inspection completed in 2020 also identified a large sump in GWc1, ~15 m, below the screened interval (22-28 mbtoc). A sump of this length may limit the ability to adequately purge GWc1 prior to sampling, and decrease confidence that observations are representative of formation/ aquifer groundwater.

GWc1 was replaced in November 2024 by a new bore (GWc1 New) due to the presence of a large sump in the original installation, which may have limited the effective removal of stagnant water during purging and, consequently, the collection of representative groundwater samples.

Figure 10 presents a comparison of electrical conductivity (EC) values between the original bore and its replacement. The data indicate that GWc1 New records slightly higher EC values (approximately 300 µS/cm greater) than those historically observed in GWc1. However, EC values measured in GWc1 New remain within the same order of magnitude as those previously recorded, indicating general consistency in groundwater salinity conditions at the site.

The observed differences are considered minor and may be attributable to a combination of factors, including slight variations in bore location, differences in installation design (e.g. screen interval), and enhanced sample representativeness in the replacement bore. Consequently, these variations do not indicate a significant change in groundwater quality at this site. However, future monitoring results from the replacement bore will be regularly compared with historical GWc1 data to verify its continued suitability for ongoing groundwater monitoring.

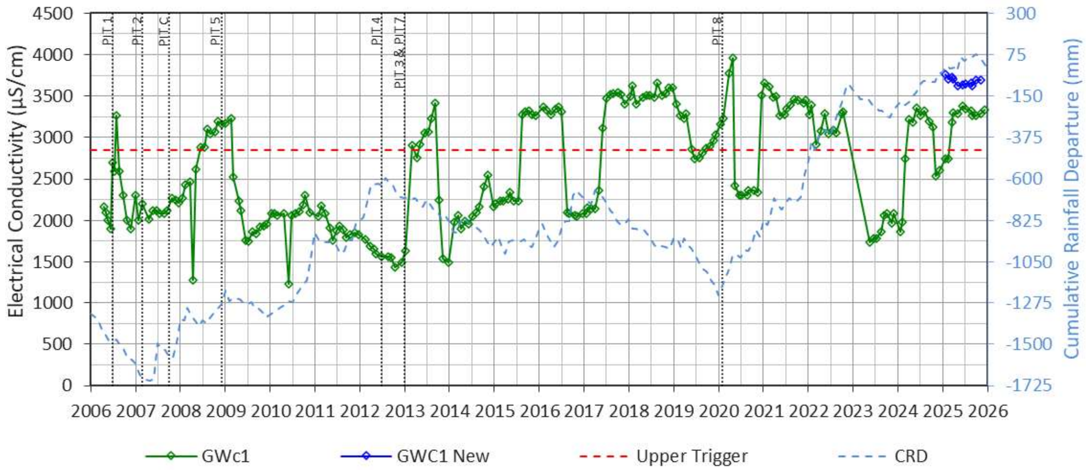


Figure 10 Electrical Conductivity Comparison - GWc1 and GWc1 New

2.4.2.2 GWc3

EC measurements exceeded the trigger value (3,304 µS/cm) from January to July 2025, and then from November to December 2025. EC has been exceeding the defined trigger level at GWc3 for most observations since 2013.

The following summarise the EC exceedance at GWc3:

- Depressurisation at GWc3 associated with Pit 3, 4 and 7 mining resulted in a reversal of the upward gradient between Cumbo Creek alluvium (monitored by GWa6) and underlying coal measures. This may have resulted in more saline groundwater from the alluvium reporting to the coal measures from 2013-2022 due to the downwards hydraulic gradient.
- Based on elevation there is potential for hydraulic connection between the Pit 4 and/or Pit 3 void and GWc3. At times, EC in Pit 2 (used a proxy for Pit 3 and Pit 4 water) has been similar to GWc3, at other times it has not. The potential hydraulic connection is not completely understood and will require further investigation that also considers the influence from Cumbo Creek surface water and alluvial groundwater.
- A downhole camera inspection identified a ~5 m sump below the screened interval of GWc3 (4.8-11.1 mbtoc). A sump of this length may limit the ability to adequately purge GWc1 prior to sampling, and decrease confidence that observations are representative of formation/ aquifer groundwater.

