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# 2024 Channel Stability Monitoring Report

Wilpinjong Coal Mine

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Wilpinjong Coal Pty Ltd

## Document Tracking

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## Abbreviations

Abbreviation	Description
ARI	Average Recurrence Interval
BEHI	Bank Erosion Hazard Index
BoM	Bureau of Meteorology
CSM	Channel Stability Monitoring
EIS	Environmental Impact Statement
ELA	Eco Logical Australia
EY	Exceedances per Year
IFD	Intensity-Frequency-Duration
LHB	Left Hand Bank
ML	Mining Lease
RHB	Right Hand Bank
SWMP	Surface Water Management Plan
WCM	Wilpinjong Coal Mine
WCPL	Wilpinjong Coal Pty Ltd

## Executive Summary

Channel stability monitoring (CSM) was completed by Eco Logical Australia (ELA) on behalf of Wilpinjong Coal Pty Ltd (WCPL) between 10 December and 19 December 2024. The CSM program aims to provide quantitative and qualitative measures of channel stability along Wilpinjong and Cumbo Creeks. Monitoring was undertaken across a total of 59 permanent monitoring locations, including 49 on Wilpinjong Creek and 10 on Cumbo Creek. Consistent with previous monitoring, methods included surveying the designated reach of each monitoring site (approximately 100 m) and completing the Bank Erosion Hazard Index (BEHI) assessment, along with visual and photographic comparative assessment with data from previous years.

CSM results in 2024 were largely consistent with previous years, with 18 Wilpinjong Creek sites experiencing slight a change to BEHI scores, indicating the largely unchanged nature of the target creeks. For Wilpinjong Creek, BEHI scores improved at six sites, declined at 12 sites, and remained unchanged at 31 sites. The changes in scores were minor and often not affecting the BEHI ratings, with ratings improving at one site and remaining unchanged at 48 sites, whilst for Cumbo Creek, ratings remained unchanged at all 10 sites. Slight increases in bank vegetation ground cover, as well as increases water levels and stream flow, were observed at most sites. Sites with a decline in channel stability between 2023 and 2024 are likely related to minor erosion caused by high flow events in late 2024. Despite this, some sites did experience an increase in channel stability BEHI scores, indicating that the impacts of preceding climatic conditions over the previous two years were not uniform throughout the catchment.

Identified historical erosion points were monitored in 2024, with some sites experiencing minor erosion in 2024, however all sites remain largely stable. Overall, erosion points require ongoing monitoring, and additional revegetation and remediation works are recommended to allow for channel bank stability. Specifically, reshaping and contouring of the bank, followed by revegetation is recommended at multiple erosion points, including E1, E3, E4, E6, E9 and E11.

The results of the 2024 CSM support conclusions made in previous monitoring and assessments that ongoing mining operations are not causing stability issues within the target creek systems. Both Wilpinjong and Cumbo Creeks are typical of ephemeral creek systems in agricultural landscapes of the surrounding region, with channel stability issues within these creeks reflecting historical disturbances and land use practices, rather than contemporary mining operations.

## Contents

<b>1. Introduction</b>	<b>1</b>
1.1. Background.....	1
1.2. Regional Overview .....	1
1.3. Previous channel stability assessments .....	1
1.4. Objectives.....	2
<b>2. Methodology</b>	<b>3</b>
2.1. Field Survey – Channel stability monitoring and comparative assessment.....	3
2.2. Rainfall and Flood Analysis .....	4
<b>3. Results</b>	<b>9</b>
3.1. Channel Stability Monitoring.....	9
<b>4. Discussion and Recommendations</b>	<b>11</b>
4.1. Multi-year comparisons.....	11
4.1.1. Site stability scores .....	11
4.1.2. Photographic comparisons.....	12
4.2. Erosion points.....	12
4.3. Revegetation, remediation and recommendations .....	16
<b>5. Conclusion</b>	<b>18</b>
<b>6. References</b>	<b>19</b>

## List of Figures

Figure 1: Channel Stability monitoring locations along Wilpinjong Creek and Cumbo Creek .....	5
Figure 2: Significant erosion locations along Wilpinjong Creek .....	6
Figure 3: Wilpinjong Creek stream flow upstream of the WCPL mine discharge point EPL 24 .....	7
Figure 4: Wilpinjong Creek stream flow downstream of the WCPL mine discharge point EPL 24 .....	7
Figure 5: Cumbo creek stream flow downstream of the WCPL mine discharge point EPL 24.....	8
Figure 6: Weed species and feral species along Wilpinjong and Cumbo Creek .....	10

## List of Tables

Table 1: BEHI score ratings for each rating class .....	3
Table 2: Significant erosion points and suggested remediation works .....	13

## List of Appendices

Appendix A: BEHI Assessment Scoring
Appendix B: 2024 BEHI data
Appendix C: Monitoring site descriptions – Wilpinjong Creek and Cumbo Creek
Appendix D: Site Photo Comparisons
Appendix E: Site stability scores
Appendix F: Monthly Rainfall Data

# 1. Introduction

## 1.1. Background

Eco Logical Australia (ELA) was engaged by Wilpinjong Coal Pty Ltd (WCPL) to undertake annual channel stability monitoring (CSM) along Wilpinjong and Cumbo Creeks. CSM is required to satisfy Schedule 3, Condition 30 (d, iii) of the WCPL Development Consent (SSD 6764), and the CSM criteria detailed in Appendix 2 (Surface Water Management Plan (SWMP)) of the Wilpinjong Water Management Plan (WCPL 2018).

## 1.2. Regional Overview

The Wilpinjong Coal Mine (WCM) is located in the Mid-Western Regional Council Local Government Area, approximately 45 km north-east of Mudgee. The mine is owned and operated by WCPL, a wholly owned subsidiary of Peabody Energy Australia.

The WCM is located at the headwaters of the Goulburn River which is a major tributary of the Hunter River catchment. Wilpinjong Creek is the main drainage channel within the WCM. It is an intermittent creek with a narrow floodplain that has a history of cattle grazing. The northern edge of the floodplain is bordered by the sandstone escarpments of the Goulburn River National Park (NP). Wilpinjong Creek has three coal mines in its catchment, Moolarben, Ulan and Wilpinjong, with the latter positioned furthest downstream. WCPL discharges treated mine water into Wilpinjong Creek, treated by reverse osmosis, at a licensed discharge point (EPL24) directly adjacent to WCM.

Cumbo Creek flows north through land managed by WCPL, passing between Pit 3, Pit 2, Pit 7 and Pit 4, before joining Wilpinjong Creek north of the eastern pit area. Wilpinjong Creek continues to flow east, for approximately 4.5 km downstream where it joins Wollar Creek, which continues another 13 km through the Goulburn River NP before entering the Goulburn River.

## 1.3. Previous channel stability assessments

A baseline channel stability assessment of Wilpinjong and Cumbo Creeks was undertaken in 2005 as part of the Environmental Impact Statement (EIS) for the Wilpinjong Coal Project (WCPL 2005) to characterise the existing condition of the Wilpinjong and Cumbo Creek stream channels prior to mining. The Wilpinjong Creek survey included 49 sites and extended 12.5 km from the upstream gauging station to the confluence with Wollar Creek to the east. The Cumbo Creek survey included ten sites and extended 3 km from the southern boundary of the Mining Lease (ML) 1573 north to the confluence with Wilpinjong Creek.

The baseline surveys concluded both Wilpinjong and Cumbo Creeks have been affected by pre-mining land management practices dominated by sheep and cattle grazing. These land management practices involved the clearing of riparian vegetation on both creeks to maximise grazing areas and stock access to drinking water. The clearing of this vegetation is likely to have contributed significantly to bank instability. Disturbance from burrowing animals, both native (e.g. *Vombatus ursinus* (Common Wombats)) and introduced (e.g. *Oryctolagus cuniculus* (European Rabbit)), is also likely to have contributed to this instability.

Subsequent annual CSM has been undertaken in 2011, and 2014-2024, to assess the ongoing stability of the Wilpinjong and Cumbo Creeks during operational mining. Barnson (2017) developed a proforma to assist in the assessment of creek stability at each survey location and to enable comparisons to be made between annual survey periods. Annual CSM reports have concluded that overall riparian health

is poor, with erosion and bank stability issues present, typical of historically cleared agricultural catchments. Data collected by annual CSM to date has indicated that mining activities are not contributing to further channel stability issues in Wilpinjong and Cumbo Creeks.

## 1.4. Objectives

This report details the findings from the 2024 CSM program and includes a comparison of the regeneration progress of both Wilpinjong and Cumbo Creeks against previous monitoring conducted since 2011.

The CSM program aims to provide qualitative measures of stream bed and bank erosion and channel instability along Wilpinjong and Cumbo Creeks.

The key objectives of the 2024 CSM program are to:

- Evaluate erosional or depositional features of the creek banks
- Record the details of permanent monitoring sites with written descriptions and photographs
- Assess the stability of Wilpinjong and Cumbo Creeks using a rapid assessment methodology
- Compare visual channel stability at each of the permanent monitoring sites against previous monitoring records.

## 2. Methodology

### 2.1. Field Survey – Channel stability monitoring and comparative assessment

The field survey was conducted by ELA ecologists Kieran Stephenson-Banks and Natalie De Losa over three days between 10 December and 19 December 2024.

A total of 59 permanent monitoring locations were surveyed (49 on Wilpinjong Creek and 10 on Cumbo Creek; Figure 1). Consistent with previous monitoring, surveys involved surveying the designated reach of each site (approximately 100 m) and completing the Bank Erosion Hazard Index (BEHI) assessment. BEHI assessment involves scoring a site on eight quantitative categories outlined below and in Appendix A.

The eight BEHI indicators of channel stability that were used to evaluate erosion at each site include:

- Bank Height (m)
- Bank Angle (°)
- Percentage of Bank Height with a Bank Angle greater than 80°
- Evidence of Mass Wasting (% of Bank)
- Unconsolidated Material (% of Bank)
- Streambank Protection (% of Streambank covered in plant roots, vegetation, logs, branches, rocks, etc.)
- Established Beneficial Riparian Woody – Vegetation Cover
- Stream Curvature Descriptor

The BEHI indicators produce an activity rating that classifies each location from ‘Highly Unstable’, indicating the drainage line is experiencing severe ongoing erosion, to ‘Highly Stable’, indicating the drainage line is highly stable in function and form. This rating system enables any deterioration or improvement in bank stability to be detected over time. The classification system is detailed below in Table 1.

**Table 1: BEHI score ratings for each rating class**

Rating	BEHI Score
Highly Stable	0-25
Moderately Stable	26-35
Stable	36-45
Unstable	46-55
Moderately Unstable	56-65
Highly Unstable	66-85

Field notes and photographs were taken to allow qualitative assessment through comparisons between monitoring periods (Appendix C: and Appendix D:). This process included written site descriptions using the previous monitoring report (ELA 2023) to make comparisons in situ, as well as taking upstream and downstream photographs at each of the permanent monitoring sites. Site descriptions are provided in Appendix C: and copies of site photos are provided in Appendix D. Comparisons of the monitoring site photographs (2011-2024) has been made by referring to previous reports prepared by Barnson (2017) and ELA (2020-2023).

Previously established erosion points along Wilpinjong Creek were also assessed (Figure 2). These are in areas with moderate to severe erosion and are monitored to determine the presence and extent of on-going erosion. Management issues and threatened species were recorded opportunistically throughout the surveys, to highlight areas where management intervention is recommended.

## **2.2. Rainfall and Flood Analysis**

Previous WCPL CSM reports have included an analysis of rainfall Intensity-Frequency-Duration (IFD) and exceedance likelihood, with its effect on erosion (Barnson 2017). Rainfall data is included in Appendix F: and shows that 2024 was wetter compared to 2023 and was wetter than the long-term average rainfall. Flow data for Wilpinjong and Cumbo Creeks is shown below in Figures 3 to 5, which demonstrates a continued reduced flow throughout 2024 compared to years prior to 2023, potentially due to reduced discharge. Due to this above average annual rainfall and low flow, coupled with an absence of significant or increased erosion events across the monitoring sites, it was determined that IFD and exceedance analysis would be of negligible benefit and therefore it has not been undertaken for the purposes of this report.

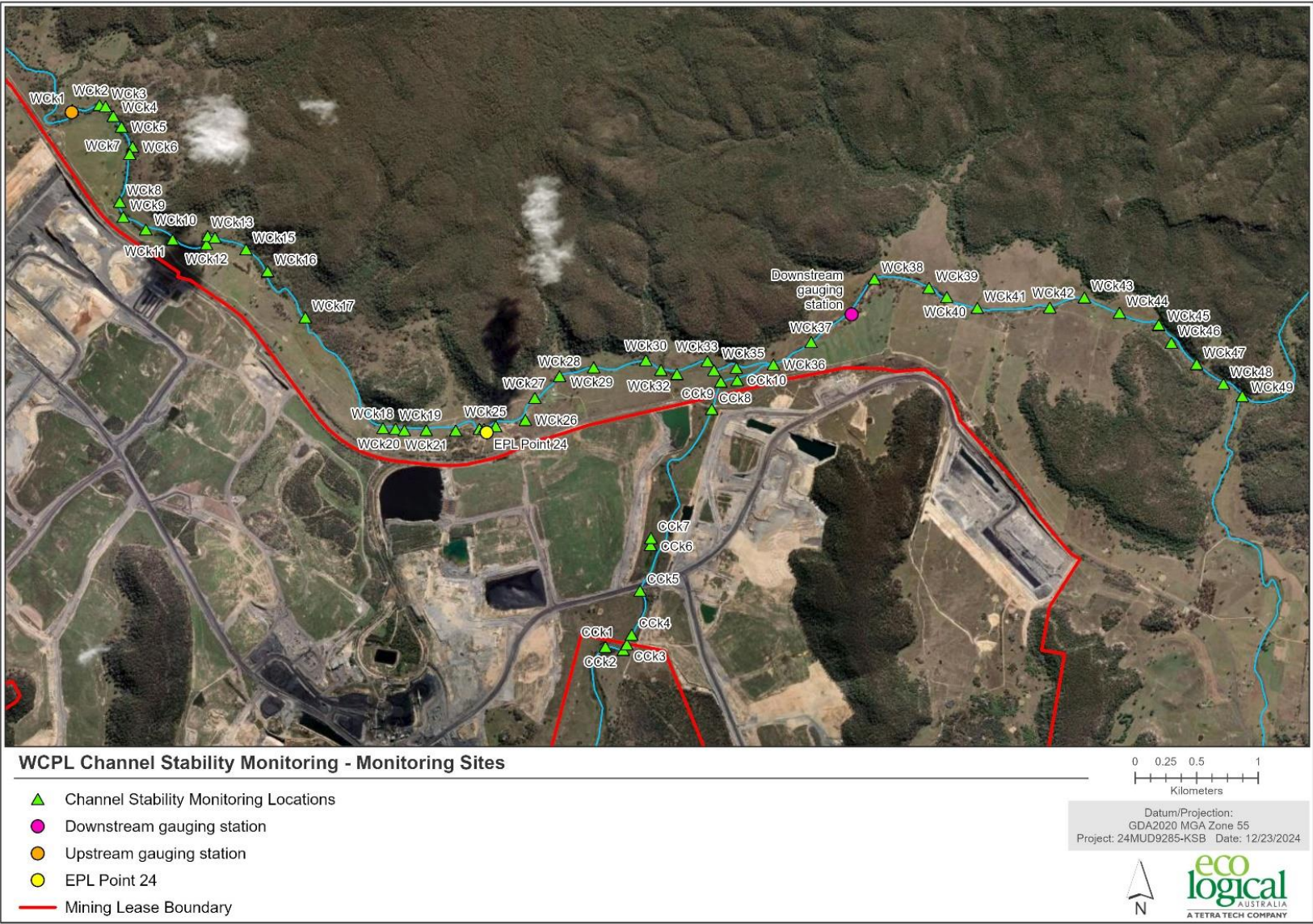


Figure 1: Channel Stability monitoring locations along Wilpinjong Creek and Cumbo Creek

