Central Queensland Coal Network

FY26 Final Draft Proposal

Maintenance and Renewals Strategies and Budgets

Prepared by Aurizon Network

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Contents

Part A
Aurizon Network's FY26 Final Draft Proposal

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1 Introduction

This document outlines Aurizon Network's draft Maintenance and Renewals Strategies and Budgets (MRSB) for each Coal System in the Central Queensland Coal Network (CQCN) for the Financial Year ending 30 June 2026 (FY26 Draft Proposal) to the Rail Industry Group (RIG).

Aurizon Network has developed its FY26 Final Draft Proposal for each Coal System having regard to the relevant matters as outlined in the 2017 Access Undertaking, ensuring that Maintenance Work is undertaken in a manner that has regard to the matters set out in the Maintenance Objectives. Table 1 provides an overview of the steps Aurizon Network has taken to achieve the Maintenance Objectives.

Table 1 Approach to Maintenance Objectives

Maintenance Objective	Treatment
Seeks to ensure that Committed Capacity is delivered.	Asset activity is undertaken to support the safe and reliable provision of rail services for users of the CQCN. Aurizon Network seeks to minimise the impact to the supply chain of Track Possessions, wherever reasonably possible, by undertaking renewal activity in integrated system closures, and undertaking maintenance activities between trains or aligned to integrated system closures. As part of the development of the MRSB, Aurizon Network develops the integrated closure regime based on driving path activity and seeks opportunities to coordinate works to reduce the footprint of asset activity as well as to align with other supply chain maintenance activities to minimise overall supply chain impact and maximise throughput.
Appropriately balances cost, reliability, and performance of the Rail Infrastructure in the long and short term.	Aurizon Network's asset management strategy prioritises a preventive maintenance regime with fit for purpose renewal of Rail Infrastructure, based on asset condition and criticality and targeting performance and reliability consistent with 4-year averages. The identification, planning and rectification of faults seeks to minimise the impact of planned and unplanned failures. Aurizon Network's asset management strategy is based on the future demands on the rail infrastructure. Renewals and maintenance plans consider this long-term demand to determine the appropriate asset activity to ensure the asset is fit for purpose for the economic life of the corridor. Aurizon Network endeavours to ensure that the level of expenditure incurred to deliver the asset activity is reasonable and undertakes a market-based approach when needing to outsource labour, services, or materials. Awarding of any contracts will include assessments of past performance, cost, quality, and safety.
Coordinates outages with other Supply Chain Participants wherever reasonably possible with a view to maximising throughput.	As part of developing the FY26 access plan, Aurizon Network engaged with other Supply Chain Participants to better understand their respective requirements. This engagement provided opportunities for alignment of the delivery of high impact network activities with major infrastructure outages and seasonal demand relevant to each Coal System.

1.1 Summary of Aurizon Network's FY26 Final Draft Proposal

The FY26 Final Draft Proposal provides a level of asset activity and funding that Aurizon Network considers is appropriate to deliver a fit for purpose, sustainable, reliable, and safe rail network that meets the needs of customers in each Coal System. It seeks to maximise supply chain throughput and takes into consideration the Independent Expert's (IE) assessment of Deliverable Network Capacity or, in the circumstances where there is no Existing Capacity Deficit, Committed Capacity.

In aggregate, Aurizon Network's FY26 Final Draft Proposal for the CQCN provides for a maintenance budget (excluding ballast undercutting plant depreciation) of $207.0m, which is $23.7m above Aurizon Network's FY25 approved budget and $13.4m above Aurizon Network's full year forecast for FY25 (as of Q1). The movement in cost between periods reflects the impacts additional maintenance activities within the General Track category including the targeted Drainage Program and increase in rail maintenance activities, additional Rail Grinding maintenance activities and additional labour costs to support maintenance activity levels and the mitigation of ageing workforce and attrition risks. Table 2 FY26 Final Draft Proposal - Direct Maintenance Cost Budget ($m) sets out the Maintenance Budget for each Coal System.

Table 2 FY26 Final Draft Proposal - Direct Maintenance Cost Budget ($m)

System	FY25 Approved Budget	FY25 Full Year Forecast	FY26 Draft Budget
Direct Maintenance Costs			
Blackwater	77.3	81.9	88.8
Goonyella	72.7	77.7	80.7
Moura	16.6	17.5	19.5
Newlands / GAPE	16.7	16.5	18.1
Total (excluding ballast undercutting plant depreciation)	183.3	193.6	207.0
Ballast undercutting plant depreciation	6.1	6.1	6.0
Total Direct Maintenance Costs	189.3	199.6	213.0
Non-Coal Allocation	(1.0)	(1.0)	(1.2)
Total CQCN	**188.3**	**198.6**	**211.9**

Note: Figures may not add due to rounding.

The FY26 Final Draft Proposal also provides for a renewals budget of $322.4m, which is $9.2m above Aurizon Network's FY25 approved budget and $25.1m above Aurizon Network's full year forecast for FY25. The movement in cost between periods reflects increases in scope and cost across Ballast Cleaning, Civil Renewals and Electrical asset renewals, offset by reductions in Permanent Way, Structures and Control Systems. Table 3 sets out the Renewals Budget values for each Coal System.

Table 3 FY26 Final Draft Proposal - Renewal Budget ($m)

System	FY25 Approved Budget	FY25 Full Year Forecast	FY26 Draft Budget
Blackwater	148.1	136.4	127.7
Goonyella	110.6	114.8	133.3
Moura	22.3	21.7	29.6
Newlands / GAPE	32.2	24.4	31.8
Total CQCN	**313.2**	**297.3**	**322.4**

Note: Figures may not add due to rounding.

1.2 Likelihood of Change

Aurizon Network notes that the development of the MRSB is an iterative process. The timeline from scope identification to the MRSB submission can be up to 11 months, with scheduled scope execution up to 18 months following approval. The asset condition continues to change across this timeline.

Aurizon's Works End to End processes, detailed in Part B Section 10, support the phased development and planning of scope with opportunities to review likelihood of change as scope develops. Sources of change include cost, scope, duration and timeframes as the MRSB develops into delivery. In the FY26 MRSB, assessment of the sources of change and resulting controls are included within each system summary in Part A with risks quantified and mitigations developed to minimise change impacts where possible. Where change does occur in the program, it is managed via the Variation Management Processes detailed in Part B in Section 10.2.4 Likelihood of Changes.

1.3 Structure of the FY26 Draft Proposal

Each annual MRSB proposal provides information to inform the approval process of the Draft Maintenance Strategy and Budget and Draft Renewal Strategy and Budget for each Coal system consistent with the requirements of Part 7A.11 of UT5. The MRSB is structured in three parts. These are:

Part A which provides the system-by-system scope and budgeted cost elements of the MRSB for the year in question. Part A is structured as follows:

- Key assumptions underpinning the FY26 Final Draft Proposal
- Maintenance Strategy and Budget and Renewals Strategy and Budget, including information on the cost, scope **and** Integrated Closures being proposed for FY26 for each Coal System, specifically the:
    - Blackwater System
    - Goonyella System
    - Moura System
    - Newlands System and GAPE
- Four year forward indicative forecast
- Stakeholder engagement as part of the development of the FY26 Final Draft Proposal.

Part B provides information regarding Aurizon Network's asset management approach, which is relevant to the CQCN more broadly. It details the strategies applied to deliver on the requirements of the Asset Maintenance and Renewal Policy to maintain reliability and deliver rail infrastructure efficiency and

performance (each in the long and short term) while seeking to ensure that Committed Capacity or Deliverable Network Capacity can be achieved. Part B is structured as follows:

- Guiding principles and applications of the asset management strategies used in the CQCN
- Legislative and regulatory obligations
- Strategies applied to each asset class for both maintenance and renewals
- Key aspects for each program including a description, maintenance, and renewal options as well as typical scope requirements
- Works End to End application to detail the process and other relevant information in the development of the MRSB from scope identification, access and works planning, budget setting and procurement, execution or delivery of the asset activity, reporting and engagement and key process improvements in these areas
- Environmental, social and governance considerations and the impact on Aurizon Network's asset management approach
- Options considered in relation to Maintenance and Renewals. Where specific options were considered for strategic scope items, or where asset renewal will be different to the typical renewal option, these are identified within each system scope discussion.

The **Detailed Scope Report, provided as a BI report and PDF**, includes detail on the specific scope proposed to be completed at specific locations. This information helps highlight the location and necessity of the proposed scope.

In this FY26 Final Draft Proposal, except to the extent a term is expressed to the contrary, capitalised terms have the meaning given in UT5.

1.4 Assumptions

To prepare the FY26 Final Draft Proposal, Aurizon Network has relied on the following assumptions.

- High impact Ballast undercutting activity has been prioritised within Integrated Closures with residual scope being executed in single line closures.
- Maintenance costs outlined within the FY26 Final Draft Proposal reflect the Direct Maintenance Costs only.
- The Direct Maintenance cost schedules presented in this FY26 Final Draft Proposal provide for a reduction in costs to reflect an allocation to non-coal services. This adjustment for each Coal System has been calculated using actual historical (FY24) non-coal railings and the QCA-approved AT1 Reference Tariff that will be applicable in FY26.
- The value of asset renewal activities represented within the FY26 Final Draft Proposal reflects the capital expenditure Aurizon Network forecast to incur while delivering these works in FY26. These values may differ from the values that Aurizon Network will seek to include in the Regulated Asset Base (RAB) via the Annual Capital Expenditure Claim (UT5, Schedule E), which reflects the cost of assets that have been commissioned during the financial year.
- Aurizon Network develops costs based on the scope of work required to be delivered, guided by historical costs, and where known, site-specific requirements and scheduling constraints. While average costs per scope unit may be used as a guide to performance for some activities, they can be subject to limitations. For example, they may not adequately explain the impact of site-specific conditions (such as site access, ground conditions and the effect of recent weather) on cost or scope performance. Average unit costs may also be impacted where internal and external resources deliver asset activity in between trains and in integrated system closures. This can create inefficiencies that would not otherwise occur if asset activity was smoothly phased over the period.
- Clause 7A.11.3(q) of UT5 identifies circumstances where execution of work may be inconsistent with approved maintenance and renewals strategies and budgets.