GWc3 was replaced in November 2024 by a new bore (GWc3 New) to improve sampling reliability and ensure representative groundwater collection.

Figure 11 presents a comparison of EC values between the original bore and its replacement. Overall, EC levels in both bores are very similar. However, in the original bore, a decline in EC below the trigger value is observed between August and October 2025, whereas the new bore does not show this decrease. Despite this, EC values in both bores remain above the trigger threshold in the most recent measurements by the end of 2025.

These small differences are likely due to factors such as slight changes in bore location, installation design (e.g., screen interval), and better sample representativeness in the new bore. Overall, these differences do not reflect a meaningful change in groundwater quality.

Future monitoring results from the new location will continue to be compared with data from the old GWc3 to support the assessment of potential connectivity between stored water in Pit 3 and/or Pit 4 and the adjacent Permian and alluvial aquifers.

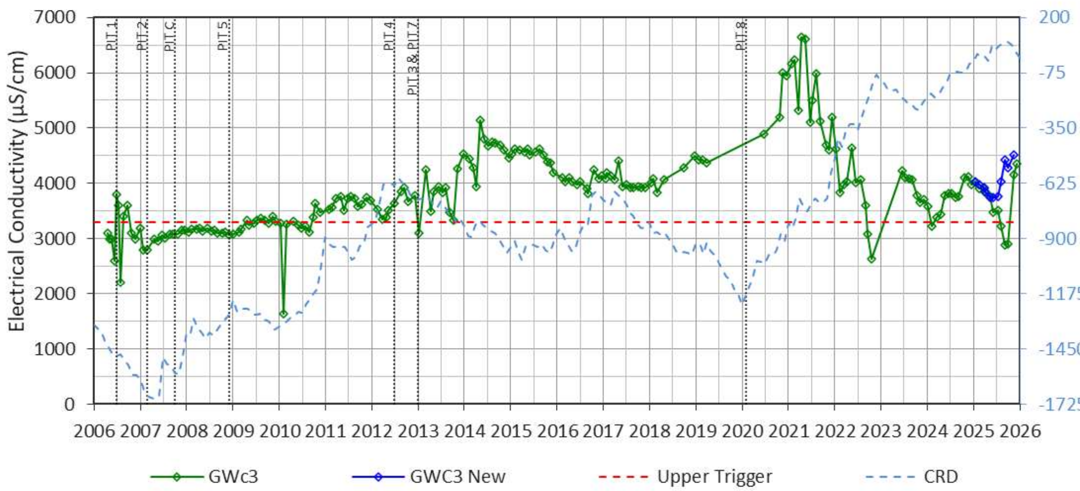


Figure 11 Electrical Conductivity Comparison – GWc3 and GWc3 New

2.4.2.3 GWc5

GWc5 is located on Wollar Creek, upstream of the confluence of Wilpinjong Creek, and 3.5 km from active mining in Pit 7 and Pit 8. EC observations at GWc5 were above the trigger level (4,798 µS/cm) for all 2025 observations. EC observations have been above the trigger level in nearly all observations since 2013.

The following summarise the EC exceedance at GWc5:

- EC observations in 2025 range from 5,390 µS/cm to 5,560 µS/cm which is broadly consistent with EC observations from 2013-2024.
- SLR (2023) investigated relationships between EC variation at GWc5, the timing of mining operations and climatic variations, and assessed that no direct relationship could be established, and there is no evidence of WCM mining influencing groundwater level or quality at GWc5.
- SLR (2023) assessed that the observed EC is likely to be representative of normal conditions at this site and recommended that the trigger level be revised to include all data until 2023. This average value is 5,560 µS/cm which is 762 µS/cm higher than the current trigger level (4,798 µS/cm). This updated trigger level was incorporated into a revised version of the GWMP (V6, submitted September 2024) that is currently awaiting approval.

It is noted that, under the revised trigger level of 5,560 µS/cm, a single monitoring result in January 2025 (5,560 µS/cm) would have reached the trigger; however, it would not have been considered as an exceedance.