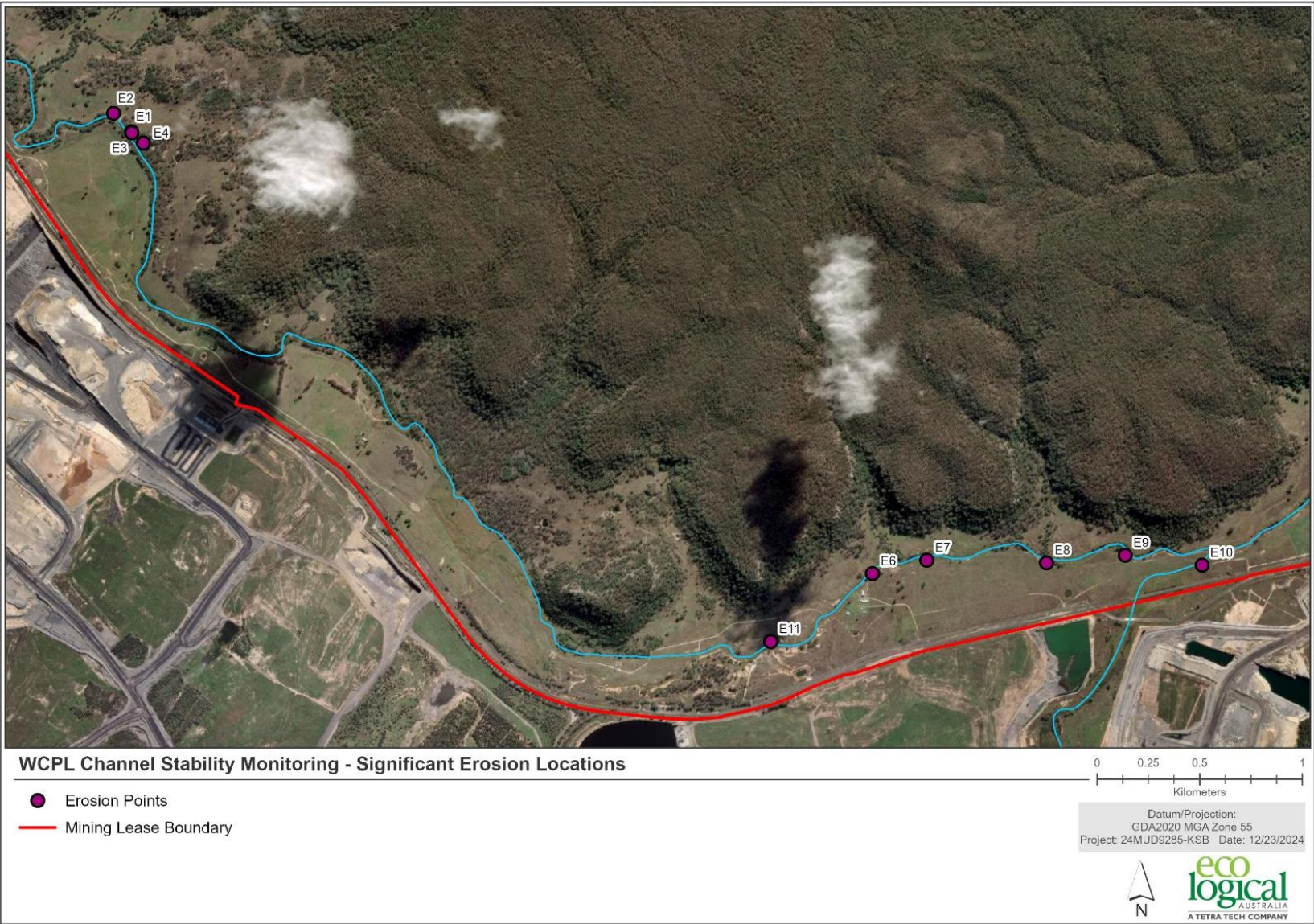


Figure 2: Significant erosion locations along Wilpinjong Creek

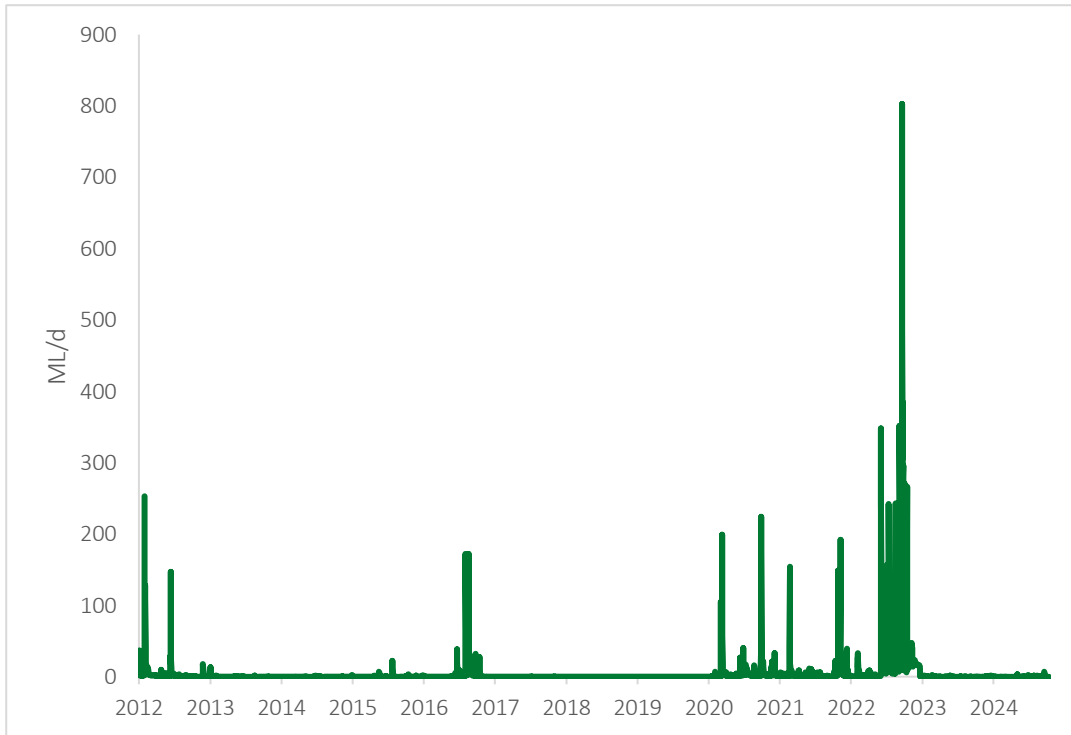


Figure 3: Wilpinjong Creek stream flow upstream of the WCPL mine discharge point EPL 24

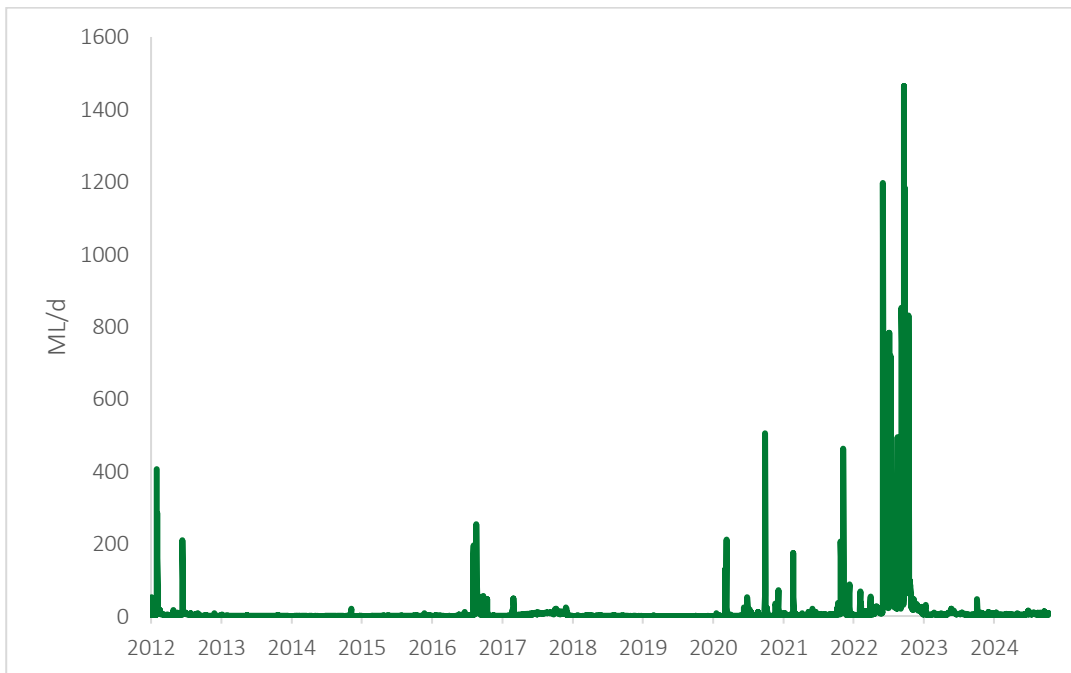


Figure 4: Wilpinjong Creek stream flow downstream of the WCPL mine discharge point EPL 24

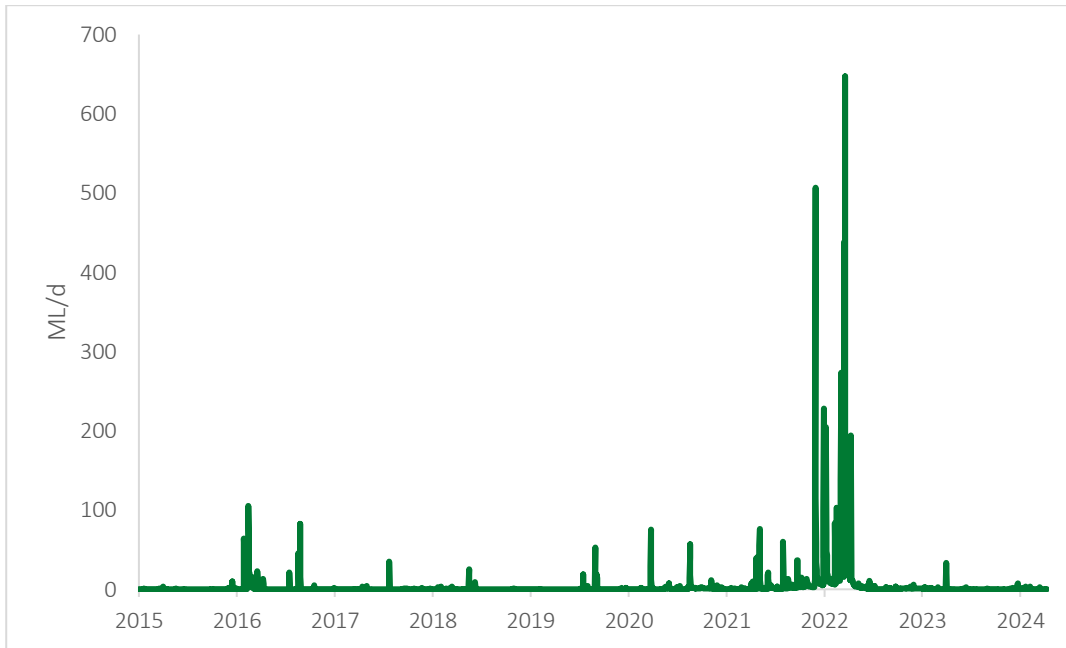


Figure 5: Cumbo creek stream flow downstream of the WCPL mine discharge point EPL 24

## 3. Results

### 3.1. Channel Stability Monitoring

The results of the BEHI assessments completed at sites along Wilpinjong Creek and Cumbo Creek are presented below in Appendix B:. Site descriptions and comparison notes can be found in Appendix C:. A range of priority weed species listed within the Central Tablelands Regional Strategic Weed Management Plan 2023-2027 (LLS 2023) were recorded, as well as priority pest animal species listed within the Central Tablelands Regional Strategic Pest Animal Management Plan 2018-2023 (LLS 2018), the locations of which are shown in **Error! Reference source not found.**