- For the purposes of Clause 7A.11.5(f)(ii)(B)(2) of UT5 and the consideration of whether material variations in the actual cost of delivering an “item” contained within the Approved Strategy and Budget are prudent and efficient:
    - for Moura, Newlands and GAPE systems, the maintenance budget in its entirety is considered an ‘item’.
    - for Blackwater and Goonyella, the product areas of resurfacing, rail grinding, general track maintenance, ‘Signalling and Telecoms’ and Electrical are considered as items.
    - product areas are considered a single item (Structures and Facilities, Trackside Systems, Other Civil Maintenance, Other General Maintenance).
- Interaction with the Annual Capacity Assessment Report (ACAR) for each Coal System discussed in Section 1.5.
- Figures displayed in various tables, charts and graphs throughout the document may not add due to rounding.

Given the uncertainty surrounding the occurrence of prolonged or extreme weather events, Aurizon Network has not included in its FY26 Final Draft Proposal any provision for costs associated with Rail Infrastructure repair or rectification following a Force Majeure Event. Where a Force Majeure Event and associated cost of rectification constitutes a Review Event under UT5, Aurizon Network will seek QCA approval to recover any incremental costs (which may include ordinary labour costs where they are not already recoverable) through the UT5 process (Schedule F, Clause 5.3) for infrastructure utilised by Coal Carrying services.

1.5 Interaction between the FY26 Final Draft Proposal and the ACAR

In July 2024, the Coal Network Capacity Company (CNCC) in its role as the Independent Expert, published the 2024 Annual Capacity Assessment Report (2024 ACAR). The 2024 ACAR assessed the Deliverable Network Capacity (DNC) of each coal system in the CQCN for the period FY25 - FY29 and noted that in all systems except Newlands/GAPE, capacity was above the Committed Capacity. For clarity, this FY26 Final Draft Proposal does not include any maintenance or capital expenditure relating to proposed Transitional Arrangements.

In developing this FY26 Final Draft Proposal, and as part of seeking to ensure that Committed Capacity or DNC can be achieved, Aurizon Network assessed the proposed FY26 access requirements against Committed Capacity or DNC for all systems.

This involves an assessment of the Usable Capacity of each system, taking into consideration non-coal traffic and other projects to deliver Transitional Arrangements or Customer requested works. Usable Capacity is a function of Network's Advanced Planning & Scheduling system (APS) which mathematically models the capacity of network infrastructure considering known and planned outages or restrictions such as:

- supply chain outages including mine and port maintenance outside of integrated closures
- integrated closures and single line possessions; and
- other planned asset activity such as inspections required under the Civil Engineering Track Standard (CETS).

The Usable Capacity calculation assesses contracted mine and port combinations and represents the maximum number of theoretical trains able to run in each area of the network, considering the capacity of areas up and down stream that may interact with it. Interconnected 'traffic pathways' that span the CQCN Network join load and unload site pathways modelled in APS. Each traffic pathway has a maximum capacity that is used in subsequent capacity calculations. Based on the modelled outages (Network, Mine and Port) the results are returned for each traffic pathway, (main line, branch line, mines, ports) and provides capability to report on usable capacity to a daily level.

In setting the usable capacity target, below rail cancellations and other planned corrective and reactive maintenance activities are also taken into consideration.

It should be noted however, that Usable Capacity is not a dynamic simulation model, and doesn't consider supply chain capability constraints such as above rail consist type/volume/availability, network and 3rd party unplanned outages/breakdowns or variation in customer demand. Once approved, the access footprint resulting from this FY26 Final Draft Proposal will be an input to the assessment of the 2025 ACAR which will assess through simulation modelling the impact of the Approved Maintenance and Renewal Strategy and Budget, together with other changes to system operating parameters that are relevant to the 2026 to 2030 financial years.

For completeness, the closure hours included in the system summaries of this FY26 Final Draft Proposal represent the integrated closures and single line possessions. It does not include activities completed in the shadow of other activities or in-between trains, CETS related access or planned or unplanned corrective or reactive maintenance. The Critical Asset Activity Calendar Power BI report that provides the detailed access information relating to this FY26 Final Draft Proposal will be published on 30 November 2024.

Importantly, Aurizon Network's assessment of Usable Capacity for the FY26 Final Draft Proposal indicates it can deliver DNC in Newlands/GAPE and Committed Capacity in the Blackwater and Moura Systems. There is an elevated risk that Aurizon Network may not be able to achieve DNC and Committed Capacity in the Goonyella System. Aurizon Network is considering a range of additional options and initiatives aimed at increasing the likelihood of delivering Committed Capacity. It is Aurizon Network's intention to present the outcomes of this additional analysis to Goonyella Customers ahead of the FY26 Final Draft proposal in January 2025.

When developing the FY26 Draft Proposal, Aurizon Network has had regard to the latest QCA-approved volume forecast for FY25. On 23 May 2024, following consultation with End Users as part of the FY25 review of Reference Tariff process, the QCA approved a CQCN volume forecast of 216.7mt for FY25. The current forecast for FY26 is assumed to be equivalent to the FY25 forecast. As outlined in Table 4, the current forecast volumes in each system are lower than the FY26 DNC set out in the 2024 ACAR.

Table 4 Comparison of Deliverable Network Capacity and Regulatory Volume Forecasts

Volumes (Million Net Tonnes)	Blackwater	Goonyella	Moura	Newlands/GAPE
Deliverable Network Capacity (mt)	85	137	16	42
QCA-approved FY26 System Forecasts[1]	58.6	107.1	14.8	36.2

Aurizon Network has commenced engagement with End Users with respect to FY26 volume forecasts and will submit any updates to the QCA for approval as part of the FY26 Annual review of Reference Tariffs submission due to the QCA on 28 February 2025. There will be no change to the volume assumptions applied within this FY26 Final Draft Proposal which will continue to apply the FY25 forecast.

1.6 Key Improvements

1.6.1 MRSB Development Process Improvements

The development of the FY26 MRSB seeks to balance cost, reliability, and performance of the Rail Infrastructure in the long and short term. Development has included engagement with customers and supply chain participants for opportunities to align delivery of high impact network activities with major infrastructure outages and seasonal demand relevant to each Coal System.

An improvement during the FY26 process has been earlier engagement and discussion on the draft scope that is driving closure requirements across the CQCN and the rationale for that scope. As part of this process, stakeholders have had the opportunity to provide feedback and influence trade-off decisions earlier in the development of the closure plan.

Early driving scope was shared as part of the Draft Access Regime Engagement in June, with detailed driving path scope shared following the session. As planning matured, trade-off considerations were shared at the Post Phase 2 Driving Scope and Closure Update held in September, with subsequent changes to the access plan:

- The Bridge Ballast Renewal planned for the MacKenzie River Bridge where alternate options were considered to reduce the driving scope impact ranging from deferring work, changing delivery methods and changing scope.
- The Goonyella May Integrated Closure originally proposed as 118-hour was revised to a 60-hour closure. Post consultation with RIG and Supply Chain Participants scope and delivery options were reviewed to reduce the access impact. The formation scope at Winchester was split over multiple closures to reduce impact of a single closure. Four turnouts at Praguelands were moved to FY27 to align with future potential port outages, early works will occur in FY26 as one project for efficiencies. Delivery of RM902 Black Mountain scope was assessed and prioritised to reduce impact.

1.6.2 Works End to End Process Improvements

While seeking to deliver a maintenance and renewal program that maintains stable levels of network performance consistent with 4-year averages for cancellations, delays and incidents, Aurizon Network is targeting continuous improvements that will benefit the safety, reliability, performance, or cost efficiency of programs. These improvements encompass new processes or ways of working, new technologies or reviewing how work is planned. The key continuous improvements targeted in FY26 are grouped by the

[1] QCA (2024), Decision Notice, Annual review of reference tariffs, 2024-25, May 2024, page 4, Website: https://www.qca.org.au/wp-content/uploads/2024/05/aurizon-network-review-of-reference-tariffs-2024-25-decision-notice-final.pdf

Works End to End processes and whether the improvement will refine scope identification, access and works planning, budget setting and procurement, execution and close or engagement and reporting.

Part B includes each of the continuous improvement initiatives related to specific elements of the Works End to End process.

Asset Maintenance and Renewal scope identification includes 19 improvement initiatives in Section 10.1.3 Maintenance and Renewal Scope Improvements, focussed on improving asset reliability, performance and safety including key improvements to:

- extend the life of assets
- improve monitoring and inspections
- improve remote monitoring to reduce physical responses to site.

Access and Works Planning includes 5 initiatives contained in Section 10.2.5 Access Planning and Works Planning Improvements, focussed on planning and performance outcomes including:

- increased scope (Civil and Power Systems) integrated into OHLE windows:
- improved assessment and inclusion of growth and Transitional Arrangement scope in the planning process
- earlier involvement of key operational staff and leaders
- improved accuracy of RM902 planning and scheduling tool utilising pre-dig return rate data
- detailed planning processes at Goonyella Ports and Callemondah Yard.