2.5 pH Trigger Exceedances

No exceedances of pH trigger levels were observed at alluvial or coal measures monitoring bores during the 2025 AR monitoring period.

3.0 Metal and Major Ion Compliance

For the 2025 annual review, the following groundwater quality time-series graphs are presented in **Appendix C**. These charts demonstrate compliance with the GWMP (Peabody, 2017) requirement to collect monthly and event-based metals monitoring data and assess trends over time:

- Major ions and analytes include: TDS, Sodium (Na), Potassium (K), Magnesium (Mg), Calcium (Ca), Chloride (Cl), Carbonate (HCO_3), Bicarbonate ($CaCO_3$), Sulfate (SO_4).
- Metal species include: Aluminium (Al), Arsenic (As), Barium (Ba), Copper (Cu), Lead (Pb), Manganese (Mn), Nickel (Ni), Selenium (Se), Molybdenum (Mo).

A QA/QC review of laboratory results and field parameters was undertaken to identify and remove outliers from the groundwater quality dataset. Samples collected when groundwater levels were below the bottom of the screened interval were excluded, as the water was likely sourced from the bore sump and considered not representative of aquifer conditions (stagnant). These included samples from:

- GWa3 (October 2015),
- GWa4 (multiple events between 2015 and 2021),
- GWa14 (October 2014 to March 2015),
- GWc3 (January 2018 to March 2021),
- GWc31 (January 2018), and
- GWa6 (selected events between 2014–2019). Bore GWa6 was subsequently replaced in 2024 following consultation with DHPI due to the lack of reliable construction and lithological information (SLR, 2024b).

Several results were retained but considered to have low confidence. These include samples from GWa5 (January and April 2015) due to anomalously high metal concentrations, samples from GWc34 (2017–2022) when the bore was mostly dry and may reflect stagnant water, and samples from GWa15, where a bailer obstruction identified in 2024 may have affected sampling reliability.

In addition, downhole camera inspections in 2025 identified structural damage or obstructions in GWa3, GWa12, GWa14 and GWa15, and these bores are currently being considered for replacement (SLR, 2025b). **Figure 12** shows an example of the plots presented in **Appendix C** (page per bore). Groundwater level and EC are displayed on the major ion charts, while groundwater level and pH are displayed on the metal ion charts for comparison with the cumulative rainfall departure (CRD).

Ongoing review of water quality monitoring is recommended to increase the level of confidence in understanding the hydrochemistry of the Permian strata and alluvium as well as in areas of spoil deposition. This will also allow the identification of trends and may prompt the need for additional investigation based on trigger exceedances.

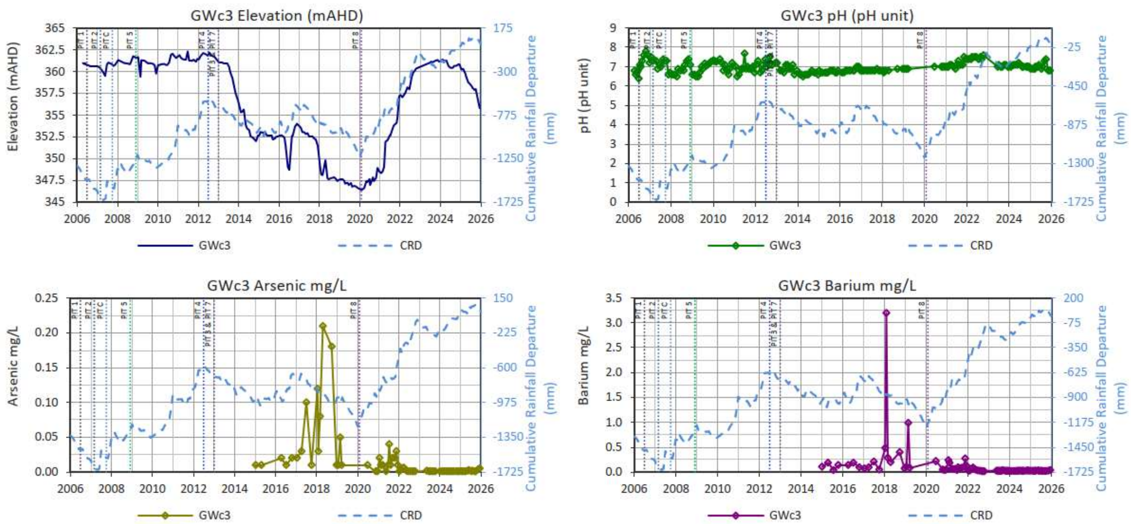


Figure 12: Example Plot of Water Quality vs CRD as Presented in Appendix C for Selected Bores