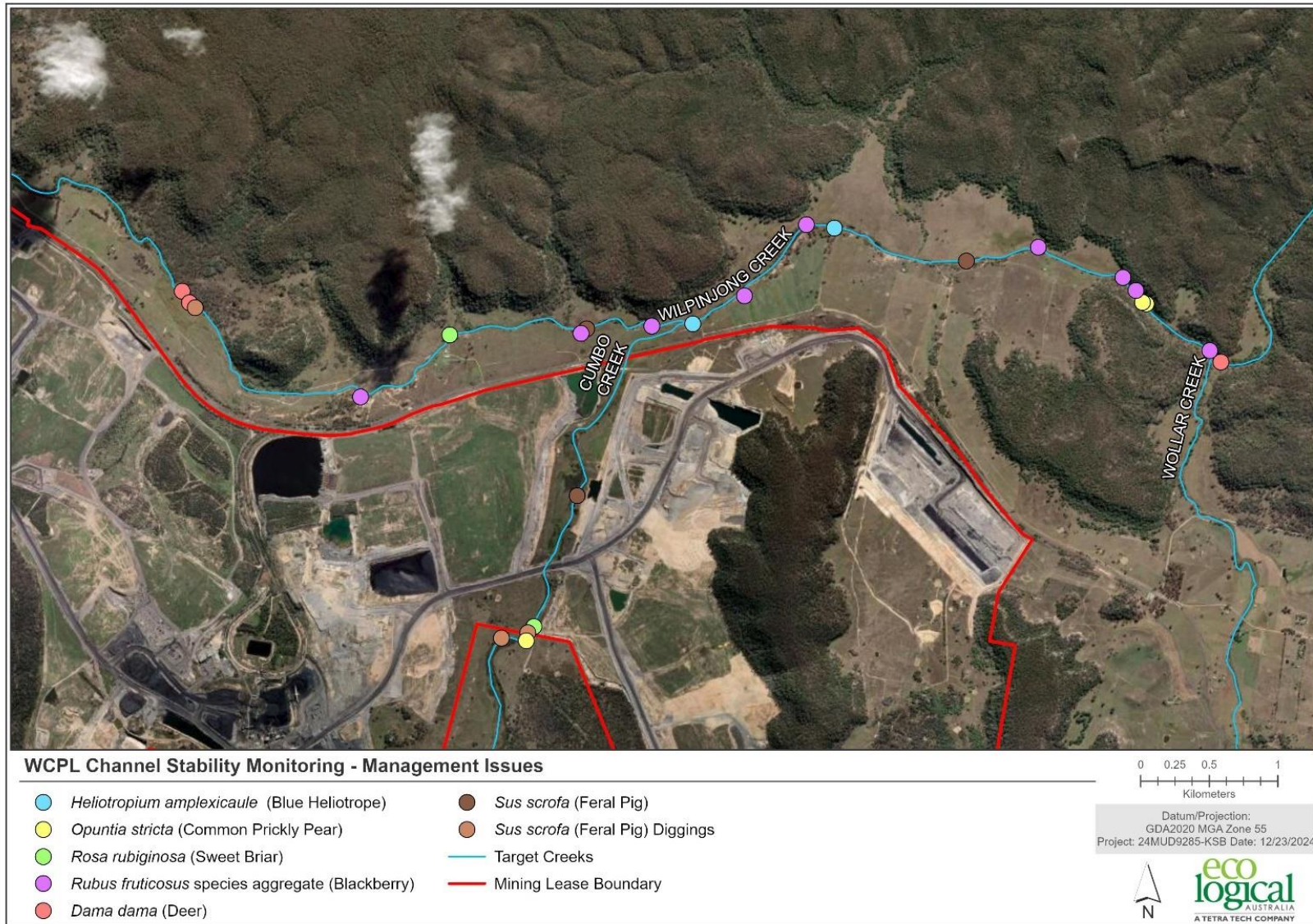


Figure 6: Weed species and feral species along Wilpinjong and Cumbo Creek

## 4. Discussion and Recommendations

Of the 49 sites surveyed along Wilpinjong Creek, 36 sites recorded scores in the stable range, whilst 13 sites recorded scores in the unstable range (Appendix E:). The lowest scoring sites (all Moderately Unstable) were WCK4, WCK27 and WCK42. Both WCK27 and WCK42 have scored Moderately Unstable since 2018 and 2017 respectively, whereas WCK4 has declined from Unstable in 2024 due to some minor erosion. These sites were typified by mass sediment wasting, high cover of unconsolidated material, less than 50% streambank protection and limited to no riparian woodland.

The western section of Wilpinjong Creek (incorporating WCK1 to WCK16) contains good areas of natural regeneration, with overall moderate to good riparian woodland vegetation and habitat present. There was some regeneration of *Eucalyptus* sp. recorded along the banks which has the potential to provide increased bank stability in the future. Overall groundcover increased slightly, although upstream sites WCK1 to WCK3 had cattle present grazing and other sites exhibited evidence of grazing pressure in 2023. In stream vegetation cover of *Phragmites australis* (Common Reed) remained consistent despite significantly reduced water levels.

The middle section of Wilpinjong Creek (incorporating sites WCK17 to WCK44) is characterised by cleared adjacent paddocks and narrow, scattered riparian woodland (where present). Widespread historic clearing in this section of the creek has a pronounced influence on the channel stability scores, with unstable BEHI scores consistently recorded. There was a slight increase in groundcover at some sites, however this was not reflected in the overall score. A high cover of *Phragmites australis* within the channel was recorded at the majority of sites.

The eastern section of Wilpinjong Creek (incorporating sites WCK45 to WCK49) is characterised by a relatively steep and narrow valley, which has resulted in a straight channel with an overall high bank height. All sites within this section are Stable, with most sites in a Moderately Stable condition, due to the high groundcover and presence of woody vegetation on the banks which is assisting in stabilising the steep bank form erosion and the reduced grazing pressures compared to sites further upstream.

Of the ten sites surveyed along Cumbo Creek, all were in the Stable range, with nine out of 10 sites Highly Stable (Appendix E:). Cumbo Creek is characterised by a shallow meandering channel with low stable banks. The adjacent paddocks have been historically cleared with only very sparse riparian vegetation woodland remaining. Despite the lack of woody riparian vegetation, the creek remains in a stable condition, primarily due to high groundcover and are absent of grazing pressures. Groundcover species can assist in providing mid and upper bank sections with greater protection from scour, as they slow water flow close to the bank (Abernathy and Rutherford 1999).

### 4.1. Multi-year comparisons

Following on from the baseline channel stability assessment of Wilpinjong and Cumbo Creeks undertaken in 2005 as part of the WCPL EIS (WCPL 2005), annual monitoring has been undertaken during 2011, and 2014 – 2024. Annual monitoring since 2011 shows that the channel stability has remained relatively constant, both upstream and downstream of WCM. The following sections compare 2024 results to the results of previous monitoring years detailed above.

#### 4.1.1. Site stability scores

Site channel stability data in the form of BEHI scores are available from 2016 – 2024 for direct comparison. Site stability ratings (based on BEHI scores) for Wilpinjong Creek and Cumbo Creek sites are presented in

Appendix E. Differences in ratings were only noted as ‘Improved’ or ‘Declined’. If no differences were observed the ratings were determined to be unchanged, indicating a consistent stability rating for that site. For Wilpinjong Creek, ratings improved at one site and remained unchanged at 48 sites. For Cumbo Creek, ratings remained unchanged at all sites.

One site recorded increase stability along Wilpinjong Creek in 2024. WCK49 had increased groundcover vegetation reflective of the increased rainfall. Increased vegetation cover is directly linked to increased scores for Streambank Protection and associated increased scores for Unconsolidated Material.

Of the eight sites that recorded changes in stability ratings along Wilpinjong Creek between 2021 and 2023, all eight maintained this difference in 2024. This indicates that decreased vegetation cover was not uniform throughout the catchment and had varying effects on different sites.

The mostly consistent results from 2016 to 2023 at Cumbo Creek reflects the overall stable nature of this creek, with most sites classified as Highly Stable.

#### 4.1.2. Photographic comparisons

Photographic comparisons of sites across 2021 – 2024 monitoring are included in Appendix D. Photos taken from 2011 and 2014 – 2019 monitoring were also compared, however are not included in this report due to size. Previous reports can be referred to for photo comparisons with earlier years.

Comparisons indicate that there has been little observable change in the overall morphology of the stream channel and banks, with little evidence of any significant ongoing erosional features. The only notable feature is the level of groundcover on the banks has either remained consistent or increased slightly compared to 2023. This is largely due to an increased in rainfall in 2024 (Appendix F) compared to 2023 and a return to above average rainfall consistent with 2020 to 2022 rainfall, and livestock grazing pressure at sites within Wilpinjong Creek remaining consistent. In stream cover of *Phragmites australis* (Common Reed) and other macrophytes was largely maintained in 2024. Vegetation bank composition remained similar in 2024, with dominant groundcover species including a mixture of native and exotic species, such as *Aristida ramosa* (Purple wiregrass), *Sporobolus creber* (Western Rat-tail Grass), *Paspalum dilatatum* (Paspalum), and *Plantago lanceolata* (Lamb’s Tongues).

Water levels were also slightly higher within Wilpinjong Creek and Cumbo Creek in 2024 compared to 2023. Most CSM sites upstream of WCPL water discharge location had water confined to pools/ponds at the time of monitoring. Downstream of the WCPL discharge point water levels were very low and slow flowing. There was no water flow within Cumbo Creek, with only isolated pools observed throughout its reach during monitoring.

Overall, increases in vegetation cover and water levels visible in site photos observed both upstream and downstream of the WCPL water discharge location can be attributed to the above average rainfall recorded during 2024.




#### 4.2. Erosion points

Table 2 provides photos of the significant erosion points along Wilpinjong and Cumbo Creeks (see Figure 2 above). These sites were identified as having moderate to severe historical erosion and the potential for continued erosion during times of downstream and lateral flow. Progression of erosion was minimal and only observed at seven of the 2024 monitoring points, with all sites stable at the time of monitoring. Sites E1, E3, E4, E7, and E9 showed evidence of ongoing mass wasting. Both Sites E7 and E9 displayed riling and undercutting, with further mass wasting observed. Sites E2, E6, E8, E10, and E11 all displayed

evidence of erosion; however, they had largely stabilised over the previous years and showed no signs of obvious erosion progression at the time of monitoring.

Table 2: Significant erosion points and suggested remediation works

Erosion point	Image	Notes / suggested works
E1 (768557, 6422438)		<p>Minor mass wasting has continued at top of bank.</p> <p>Reshaping and contouring of bank to ease water flowing through the erosion and revegetation (Section 4.3).</p>
E2 (768469, 6422527)		<p>Rills formed on exposed bare soil with mass wasting also evident. No evidence of active erosion at the time of monitoring.</p> <p>Revegetation and mulching (Section 4.3).</p>

Erosion point	Image	Notes / suggested works
<p>E3 (768558, 6422432)</p>		<p>Evidence of continued mass wasting at top of bank and around tree roots.</p> <p>Reshaping and contouring of bank to ease water flowing through the erosion and revegetation (Section 4.3).</p>
<p>E4 (768614, 6422382)</p>		<p>Erosion has continued over the past year with some mass wasting evident at top of bank.</p> <p>Reshaping and contouring of bank to ease water flowing through the erosion and revegetation (Section 4.3).</p>
<p>E6 (772166, 6420287)</p>		<p>Erosion appears stable on the steep banks with no further mass wasting or undercutting observed at the time of monitoring.</p> <p>Reshaping and contouring of bank to ease water flowing through the erosion and revegetation (Section 4.3).</p>

Erosion point	Image	Notes / suggested works
<p>E7 (772431, 6420352)</p>		<p>Undercutting and riling evident. A small amount of mass wasting has occurred over the past year. Reshaping of bank to ease water flowing through the erosion and revegetation (Section 4.3).</p>
<p>E8 (773014, 6420339)</p>		<p>Road continues to be stable with no further erosion evident. Continue to monitor rill.</p>
<p>E9 (773397, 6420376)</p>		<p>Erosion has continued to progress with evidence of undercutting and mass wasting. Tree roots on bank edge exposed. Reshaping and contouring of bank and revegetation (Section 4.3).</p>

Erosion point	Image	Notes / suggested works
E10 (773772, 6420328)		<p>Erosion has continued to remain stable over the past year. Not active at time of monitoring.</p> <p>Revegetation and mulching (Section 4.3)</p>
E11 (771670, 6419956)		<p>Undercutting, rilling and runoff of soil apparent. No evidence of further erosion at the time of monitoring.</p> <p>Reshaping of bank, revegetation and mulching (Section 4.3).</p>

### 4.3. Revegetation, remediation and recommendations

Revegetation work is recommended to target most of the erosion points, except for E8. The establishment of riparian vegetation can assist in stabilising banks and slow surface runoff (Abernathy and Rutherford 1999). Sites E1, E3, E4, E6 and E9 have very steep and exposed banks, which without intervention will continue to erode. This erosion can range from minor activity to gully retreat, bank collapse, and further root exposure. As these banks become higher, and the bank angle becomes greater, which will lead to further erosion. Therefore, it is recommended that these banks are initially reshaped to reduce the overall bank angle, before undertaking revegetation works.

Meanwhile, with site E2 showing evidence of rill erosion, the application of a native groundcover seed mix and mulch to the bank sides (including hydro-mulch) is recommended to assist stabilisation until vegetation establishes, along with the installation of coarse-rock, large-woody debris, coir logs and/or hay bale check dams to reduce water flow in designated erosion points. Seeding and mulching is also

recommended for sites E10, and E11. Temporary fencing works in all areas will also assist in excluding native and introduced fauna from revegetation and remediation areas, it is recommended that the existing fencing around sites E1 to E4 be assessed and reinstated where required.

Previous revegetation works were undertaken in 2019 by WCPL on a 1.6 km section of Wilpinjong Creek, approximately between sites Wck25 and Wck27 (see Figure 1), and in 2020 along approximately 1.9 km of Cumbo Creek and 1 km of Wilpinjong Creek using tube stock of native species. Cumbo Creek is currently stable and continues to remain stable, it is recommended that the ongoing success of the revegetation works be determined through survival assessments, which could also help to inform future revegetation works planned for both the two channels and the mine rehabilitation.

Livestock (cattle) access to the riparian zone continues to impact on the overall stability and riparian health of Wilpinjong Creek. The impact of livestock was apparent in the far-western section of Wilpinjong Creek (incorporating sites Wck1 to Wck4), with heavy grazing observed of riparian and instream vegetation at each of these four sites. The generally preceding wetter conditions in the lead up to 2024 monitoring likely exacerbated the impact of stock grazing in this section on Wilpinjong Creek. Excluding stock from the riparian zone in these areas, is recommended to improve creek stability and health and assist natural regeneration.

The results of ongoing monitoring provide evidence that the channels along both Wilpinjong and Cumbo Creek and relatively stable and have remained consistently stable throughout recent years of drought and flooding. Given the consistent results produced through monitoring, it is recommended that the annually monitoring be changed to biennial or triennial monitoring, and in response to extreme rainfall years. This recommendation would require a change to the WCPL SWMP, so that monitoring is consistent with the SWMP. It is recommended that WCPL considered altering the requirements for channel stability monitoring in the 2025 management plan review and update period upon submission of the Annual Review.

## 5. Conclusion

The channel stability of both Wilpinjong and Cumbo Creeks is characteristic of ephemeral systems in agricultural landscapes, and consistent with other creeks in the surrounding region. Both creek systems exhibit characteristic channel stability issues associated with agricultural landscapes including:

- Historically cleared and degraded riparian vegetation and the presence of exotic species, including Regional Priority Weeds such as *Rubus fruticosus* species aggregate (Blackberry), *Rosa rubiginosa* (Sweet Brier) and *Hypericum perforatum* (St John's Wort).
- Lateral gully-erosion at several locations, due to an increase in runoff velocity occurring perpendicular to the creek line from adjacent cleared paddocks.
- Continued livestock access contributing to bank instability, reducing in-stream and riparian vegetation and hampering natural regeneration.
- Introduced and native fauna (e.g. European Rabbit and Common Wombat) burrowing within the riparian zone.