Works Execution and Close includes 6 improvement initiatives contained in Section 10.4.7 Works Execution and Close Improvements, focussing on cost out, reliability and improved access benefits including:

- vendor reviews - packaging of labour, materials and services as well as the strategic location of vendors to minimise mobilisation & demobilisation costs.
- implementing cyclical access windows based on work demand, reliability risks, defect profiles etc to enable work to be integrated, packaged and aligned.
- trialling alternative vegetation management methods.
- internalising the telecommunications maintenance previously outsourced.
- extending the western depot allowances and western depot accommodation strategy.
- maintenance and capital internal labour efficiency and effectiveness review.

1.6.3 Internal Labour Efficiency and Effectiveness Review

Aurizon Network has worked with the RIG Producer Group members to undertake a review of internal labour efficiency and effectiveness with an external consultant. A decision was made by the RIG Producer Group and Aurizon Network to review the approach following an RFP process that was initiated in March 2024 after initial proposals were found (by Aurizon and RIG) to be unsuitable. In August and September, Aurizon Network presented labour data, metrics and cost drivers to assist with refining and reducing the review required by an external consultant. In response to a request by the RIG Producer Group, Aurizon Network proposed a scope of works for an external consultant that looks at the benchmark data for the Electrical team and undertakes a qualitative investigation with subject matter experts.

A second RFP process based on the reviewed scope of works was completed in November to progress the review and identification of opportunities with a consultant now engaged to start work in January 2025. The review is expected to be completed by April 2025.

Table 5 Internal Labour Efficiency and Effectiveness Stages

Stage
Stage 1 – Briefing, Desktop Review and Methodology Development
Stage 2 – Qualitative investigation
Stage 3 – Synthesise Data
Stage 4 – Report Findings

1.7 Next Steps

Following submission, the key milestones in relation to the FY26 Final Draft Proposal are outlined in Table 6 Regulatory Milestones Relating to the FY26 Final Draft Proposal.

Table 6 Regulatory Milestones Relating to the FY26 Final Draft Proposal

Date	Milestone	Description
30 November 2024	Draft Submission	Aurizon Network submits its FY26 Draft Proposal for each Coal System to the Chair of the RIG, Customers, and non-coal Access Holders.
1 January 2025	Due date for feedback on the FY26 Draft Proposal	The Chair of the RIG, on behalf of End Users, may give Aurizon Network a notice which specifies amendments to the FY26 Draft Proposal that members of the RIG consider reasonably necessary (giving reasons).
21 January 2025	Aurizon Network submits FY26 Final Draft Proposal	
14 February 2025	Notification of voting outcomes	The Chair of the RIG notifies Aurizon Network and the QCA as to whether a Special Majority of End Users for each Coal System has approved Aurizon Network's FY26 Final Draft Proposal

1.8 New Information since 30 November 2024

The development of the annual maintenance and renewal strategy and budget is part of Aurizon Network's process to manage the rail infrastructure in a way that meets the Maintenance Objectives outlined in section 7A.11 of the 2017 Access Undertaking. The draft proposal submitted on 30 November each year to the Rail Industry Group Chair takes into consideration the identification and assessment of scope that in some cases occurs up to 18 months prior to the submission date. Aurizon Network makes an informed assessment based on the available information, including the likelihood of change to the scope, cost and access impacts, for inclusion in each years' proposal.

Since 30 November 2024, Aurizon Network has continued to develop and review scope identified in the FY26 Draft Proposal. Consistent with section 7A.11(c)(iii) of the 2017 Access Undertaking, this section of

the FY26 Final Draft Proposal provides an update to the members of the Rail Industry Group, non-coal Access Holders and Customers on new information in relation to the FY26 Draft Proposal that has become available between 30 November 2024 and 21 January 2025. The changes include responses to Rail Industry Group feedback from the FY26 Draft Proposal and include additional maintenance and renewal costs relating to; an increase in Rail Maintenance activity levels; costs to support the removal of OHLE windows in Goonyella; additional MRSB-funded branchline infrastructure in the Blackwater system; costs omitted from asset renewal estimates; and inclusion of a critical undercutting renewal site, replanned following wet weather impacts during FY25.

The changes result in a $3.1m increase in asset renewal expenditure and an increase of $7.1m in asset maintenance expenditure in FY26.

The tables below provide a summary of all changes to the FY26 Draft Proposal based on new information and the associated forecast variance.

Table A Changes to FY26 Draft Proposal – Forecast Cost Impact ($m)

System		FY26 Draft Proposal – Nov 24	FY26 Final Draft Proposal - Jan 25	Variance
Blackwater	Maintenance	86.2	88.8	2.6
	Renewals	126.2	127.7	1.5
	System Total	**212.4**	**216.4**	**4.0**
Goonyella	Maintenance	78.9	80.8	1.9
	Renewals	132.1	133.3	1.1
	System Total	**211.0**	**214.0**	**3.0**
Moura	Maintenance	18.4	19.5	1.1
	Renewals	29.3	29.6	0.4
	System Total	**47.7**	**49.1**	**1.5**
Newlands	Maintenance	16.8	18.1	1.3
	Renewals	31.6	31.8	0.3
	System Total	**48.4**	**49.9**	**1.6**

Note: Figures may not add due to rounding.

Maintenance expenditure reflected above is exclusive of ballast plant depreciation

Table B Changes to FY26 Draft Proposal from new information detail

Section Reference	Description/Reason for Change	Impact on FY26 Draft Proposal Forecast ($m)
PART A		
1.6.3 Internal Labour Efficiency and Effectiveness Review	Updates to reflect progress of RFP November to January. Table 5 Removed progress of scope, now includes only scope stages	Nil
Blackwater System		
2.1 Blackwater System – Characteristics and Corridor Strategy	In response to RIG request, the corridor strategy and Figure 2 updated to include commentary on the historical performance, together with information on how to consider the metrics.	Nil
2.2 Blackwater System – Integrated Closure Plan	Updated Table 8 to reflect 68hours as this IC is 68hrs + 16hr post closure German Ck balloon only.	Nil
	Updated data in Table 8 Driving Path Activities – Blackwater.	Nil
2.3 Blackwater System – Maintenance expenditure	Increase in General Track maintenance costs to reflect uplift in Rail maintenance activity levels	$0.8m

Section Reference	Description/Reason for Change	Impact on FY26 Draft Proposal Forecast ($m)
	Inclusion of expenditure relating to maintenance of existing branch line now included in MRSB.	$1.8m
	Inclusion of cyber security costs omitted from draft proposal	$0.1m
2.4 Blackwater System – Asset Renewal expenditure	Adjustment to Permanent Way, Mainline Undercutting and Bridge Ballast renewal estimates to reflect costs omitted from the draft submission	$1.5m
	Reduction in LX Designs by 1	-$0.1m
	Error in Track KM reported in Table 11 from 8.1 to 4.7. Scope was correct in other detailed tables, no actual change to scope.	Nil
6.1 Blackwater System – Four-Year Forecasts	Update to FY27-30 Forecast maintenance spend following adjustments to FY26 maintenance activity levels	Nil
Goonyella System		
3.0 Goonyella System	Updated closure comments on page 67 to accurately reflect % variance on previous years.	Nil
3.1 Goonyella System – Characteristics and Corridor Strategy	In response to RIG request, the corridor strategy and Figure 23 updated to include commentary on the historical performance, together with information on how to consider the merics.	Nil
	Updated # of IC to 8 not 7 on page 70	Nil
3.2 Goonyella System – Integrated Closure Plan	Updated data in Table 20 Driving Path Activities – Goonyella System.	Nil
3.3 Goonyella System – Maintenance expenditure	Increase in General Track maintenance costs to reflect uplift in Rail maintenance activity levels	$1.2m
	Inclusion of costs relating to Capacity Enhancement Initiatives to remove overhead maintenance windows	$0.6m
	Inclusion of Cyber Security costs omitted from draft proposal	$0.2m
3.4 Goonyella System – Asset Renewal expenditure	Replanning of critical mainline undercutting site and minor adjustments to mainline undercutting estimates to reflect correct rail management activity costs.	$0.7m
	Adjustment to Permanent Way renewal estimates to reflect costs omitted from the draft submission	$0.4m
6.2 Goonyella System – Four-Year Forecasts	Update to FY27-30 Forecast maintenance spend following adjustments to FY26 maintenance activity levels	Nil
Moura System		
4.1 Moura System – Characteristics and Corridor Strategy	In response to RIG request, the corridor strategy and Figure 44 updated to include commentary on the historical performance, together with information on how to consider the metrics.	Nil
4.3 Moura System – Maintenance expenditure	Increase in General Track maintenance costs to reflect uplift in Rail maintenance activity levels	$0.8m
	Increase in General Track maintenance costs to reflect additional corrective maintenance activity levels required	$0.3m
	Inclusion of Cyber Security costs omitted from draft proposal	$0.0m
4.4 Moura System – Asset Renewal expenditure	Adjustment to Permanent Way renewal estimates to reflect costs omitted from the draft submission	$0.4m
6.3 Moura System – Four-Year Forecasts	Update to FY27-30 Forecast maintenance spend following adjustments to FY26 maintenance activity levels	Nil