4.0 Groundwater Model Review

Previous reporting (HydroSimulations, 2015a; Peabody, 2016) has utilised the HydroSimulations (2013) and (2015b) groundwater model to assess likely impacts of WCM and ensure sufficient water licences are purchased prior to a water year. This groundwater model was converted from the original numerical groundwater model used by AGE (2005).

The 2015 version of the groundwater model (HydroSimulations, 2015b) was updated in 2020 by SLR (2020a), in line with the recommendations from the 2018 Annual Review (HydroSimulations, 2019). These changes aimed to verify if the model calibration was still appropriate by updating climatic inputs, available groundwater level observations, and revising mine progression to reflect actual extraction.

As is required by the GWMP (Peabody, 2017), the following section reports on the current model (SLR, 2020a) and presents the results of the model verification. SLR is also required to assess the performance and suitability of the model triennially to ensure predictions are consistent with observed data.

A new groundwater model commenced construction in late 2023 and is currently undergoing regulatory review to support proposed changes and extensions of mining operations. It is anticipated that this model will be used for the 2026 Annual Groundwater Monitoring Report.

4.1 Model Updates (2020)

Further updates to the Hydrosimulations model (HydroSimulations, 2015b), were made in 2020 (SLR, 2020a). The 2020 model revisions included:

- Update of the rainfall-recharge to reflect the rainfall recorded in the years following the creation of the model in 2015 up to 2020.
- Update of the mining progression to reflect the schedule and extent of mining more closely up to 2020.
- Update of the MODFLOW River (RIV) stage heights to reflect time-series observations made up to 2020.

- Incorporation of pumping from water supply bores using pumping rates based on site data up to 2020.
- Update of the observation target file with new monitoring bores and new observed groundwater level data up to 2020.

4.2 Model Updates (2023-2025)

The updated groundwater model incorporates the main features from the previous groundwater model (SLR, 2020a) while incorporating the following changes:

- Extension of the model boundary to the east in the direction of the potential future extensions to limit impacts of the model boundary conditions on potential drawdown predictions.
- A refined mesh (grid) in the area of potential future extensions within Exploration Licence (EL) 9399.
- Updated model layers in the area of potential future extensions, based on a revised site geological model provided by WCPL.
- Extension of the calibration period until December 2023 with mining progression updated to reflect approved as-mined conditions to the end of 2023 (approved under SSD-6764).

4.3 Model Verification

The following section contains an assessment of the modelled vs observed groundwater levels where potential mining impacts are observed. Hydrographs of observed and modelled groundwater levels are presented in **Appendix D.**

It is noted that climatic conditions from 2020 to 2025 are not captured in the model used for this verification exercise. The model updates were completed in early 2020. Updated climate and stream flow series, actual and proposed mining will be included in the next model update, which commenced in late 2023. The updated model is intended to be used for future reviews.

4.3.1 Predictions at Alluvial Bores

The SLR (2020a) modelling predictions are consistent with HydroSimulations (2015b) predictions at the alluvial monitoring sites along Wilpinjong Creek, with approximately 1 m drawdown for the life of approved mining (GWa6 has the maximum predicted drawdown in an alluvial monitoring bore of about 1.5 m predicted in 2029).

The timing of the mining effects modelled at the alluvial monitoring bores shows good correlation with the observed measurements and often indicates a repressed response to rainfall that is also seen in the observed data. Most of the modelled groundwater levels at the alluvial monitoring bores respond to the updated (SLR, 2020a) modelled rainfall recharge series.