The 2024 period recorded rainfall levels that were above the historical average leading to an increase in water flowing throughout the Wilpinjong catchment in comparison to the previous year monitoring period, and back to above average flow consistent with monitoring periods 2020 - 2022. There was little evidence of erosion progression at the CSM sites, whilst there being increased rainfall and resulting water flowing through the channels, there was also increased riparian and instream vegetation cover due to the wetter conditions that has the potential to increase stability for future monitoring periods. Minor erosion was observed at approximately half of the erosion monitoring points; however, they were all largely stable and not active during the monitoring period of increased rainfall. Flow both upstream and downstream of the WCM was relatively consistent with flow observed in 2023.

Erosion and bank stability issues within the Wilpinjong and Cumbo Creeks are the result of historic agricultural practices within the riparian zone, including widespread clearing and direct and ongoing stock access to the bank and channel. The stability of the bank and channel has remained relatively consistent throughout recent years of drought and flooding. There is no evidence that mining activities are adversely impacting the channel stability of the target creeks surrounding the WCM. It is recommended that WCPL consider transitioning the annual monitoring to biennial or triennial monitoring.

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## Appendix A: BEHI Assessment Scoring

Indicator	Measure	Score
1. Bank Height (m)	0 - 1.5	0
	1.5-3	2.5
	3-4.5	5
	4.5-6	7.5
	6+	10
2. Bank Angle (°)	0-20	0
	21-60	2
	61-80	4
	81-90	6
	91-120	8
	> 120	10
3. Percentage of Bank Height with a Bank Angle Greater than 80°	0-10	0
	11 to 25	2.5
	26-50	5
	51-75	7.5
	76-100	10
4. Evidence of Mass Wasting (% of Bank)	0-10	0
	11 to 25	2.5
	26-50	5
	51-75	7.5
	76-100	10
5. Unconsolidated Material (% of Bank)	0-10	0
	11 to 25	2.5
	26-50	5
	51-75	7.5
	76-100	10
6. Streambank Protection (% of Streambank covered by plant roots, vegetation, logs, branches, rocks, etc.)	0-10	15
	11 to 25	12.5
	26-50	10
	51-70	7.5
	70-90	2.5
7. Established Beneficial Riparian Woody – Vegetation Cover	90-100	0
	0-10	15
	11 to 25	12.5
	26-50	10
	51-70	7.5
8. Stream Curvature Descriptor	70-90	2.5
	90-100	0
	Meander	5
	Shallow Curve	2.5
	Straight	0
Site Ratings (totals)	Highly Stable	0-25
	Mod Stable	26-35

Indicator	Measure	Score
	Stable	36-45
	Unstable	46-55
	Mod Unstable	56-65
	Highly Unstable	66-85

## Appendix B: 2024 BEHI data

2024 BEHI data for Wilpinjon Creek

Site	Bank (L/R)	Bank Height (m)	Bank Face Length	BEHI Indicator								Total	Rating
				1	2	3	4	5	6	7	8		
Wck1	L	4	10	5	2	5	2.5	2.5	7.5	7.5	5	37	Stable
Wck2	R	3.5	9	5	2	5	5	5	7.5	10	0	39.5	Mod Stable
Wck3	L	3	12	5	2	2.5	10	7.5	10	12.5	5	54.5	Unstable
Wck4	L	3.5	7	5	2	7.5	7.5	7.5	10	12.5	0	52	Unstable
Wck5	L	3	7	5	2	2.5	7.5	7.5	2.5	7.5	0	34.5	Mod Stable
Wck6	L	3	6	2.5	2	2.5	0	2.5	7.5	7.5	2.5	27	Mod Stable
Wck7	L	2.5	6	2.5	2	2.5	0	2.5	7.5	7.5	0	24.5	Highly Stable
Wck8	L	5	12	7.5	2	0	2.5	0	2.5	15	2.5	32	Mod Stable
Wck9	R	2	9	2.5	2	7.5	7.5	5	10	15	2.5	52	Unstable
Wck10	R	1.5	15	2.5	0	0	0	0	2.5	15	2.5	22.5	Highly Stable
Wck11	R	1.5	18	0	0	0	0	2.5	0	10	2.5	15	Highly Stable
Wck12	R	2	12	2.5	2	0	0	2.5	2.5	12.5	5	27	Mod Stable
Wck13	L	4	8	5	4	0	0	2.5	0	10	5	26.5	Mod Stable
Wck14	L	1.8	7	2.5	2	0	0	2.5	2.5	12.5	0	22	Highly Stable
Wck15	L	1.8	6	2.5	2	2.5	0	2.5	2.5	10	2.5	24.5	Highly Stable
Wck16	L	2	7	2.5	2	5	0	2.5	7.5	7.5	0	27	Mod Stable
Wck17	R	1.8	4	2.5	2	0	0	0	0	15	2.5	22	Highly Stable
Wck18	R	2.5	5	2.5	2	5	2.5	0	0	15	2.5	29.5	Mod Stable
Wck19	L	2	4	2.5	2	2.5	2.5	0	0	15	0	24.5	Highly Stable
Wck20	L	1.8	5	2.5	2	5	7.5	2.5	7.5	12.5	0	39.5	Stable
Wck21	R	1.3	5	0	2	2.5	2.5	0	2.5	15	2.5	27	Mod Stable
Wck22	R	1.6	8	2.5	2	0	7.5	5	12.5	12.5	2.5	44.5	Stable
Wck23	R	2.5	12	2.5	2	0	5	5	12.5	15	5	47	Unstable
Wck24	R	1.7	10	2.5	0	2.5	0	2.5	2.5	15	2.5	27.5	Mod Stable
Wck25	L	1.7	7	2.5	2	2.5	7.5	5	10	15	2.5	47	Unstable

Site	Bank (L/R)	Bank Height (m)	Bank Face Length	BEHI Indicator								Total	Rating
				1	2	3	4	5	6	7	8		
Wck26	L	3.5	10	5	2	7.5	7.5	5	10	15	2.5	54.5	Unstable
Wck27	R	2.8	5	2.5	6	7.5	7.5	5	10	15	2.5	56	Mod Unstable
Wck28	L	2.5	5	2.5	2	7.5	7.5	2.5	7.5	12.5	2.5	44.5	Stable
Wck29	L	3.6	8	5	2	7.5	7.5	5	10	15	2.5	54.5	Unstable
Wck30	R	2.8	12	2.5	2	0	0	2.5	2.5	12.5	2.5	24.5	Highly Stable
Wck31	R	3	6	2.5	4	5	5	5	7.5	15	2.5	46.5	Unstable
Wck32	R	3.2	7	5	4	7.5	7.5	2.5	7.5	15	2.5	51.5	Unstable
Wck33	L	3.2	6	5	4	7.5	7.5	5	10	10	5	54	Unstable
Wck34	R	2.4	6	2.5	4	5	5	0	2.5	15	5	39	Mod Stable
Wck35	R	2.2	13	2.5	2	2.5	7.5	5	10	15	2.5	47	Unstable
Wck36	R	2	15	2.5	2	0	5	2.5	7.5	15	2.5	37	Mod Stable
Wck37	R	2	12	2.5	2	2.5	7.5	5	7.5	15	2.5	44.5	Stable
Wck38	L	3.1	6	5	2	2.5	0	2.5	0	10	5	27	Mod Stable
Wck39	L	3.2	7	5	4	2.5	7.5	7.5	7.5	15	2.5	51.5	Unstable
Wck40	R	3.2	14	5	2	0	7.5	7.5	12.5	15	0	49.5	Unstable
Wck41	R	2.8	8	2.5	2	2.5	0	0	0	15	0	22	Highly Stable
Wck42	R	4	6	5	4	7.5	5	10	12.5	12.5	2.5	59	Mod Unstable
Wck43	L	3.1	5	5	4	7.5	2.5	0	2.5	15	2.5	39	Stable
Wck44	R	1.7	3	2.5	2	2.5	0	0	2.5	15	2.5	27	Mod Stable
Wck45	L	3.5	7	5	4	2.5	2.5	0	2.5	7.5	5	29	Mod Stable
Wck46	R	2.5	5	2.5	4	5	2.5	2.5	2.5	10	2.5	31.5	Mod Stable
Wck47	R	2.5	6	2.5	2	2.5	7.5	2.5	10	12.5	0	39.5	Stable
Wck48	L	2.7	6	2.5	2	2.5	2.5	5	2.5	10	2.5	29.5	Mod Stable

Site	Bank (L/R)	Bank Height (m)	Bank Face Length	BEHI Indicator								Total	Rating
				1	2	3	4	5	6	7	8		
WCk49	L	4	10	5	4	2.5	0	5	2.5	10	2.5	31.5	Mod Stable

## 2024 BEHI data for Cumbo Creek

Site	Bank (L/R)	Bank Height (m)	Bank Face Length	BEHI Indicator								Total	Rating
				1	2	3	4	5	6	7	8		
CCK1	L	1.8	10	0	0	0	0	0	0	15	0	15	Highly Stable
CCK2	R	1.3	8	0	2	2.5	5	2.5	7.5	15	5	39.5	Stable
CCK3	L	0.4	2	0	0	0	0	2.5	0	15	2.5	20	Highly Stable
CCK4	R	1	13	0	0	0	0	0	0	15	2.5	17.5	Highly Stable
CCK5	R	1	8	0	0	0	0	2.5	0	15	2.5	22	Highly Stable
CCK6	R	1.8	10	2.5	2	2.5	0	0	0	15	2.5	24.5	Highly Stable
CCK7	R	0.5	2	0	2	2.5	0	0	0	15	2.5	22	Highly Stable
CCK8	L	2	15	2.5	0	0	0	0	0	15	2.5	20	Highly Stable
CCK9	L	0.7	2	0	2	2.5	0	0	0	15	2.5	22	Highly Stable
CCK10	L	0.7	4	0	2	2.5	0	0	0	15	2.5	22	Highly Stable

## Appendix C: Monitoring site descriptions – Wilpinjong Creek and Cumbo Creek

Site	Upstream	Downstream
Wilpinjong Creek		
Wck1	<ul style="list-style-type: none"> <li>Water level is higher than 2023 with water pooled downstream of weir</li> <li>No further dieback of <i>Angophora floribunda</i> (Rough-barked Apple) since 2021</li> <li>Livestock access to creek</li> <li>Groundcover on bank heavily grazed</li> <li>Cattle present</li> </ul>	<ul style="list-style-type: none"> <li>Bare soil patches, erosion stabilising</li> <li>Livestock access to creek</li> <li>Groundcover on bank heavily grazed</li> <li>Water ponding within channel</li> <li>Cattle present</li> </ul>
Wck2	<ul style="list-style-type: none"> <li>Livestock access to creek</li> <li>Groundcover on bank heavily grazed</li> <li>Large decrease in vegetation cover within the channel due to livestock grazing, cattle present</li> <li>Water ponding within channel Minimal localised erosion, currently appears stable, however has slight increase due to livestock access</li> </ul>	<ul style="list-style-type: none"> <li>Livestock access to creek</li> <li>Groundcover on bank heavily grazed</li> <li>Erosion appears stable, however slight increase due to livestock access</li> <li>Water ponding within channel</li> <li>Cattle present</li> </ul>
Wck3	<ul style="list-style-type: none"> <li>Livestock access to creek</li> <li>Groundcover on bank heavily grazed</li> <li><i>Phragmites australis</i> and <i>Juncus</i> sp. present in 2022 now absent due to grazing</li> <li>Water ponding within channel.</li> <li>Minimal localised erosion, slight progression</li> <li>Cattle present</li> </ul>	<ul style="list-style-type: none"> <li>Livestock access to creek</li> <li>Groundcover on bank heavily grazed</li> <li><i>Phragmites australis</i> and <i>Juncus</i> sp. present in 2022 now absent due to grazing</li> <li>Some progression of erosion and mass wasting</li> <li>Water ponding within channel</li> <li>Cattle present</li> </ul>
Wck4	<ul style="list-style-type: none"> <li>Livestock access to creek</li> <li>Groundcover on bank and within channel heavily grazed</li> <li><i>Phragmites australis</i> now absent from channel</li> <li>No water within channel</li> <li>Active erosion on left hand bank (LHB) continues, with evidence of undercutting and mass wasting</li> </ul>	<ul style="list-style-type: none"> <li>LHB steep with exposed roots</li> <li>Vegetation cover on both banks is good</li> <li>LHB erosion active still active, with undercutting and mass wasting</li> <li>Vegetation in channel is high, dominated by <i>Phragmites australis</i> and <i>Juncus</i> sp.</li> <li>No water within channel</li> </ul>
Wck5	<ul style="list-style-type: none"> <li><i>Phragmites australis</i> present in channel, high cover</li> <li>LHB erosion active with mass wasting evident. Some bare soil patches on bank from erosion</li> <li>Vegetation on banks is in good condition</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation in channel is high, dominated by <i>Phragmites australis</i></li> <li>Woody vegetation cover is good on both banks</li> <li>Bank vegetation cover good, with mixed grasses including <i>Themeda triandra</i></li> <li>Minor localised erosion on LHB from animal tracks, however appears largely stable</li> </ul>