Section Reference	Description/Reason for Change	Impact on FY26 Draft Proposal Forecast ($m)
Newlands System		
5.0 Newland System and GAPE	Updated reference to Newlands System and GAPE from Goonyella.	Nil
5.1 Newlands System and GAPE – Characteristics and Corridor Strategy	In response to RIG request, the corridor strategy and Figure 63 updated to include commentary on the historical performance, together with information on how to consider the metrics.	**Nil**
5.2 Newlands System and GAPE – Integrated Closure Plan	Updated data in Table 44 Driving Path Activities – Newlands System and GAPE.	
5.3 Newlands System – Asset Renewal expenditure	Increase in General Track maintenance costs to reflect uplift in Rail maintenance activity levels	$1.2m
	Inclusion of Cyber Security costs omitted from draft proposal	$0.1m
5.4 Newlands System – Asset Renewal expenditure	Adjustment to Permanent Way renewal estimates to reflect costs omitted from the draft submission	$0.3m
6.4 Newlands System and GAPE – Four-Year Forecasts	Update to FY27-30 Forecast $ due to escalation formula error in base excel document and adjustments to FY26 maintenance activity levels	Nil
PART B		
7 Stakeholder Engagement FY26 Draft Access Regime	Armuna culvert review of scope items confirmed as renewal (not repair).	Nil
10.3.1 Budget Development for Maintenance Activities	Information adjusted to include assumptions relating to the uplift in corrective maintenance activity levels relating to General Track activities in Moura and Rail Maintenance activities across all systems	Nil
10.3.2 Budget Development for Renewal Activities	Updated Table 86 Turnout Excavator Ballast Cleaning – Cost Summary with reference to FY26 Draft Budget (as opposed to FY25 Draft Budget)	Nil
	Added assumption to Table 80 related to spoil removal.	Nil

Blackwater

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2 Blackwater System

This section presents Aurizon Network's Draft Maintenance and Renewal Strategy and Budget for the Blackwater System for FY26. In line with 7A.11.3 of UT5, this section will be subject to vote by the relevant Blackwater End Users.

Aurizon Network's FY26 Final Draft Proposal for the Blackwater System provides for:

A strategy to maintain a stable level of service over the long-term

The asset management strategy for the Blackwater System is to maintain and renew assets to hold the condition of the assets steady relative to the expected economic life of assets.

This strategy is achieved through undertaking preventive and planned corrective maintenance and asset renewals ahead of unplanned failure or obsolescence.

A Direct Maintenance Cost Allowance of $88.8m

The proposed Direct Maintenance Cost Allowance, which excludes ballast undercutting plant depreciation, represents an increase of $6.9m compared to Aurizon Network's current FY25 full year maintenance forecast and an increase of $11.4m compared to the approved FY25 Maintenance Strategy and Budget.

The increase in maintenance spend against the FY25 approved budget is predominantly driven by:

- additional internal labour costs relating to annual Enterprise Agreement uplifts
- additional internal resource allocation to support maintenance activity levels
- reduction in external contractor support for telecommunications maintenance
- cost escalation on contractor, materials and other cost categories
- additional external contractors to deliver targeted drainage program
- uplift in rail maintenance activity levels
- expenditure associated with existing branch line now included within the MRSB
- an increase in grinding frequencies across critical locations driven by asset condition.

A Renewals Allowance of $127.7m

This represents a decrease of $8.7m compared to Aurizon Network's current FY25 renewals forecast and a decrease of $20.4m compared to the approved FY25 Renewals Strategy and Budget.

The decrease in renewal spend is due to reductions in the Permanent Way, Ballast Cleaning, Structures and Control Systems renewal categories, partly offset by increases in Civil Renewals and Electrical Systems. The variations are a combination of scope and cost changes.

Integrated Closures

There are eight integrated closures planned in Blackwater for FY26.

- **16% YoY** increase in planned Integrated Closure if the FY25 contingency closure is not required or a net increase of 11 hours (2%) if contingency closure is required.

Aurizon Network's capacity assessments indicate adequate system usable capacity to deliver the Committed Capacity.

In FY26, we have removed the contingency closure, a strategy that was implemented in FY25, due to the transition back to a six-weekly cycle. This adjustment, which results in additional closures over the course of the year mitigates the risk of requiring a contingency closure by more evenly distributing major renewal projects and their associated resource demands.

Additionally, this revised approach enhances alignment between internal maintenance teams and supply chain stakeholders, leading to fewer isolated activities that could otherwise impact system capacity outside of scheduled integrated closures.

Likelihood of Change

Completion of prior year scope and weather remain key program risks for the Blackwater system. Where prior year scope is replanned for completion during FY26, this could impact the ability to complete planned FY26 renewal scope.

2.1 Blackwater System – Characteristics and Corridor Strategy

The Blackwater System is Aurizon Network's oldest Coal System and the largest by track length. It primarily serves coal mines in the central and southern Bowen Basin, carrying product through to export ports in Gladstone, as well as domestic electricity generation and industrial users. The system also supports traffic originating in the northern coal systems railing via the Gregory Branch to the ports in the Gladstone area as well as freight and passenger services on both the North Coast Line (NCL) and Central Lines. The Blackwater System includes approximately 1,137km of electrified track.

The Central Line track section west of Burngrove (202.700km point west) approx. 65km, and the Springsure Branch approx. 43km, are still managed by Aurizon Network but are not currently utilised by coal train services. Consequently, Aurizon Network has excluded FY26 maintenance and renewal activity associated with these track sections from the FY26 Final Draft Proposal.

Maintenance and renewal activities in the Blackwater System are primarily delivered from depots located in Gladstone, Gracemere, and Blackwater, with mobile mechanised plant based in Rockhampton.

Aurizon Network's depots are strategically located to enable incident response times across the Blackwater System within two and half hours. Mechanised plant (e.g., resurfacing) is typically able to respond to an urgent defect (e.g., a buckle or geometry defect) in the Blackwater System within 1 day.

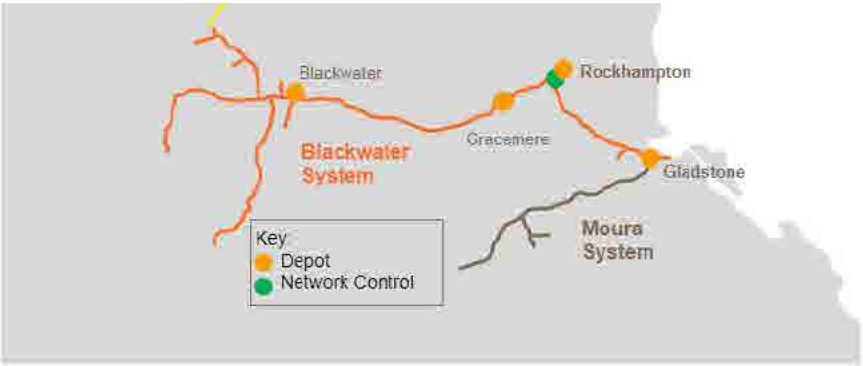


Figure 1 Depot Locations - Blackwater and Moura Systems

Aurizon Network has considered asset conditions specific to this Coal System when developing the FY26 Final Draft Proposal, particularly in relation to:

- **Civil Assets** – the Blackwater System was not built as a dedicated heavy haul coal network but rather to facilitate steam-powered grain, cattle, general freight and passenger movements. Sections of formation and structures date back to the late 1800's. The rail alignment also traverses significant sections of low-lying floodplains and black soils which result in formation and track alignment issues manifesting in temporary speed restrictions during periods of alternating wet and very dry weather. Newer infrastructure constructed in the Blackwater System, including the Wiggins Island Rail Project (WIRP), facilitated a capacity uplift however did not address all older civil infrastructure. Despite the aged infrastructure, renewals are targeted based on observable condition and degradation patterns. These considerations have a tendency to result in higher track resurfacing and formation renewal activity when compared to the other Coal Systems.
- **Control Systems Assets** – the completion of WIRP and the Blackwater duplications in the early 2010's resulted in a significant upgrade of the telecommunications, wayside and train protection systems. However, there are aged Control Systems assets remaining, especially on the NCL and west of Tunnel. In particular, the

interlockings in Callemondah yard were installed in the 1970's and train detection track circuits were installed in the 1980's. These assets are nearing end of life.

The radio system across Blackwater was upgraded in recent years to a digital based Terrestrial Trunked Radio (TETRA) system. Trains are detected through a mix of track circuits and axle counter track sections with ongoing renewals programmed for life expired track circuit assets. A program to modernise the optic fibre in Blackwater commenced in FY22 and continues in FY26.

- **Electrical Assets** – the Electrical assets were largely installed during the mid-1980's mainline electrification project and, while four new feeder stations were installed in 2012, a significant proportion of the substation assets are approaching the end of their 30–40-year design life. A focus of FY26 is the feasibility phase of the Substation Renewals Program. Aurizon Network is also considering options for the OHLE corrosion remediation in the Blackwater System.
- **Callemondah Yard** – the yard at Callemondah has grown over the last 30 years along with the expansion of the Blackwater System. The yard has a constrained footprint with Gladstone airport to the south. As such, the roads in this yard are close together. In addition, the electrical sectioning and signal interlocking arrangement result in outages affecting significant areas within the yard reducing throughput capacity during faults. Several assets require renewal across the yard infrastructure continuing through FY26, including turnouts and signal interlocking from the original 1970's construction. Given the system disruption of renewals in this area, Aurizon Network has developed a Callemondah Yard renewals strategy spanning multiple years to minimise access and operational impacts**.**

Corridor Strategy

The Blackwater System is a mix of aged assets and newer assets installed in the more recent WIRP, Blackwater duplications and Blackwater electrification projects.