Groundwater levels along Wilpinjong Creek and Cumbo Creek are generally well represented in the alluvial aquifer (GWa1, GWa2, GWa5, GWa6, GWa12, GWa14 and GWa15). However, the model does not clearly reproduce the mining induced decline observed between 2014 and 2020 (associated with Pits 3, 4 and 7) or recent shallow groundwater responses to above average rainfall, noting the model was developed in early 2020 and does not incorporate subsequent climatic conditions.

At some of the alluvial bores (GWa2, GWa4, GWa5, GWa12 and GWa14) the decrease in observed groundwater level from 2014 to 2016 and from 2017 to 2020 is approximately 1.5 m greater than that predicted by the model, with dry observations during these periods of below average rainfall not being replicated by the model. Some improvements to model performance may be achieved by making minor revisions to the aquifer properties and geometry of the alluvium (with a focus on including information from any recent drilling).

An updated groundwater model was commenced in late 2023, including a rebuild of the model geometry, recalibration of hydraulic parameters and inclusion of 2020-2023 climatic conditions, which is anticipated to improve the match between modelled and observed groundwater elevations at these locations.

4.3.1.1 Observations

Observed drawdown at GWa5 is approximately 1.5 to 2.5 m greater than the drawdown predicted by the model for the period between 2013 and the end of 2021. Previous reporting sighted a lack of inflow at Cumbo Creek due to reduced rainfall and a possible under-prediction of Pit 3 and Pit 7 mining impacts as the reason for the difference (HydroSimulations, 2018, 2019 and SLR, 2020b).

Additional investigation at GWa5 undertaken in 2021 could not explicitly determine whether it is still connected to the Cumbo Creek alluvial aquifer. GWa5 was replaced in November 2024 by a monitoring well targeting similar lithology to GWa5 that has an updated geology and bore construction log. This bore may help understand and evaluate potential impacts to the Cumbo Creek alluvium.

While the model captures alluvial groundwater response for periods of above average rainfall, low water/ dry observations in drier periods such as 2015 and 2017-2020, are often not well represented. The relationship between different recharge sources to the alluvium (i.e. flow from Permian strata, surface water flow, rainfall recharge) will be considered in the current revision and recalibration of the groundwater model.

4.3.2 Predictions at Coal Measures Bores

Comparative graphs of modelled and observed groundwater levels at coal measures monitoring bores affected by mining are also presented in **Appendix D**. The largest drawdowns predicted by the model were during the excavation of Pit 3 and Pit 4, with continued drawdown predicted at several bores following mining at Pit 5. Noting the uncertainty in distinguishing between climate and mining-related drawdown in the observed data, modelled groundwater levels at the coal measures monitoring bores generally show a good correlation with the timing and magnitude of observed drawdown.

It is noted that many bores within the coal measures have significantly recovered in response to above average rainfall in 2020-2023 period. As this above average rainfall has not been captured within the SLR (2020a) updated model, similar responses are not reflected within the modelled groundwater levels. The relationship between coal measures bores and WCM site water storages has been suggested for further investigation (**Section 2.4.2**), with water storages being included in the updated model.

SLR (2020a) predicts a reduction in the rate of drawdown between 2006 and 2009 (when mining starts at Pit 1, 2 and 5) at GWc2, GWc3, GWc12, GWc14 and GWc15. The timing of drawdown is still represented in these bores and the simulated groundwater levels match the observed levels prior to the extraction of Pit 4 in 2013. SLR (2020a) better captures the maximum drawdown following mining at Pit 1 and 2 at GWc1 and GWc11 located near Pit 2, although the groundwater level recovers more quickly and to levels above the observed data prior to 2012.

Revised model predictions (SLR, 2020a) improved the timing of drawdown after mining Pit 4 and following below average rainfall conditions at GWc1 and GWc2. The maximum predicted drawdown better aligns with the observed depressurisation at GWc3 (Cumbo Creek) and matches the drawdown gradient at GWc15 following the mining of Pits 4, 3 and 7. The observed data at Pit 8 monitoring bores GWc28 and GWc29 is relatively well matched by the model although observed drawdown is greater than the model predicts. However, at GWc25 (southern Pit 5), predicted groundwater levels (SLR, 2020a) do not match observed groundwater levels and do not capture the drawdown related to Pits 3, 4, 5 and 7 operations.