Site	Upstream	Downstream
	<ul style="list-style-type: none"> <li>● <i>Eucalyptus blakelyi</i> (Blakely's Red Gum) regeneration in channel</li> <li>● No water within channel</li> <li>● Erosion stable on LHB, how ever slight progression</li> </ul>	
Wck6	<ul style="list-style-type: none"> <li>● <i>Phragmites australis</i> in channel, high cover</li> <li>● Good vegetation on both banks bank</li> <li>● Eucalypt regeneration on LHB</li> <li>● Water ponding within channel</li> <li>● Small <i>Rubus fruticosus</i> species aggregate (Blackberry) on LHB</li> </ul>	<ul style="list-style-type: none"> <li>● Vegetation in channel is high, dominated by <i>Phragmites australis</i></li> <li>● Woody vegetation cover is good on both banks</li> <li>● Large <i>Rubus fruticosus</i> species aggregate on RHB and small <i>Rubus fruticosus</i> species aggregate along LHB</li> <li>● Water ponding within channel</li> </ul>
Wck7	<ul style="list-style-type: none"> <li>● <i>Phragmites australis</i> present in channel, high cover</li> <li>● Good vegetation cover that has increased on both banks</li> <li>● Regeneration of <i>Eucalyptus blakelyi</i> on banks</li> <li>● Large woody debris (LWD), within channel, potential litter trap during high flow events</li> <li>● Water ponding within channel</li> </ul>	<ul style="list-style-type: none"> <li>● Vegetation in channel is high, dominated by <i>Phragmites australis</i></li> <li>● Good vegetation cover on bank increased, with groundcover on LHB contributing to stabilisation</li> <li>● Woody vegetation is good on both banks</li> <li>● Regeneration of <i>Angophora floribunda</i> and <i>Eucalyptus blakelyi</i> on both banks</li> <li>● Water ponding within channel</li> </ul>
Wck8	<ul style="list-style-type: none"> <li>● High <i>Phragmites australis</i> cover within and edge of channel</li> <li>● Water ponding/pooling, no flow</li> <li>● Good woody vegetation cover on LHB, RHB has good groundcover</li> </ul>	<ul style="list-style-type: none"> <li>● High <i>Phragmites australis</i> cover within and edge of channel</li> <li>● Water ponding/pooling, no flow</li> <li>● Some bare patches on RHB, however no erosion</li> <li>● LHB has high groundcover</li> </ul>
Wck9	<ul style="list-style-type: none"> <li>● Erosion on right hand bank (RHB) has been active in past year, currently appears stable</li> <li>● High cover of <i>Phragmites australis</i> in channel</li> <li>● Debris washed up into trees from previous high flow events</li> </ul>	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> in channel</li> <li>● Good vegetation cover on upper and lower bank</li> <li>● RHB is steep, with mid bank bare due to erosion</li> <li>● Erosion on RHB has been active within the past year, currently appears stable</li> </ul>
Wck10	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> in channel and on bank</li> <li>● Water ponding within channel Eucalyptus regeneration on RHB</li> <li>● Good vegetation cover on RHB</li> </ul>	<ul style="list-style-type: none"> <li>● Good vegetation cover on both banks</li> <li>● High woody vegetation cover on RHB</li> <li>● High cover of <i>Phragmites australis</i> in channel</li> <li>● Debris from high flow events washed up onto trees on RHB</li> <li>● Water ponding within channel</li> </ul>
Wck11	<ul style="list-style-type: none"> <li>● High vegetation cover in channel and on banks with <i>Phragmites australis</i>, <i>Arundinella nepalensis</i> (Reedgrass), and <i>Austrostipa verticillata</i> (Slender bamboo grass) present</li> <li>● <i>Cyperaceae</i> sp. in channel</li> <li>● High woody vegetation cover on LHB</li> <li>● Young <i>E. camaldulensis</i> and <i>E. blakelyi</i> on RHB</li> <li>● No water within channel</li> </ul>	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> in channel</li> <li>● High vegetation cover on both banks</li> <li>● Regeneration of <i>Eucalyptus blakelyi</i> in channel</li> <li>● No water in channel</li> </ul>

Site	Upstream	Downstream
Wck12	<ul style="list-style-type: none"> <li>● Young <i>Allocasuarina</i> species on LHB</li> <li>● Good vegetation cover on both banks increased since 2023</li> <li>● High <i>Phragmites australis</i> cover in channel</li> <li>● No water within channel</li> </ul>	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> in channel</li> <li>● High woody vegetation cover on both banks</li> <li>● Increased high vegetation cover on both banks, RHB dominated by <i>Lomandra confertifolia</i></li> <li>● Regeneration of <i>Angophora floribunda</i> and <i>Eucalyptus blakelyi</i> on RHB</li> <li>● No water within channel</li> </ul>
Wck13	<ul style="list-style-type: none"> <li>● Good vegetation cover on banks, high cover of <i>Phragmites australis</i> within and on the edge of the channel</li> <li>● Debris washed up from high flow events in channel on LHB</li> <li>● Water ponding within channel</li> <li>● Eucalypt regeneration present on both banks</li> </ul>	<ul style="list-style-type: none"> <li>● Regeneration of <i>Eucalyptus blakelyi</i> on both banks</li> <li>● Good vegetation cover on both banks</li> <li>● Water ponding within channel</li> </ul>
Wck14	<ul style="list-style-type: none"> <li>● Debris washed up against base of tree from high flow events</li> <li>● High cover of <i>Phragmites australis</i> within and on the edge of the channel</li> <li>● Good groundcover and woody vegetation cover on both banks</li> <li>● Regeneration of <i>Eucalyptus blakelyi</i> on RHB</li> <li>● Water ponding within channel</li> </ul>	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> within and on edge of channel</li> <li>● High groundcover on LHB</li> <li>● Regeneration of <i>Eucalyptus blakelyi</i> on LHB</li> <li>● Water ponding within channel</li> </ul>
Wck15	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> in channel</li> <li>● Good vegetation cover on both banks, which is stabilising LHB</li> <li>● Good groundcover on both banks</li> <li>● No water within channel</li> </ul>	<ul style="list-style-type: none"> <li>● LHB stable with good vegetation cover</li> <li>● High cover of <i>Phragmites australis</i> within and on edge of channel</li> <li>● No water within channel</li> </ul>
Wck16	<ul style="list-style-type: none"> <li>● Water ponding within channel</li> <li>● High cover of <i>Phragmites australis</i> on the edge of the bank</li> <li>● Good vegetation cover on both banks</li> </ul>	<ul style="list-style-type: none"> <li>● Water ponding within channel</li> <li>● <i>Phragmites australis</i> on the edge of RHB</li> <li>● Both banks well vegetated</li> <li>● LHB stable with good vegetation cover</li> <li>● <b>Channel is bare with little vegetation</b></li> </ul>
Wck17	<ul style="list-style-type: none"> <li>● Highly vegetated with <i>Phragmites australis</i> in channel and extended onto bank</li> <li>● Regen present on both banks</li> </ul>	<ul style="list-style-type: none"> <li>● Dense vegetation of <i>Phragmites australis</i> in channel at similar cover to 2022 monitoring, is preventing access to point</li> <li>● <i>Eucalyptus blakelyi</i> regeneration on RHB</li> <li>● LHB stable with good vegetation cover</li> </ul>
Wck18	<ul style="list-style-type: none"> <li>● Good vegetation cover on RHB</li> <li>● Good woody vegetation on LHB</li> <li>● <i>Phragmites australis</i> on edge of channel</li> <li>● Water ponding/pooling</li> </ul>	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> within in channel, extending to upper bank</li> <li>● Good vegetation cover on banks</li> <li>● Water ponding/pooling</li> <li>● Erosion on RHB has stabilised due to increased groundcover</li> </ul>

Site	Upstream	Downstream
	<ul style="list-style-type: none"> <li>Erosion on RHB has been active over past year, small amounts of mass wasting</li> </ul>	
Wck19	<ul style="list-style-type: none"> <li>High vegetation cover on bank, including <i>Lomandra confertifolia</i> (Mat-rush) and <i>Themeda triandra</i></li> <li>Minor erosion from animal tracks on LHB, currently appears stable</li> <li><i>Phragmites australis</i> within and on the edge of channel</li> <li>Water ponding/pooling</li> </ul>	<ul style="list-style-type: none"> <li>Good vegetation cover on LHB, dominated by <i>Lomandra confertifolia</i> and native grasses</li> <li>High cover of <i>Phragmites australis</i> within in channel</li> <li>Water ponding/pooling</li> <li>Bare patches present on LHB, minor erosion has historically but appears stable</li> </ul>
Wck20	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> in channel</li> <li>Mass wasting has continued on LHB over past year, for approximately 50 m upstream from point</li> <li>Good groundcover vegetation on lower bank and upper bank, dominated by <i>Lomandra confertifolia</i></li> <li>Bare soil present mid bank on LHB from erosion</li> </ul>	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> within in channel, extending to upper bank</li> <li>Good vegetation cover on LHB, dominated by <i>Lomandra confertifolia</i> and native grasses</li> <li>Regeneration of <i>Angophora floribunda</i> on LHB</li> <li><i>Rubus fruticosus</i> species aggregate on RHB</li> <li>No water within channel</li> </ul>
Wck21	<ul style="list-style-type: none"> <li>Vegetation cover on high, dominated by <i>Lomandra confertifolia</i></li> <li>High <i>Phragmites australis</i> cover within and on the edge of the channel</li> <li>Eucalypt regeneration present on RHB</li> <li>Water pooling within channel</li> </ul>	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> within in channel</li> <li><i>Angophora floribunda</i> regeneration on RHB</li> <li>High groundcover on both banks, dominated by <i>Lomandra confertifolia</i>, which has helped stabilise erosion</li> <li>Water pooling within channel</li> </ul>
Wck22	<ul style="list-style-type: none"> <li>Good vegetation cover on RHB</li> <li>Some bare patches of ground on RHB, low bank angle, minor active erosion</li> <li>No riparian tree cover on LHB with only a small riparian zone on RHB</li> <li>Eucalypt regeneration present RHB</li> <li>High <i>Phragmites australis</i> cover within and on edges of channel</li> <li>No water in channel</li> </ul>	<ul style="list-style-type: none"> <li>Erosion on RHB has been active over the past year but currently appears stable</li> <li>Minimal vegetation cover on RHB, dominated by bare ground</li> <li>No riparian tree cover on RHB</li> <li>High cover of <i>Phragmites australis</i> within channel</li> <li>Good vegetation cover on LHB</li> <li>No water within channel</li> </ul>
Wck23	<ul style="list-style-type: none"> <li>High <i>Phragmites australis</i> cover within channel</li> <li>Minor erosion on LHB, however there is good vegetation cover stabilising the bank and regeneration is occurring</li> <li>Patches of bare soil on RHB, erosion is currently stable</li> <li>No water in channel</li> </ul>	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> within channel</li> <li>Vegetation cover on RHB is similar to 2022 monitoring</li> <li>Erosion on RHB appears to have stabilised, though bare ground present</li> <li><i>Rubus fruticosus</i> species aggregate present</li> </ul>
Wck24	<ul style="list-style-type: none"> <li>High vegetation cover on RHB</li> </ul>	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> and <i>Typha</i> sp. within channel</li> <li>High vegetation cover high on lower RHB</li> </ul>

Site	Upstream	Downstream
	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> in channel with <i>Juncus</i> sp. on edge of channel</li> <li>● Erosion on RHB stable</li> <li>● No water in channel</li> </ul>	<ul style="list-style-type: none"> <li>● Sediment fence is gone</li> </ul>
Wck25	<ul style="list-style-type: none"> <li>● Bank well vegetated increased since 2023</li> <li>● High <i>Phragmites australis</i> cover within and on the edge of the channel</li> <li>● Eucalypt regeneration on LHB</li> <li>● Low cover of <i>Hypericum perforatum</i> on LHB</li> <li>● Some bare patches, however no active erosion</li> <li>● No water within channel</li> </ul>	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> within channel</li> <li>● Bare soil patches on LHB, with active erosion</li> <li>● Good vegetation cover on the upper banks, mainly native grasses, with increase in cover since 2023</li> <li>● <i>Hypericum perforatum</i> present on lower LHB</li> </ul>
Wck26	<ul style="list-style-type: none"> <li>● Good vegetation cover on LHB</li> <li>● High <i>Phragmites australis</i> cover within channel and extending to upper bank</li> <li>● <i>Rubus fruticosus</i> species aggregate present on LHB</li> </ul>	<ul style="list-style-type: none"> <li>● LHB is steep and continues to erode, with evidence of wasting and run off</li> <li>● High cover of <i>Phragmites australis</i> within channel</li> <li>● LHB mostly bare due to erosion</li> <li>● Groundcover on upper LHB dying off</li> </ul>
Wck27	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> within channel</li> <li>● RHB continues to be an erosion risk mass wasting has not progressed since 2023</li> <li>● Vegetation cover on top of bank has increased since 2023</li> <li>● No water within channel</li> </ul>	<ul style="list-style-type: none"> <li>● RHB is steep and continues to erode through mass wasting</li> <li>● High <i>Phragmites australis</i> cover within channel</li> <li>● Patches of bare soil on lower and mid RHB</li> <li>● Groundcover on upper RHB has increased since 2023</li> </ul>
Wck28	<ul style="list-style-type: none"> <li>● Mass wasting on LHB has progressed slightly</li> <li>● Good vegetation cover on banks, slightly less than 2023</li> <li>● High cover of <i>Phragmites australis</i> in channel</li> <li>● Eucalypt regeneration at top of LHB</li> </ul>	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> within channel</li> <li>● LHB steep with evidence of mass wasting erosion over the past year</li> <li>● Vegetation cover on upper LHB consistent with 2023</li> <li>● Erosion on RHB currently appears stable with groundcover consistent with 2023</li> </ul>
Wck29	<ul style="list-style-type: none"> <li>● <i>Angophora floribunda</i> regeneration on LHB</li> <li>● Large <i>Rubus fruticosus</i> species aggregate present on LHB</li> <li>● High cover of <i>Phragmites australis</i> in channel</li> <li>● Slight increase in erosion continued around exposed tree root on LHB</li> </ul>	<ul style="list-style-type: none"> <li>● Signs of recent erosion on LHB, mass wasting active on steep bank face, top of bank held by native grasses</li> <li>● Lower and mid LHB is bare</li> <li>● High cover of <i>Phragmites australis</i> within channel</li> </ul>
Wck30	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> in channel</li> <li>● Extensive wombat burrows on RHB, bank vegetation cover similar to 2023</li> <li>● Good woody vegetation cover on both banks</li> <li>● Regeneration of <i>Angophora floribunda</i> on both banks</li> <li>● RHB dominated by <i>Lomandra confertifolia</i></li> </ul>	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> within channel</li> <li>● Vegetation cover is high on RHB with <i>Lomandra confertifolia</i> dominating RHB</li> <li>● <i>Rubus fruticosus</i> species aggregate on LHB</li> <li>● Regeneration of <i>Angophora floribunda</i> and <i>Eucalyptus blakelyi</i> and <i>Eucalyptus melliodora</i> on RHB</li> <li>● Water ponding/pooling</li> </ul>