The asset management strategy for the Blackwater System is to maintain and renew assets to hold the condition of the assets steady relative to the expected economic life. Generally, the level of asset availability is expected to be consistent with prior years.

Variable soil types and age of formation result in higher track resurfacing and formation renewal activity when compared to the other coal systems as well as higher susceptibility to weather related issues (mud holes etc).

Renewal activities in the Callemondah Yard are sequenced and integrated to minimise the impact on capacity where possible.

Maintenance activity is focused on inspecting and maintaining the in-situ condition of assets, repairing or implementing and maintaining minor holding works (including Temporary Speed Restrictions) following identification of a defect or infrastructure failure to minimise the impact and duration of unplanned outages.

Asset Renewals seek to renew or replace aged or degraded assets ahead of unplanned failure or obsolescence.

The below graphs in Figure 2 indicate the asset management strategy is effectively maintaining performance and reliability consistent with 4-year averages.

The number of incidents, cancellations, delays (including TSRs) and OTCI provide

- an indication of the performance of the system over time
- are triggers for Event Threshold Reporting that seeks to inform the asset management approach for each asset class
- Contribute to (amongst other factors) specific scope identification and selection

Delays and Cancellations measure the impact of incidents on the supply chain and are influenced by multiple factors including:

- Type and location of defect
- Incident response time
- Planning and scheduling
- Traffic management decisions

The OTCI index is a measure that trends track geometry at a system level. OTCI predominantly relates to the effectiveness over time of the Ballast Renewal and Resurfacing programs. It does not measure electrical or control system assets.

Please refer to the Glossary for further information on interpretation of these graphs.

Of note:

The 4-year average cancellations reduced significantly in FY2023 because of a period of relatively few cancellations in FY2021 and FY2022

Cancellations numbers can vary significantly from month to month as a result of significant and disruptive events. Major peaks in the cancellation chart are impacted by:

- January 2017: Derailment at Raglan (37 cancellations)
- January 2018: Derailment at Duaringa (127 cancellations, the chart cuts of at 70)
- April 2019: Derailment Callemondah (37 cancellations)
- October 2019 – March 2020: Various causes of cancellations across disciplines

- October 2022: AZJ contractor truck colliding with overhead (8 cancellations) plus various other causes
- March 2023: Broken Rail Tunnel (17 cancellations) and Late handback of closure (15 cancelled)
- April -May 2024: Dewirement Boonal (13 cancellations)

The 4-year average for all delay codes and specifically TSR delays has held relatively steady since FY2018 OTCI index has stabilised in an improved state, highlighting overall improvement to average track geometry condition. OTCI does not account for localised reliability impacts, traction or control systems assets.

Delay min/100km includes delays caused by incidents, planning and TSRs. During the prolonged wet period between Nov21 and March23, TSR delays were elevated resulting in overall increase in delays. TSRs tend to increase in the second part of the financial year, as the system is entering the wet period and the ground is saturated. TSRs tend to reduce in Q1 as the system is exiting the wet period and renewal work is undertaken.

Incident numbers have held steady or slightly decrease over time. FY25 YTD has seen an increase in incidents, driven by a rise in less impactful control systems incidents.

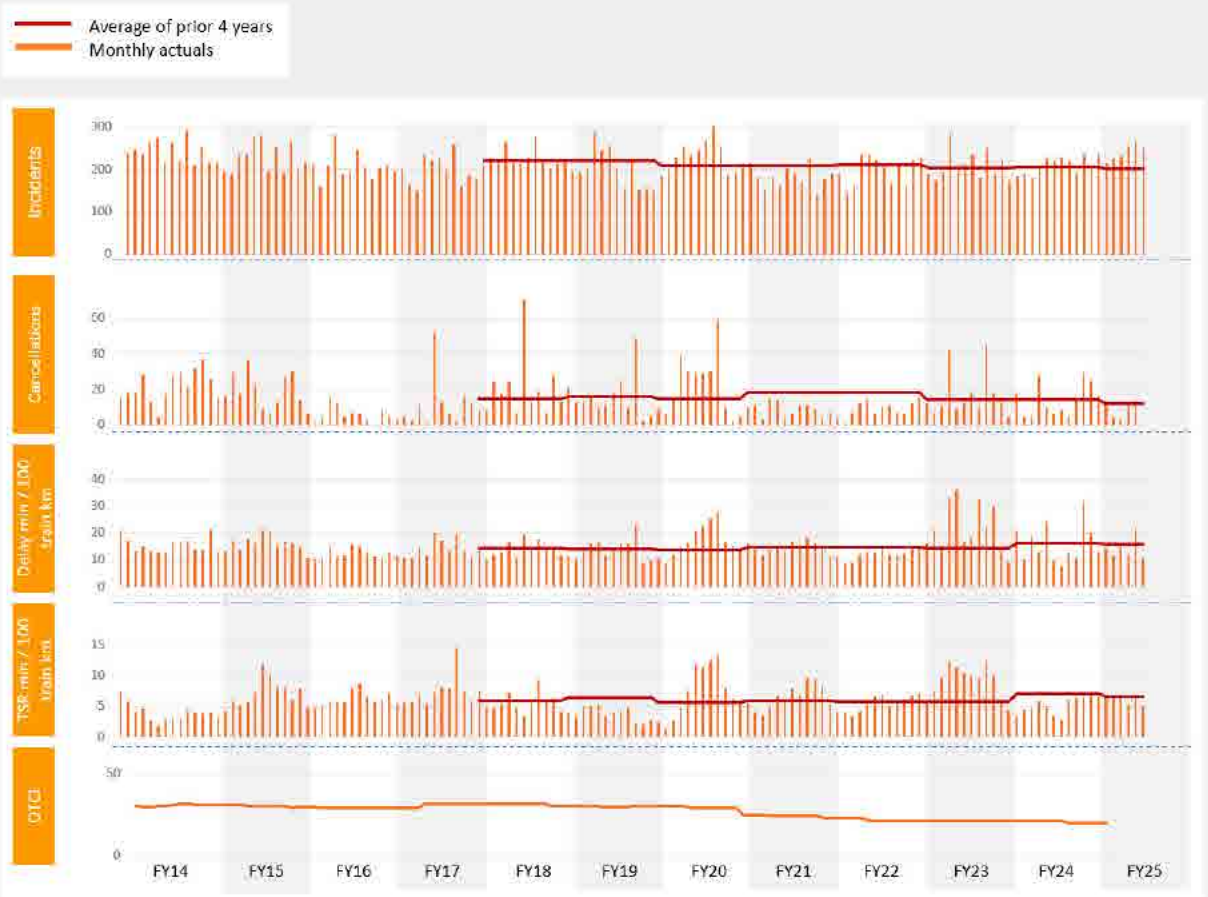


Figure 2 Blackwater Below Rail Performance 4-year average trends using monthly performance from FY2014 to October 2025

2.2 Blackwater System – Integrated Closure Plan

Specific Blackwater Supply Chain considerations

The supply chain typically operates in a 'production push' mode with RG Tanna and Wiggins Island Coal Export Terminal (WICET) being stockpile ports, while several producers have limited mine site stockpile capacity. Domestic terminals and processing facilities each have unique inventory and associated logistic requirements.

Specific scope items that require longer closures to execute, require increased engagement, planning and risk management to ensure supply chain inventories are managed.

The Blackwater system also interfaces with the NCL. Blackwater closures are aligned with QR NCL outages wherever reasonably possible to minimise the impact to passenger and freight services.

Closure planning considers peak demand periods of December and June, and closure conflicts with adjacent corridors/branch lines are avoided where possible.

Table 7 sets out the proposed Blackwater System integrated closure hours for FY26, including integrated system and branch line closures. Integrated system closures in Blackwater can impact the Central West Line (CWL) from Rocklands to Burngrove and/or the NCL from Callemondah to Rocklands.

Table 7 Planned Integrated Closures and Branch Closures – Blackwater System

FY26 Integrated System Closures													
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Location	CWL	CWL	NCL CWL	CWL			NCL CWL		CWL	NCL CWL	NCL CWL		
Hours	60	68	74	60			36		36	60	102		506

The total integrated closure hours for FY26 are 506hrs. The outages are a result of the duration and access requirements of specific driving path asset activities (i.e., the critical path scope). In Blackwater, the extended duration has provided an opportunity for the BCM to be integrated with the driving path scope to achieve optimal production rates and maximise scope delivery within the integrated closures.

In addition to the integrated closures, single line maintenance activities have also been planned throughout the year. Timing and duration of both the integrated closures and single line possessions are tested against delivering Committed Capacity as well as being coordinated with other supply chain participants where possible, to maximise supply chain alignment and throughput. The final Critical Asset Activities Power BI report that aligns with this FY26 Final Draft Proposal is available from 30 November 2024. Single line planned possession hours for FY26 are 1759 hours. Note hours are not reflective of customer impact as it does not consider works planned in the shadow of port outages or other works to reduce impact. These hours do not include moving products such as rail grinders, resurfacing, Ultrasonic Rail Inspections and Road Patrols, maintenance works to be planned throughout the year or asset activity planned around train services (Plan throughs) as they do not impact capacity or services.

Driving path activities listed in Table 8 have determined the duration of the planned integrated closures and access requirements in the Blackwater System during FY26B.