The simulated depressurisation of the coal seams in the current model (SLR, 2020a) between 2013 and 2019 is generally lower than the observed data at GWc12, GWc15, GWc14, GWc28 and higher at GWc1, GWc2 and GWc3. Predicted recovery from 2020-22 and ongoing in 2023 is generally less than that observed at all coal monitoring bores, as discussed above. However, this discrepancy between modelled and observed groundwater levels at these locations are expected to improve with the updated numerical model.

5.0 Review of Groundwater 'Take'

The following section is based on a WCM water balance model output review and the method used to estimate 'groundwater take' from those records/results.

5.1 Assessment of Annualised Groundwater Inflow

WCPL holds a consolidated licence (WAL41862) to cover the extraction of water from all Pits. The total authorised volume of groundwater extraction is 3,121 Unit Shares. When annualised from a daily inflow value of 3.0 ML/day, the SLR (2026) water balance model estimates approximately 1097 ML/a for the 2025-2026 water year. This estimate is informed by updated groundwater model predictions (SLR, 2025c) and factored based on observed 6-monthly rainfall totals compared to the long-term average.

It is noted that the updated groundwater numerical model (SLR, 2025c) was used to inform the water balance model (SLR, 2026), however, this groundwater numerical model is still undergoing regulatory review.

Table 7 presents the relevant entitlement volume for the consolidated licence, the estimated inflow or 'take' for 2025-26 and compares these water balance model estimates to numerical model predictions using the 2020 Model and the 2025 Model (still to undergoing regulatory review). The SLR (2020 and 2025c) annualised inflow estimates are within the allocated licence volume for the 2025-26 water year.

Table 7: Summary of Annual Volume of Inferred Maximum Groundwater Take

Water Access License	Limit [ML/a]	2024-2025		2025-2026		
		WBM Inflow (SLR, 2025a)	Modelled Inflow (SLR, 2020a)	WBM Inflow (SLR, 2026)	Modelled Inflow (SLR, 2020c)	Modelled Inflow (SLR, 2025c)
Pits	3,121 (WAL 418 62)	694	511	1,097	508	877
Dewatering Bores		0		0		
TOTAL		694	511	1,097	508	877

Figure 13 shows the groundwater inflow estimates from the SLR (2020a) groundwater model. Inflow in 2025 and 2026 is predicted to be sourced mostly from Pit 3, Pit 6 and Pit 8, which is consistent with conceptual hydrogeological understanding as most mining activity during this period occurred at those locations.

Additionally, **Figure 13** presents groundwater inflow estimates from the updated numerical groundwater model (SLR, 2025c) and the current water balance model (SLR, 2026), indicating higher inflows consistent with above-average rainfall observed since 2020. The previous numerical model incorporated climate and mining progression data only up to 2020, whereas the updated model includes data through 2023. Consequently, groundwater inflows toward the pits were likely underestimated by the earlier model for the period 2020–2025, and the modelled responses to recent climatic variability during this period were not fully captured. Despite this, inflows predicted by both the groundwater model (SLR, 2020a; SLR, 2025c) and the water balance assessment (SLR, 2026) remain well below the licenced allocation of 3,121 ML/a.

5.2 Alluvial Groundwater Take

Groundwater can be lost from alluvium to underlying Permian sediments through natural processes or as incidental take in response to mining (i.e. by a mining induced increase in the downward vertical hydraulic gradient from the alluvium to the Permian). As there are no physical means by which this volume of alluvial water can be measured, groundwater modelling is necessary to quantify the expected loss of alluvial groundwater to the underlying Permian strata.

The SLR model (2020a) has predicted the likely alluvial take during the 2025-2026 water year, as shown in **Figure 14** for both Wilpinjong Creek alluvium and Cumbo Creek alluvium. The predicted loss from Wollar Creek is negligible.

For the 2025-2026 water year the additional alluvial water loss, over and above what occurs naturally from the Wilpinjong Creek alluvium is estimated to be about 0.27 ML/day and about 0.19 ML/day from Cumbo Creek alluvium. This gives a predicted alluvial groundwater take of approximately 168 ML/year. WCM holds an allocation of 474 ML for the Wollar Creek Water Source under the Water Sharing Plan for the Hunter Unregulated and Alluvial Sources, 2009 (WAL 21499). This estimated take is within and compliant with the licence volume held by WCM.