Site	Upstream	Downstream
Wck31	<ul style="list-style-type: none"> <li>Water ponding/pooling</li> <li>Erosion on RHB continues with undercutting and mass wasting, some sections stabilised by high groundcover</li> <li>High cover of <i>Phragmites australis</i> in channel, increased since 2023</li> <li>Vegetation cover on banks is similar to 2023</li> <li>Water flowing in channel</li> </ul>	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> within channel and extending to banks, cover has increased since 2023</li> <li>Minor erosion on RHB, some evidence of mass wasting progression at top of RHB, however largely stable</li> <li>Eucalypt regeneration on RHB</li> </ul>
Wck32	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> in channel</li> <li>RHB steep leading to exposed roots of Eucalypts on bank edge. Erosion is slowly progressing due to mass wasting</li> <li>Bare patches mid bank on RHB, good vegetation cover on upper and lower bank</li> <li>Very large <i>Rubus fruticosus</i> species aggregate at top of RHB which extends to the lower bank</li> <li>Water ponding/pooled</li> </ul>	<ul style="list-style-type: none"> <li>Erosion on RHB, largely stable but some evidence of mass wasting</li> <li>High cover of <i>Phragmites australis</i> within channel</li> <li>RHB dominated by native grasses</li> <li>Decrease in bareground on RHB</li> <li>Very large <i>Rubus fruticosus</i> species aggregate at top of RHB which extends to the lower bank</li> </ul>
Wck33	<ul style="list-style-type: none"> <li>Vegetation is denser than 2023 with more less ground patches, particularly on lower and mid bank</li> <li>High <i>Lomandra confertifolia</i> cover on LHB</li> <li>High cover of <i>Phragmites australis</i> in channel</li> <li>Erosion has occurred on LHB over past year, currently appears stable in some sections but mass wasting active in some spots</li> <li>Water ponding in channel</li> </ul>	<ul style="list-style-type: none"> <li>Active erosion on LHB, exposed root system with active mass wasting around it and increases in bare soil patches</li> <li>Upper LHB has good vegetation cover</li> <li>Good vegetation cover on RHB, dominated by <i>Lomandra confertifolia</i>, increase in cover from 2023</li> <li>Water ponding/pooling</li> <li>Two trees have fallen on LHB, with one over the channel</li> <li>High cover of <i>Phragmites australis</i> within channel</li> </ul>
Wck34	<ul style="list-style-type: none"> <li>High <i>Phragmites australis</i> within channel</li> <li>Minimal localised erosion along animal tracks on RHB</li> <li>Minor erosion on RHB, high vegetation cover is stabilising bank</li> <li>High <i>Lomandra confertifolia</i> cover on RHB</li> <li>Water ponding/pooling</li> </ul>	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> within channel</li> <li>Minor erosion on RHB has stabilised, however there are some bare patches of ground</li> <li>Good vegetation cover on LHB</li> <li>High groundcover on RHB dominated by <i>Lomandra confertifolia</i></li> </ul>
Wck35	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> within channel</li> <li>RHB bare patches and active erosion continues to progress slowly, however appears stable</li> <li>Good vegetation cover on LHB and top of RHB</li> <li>Low flow of water in channel</li> </ul>	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> within channel</li> <li>Vegetation cover on RHB is dominated by native grasses, however there is an increase in bare ground</li> <li><i>Rubus fruticosus</i> species aggregate within channel</li> <li>Erosion on RHB has been active over the past years, though has largely stabilised</li> <li>Good vegetation cover on LHB</li> <li>No tree cover in riparian zone on RHB</li> </ul>

Site	Upstream	Downstream
		<ul style="list-style-type: none"> <li>● Low flow of water in channel</li> </ul>
Wck36	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> and <i>Typha</i> species within channel</li> <li>● Less bare patches and minor erosion on both banks than 2023, currently appears stable</li> <li>● RHB vegetation includes a mix of <i>Verbena bonariensis</i>, native grasses and <i>Lomandra confertifolia</i></li> </ul>	<ul style="list-style-type: none"> <li>● RHB erosion appears stable with good vegetation cover</li> <li>● Some bare ground on top of RHB</li> <li>● High cover of <i>Phragmites australis</i> and <i>Typha</i> sp. within channel</li> <li>● No tree cover in riparian zone on either bank</li> <li>● Both banks dominated native grasses and <i>Lomandra confertifolia</i></li> </ul>
Wck37	<ul style="list-style-type: none"> <li>● Decrease in groundcover and increase in bare patches on RHB</li> <li>● Mass wasting progressing slowly</li> <li>● LHB remains well vegetated with minor lateral erosion</li> <li>● High cover of <i>Phragmites australis</i> and <i>Typha</i> species within channel</li> <li>● Water pooling and flowing slowly</li> </ul>	<ul style="list-style-type: none"> <li>● Vegetation cover is still high on RHB, but slightly decreased since 2023</li> <li>● Minor erosion on top of RHB, however stable due to good groundcover</li> <li>● High cover of <i>Phragmites australis</i> and <i>Typha</i> sp. within channel</li> </ul>
Wck38	<ul style="list-style-type: none"> <li>● Increase in groundcover vegetation on banks, some bare ground persisting however no erosion</li> <li>● <i>Phragmites australis</i> on edge of channel on LHB</li> <li>● Water ponding and flowing slowly</li> <li>● <i>Rubus fruticosus</i> species aggregate present on LHB</li> </ul>	<ul style="list-style-type: none"> <li>● Increase in groundcover vegetation on banks, some bare ground however no erosion</li> <li>● Good woody vegetation cover on both banks</li> <li>● <i>Rubus fruticosus</i> species aggregate present on LHB</li> <li>● Water flowing slowly within channel</li> </ul>
Wck39	<ul style="list-style-type: none"> <li>● Vegetation cover good on upper and lower LHB, however mid bank bare</li> <li>● <i>Juncus</i> sp. on edge of channel</li> <li>● Water flowing slowly within channel</li> <li>● Erosion progressing slowly on LHB with evidence of run off and mass wasting, currently appears stable</li> <li>● Regeneration of Eucalypt species on both banks, healthy and growing well</li> <li>● Grazing of channel and bank vegetation due to livestock</li> </ul>	<ul style="list-style-type: none"> <li>● Vegetation cover good on lower and upper LHB</li> <li>● Erosion on LHB recently active, some evidence of mass wasting but largely stable and vegetated</li> <li>● LHB steep with bare mid bank</li> <li>● Regeneration of Eucalypt species on both banks progressing well</li> <li>● <i>Rubus fruticosus</i> species aggregate present on RHB</li> <li>● Water flowing within channel</li> <li>● Grazing of channel and bank vegetation due to livestock</li> </ul>
Wck40	<ul style="list-style-type: none"> <li>● Vegetation cover on banks and in channel similar to 2023</li> <li>● Regeneration of <i>Eucalyptus blakelyi</i> on both banks healthy and growing well</li> <li>● LHB erosion remains stable</li> <li>● RHB mostly bare ground with unconsolidated materials, some evidence of erosion but largely stable</li> <li>● Channel and bank vegetation cover high</li> <li>● Water flowing slowly</li> </ul>	<ul style="list-style-type: none"> <li>● Vegetation cover on banks and in channel similar to 2023</li> <li>● Channel and bank vegetation cover high, <i>Juncus</i> sp. present</li> <li>● RHB mostly bare ground with unconsolidated materials, some evidence of erosion but largely stable</li> <li>● Regeneration occurring on both banks</li> <li>● Water flower slowly in narrow channel</li> </ul>

Site	Upstream	Downstream
Wck41	<ul style="list-style-type: none"> <li>● RHB exposed tree roots, however vegetation cover is good and is assisting with bank stabilisation, no progression of erosion</li> <li>● Macrophytes and <i>Juncus</i> sp. in channel</li> <li>● Water ponding/pooling</li> <li>● Channel and bank vegetation cover high and increased since 2023</li> </ul>	<ul style="list-style-type: none"> <li>● Channel and bank vegetation cover high and increased since 2023</li> <li>● Macrophytes and <i>Juncus</i> sp. in channel</li> <li>● Erosion on RHB stable</li> <li>● Water pooled and moving very slowly</li> </ul>
Wck42	<ul style="list-style-type: none"> <li>● Veg in channel and on banks similar to 2023</li> <li>● Bank vegetation cover high,</li> <li>● High macrophyte and <i>Juncus</i> sp. cover within channel</li> <li>● RHB steep but appears stable, low groundcover</li> <li>● Water flowing in channel</li> </ul>	<ul style="list-style-type: none"> <li>● Erosion on RHB is still active, undercutting and mass wasting present, though overall less compared to previous years</li> <li>● LHB vegetation cover high</li> <li>● LHB is well vegetated with regeneration of Eucalypts present</li> <li>● High macrophyte and <i>Juncus</i> sp. cover within channel</li> <li>● Water flowing in channel</li> </ul>
Wck43	<ul style="list-style-type: none"> <li>● High cover of macrophytes within channel</li> <li>● Good groundcover on RHB increased since 2023</li> <li>● LHB steep, some progression of mass wasting but appears stable</li> <li>● Water flowing slowly in channel</li> </ul>	<ul style="list-style-type: none"> <li>● High vegetation cover within channel and on the lower and upper LHB increased since 203</li> <li>● LHB steep, some progression of mass wasting but appears stable due to good groundcover</li> <li>● Water flowing slowly in channel</li> </ul>
Wck44	<ul style="list-style-type: none"> <li>● Vegetation cover on RHB similar to 2023, some bare patches</li> <li>● Groundcover dominated by native grass species</li> <li>● Mass wasting on both banks stab due to good vegetation cover</li> <li>● <i>Juncus</i> sp. and other macrophytes on edge of channel</li> <li>● LHB appears stable</li> <li>● Water flowing slowly in channel</li> </ul>	<ul style="list-style-type: none"> <li>● Vegetation cover on RHB consistent with 2023, dominated by <i>Aristida ramosa</i> and <i>Bothriochloa macra</i></li> <li>● <i>Phragmites australis</i> and <i>Typha</i> sp. within channel</li> <li>● LHB exposed steep bank appears stable due to good vegetation cover, erosion caused by wombats and animal tracks</li> <li>● Water pooling and flowing slowly</li> </ul>
Wck45	<ul style="list-style-type: none"> <li>● Vegetation cover is similar to 2023</li> <li>● Water flowing in channel</li> <li>● LHB stable with vegetation cover improving stability</li> <li>● <i>Eucalyptus blakelyi</i> and <i>Eucalyptus melliodora</i> (Yellow Box) regeneration on both banks</li> </ul>	<ul style="list-style-type: none"> <li>● Vegetation cover similar to 2023, with high vegetation cover on both banks</li> <li>● <i>Rubus fruticosus</i> species aggregate on LHB</li> <li>● Regeneration of <i>Eucalyptus melliodora</i> and <i>Eucalyptus blakelyi</i> on RHB</li> <li>● LHB is steep, with erosion and mass wasting active over the previous year</li> <li>● Goody woody vegetation cover on LHB</li> </ul>
Wck46	<ul style="list-style-type: none"> <li>● High vegetation cover in channel and on banks</li> <li>● Water slowly flowing in channel</li> <li>● Large <i>Rubus fruticosus</i> species aggregate on LHB</li> <li>● Large <i>Angophora floribundas</i> on both banks with regen present</li> </ul>	<ul style="list-style-type: none"> <li>● High vegetation cover on both banks, including <i>Juncus</i> and <i>Cyperaceae</i> sp. on RHB</li> <li>● Good woody vegetation cover on RHB</li> <li>● Very slow flow of water</li> <li>● Fallen tree from LHB across channel, causing litter trap</li> <li>● LHB continues to be stabilised due to vegetation cover</li> <li>● RHB is steep with minor erosion but appears to have stabilised</li> </ul>

Site	Upstream	Downstream
Wck47	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> and <i>Typha</i> species within channel</li> <li>● Erosion and mass wasting has slowly progressed on RHB, however is currently stable</li> <li>● Regeneration of <i>Eucalyptus blakelyi</i> and <i>Angophora floribunda</i> on both banks</li> <li>● LHB is steep but stable with good groundcover</li> <li>● RHB good groundcover on lower and upper bank, dominated by <i>Lomandra confertifolia</i></li> </ul>	<ul style="list-style-type: none"> <li>● High cover of <i>Phragmites australis</i> and <i>Typha</i> species within channel</li> <li>● Both banks have high cover of groundcover dominated by <i>Lomandra confertifolia</i></li> <li>● Both banks have good woody vegetation cover</li> <li>● RHB is steep, erosion and mass wasting appears stable, mid bank is bare</li> <li>● Water in channel flowing slowly</li> </ul>
Wck48	<ul style="list-style-type: none"> <li>● Vegetation cover has increased since 2023, with good cover on both banks</li> <li>● High cover of <i>Phragmites australis</i> and <i>Typha</i> species within channel</li> <li>● Animal tracks on LHB steep and causing localised erosion</li> <li>● Active erosion and undercutting under tree root on LHB, currently appears stable</li> <li>● Water flowing in channel</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Phragmites australis</i> and <i>Typha</i> species on the edge of channel</li> <li>● Water flowing within channel</li> <li>● Good vegetation cover on both banks increased since 2023</li> <li>● LHB erosion currently stable and held by woody vegetation</li> <li>● Some bare ground on lower LHB</li> <li>● Erosion caused by animal tracks has stabilised</li> </ul>
Wck49	<ul style="list-style-type: none"> <li>● Vegetation cover on banks is similar to 2023</li> <li>● LHB woody vegetation cover is high and stabilising bank</li> <li>● RHB lateral erosion is currently stable</li> <li>● <i>Rubus fruticosus</i> species aggregate on LHB</li> <li>● Water flowing in channel</li> </ul>	<ul style="list-style-type: none"> <li>● Water flowing within channel</li> <li>● Good vegetation cover on both banks assisting with stabilising erosion</li> <li>● RHB some minor erosion and bare soil due to high flow events, however groundcover still high</li> <li>● Good woody vegetation cover on LHB stabilising erosion</li> </ul>
<b>Cumbo Creek</b>		
Cck1	<ul style="list-style-type: none"> <li>● Vegetation cover within channel similar to 2023, dominated by <i>Juncus</i> sp.</li> <li>● Vegetation cover on banks is similar to 2023 and is dominated by <i>Plantago lanceolata</i> (Lamb's Tongues) and native grasses</li> <li>● Some regeneration of Eucalypts present</li> <li>● Water pooling within channel</li> </ul>	<ul style="list-style-type: none"> <li>● Vegetation cover on bank and in channel is similar to 2023</li> <li>● Channel vegetation cover is high, including <i>Juncus</i> sp. and <i>Cyperaceae</i> sp.</li> <li>● Bank dominated by <i>Plantago lanceolata</i> (Lamb's Tongues) and a mixture of native and exotic grasses</li> <li>● Eucalypt regeneration on LHB is healthy and growing well</li> </ul>
Cck2	<ul style="list-style-type: none"> <li>● Vegetation cover on bank and channel high, dominated by <i>Juncus</i> sp and native grasses including <i>Aristida ramosa</i></li> <li>● Some bare patches on RHB</li> <li>● Erosion and mass wasting on bank continues to stabilise</li> <li>● Water pooling within channel</li> </ul>	<ul style="list-style-type: none"> <li>● Good vegetation cover in channel and on LHB</li> <li>● Bare soil on RHB, erosion currently appears stable</li> <li>● Channel vegetation cover is high, including <i>Juncus</i> sp. and <i>Cyperaceae</i> sp.</li> <li>● Mix of native and exotic grass species dominating bank, including <i>Aristida ramosa</i></li> </ul>