Table 8 Driving Path Activities - Blackwater

Closure	Driving Path Activities	Location
July **60-hour**	Bridge Rollout	Starlee to Rolleston
	Formation Renewal	Wycarbah to Warren

Closure	Driving Path Activities	Location
	RM902 Ballast Renewal	Bluff to Boonal
August **68-hour**	Track Upgrade and Rail Renewal	German Creek
	Culvert Renewals	Boonal
September **74-hour**	RM902 Ballast Renewal	Bluff to Umolo
	Formation Renewal	Wycarbah to Warren
	Culvert Renewal	Ambrose
	Culvert Renewal	Midgee
October **60-hour**	Bridge Rollout	Kabra to Warren
January **36-hour**	RM902 Ballast Renewal	Mt Larcom to Ambrose
	Track Upgrade	Callemondah Provisioning Shed
	Culvert Renewal	Wallaroo
March **36-hour**	RM902 Ballast Renewal	Rocklands to Gracemere
	Bridge Rollout	Dingo to Umolo
April **60-hour**	RM902 Ballast Renewal	Ambrose to Epala
	Interlocking Renewal	Callemondah
	Track Upgrade	Duaringa to Wallaroo
	Bridge Rollout	Crew to MacKenzie
	Level Crossing Renewal	Raglan to Marmor
May **102-hour (NCL)**	Interlocking Renewal	Callemondah
	Turnout Renewal	Callemondah
84-hour (CWL)	Level Crossing Renewal	Warren to Wycarbah
	Bridge Rollout	Crew to MacKenzie

Figure 3 illustrates the historical Blackwater integrated system closure hours in comparison to the FY26 Final Draft Proposal.

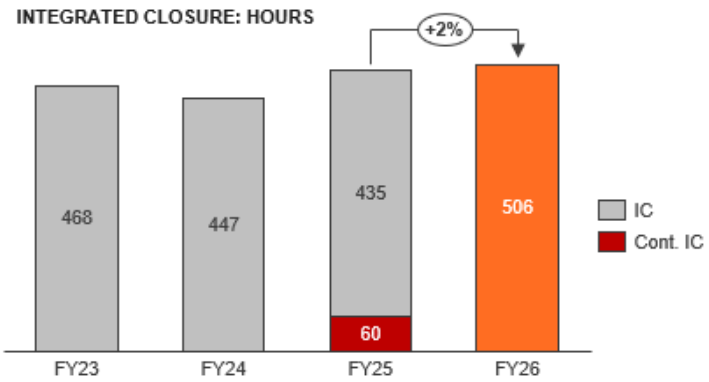


Figure 3 Trend of Integrated System Closure Hours from FY23 to FY26 - Blackwater System

2.3 Blackwater System – FY26 Maintenance Strategy and Budget

Aurizon Network has developed its Draft Maintenance Strategy and Budget for the Blackwater System having regard to all relevant matters outlined in clause 7A.11 of UT5, including the Maintenance Objectives. Aurizon Network considers its FY26 Final Draft Proposal provides an appropriate level of asset activity that will promote the safety, reliability and performance of the Blackwater System rail Infrastructure and seeking to deliver Committed Capacity.

2.3.1 Summary of Historic, Forecast and FY26 Maintenance Strategy and Budget

Aurizon Network's FY26 Final Draft Proposal for the Blackwater System provides for a Direct Maintenance Cost Allowance of $88.8m (excluding ballast undercutting plant depreciation) which is:

- $11.4m higher than the approved FY25 Maintenance Strategy and Budget
- $6.9m higher than Aurizon Network's current FY25 full-year forecast.

Figure 4 provides a summary of historic direct maintenance costs as well as the proposed direct maintenance cost allowance in respect of FY26.

To ensure comparability with prior periods, the direct maintenance costs shown in Figure 4 and Figure 5 exclude depreciation on ballast plant.

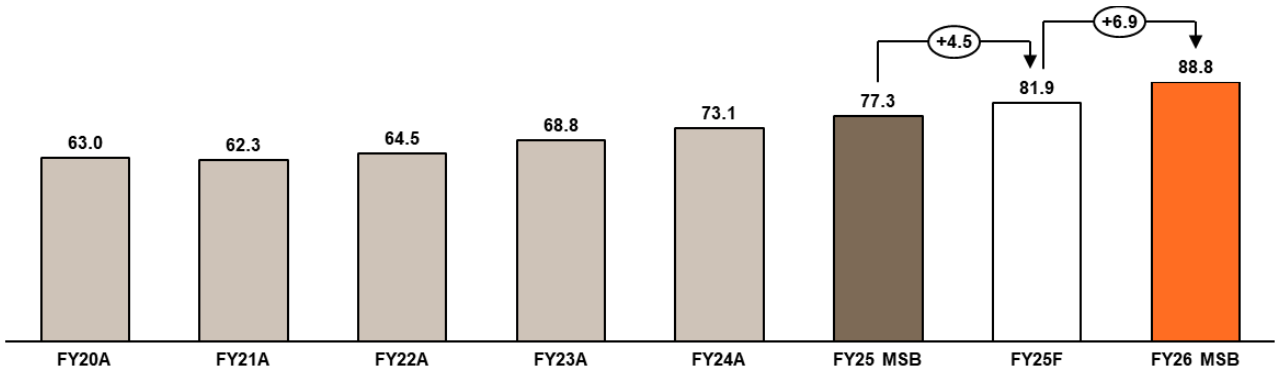


Figure 4 Direct Maintenance Costs - Blackwater System

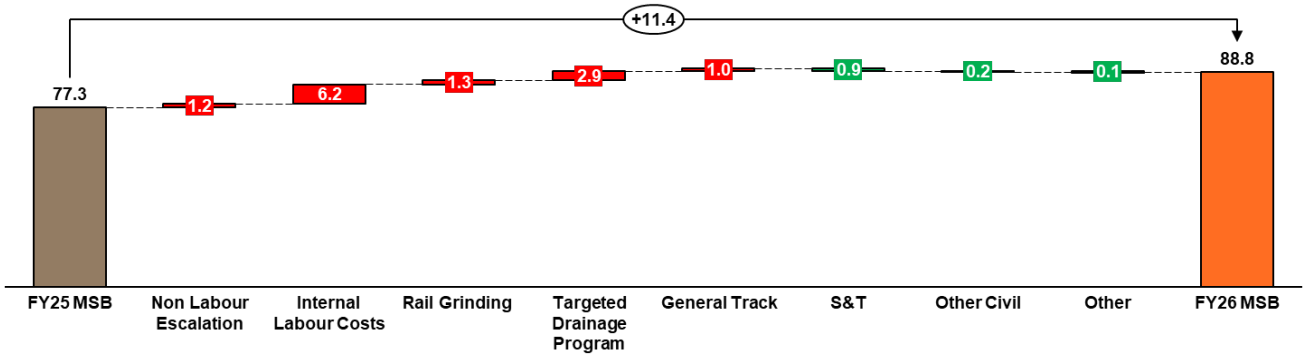


Figure 5 Direct Maintenance Cost Movement - Blackwater System

FY26 Draft Maintenance costs (excluding ballast undercutting plant depreciation) are budgeted at $88.8m. The increase in spend of $11.4m against the approved FY25 Maintenance Strategy and Budget is primarily driven by:

- **Non labour cost escalation (+$1.2m)** – annual cost escalation on contractors, materials, plant and other consumables.
- **Internal labour costs (+$6.2m)** – additional internal labour costs driven by:
  - annual increase required under the Infrastructure Enterprise Agreement and other Staff Agreements (~$1.6m)
  - correction of labour cost error identified in the FY25 approved budget which had the effect of understating labour costs by $1.2m
  - additional internal labour resource support for Civil Infrastructure to deliver uplift in corrective maintenance levels and to support additional branchline infrastructure associated with new Access Rights in FY26.
  - additional FTE to support internalisation of telecommunications maintenance activities
  - additional FTE to support ageing workforce and critical skill risks.
- **Rail Grinding (+$1.3m)** – increase in frequency at targeted curves at Westwood, Windah and Edungalba (Mainline) to improve rail surface condition and additional grind frequencies at critical turnouts, in particular at entry points to Yard and Ports.
- **Targeted drainage program (+$2.9m)** – reflects additional contractor support to execute targeted program to improve track and corridor drainage at sites where formation degradation is evident.
- **General Track (+$1.m) -** increase driven by additional materials and contractor cost to deliver corrective rail maintenance activities required to support asset condition.
- **Signalling & Telecommunications (-$0.9m)** – reduction in contractor spend following internalisation of telecommunications maintenance activities.
- **Other Civil (-$0.2m)** – reflects assumed reduction in corrective maintenance activity levels.
- **Efficiency** – FY26B reflects target efficiencies of $1.3m, which is broadly consistent with the efficiency target assumed in the FY25 approved budget. Initiative focus areas include labour, indirect costs, contractor spend and procurement activities. Refer Section 10.4.7 which describes areas of focus since the FY25 MRSB.

The FY25 forecast is $4.5m higher than the approved FY25[2] budget with the General Track maintenance category expected to breach the materiality thresholds set in UT5. This is predominately driven by the targeted drainage program ($2.6m) which was not provided for in the FY25 budget. The FY25 forecast is subject to review and will be updated at the end of Q2 FY25.

An overview of the methodology used to develop the FY26 maintenance budget is provided in Section 10.3.1 Budget Development of Maintenance Activities.

2.3.2 FY26 Maintenance Strategy and Budget

The maintenance program includes preventative, planned corrective and reactive maintenance activities.

The planned and preventive maintenance activities and inspections, as well as the planned mechanised production scope, are derived in line with the intervention periods as detailed in Aurizon Network's Asset Maintenance and Renewal Policy. This policy determines the inspection regime and period based on asset type condition and location.