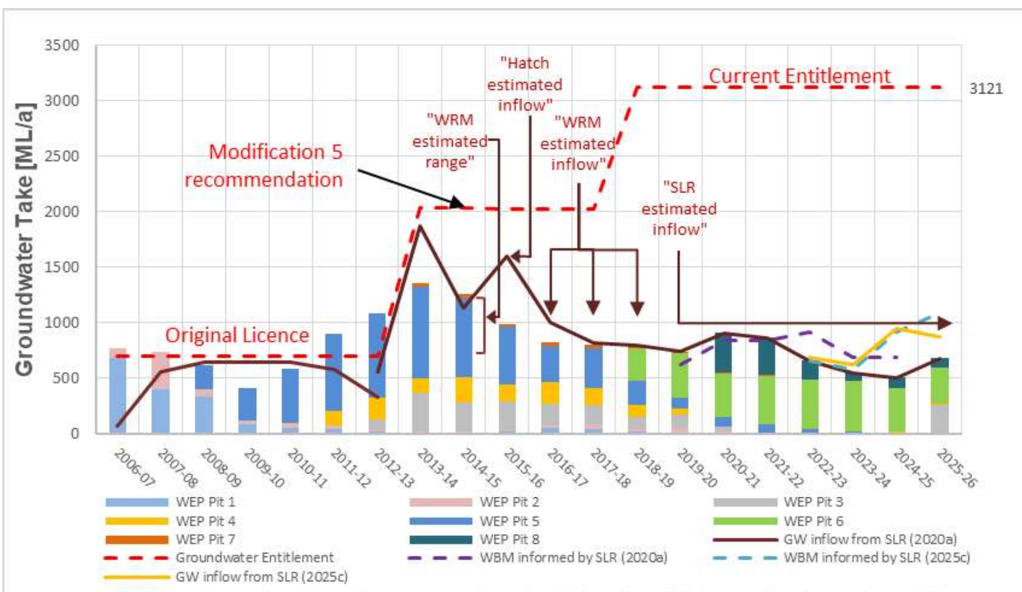


Figure 13: Comparison of Predicted Inflow (SLR, 2020a) against Entitlement

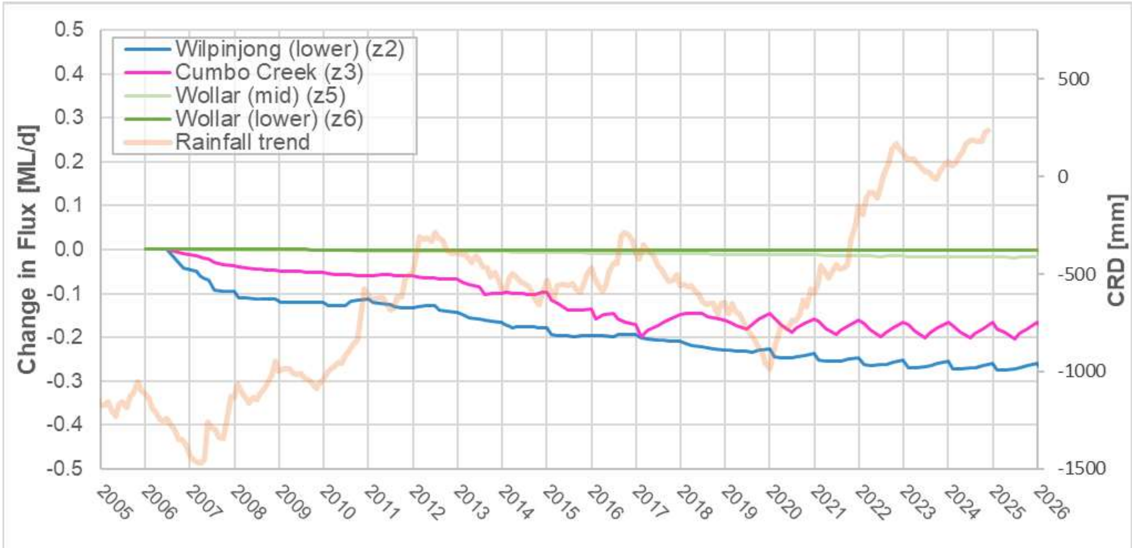


Figure 14: Modelled take from Alluvium (SLR, 2020a)