Site	Upstream	Downstream
Cck3	<ul style="list-style-type: none"> <li>High vegetation cover on both banks, with a mix of native and exotic grasses</li> <li>High cover of in stream vegetation, including <i>Cyperaceae</i> species</li> <li>Water pooling within channel</li> </ul>	<ul style="list-style-type: none"> <li>Bank vegetation cover is high</li> <li>Bank dominated by <i>Juncus</i> sp. and <i>Cyperaceae</i> sp. and a mix of native and exotic grass species</li> <li>Small amounts of <i>Hypericum perforatum</i> also present</li> <li>Water pooling within channel</li> </ul>
Cck4	<ul style="list-style-type: none"> <li>Good groundcover within channel and on banks</li> <li>Increased ground cover form 2023</li> <li>Bank vegetation is dominated by <i>Plantago lanceolata</i> and <i>Sporobolus creber</i> (Western Rat-tail Grass)</li> <li>Small amount of <i>Hypericum perforatum</i></li> <li><i>Rosa rubiginosa</i> (Sweet Briar) in channel on RHB</li> <li>Water pooling within channel</li> </ul>	<ul style="list-style-type: none"> <li>Two large <i>Rosa rubiginosa</i> on RHB</li> <li>Site remains stable with good vegetation cover which has increased since 2023</li> <li>Channel vegetation cover is high, including <i>Juncus</i> sp. and <i>Cyperaceae</i> sp.</li> <li>Small amounts of <i>Hypericum perforatum</i> also present</li> <li>Water pooling within channel</li> </ul>
Cck5	<ul style="list-style-type: none"> <li>High cover within channel, dominated by <i>Juncus</i> sp.</li> <li>Groundcover on banks is similar to 2023, dominated by <i>Plantago lanceolata</i> and native grasses including <i>Sporobolus creber</i> and <i>Aristida ramosa</i></li> <li>Small amounts of <i>Hypericum perforatum</i> present</li> <li>Water pooling within channel</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation cover is high and similar to 2023</li> <li>Vegetation cover within channel is dominated by <i>Juncus</i> sp.</li> <li>Upper bank dominated by <i>Plantago lanceolata</i>, <i>Paspalum dilatatum</i> and <i>Cynodon dactylon</i></li> <li>Small amounts of <i>Hypericum perforatum</i> also present</li> <li>Water pooling within channel</li> </ul>
Cck6	<ul style="list-style-type: none"> <li>Channel vegetation cover high</li> <li>Upper banks dominated by <i>Lomandra filiformis</i> (Wattle Mat-rush) as well as <i>Paspalum dilatatum</i> and <i>Cynodon dactylon</i> and <i>Juncus</i> sp.</li> <li>Water pooling within channel</li> </ul>	<ul style="list-style-type: none"> <li>Channel is bare with no vegetation</li> <li>Vegetation cover on banks is high and is dominated by <i>Lomandra filiformis</i> (Wattle Mat-rush) as well as <i>Paspalum dilatatum</i>, <i>Bromus</i> sp. and <i>Juncus</i> sp.</li> <li>Small water pool within channel</li> </ul>
Cck7	<ul style="list-style-type: none"> <li>Vegetation within channel and on banks very high, dominated by <i>Paspalum dilatatum</i>, <i>Bromus</i> sp. and <i>Plantago lanceolata</i></li> <li>No water within channel</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation within channel and on banks very high, dominated by <i>Paspalum dilatatum</i>, <i>Bromus</i> sp. and <i>Plantago lanceolata</i></li> <li>No water within channel</li> </ul>
Cck8	<ul style="list-style-type: none"> <li>High cover of <i>Phragmites australis</i> within channel</li> <li>Vegetation on bank is dominated by <i>Paspalum dilatatum</i>, <i>Sporobolus creber</i> and <i>Plantago lanceolata</i></li> <li>Small amount of <i>Hypericum perforatum</i> present on LHB</li> </ul>	<ul style="list-style-type: none"> <li>High vegetation cover in channel, with <i>Phragmites australis</i>, <i>Juncus</i> sp., and <i>Cyperaceae</i> sp. present</li> <li>Good vegetation cover on banks, including <i>Paspalum dilatatum</i> <i>Bromus</i> sp. and <i>Sporobolus creber</i></li> </ul>
Cck9	<ul style="list-style-type: none"> <li>Vegetation cover is similar to 2023,</li> <li>Vegetation cover is high and dominated by <i>Cyperaceae</i> sp. within the channel and mixed native and exotic grasses on both banks</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation cover is similar to 2023</li> <li>Erosion has been stabilised by vegetation cover</li> <li>Bank is dominated by mixed native and exotic grass species</li> <li>Channel vegetation cover is high and dominated by <i>Cyperaceae</i> sp. and <i>Typha</i> sp.</li> </ul>
CC10	<ul style="list-style-type: none"> <li>Vegetation cover has increased on the banks since 2023</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation cover has increased on the banks since 2023</li> </ul>

Site	Upstream	Downstream
	<ul style="list-style-type: none"><li>● Vegetation cover is high and dominated by <i>Cyperaceae</i> sp. within the channel and mixed native and exotic grasses on both banks</li><li>● Water pooling/ponding</li></ul>	<ul style="list-style-type: none"><li>● Vegetation cover is high and dominated by <i>Cyperaceae</i> sp. within the channel and mixed native and exotic grasses on both banks</li><li>● LHB erosion is currently stable</li><li>● Water pooling/ponding</li></ul>

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## Appendix D: Site Photo Comparisons