The scope of planned corrective and reactive maintenance tasks is heavily dependent on the faults identified via the planned inspection programs. Aurizon Network has assumed that in FY26 the Coal System will see a similar level of faults that require planned corrective or immediate response as in prior years.

Section 9 Strategies by Asset Class, outlines the different approaches with regards to maintaining the Rail Infrastructure. These approaches lead to the application of the maintenance tasks across the system.

The proposed FY26 maintenance scope and budget for the Blackwater System is outlined in Table 9.

[2] Refer to Q1 FY25 Quarterly Performance Report for more detailed - information on costs expected to be incurred.

Table 9 FY26 Proposal - Maintenance - Blackwater System

Maintenance Item	Scope Units	FY25 Budget Scope	FY25 Budget ($m)	FY25 Forecast Scope	FY25 Forecast ($m)	FY26 Budget Scope	FY26 Budget ($m)
Resurfacing			10.2		9.7		10.3
Mainline	Km	896	8.5	770	8.1	896	8.6
Turnout	Site	173	1.7	173	1.6	173	1.8
Rail Grinding			9.4		9.8		11.0
Mainline	Km	[redacted]	6.7	[redacted]	7.3	[redacted]	7.8
Turnout	Site	[redacted]	2.7	[redacted]	2.4	[redacted]	3.0
Level Crossing	Track LX	[redacted]	0.1	[redacted]	0.1	[redacted]	0.1
General Track Maintenance			24.0		26.7		31.0
General Track	Activity		22.0		22.3		25.7
Corridor Maintenance	Activity		1.5		3.8		4.8
Ultrasonic Testing	Km	5,042	0.6	5,139	0.5	5,042	0.6
Signalling and Telecoms			12.5		14.4		14.3
Signalling Corrective	Activity		3.2		2.8		3.6
Signalling Preventative	Inspection		6.7		8.6		7.5
Telecoms Corrective	Activity		0.4		0.4		0.5
Telecoms Preventative	Inspection		2.3		2.5		2.6
Electrical			7.7		8.8		8.8
OHLE Corrective	Activity		2.6		2.2		3.2
OHLE Preventative	Inspection		2.9		4.9		4.1
Power Systems Corrective	Activity		0.7		0.5		0.6
Power Systems Preventative	Inspection		1.4		1.2		0.9
Structures and Facilities			5.5		5.5		5.8
Trackside Systems			1.0		1.3		1.3
Other Civil Maintenance			3.1		2.6		3.0
Other General Maintenance			3.9		3.1		3.3
Sub-Total			**77.3**		**81.9**		**88.8**
Ballast Undercutting Plant Depreciation			3.1		3.1		3.1
Total Direct Maintenance Costs			80.5		85.0		91.9
Non-Coal Allocation			(0.8)		(0.8)		(0.9)
Total			**79.6**		**84.2**		**90.9**

Note: Figures may not add due to rounding

For the Blackwater System:

- **Direct Maintenance Costs** (excluding ballast undercutting plant depreciation) are budgeted to increase by $11.4m from the FY25 Budget.
- **General Track Maintenance (+$7.0m)** – increase driven by additional internal labour support, contractor support and rail materials to support Civil Infrastructure discipline in delivering an uplift in corrective maintenance levels predominantly relating to rail maintenance activities[3]. The FY26 budget also reflects additional contractor support to execute the targeted drainage improvement program.

[3] Refer to additional information presented to RIG Producer Group – FY26 v FY25 Draft Overview 17.01.2025

Additionally, an increase in preventative and corrective maintenance activities and forecast expenditure has been included relating to an existing branch line that did not have long-term Access Rights during the development of the FY26 MRSB. An end user has secured long-term Access Rights and consequently the forecast expenditure associated with this branch line will be included within the final draft MSB for FY26, with the customer subject to ongoing pricing tests on infrastructure associated with and the commencement of new Access Rights[4].

- **Rail Grinding (+$1.6m)** – increase driven by contract escalation and targeted increases in grind frequencies to support asset condition resulting in increased Mainline [redacted], Turnouts [redacted] and Level Crossing grinding [redacted] scope.
- **Resurfacing (+$0.1m)** – spend expected to be broadly in line with FY25 budget.
- **Other Civil (-$0.2m)** – spend expected to be broadly in line with FY25 budget.
- **Signalling & Telecoms (+$1.8m)** – increase driven by higher Internal Labour cost with the annual increase required under the Infrastructure Enterprise Agreement and other Staff Agreements (including shift count allowances), additional FTEs to support internalisation of telecommunications maintenance activities, additional FTE to support ageing workforce and critical skills risks, as well as the correction of labour cost error identified in the FY25 approved budget which resulted in an understatement of labour costs. This is offset by a reduction in Contractor spend following internalisation of telecommunications maintenance activities.
- **Electrical (+$1.2m)** - increase driven by higher Internal Labour cost with the annual increase required under the Infrastructure Enterprise Agreement and other Staff Agreements (shift count allowances), and the correction of labour cost error identified in the FY25 approved budget which resulted in an understatement of labour costs. This is offset by a reduction in Contractor spend following internalisation of telecommunications maintenance activities.
- **Ballast Undercutting Plant Depreciation** – ballast undercutting plant depreciation as a total is largely in line with FY25B, with the allocation between systems based on the number of days that the ballast plant is expected to be operating in the Blackwater system in FY26.
- **Non-Coal Allocation** – this adjustment reflects an allocation of costs to non-coal services and is calculated by applying the actual non-coal volumes railed in Blackwater during FY23 to the QCA-approved AT1 Reference Tariff for FY26.

Figure 6 sets out a summary of historic, forecast, and budgeted direct maintenance costs by maintenance category. To ensure comparability between periods, the direct maintenance costs presented in Figure 6 exclude depreciation on ballast undercutting plant.

[4] *Access Charges for the relevant Train Service will be set in accordance with the UT5 pricing principles and any incremental costs will be considered when calculating the 'Minimum Revenue Contribution'*

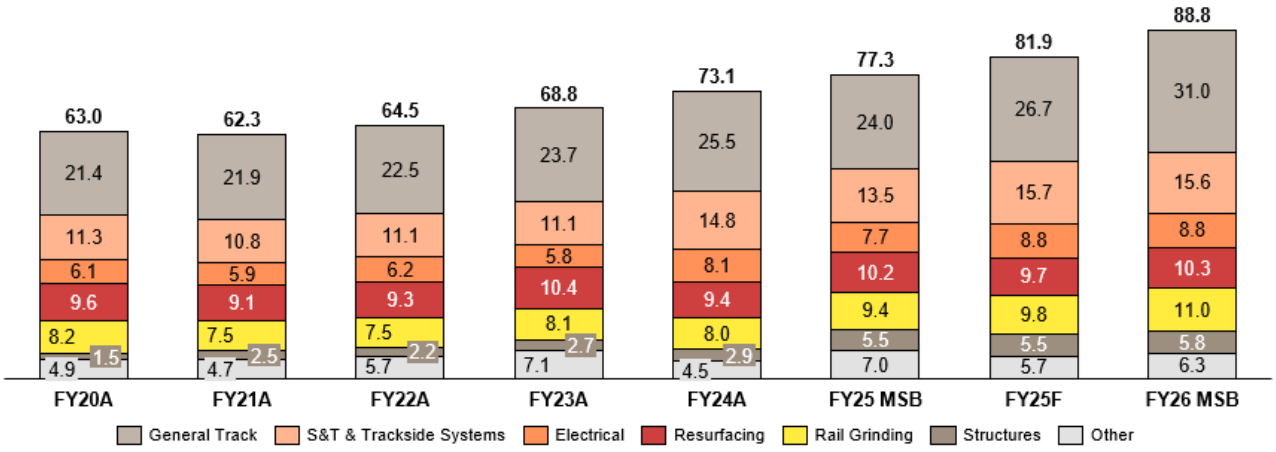


Figure 6 Direct Maintenance Costs - Blackwater System

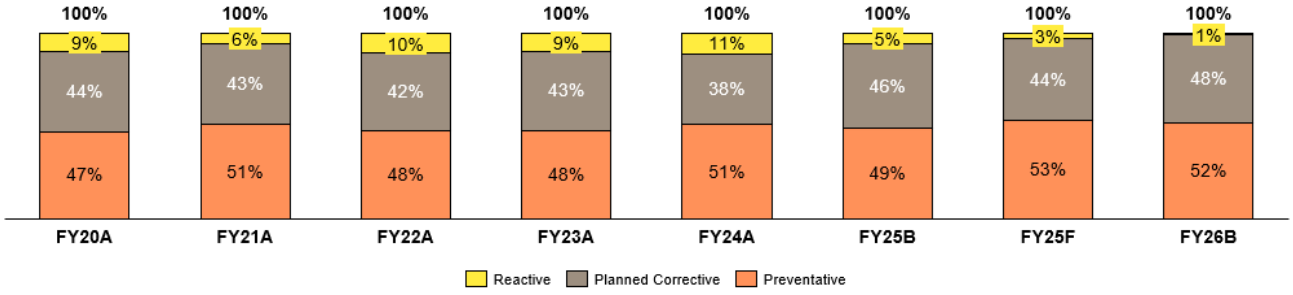


Figure 7 Preventative/Planned Corrective Maintenance Spend Composition - Blackwater System

Figure 7 illustrates the proportion of preventive, planned corrective and reactive maintenance expenses in the Blackwater System over time. Approximately 52% of Blackwater System maintenance spend in FY26 is expected to be preventive in nature.

Additional detail in relation to the make-up of costs for each maintenance activity has also been provided to the RIG Expert Advisor.