6.0 Dewatering Bores

6.1 Groundwater Take

Six water supply production bores (GWs10, GWs11, GWs12, GWs14, GWs15, PB1) are located north of the active WCM mine area at locations both north and south of Wilpinjong Creek (**Figure 2**). In addition, one production bore designed for dewatering was constructed near a turkey's nest dam north of Pit 2 and Pit 4 during the 2018-19 water year. Of these seven production bores, none were extracting water from in the 2024-25 water year, or the 2025 calendar year (0 ML).

The consolidated licence WAL 41862 now covers groundwater extraction for both water supply bores and WCM open cut pits. Compliance of this extraction with the relevant licence conditions is addressed in **Section 5.1**.

6.2 Cease-to-Pump Trigger Levels

Trigger levels are designated to coal monitoring bores close to each of the originally installed production bores (GWs10, GWs11, GWs12, GWs14, and GWs15) and have been determined based on the expected maximum drawdown (HydroSimulations, 2015b), as a result of the development of the open cut and water supply borefield. The cease-to-pump trigger levels and the minimum groundwater levels recorded during 2024-2025 water year, and 2025 reporting period is summarised in **Table 8**.

Table 8: Water Supply Borefield - Cease to Pump Trigger Level Exceedances

Production Bore	Monitoring Bore	Cease-to-Pump Trigger Level (mAHD)	Lowest Observed Water Level 2024-2025 (mAHD)	Trigger Exceedance (Yes/No)
GWs10	GWc10	346.0	369.0	No
GWs11	GWc11	348.5	363.6	No
GWs12	GWc12	332.5	359.6	No
GWs14	GWc14	319.5	355.7	No
GWs15	GWc15	314.5	349.7	No

There were no breaches of the cease-to-pump trigger levels during 2025.

7.0 Recommendations

Following the 2025 Annual Review of groundwater data and in line with recommendations from previous Annual Reviews and associated trigger investigations, the following observations are made:

- New and replacement groundwater monitoring locations (**Section 1.1**) should be included in the next revision of the Wilpinjong GWMP and assessed for the establishment of site specific trigger levels, where applicable. Monitoring should be undertaken at frequencies and for analytes consistent with the existing network, unless otherwise justified. Monitoring bores that have been replaced during 2025 and subsequently identified as non-essential should be scheduled for decommissioning.
- Once a sufficient dataset has been collected, it is recommended that groundwater levels, pH, and electrical conductivity (EC) in the replacement bores be compared with data from the original bores. This will help assess the representativeness of the replacement bores and determine their suitability for ongoing monitoring at these locations and potential amendment of trigger levels.
- GWa3, GWa12, GWa14 and GWa15 should be considered for replacement following downhole camera inspections, which identified manually slotted screens resulting in root ingress and silt accumulation within the bores. In addition, bailers lodged within the casing of GWa14 and GWa15 could not be retrieved during maintenance, compromising bore integrity and the reliability of groundwater level and quality data. Prior to replacement, a review of the groundwater monitoring network is recommended to assess operational context and monitoring coverage; subject to this review, some locations may be suitable for decommissioning rather than replacement, provided monitoring objectives are maintained.
- Groundwater observations in 2026 should record total well depth and depth to water on occasions, where water is measured in a bore, but there is insufficient water to collect a sample. For locations that consistently yield insufficient water using the current sampling approach, alternative sampling techniques should be evaluated and implemented as appropriate (e.g. low flow peristaltic pump and tubing).
- The updated groundwater model will be adopted in future annual reviews to improve alignment between predicted and observed conditions, particularly in response to recent climate and mining changes. The updated model outputs should be used to compare observed and predicted groundwater levels, identify any discrepancies, and support the development and refinement of site-specific trigger levels for ongoing groundwater management.

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