### WCK 1



Figure B - 1: 2024 upstream



Figure B - 2: 2023 upstream



Figure B - 3: 2022 upstream



Figure B - 4: 2021 upstream



Figure B - 5: 2024 downstream



Figure B - 6: 2023 downstream



Figure B - 7: 2022 downstream



Figure B - 8: 2021 downstream

WCK 2



Figure B - 9: 2024 upstream



Figure B - 10: 2023 upstream



Figure B - 11: 2022 upstream



Figure B - 12: 2021 upstream



Figure B - 13: 2024 downstream



Figure B - 14: 2023 downstream



Figure B - 15: 2022 downstream



Figure B - 16: 2021 downstream

**WCK 3**



Figure B - 17: 2024 upstream



Figure B - 18: 2023 upstream



Figure B - 19: 2022 upstream



Figure B - 20: 2021 upstream



Figure B - 21: 2024 downstream



Figure B - 22: 2023 downstream



Figure B - 23: 2022 downstream



Figure B - 24: 2021 downstream

**WCK 4**



Figure B - 25: 2024 upstream



Figure B - 26: 2023 upstream



Figure B - 27: 2022 upstream



Figure B - 28: 2021 upstream



Figure B - 29: 2024 downstream



Figure B - 30: 2023 downstream



Figure B - 31: 2022 downstream



Figure B - 32: 2021 downstream

**WCK 5**



Figure B - 33: 2024 upstream



Figure B - 34: 2023 upstream



Figure B - 35: 2022 upstream



Figure B - 36: 2021 upstream



Figure B - 37: 2024 downstream



Figure B - 38: 2023 downstream



Figure B - 39: 2022 downstream



Figure B - 40: 2021 downstream

WCK 6



Figure B - 41: 2024 upstream



Figure B - 42: 2023 upstream



Figure B - 43: 2022 upstream



Figure B - 44: 2021 upstream



Figure B - 45: 2024 downstream



Figure B - 46: 2023 downstream



Figure B - 47: 2022 downstream



Figure B - 48: 2021 downstream

WCK 7



Figure B - 49: 2024 upstream



Figure B - 50: 2023 upstream



Figure B - 51: 2022 upstream



Figure B - 52: 2021 upstream



Figure B - 53: 2024 downstream



Figure B - 54: 2023 downstream



Figure B - 55: 2022 downstream



Figure B - 56: 2021 downstream

**WCK 8**



Figure B - 57: 2024 upstream



Figure B - 58: 2023 upstream



Figure B - 59: 2022 upstream



Figure B - 60: 2021 upstream



Figure B - 61: 2024 downstream



Figure B - 62: 2023 downstream



Figure B - 63: 2022 downstream



Figure B - 64: 2021 downstream

WCK 9



Figure B - 65: 2024 upstream



Figure B - 66: 2023 upstream



Figure B - 67: 2022 upstream



Figure B - 68: 2021 upstream



Figure B - 69: 2024 downstream



Figure B - 70: 2023 downstream



Figure B - 71: 2022 downstream



Figure B - 72: 2021 downstream

**WCK 10**



Figure B - 73: 2024 upstream



Figure B - 74: 2023 upstream



Figure B - 75: 2022 upstream



Figure B - 76: 2021 upstream



Figure B - 77: 2024 downstream



Figure B - 78: 2023 downstream



Figure B - 79: 2022 downstream



Figure B - 80: 2021 downstream

**WCK 11**



Figure B - 81: 2024 upstream



Figure B - 82: 2023 upstream



Figure B - 83: 2022 upstream



Figure B - 84: 2021 upstream



Figure B - 85: 2024 downstream



Figure B - 86: 2023 downstream



Figure B - 87: 2022 downstream



Figure B - 88: 2021 downstream

**WCK 12**



Figure B - 89: 2024 upstream



Figure B - 90: 2023 upstream



Figure B - 91: 2022 upstream



Figure B - 92: 2021 upstream



Figure B - 93: 2024 downstream



Figure B - 94: 2023 downstream



Figure B - 95: 2022 downstream



Figure B - 96: 2021 downstream

WCK 13



Figure B - 97: 2024 upstream



Figure B - 98: 2023 upstream



Figure B - 99: 2022 upstream



Figure B - 100: 2021 upstream



Figure B - 101: 2024 downstream



Figure B - 102: 2023 downstream



Figure B - 103: 2022 downstream



Figure B - 104: 2021 downstream

WCK 14



Figure B - 105: 2024 upstream



Figure B - 106: 2023 upstream



Figure B - 107: 2022 upstream



Figure B - 108: 2021 upstream



Figure B - 109: 2024 downstream



Figure B - 110: 2023 downstream



Figure B - 111: 2022 downstream



Figure B - 112: 2021 downstream

**WCK 15**



Figure B - 113: 2024 upstream



Figure B - 114: 2023 upstream



Figure B - 115: 2022 upstream



Figure B - 116: 2021 upstream



Figure B - 117: 2024 downstream



Figure B - 118: 2023 downstream



Figure B - 119: 2022 downstream



Figure B - 120: 2021 downstream

WCK 16



Figure B - 121: 2024 upstream



Figure B - 122: 2023 upstream



Figure B - 123: 2022 upstream



Figure B - 124: 2021 upstream



Figure B - 125: 2024 downstream



Figure B - 126: 2023 downstream



Figure B - 127: 2022 downstream



Figure B - 128: 2021 downstream

WCK 17



Figure B - 129: 2024 upstream



Figure B - 130: 2023 upstream



Figure B - 131: 2022 upstream



Figure B - 132: 2021 upstream



Figure B - 133: 2024 downstream



Figure B - 134: 2023 downstream



Figure B - 135: 2022 downstream



Figure B - 136: 2021 downstream

**WCK 18**



Figure B - 137: 2024 upstream



Figure B - 138: 2023 upstream



Figure B - 139: 2022 upstream



Figure B - 140: 2021 upstream



Figure B - 141: 2024 downstream



Figure B - 142: 2023 downstream



Figure B - 143: 2022 downstream



Figure B - 144: 2021 downstream

**WCK 19**



Figure B - 145: 2024 upstream



Figure B - 146: 2023 upstream



Figure B - 147: 2021 upstream



Figure B - 148: 2021 upstream



Figure B - 149: 2024 downstream



Figure B - 150: 2023 downstream



Figure B - 151: 2021 downstream



Figure B - 152: 2021 downstream

WCK 20



Figure B - 153: 2024 upstream



Figure B - 154: 2023 upstream



Figure B - 155: 2022 upstream



Figure B - 156: 2021 upstream



Figure B - 157: 2024 downstream



Figure B - 158: 2023 downstream



Figure B - 159: 2022 downstream



Figure B - 160: 2021 downstream

**WCK 21**



Figure B - 161: 2024 upstream



Figure B - 162: 2023 upstream



Figure B - 163: 2022 upstream



Figure B - 164: 2021 upstream



Figure B - 165: 2024 downstream



Figure B - 166: 2023 downstream



Figure B - 167: 2022 downstream



Figure B - 168: 2021 downstream

WCK 22



Figure B - 169: 2024 upstream



Figure B - 170: 2023 upstream



Figure B - 171: 2022 upstream



Figure B - 172: 2021 upstream



Figure B - 173: 2024 downstream



Figure B - 174: 2023 downstream



Figure B - 175: 2022 downstream



Figure B - 176: 2021 downstream

WCK 23



Figure B - 177: 2024 upstream



Figure B - 178: 2023 upstream



Figure B - 179: 2022 upstream



Figure B - 180: 2021 upstream



Figure B - 181: 2024 downstream



Figure B - 182: 2023 downstream



Figure B - 183: 2022 downstream



Figure B - 184: 2021 downstream

WCK 24



Figure B - 185: 2024 upstream



Figure B - 186: 2023 upstream



Figure B - 187: 2022 upstream



Figure B - 188: 2021 upstream



Figure B - 189: 2024 downstream



Figure B - 190: 2023 downstream



Figure B - 191: 2022 downstream



Figure B - 192: 2021 downstream

WCK 25



Figure B - 193: 2024 upstream



Figure B - 194: 2023 upstream



Figure B - 195: 2022 upstream



Figure B - 196: 2021 upstream



Figure B - 197: 2024 downstream



Figure B - 198: 2023 downstream



Figure B - 199: 2022 downstream



Figure B - 200: 2021 downstream

WCK 26



Figure B - 201: 2024 upstream



Figure B - 202: 2023 upstream



Figure B - 203: 2022 upstream



Figure B - 204: 2021 upstream



Figure B - 205: 2024 downstream



Figure B - 206: 2023 downstream



Figure B - 207: 2022 downstream



Figure B - 208: 2021 downstream

WCK 27



Figure B - 209: 2024 upstream



Figure B - 210: 2023 upstream



Figure B - 211: 2022 upstream



Figure B - 212: 2021 upstream



Figure B - 213: 2024 downstream



Figure B - 214: 2023 downstream



Figure B - 215: 2022 downstream



Figure B - 216: 2021 downstream

WCK 28



Figure B - 217: 2024 upstream



Figure B - 218: 2023 upstream



Figure B - 219: 2022 upstream



Figure B - 220: 2021 upstream



Figure B - 221: 2024 downstream



Figure B - 222: 2023 downstream



Figure B - 223: 2022 downstream



Figure B - 224: 2021 downstream

WCK 29



Figure B - 225: 2024 upstream



Figure B - 226: 2023 upstream



Figure B - 227: 2022 upstream



Figure B - 228: 2021 upstream



Figure B - 229: 2024 downstream



Figure B - 230: 2023 downstream



Figure B - 231: 2022 downstream



Figure B - 232: 2021 downstream

WCK 30



Figure B - 233: 2024 upstream



Figure B - 234: 2023 upstream



Figure B - 235: 2022 upstream



Figure B - 236: 2021 upstream



Figure B - 237: 2024 downstream



Figure B - 238: 2023 downstream



Figure B - 239: 2022 downstream



Figure B - 240: 2021 downstream

**WCK 31**



Figure B - 241: 2024 upstream



Figure B - 242: 2023 upstream



Figure B - 243: 2022 upstream



Figure B - 244: 2021 upstream



Figure B - 245: 2024 downstream



Figure B - 246: 2023 downstream



Figure B - 247: 2022 downstream



Figure B - 248: 2021 downstream

WCK 32



Figure B - 249: 2024 upstream



Figure B - 250: 2023 upstream



Figure B - 251: 2022 upstream



Figure B - 252: 2021 upstream



Figure B - 253: 2024 downstream



Figure B - 254: 2023 downstream



Figure B - 255: 2022 downstream



Figure B - 256: 2021 downstream

WCK 33



Figure B - 257: 2024 upstream



Figure B - 258: 2023 upstream\*



Figure B - 259: 2022 upstream



Figure B - 260: 2021 upstream



Figure B - 261: 2024 downstream



Figure B - 262: 2023 downstream\*



Figure B - 263: 2022 downstream



Figure B - 264: 2021 downstream

WCK 34



Figure B - 265: 2024 upstream



Figure B - 266: 2023 upstream



Figure B - 267: 2022 upstream



Figure B - 268: 2021 upstream



Figure B - 269: 2024 downstream



Figure B - 270: 2023 downstream



Figure B - 271: 2022 downstream



Figure B - 272: 2021 downstream

WCK 35



Figure B - 273: 2024 upstream



Figure B - 274: 2023 upstream



Figure B - 275: 2022 upstream



Figure B - 276: 2021 upstream



Figure B - 277: 2024 downstream



Figure B - 278: 2023 downstream



Figure B - 279: 2022 downstream



Figure B - 280: 2021 downstream

WCK 36



Figure B - 281: 2024 upstream



Figure B - 282: 2023 upstream



Figure B - 283: 2022 upstream



Figure B - 284: 2021 upstream



Figure B - 285: 2024 downstream



Figure B - 286: 2023 downstream



Figure B - 287: 2022 downstream



Figure B - 288: 2021 downstream

WCK 37



Figure B - 289: 2024 upstream



Figure B - 290: 2023 upstream



Figure B - 291: 2022 upstream



Figure B - 292: 2021 upstream



Figure B - 293: 2024 downstream



Figure B - 294: 2023 downstream



Figure B - 295: 2022 downstream



Figure B - 296: 2021 downstream

**WCK 38**



Figure B - 297: 2024 upstream



Figure B - 298: 2023 upstream



Figure B - 299: 2022 upstream



Figure B - 300: 2021 upstream



Figure B - 301: 2024 downstream



Figure B - 302: 2023 downstream



Figure B - 303: 2022 downstream



Figure B - 304: 2021 downstream

WCK 39



Figure B - 305: 2024 upstream



Figure B - 306: 2023 upstream



Figure B - 307: 2022 upstream



Figure B - 308: 2021 upstream



Figure B - 309: 2024 downstream



Figure B - 310: 2023 downstream



Figure B - 311: 2022 downstream



Figure B - 312: 2021 downstream

**WCK 40**



Figure B - 313: 2024 upstream



Figure B - 314: 2023 upstream



Figure B - 315: 2022 upstream



Figure B - 316: 2021 upstream



Figure B - 317: 2024 downstream



Figure B - 318: 2023 downstream



Figure B - 319: 2022 downstream



Figure B - 320: 2021 downstream

**WCK 41**



Figure B - 321: 2024 upstream



Figure B - 322: 2023 upstream



Figure B - 323: 2022 upstream



Figure B - 324: 2021 upstream



Figure B - 325: 2024 downstream



Figure B - 326: 2023 downstream



Figure B - 327: 2022 downstream



Figure B - 328: 2021 downstream

WCK 42



Figure B - 329: 2024 upstream



Figure B - 330: 2023 upstream



Figure B - 331: 2022 upstream



Figure B - 332: 2021 upstream



Figure B - 333: 2024 downstream



Figure B - 334: 2023 downstream



Figure B - 335: 2022 downstream



Figure B - 336: 2021 downstream

**WCK 43**



Figure B - 337: 2024 upstream



Figure B - 338: 2023 upstream



Figure B - 339: 2022 upstream



Figure B - 340: 2021 upstream



Figure B - 341: 2024 downstream



Figure B - 342: 2023 downstream



Figure B - 343: 2022 downstream



Figure B - 344: 2021 downstream

**WCK 44**



Figure B - 345: 2024 upstream



Figure B - 346: 2023 upstream



Figure B - 347: 2022 upstream



Figure B - 348: 2021 upstream



Figure B - 349: 2024 downstream



Figure B - 350: 2023 downstream



Figure B - 351: 2022 downstream



Figure B - 352: 2021 downstream

WCK 45



Figure B - 353: 2024 upstream



Figure B - 354: 2023 upstream



Figure B - 355: 2022 upstream



Figure B - 356: 2021 upstream



Figure B - 357: 2024 downstream



Figure B - 358: 2023 downstream



Figure B - 359: 2022 downstream



Figure B - 360: 2021 downstream

WCK 46



Figure B - 361: 2024 upstream



Figure B - 362: 2023 upstream



Figure B - 363: 2022 upstream



Figure B - 364: 2021 upstream



Figure B - 365: 2024 downstream



Figure B - 366: 2023 downstream



Figure B - 367: 2022 downstream



Figure B - 368: 2021 downstream

**WCK 47**



Figure B - 369: 2024 upstream



Figure B - 370: 2023 upstream



Figure B - 371: 2022 upstream



Figure B - 372: 2021 upstream



Figure B - 373: 2024 downstream



Figure B - 374: 2023 downstream



Figure B - 375: 2022 downstream



Figure B - 376: 2021 downstream

**WCK 48**



Figure B - 377: 2024 upstream



Figure B - 378: 2023 upstream



Figure B - 379: 2022 upstream



Figure B - 380: 2021 upstream



Figure B - 381: 2024 downstream



Figure B - 382: 2023 downstream



Figure B - 383: 2022 downstream



Figure B - 384: 2021 downstream

**WCK 49**



Figure B - 385: 2024 upstream



Figure B - 386: 2023 upstream



Figure B - 387: 2022 upstream



Figure B - 388: 2021 upstream



Figure B - 389: 2024 downstream



Figure B - 390: 2023 downstream



Figure B - 391: 2022 downstream



Figure B - 392: 2021 downstream

CCK1



Figure B - 393: 2024 upstream



Figure B - 394: 2023 upstream



Figure B - 395: 2022 upstream



Figure B - 396: 2021 upstream



Figure B - 397: 2024 downstream



Figure B - 398: 2023 downstream



Figure B - 399: 2022 downstream



Figure B - 400: 2021 downstream

CCK2



Figure B - 401: 2024 upstream



Figure B - 402: 2023 upstream



Figure B - 403: 2022 upstream



Figure B - 404: 2021 upstream



Figure B - 405: 2024 downstream



Figure B - 406: 2023 downstream



Figure B - 407: 2022 downstream



Figure B - 408: 2021 downstream

CCK 3



Figure B - 409: 2024 upstream



Figure B - 410: 2023 upstream



Figure B - 411: 2022 upstream



Figure B - 412: 2021 upstream



Figure B - 413: 2024 downstream



Figure B - 414: 2023 downstream



Figure B - 415: 2022 downstream



Figure B - 416: 2021 downstream

CCK 4



Figure B - 417: 2024 upstream



Figure B - 418: 2023 upstream



Figure B - 419: 2022 upstream



Figure B - 420: 2021 upstream



Figure B - 421: 2024 downstream



Figure B - 422: 2023 downstream



Figure B - 423: 2022 downstream



Figure B - 424: 2021 downstream

CCK 5



Figure B - 425: 2024 upstream



Figure B - 426: 2023 upstream



Figure B - 427: 2022 upstream



Figure B - 428: 2021 upstream



Figure B - 429: 2024 downstream



Figure B - 430: 2023 downstream



Figure B - 431: 2022 downstream



Figure B - 432: 2021 downstream

CCK 6



Figure B - 433: 2024 upstream



Figure B - 434: 2023 upstream



Figure B - 435: 2022 upstream



Figure B - 436: 2021 upstream



Figure B - 437: 2024 downstream



Figure B - 438: 2023 downstream



Figure B - 439: 2022 downstream



Figure B - 440: 2021 downstream

CCK 7



Figure B - 441: 2024 upstream



Figure B - 442: 2023 upstream



Figure B - 443: 2022 upstream



Figure B - 444: 2021 upstream



Figure B - 445: 2024 downstream



Figure B - 446: 2023 downstream



Figure B - 447: 2022 downstream



Figure B - 448: 2021 downstream

CCK 8



Figure B - 449: 2024 upstream



Figure B - 450: 2023 upstream



Figure B - 451: 2022 upstream



Figure B - 452: 2021 upstream



Figure B - 453: 2024 downstream



Figure B - 454: 2023 downstream



Figure B - 455: 2022 downstream



Figure B - 456: 2021 downstream

CCK 9



Figure B - 457: 2024 upstream



Figure B - 458: 2023 upstream



Figure B - 459: 2022 upstream



Figure B - 460: 2021 upstream



Figure B - 461: 2024 downstream



Figure B - 462: 2023 downstream



Figure B - 463: 2022 downstream



Figure B - 464: 2021 downstream

CCK 10



Figure B - 465: 2024 upstream



Figure B - 466: 2023 upstream



Figure B - 467: 2022 upstream



Figure B - 468: 2021 upstream



Figure B - 469: 2024 downstream



Figure B - 470: 2023 downstream



Figure B - 471: 2022 downstream



Figure B - 472: 2021 downstream

## Appendix E: Site stability scores

Wilpinjong Creek site stability scores 2016-2024 comparisons

Site	2016 Rating	2017 Rating	2018 Rating	2019 Rating	2020 Rating	2021 Rating	2022 Rating	2023 Rating	2024 Rating	Difference
Wck1	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Stable	Stable	Unchanged
Wck2	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck3	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck4	Highly Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck5	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Highly Stable	Highly Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck6	Stable	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Moderately Stable	Moderately Stable	Unchanged
Wck7	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
Wck8	Stable	Stable	Stable	Unstable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck9	Unstable	Stable	Stable	Unstable	Stable	Stable	Unstable	Unstable	Unstable	Unchanged
Wck10	Highly Stable	Highly Stable	Moderately Stable	Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
Wck11	Moderately Stable	Highly Stable	Highly Stable	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
Wck12	Moderately Stable	Highly Stable	Highly Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck13	Stable	Moderately Stable	Stable	Stable	Highly Stable	Highly Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck14	Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
Wck15	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
Wck16	Highly Stable	Moderately Stable	Moderately Stable	Stable	Highly Stable	Highly Stable	Highly Stable	Moderately Stable	Moderately Stable	Unchanged

Site	2016 Rating	2017 Rating	2018 Rating	2019 Rating	2020 Rating	2021 Rating	2022 Rating	2023 Rating	2024 Rating	Difference
Wck17	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
Wck18	Stable	Stable	Stable	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck19	Unstable	Stable	Stable	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Highly Stable	Highly Stable	Unchanged
Wck20	Unstable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Stable	Stable	Stable	Unchanged
Wck21	Unstable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck22	Moderately Unstable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Unchanged
Wck23	Moderately Unstable	Stable	Stable	Stable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck24	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck25	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck26	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck27	Stable	Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Unchanged
Wck28	Unstable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Unchanged
Wck29	Unstable	Stable	Stable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck30	Stable	Moderately Stable	Highly Stable	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
Wck31	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck32	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck33	Moderately Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck34	Unstable	Unstable	Unstable	Unstable	Stable	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged

Site	2016 Rating	2017 Rating	2018 Rating	2019 Rating	2020 Rating	2021 Rating	2022 Rating	2023 Rating	2024 Rating	Difference
Wck35	Stable	Moderately Stable	Stable	Stable	Stable	Stable	Unstable	Unstable	Unstable	Unchanged
Wck36	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck37	Stable	Stable	Stable	Stable	Unstable	Unstable	Stable	Stable	Stable	Unchanged
Wck38	Stable	Stable	Stable	Stable	Moderately Stable	Moderately Stable	Highly stable	Moderately Stable	Moderately Stable	Unchanged
Wck39	Stable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck40	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unstable	Unchanged
Wck41	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
Wck42	Highly Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Moderately Unstable	Unchanged
Wck43	Not surveyed	Unstable	Unstable	Unstable	Unstable	Unstable	Stable	Stable	Stable	Unchanged
Wck44	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Highly Stable	Moderately Stable	Moderately Stable	Unchanged
Wck45	Stable	Stable	Stable	Stable	Moderately Stable	Moderately Stable	Highly Stable	Moderately Stable	Moderately Stable	Unchanged
Wck46	Stable	Moderately Stable	Moderately Stable	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck47	Stable	Moderately Stable	Stable	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Stable	Stable	Unchanged
Wck48	Stable	Stable	Stable	Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Unchanged
Wck49	Stable	Stable	Stable	Unstable	Stable	Stable	Stable	Stable	Moderately Stable	Improved

## Cumbo Creek site stability scores 2016-2023 comparison

Site	2016 Rating	2017 Rating	2018 Rating	2019 Rating	2020 Rating	2021 Rating	2022 Rating	2023 Rating	2024 Rating	Difference
CCK1	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
CCK2	Moderately Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Unchanged
CCK3	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
CCK4	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
CCK5	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
CCK6	Moderately Stable	Highly Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Moderately Stable	Highly Stable	Highly Stable	Unchanged
CCK7	Not surveyed	Moderately Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
CCK8	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
CCK9	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged
CCK10	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Highly Stable	Unchanged

## Appendix F: Monthly Rainfall Data

Table C - 1: Monthly rainfall from 2015-2024 (mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
2015	127.6	11.6	9.4	108.4	42.8	42.8	38.0	53.8	7.8	61.0	59.0	118.4	680.6
2016	152.1	7.2	23.5	14.8	66.8	104.2	101.1	40.9	198.7	86.6	51.9	90.6	938.4
2017	27.8	34.2	146	23	32.4	10.4	5.8	25.2	3	28.4	92.6	102.6	531.4
2018	24.4	77	24.6	42.2	12.4	21.6	1.2	43.8	39.6	56.8	47.4	91.2	482.2
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	66.8	25.4	44.2	40.8	249.2	81.4	942.4
2022	101.4	16	119.8	95	43.6	13	136.4	103.2	93.8	174.4	64	26.6	987.2
2023	48.6	24.6	64.6	47.8	2.8	28.8	23.2	29.8	18	36.2	94	59.6	478
2024	86.6	78.6	32.8	68.8	62.2	68.6	65	39.8	45.4	51	116.6	30.8	745.2
<b>Historical Mean</b>	67.2	62.2	55.2	39.3	37.2	44.0	43.0	41.1	41.7	52.1	57.0	60.9	593.1

Source: 2024 data from the WCPL Weather Station Sentinex 34 received 19 December 2024, historical data from the BoM weather stations Wollar (Barrigan Street) weather station number: 62032 (BOM 2024).