2.4 Blackwater System – FY26 Renewals Strategy and Budget

Aurizon Network has developed its Draft Renewals Strategy and Budget for the Blackwater System having regard to all relevant matters outlined in clause 7A.11 of UT5. Aurizon Network considers its FY26 Final Draft Proposal provides an appropriate level of asset activity that will promote the safety, reliability and performance of Blackwater System rail infrastructure and seeking to deliver Committed Capacity.

2.4.1 Summary of FY26 Renewals Strategy and Budget

Aurizon Network's FY26 Draft Maintenance Renewals Strategy and Budget for the Blackwater system provides for an Asset Renewals requirement of $127.7m which is:

- $20.4 lower than the approved FY25 Renewals Strategy and Budget
- $8.7m lower than Aurizon Network's current FY25 forecast.

Further details of changes to the FY25 program have been detailed as part of the Quarterly RIG reporting process.

A summary of the FY26 renewals budget for the Blackwater System is outlined in Table 10 below.

Table 10 FY26 Renewals Strategy and Budget

Renewals Item	Assets Included	FY25 Approved Budget	FY25 Forecast	FY26 Draft Budget
Civil Assets		126.0	114.9	105.8
Permanent Way	Rail, Track, Sleeper, Turnouts	33.8	30.3	23.2
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	54.2	52.9	51.8
Structures	Culverts, Bridges	23.6	20.1	13.2
Civil Renewals	Formation, Level Crossings, Access Points	14.4	11.6	17.6
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission	18.1	17.1	14.8
Electrical Assets	Overhead Line Equipment and Power Systems	4.0	4.5	7.1
Total		**148.1**	**136.4**	**127.7**

Note: Figures may not add due to rounding.

The FY26 budget variance to the approved FY25 Renewals Strategy and Budget is primarily driven by:

- **Cost Escalation** – Variations across program largely impacted by labour and non-labour escalation outlined in Section 10.3 Budget Setting and Procurement.

- **Permanent Way (-$10.5m)** – Rail renewal scope fluctuates from year to year based on the quantity of rail kilometres that will reach wear limits or will require replacement due to surface defects or corrosion. Total rail replacement to achieve the annual strategic CQCN target is delivered through a combination of Rail Renewal and Track Upgrade scope. Track Upgrade scope (a combination of sleeper and rail renewal) is consistent with FY25 budget. Additionally, in FY26 there are 2 less turnouts planned to be renewed compared to FY25.
- **Ballast Cleaning (-$2.4m)** – In FY26, mainline ballast undercutting scope is relatively consistent with the FY25 budget. Cost estimates have been informed by expected ballast return rates which have been based on information collected through pre-dig assessments. Pre-dig information has been used to help inform ballast quantity requirements, ballast delivery costs and ballast removal (spoil) costs. The cost increase in mainline ballast undercutting is offset by lower levels of mainline excavator undercutting.
- **Structures Renewals (-$10.4m)** – The FY26 budget for Bridge Renewal scope in the Blackwater system is lower than FY25, as FY25 included a large strategic bridge renewal at Archer. The Bridge Renewal Program also includes bridge component renewals and in FY26 will only see the renewal of a bridge relieving slab (approach/transition slab) at MacKenzie River. Similar to FY25, the FY26 Culvert renewal program will see 12 renewals planned for FY26. However, the mix has changed with more Reinforced Concrete Box Culvert renewals than in FY25, which are circa double the cost of Reinforced Concrete Pipelining and four times the cost of eliminating or removing the culvert.
- **Civil Renewals (+$3.2m)** – Variance driven by the inclusion of a major strategic Slope Stability renewal at Rocklands due to rock cutting face failures in this location, a small increase in planned Formation Renewal, and 21.5km of planned Corridor Fencing compared to prior years. From FY26, the Corridor Fencing renewal program will include a quantity of planned renewals scope. These renewals will be focussed at locations of higher risk (local to more populated areas) identified through trespass incidents as well as locations where livestock are more able to enter the corridor due to the condition of the fence. At an annualised renewal rate of approximately 1.3% of the asset base, this investment will serve to improve the overall condition of the Corridor Fencing in Blackwater and support underpinning legislative (Transport Infrastructure Act) requirements. Additionally, the FY26 budget for formation renewals has reduced compared to the FY25 budget.
- **Electrical (+$3.1m)** – Increased strategic scope for Traction Substation Renewals compared to prior years and baseload scope for Overhead Line Equipment (OHLE) renewals.
- **Control Systems (-3.3m)** – To provide stability in the delivery of the program year on year, scope to be delivered in FY26 has been reduced to allow for prior year scope that has been deferred to FY26. This will assist in reducing variability of flow of works between years. ‘Rollover’ scope will continue to be reported as FY25 approved scope (or for the year in which it was approved) in line with the reporting approach agreed with the Rail Industry Group. Additionally, there is some reduction in Optical Fibre scope being delivered in FY26 compared to prior years, as this program is nearing renewal completion (FY28).

Figure 8 below shows the distribution of scope locations as well as the relative spend per scope. As is typical of prior years in the Blackwater system, the works completed are most concentrated on the NCL and Central mainlines aligned to these track sections seeing 100% of system traffic. There is also investment on branch lines and individual mine balloon loops.

The largest single scope item for FY26 is the Mainline Undercutting renewal (7.38km) at Archer at the 623.2km to 630.57km on the Blackwater Mainline.

Figure 8 Map of Scope Location and Spend FY26

Set out in Table 11 is a summary of Blackwater System renewals as a proportion of total system assets.

Table 11 FY26 Final Draft Proposal - Renewals as a % of Total System Assets and Blackwater System

Renewals Item	Assets Include	Total system Assets	FY25 RIG Approved Scope	FY26 Proposed Scope	FY26 scope % Total System Assets
Civil Assets					
Permanent Way	Rail, Track, Sleeper, Turnouts	2,352 rail km 1,176km sleepers 1,176 track km 431 turnouts	31.0 rail km 0.8km sleeper 4.7km track upgrade 4 turnouts	15.9 rail km 0.9km sleeper 4.7km track upgrade 2 turnouts	0.7% 0.1% 0.4% 0.5%
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	1,176 track km Mainline 431 Turnouts 150 bridges	63.2 track km Mainline 17 Turnouts 11 bridges	51.8 track km Mainline 17 Turnouts 4 bridges	4.4% 3.9% 2.7%
Structures	Culverts, Bridges	150 bridges 1,473 culverts	5 bridges 12 culverts	1 bridge (relieving slab only) 12 culverts	0.7% 0.8%

Renewals Item	Assets Include	Total system Assets	FY25 RIG Approved Scope	FY26 Proposed Scope	FY26 scope % Total System Assets
Civil Renewals	Formation, Level Crossings, Access Points and Security and Fencing	1,176km formation 236 level crossings 1569km fencing	0.8km formation 3 level crossings 0km	1.1km formation 3 level crossings 21.5km	0.1% 1.3% 1.3%
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission		20 Sites 16 Units 1 Link 27.0km Optic Fibre	18 Sites 51 Units 8.0km Optic Fibre	
Electrical Assets	Overhead Line Equipment, Feeder Stations, Autotransformer, SCADA system		1 Site 10 Units	12 Site 16 Units 13 Structures	

Note:

- *Corridor Security and Fencing was managed in previous years through a reactive allocation, in FY26 planned scope has been identified for renewal.*
- *Control Systems count of assets is a collective of sites, nodes, cable routes, communications assets and systems and is included to indicate level of work comparable to prior year.*
- *Electrical count of assets is a collective of units, earthing and bonding, current detection, transformer renewal, protection relay replacement etc.*

Figure 9 illustrates the FY25 Approved Budget and proposed FY26 asset renewals by type (categorised as baseload scope, reactive renewals, strategic renewals and future scope).

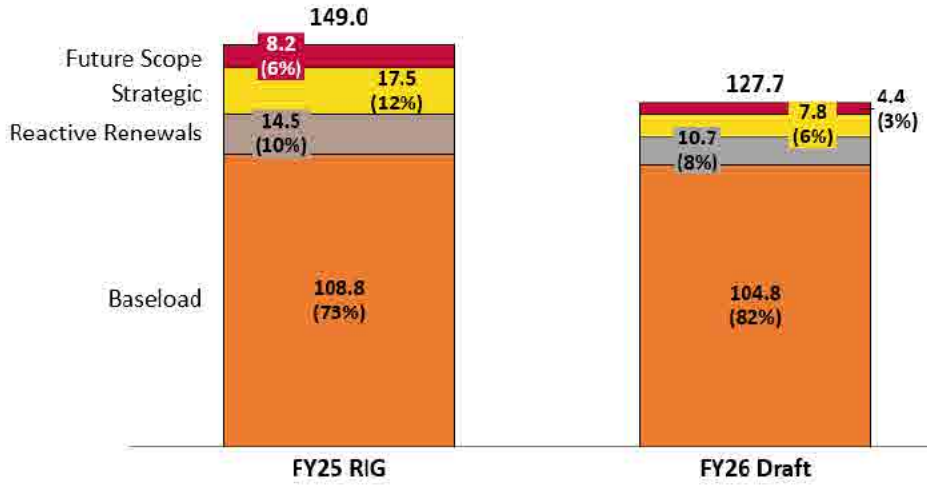


Figure 9 Split of Renewals by Category FY25B and FY26 Final Draft Proposal - Blackwater System ($m)

In relation to the above, the following comments are made:

- **Baseload renewals** – represents the majority of the FY26 asset renewal program and includes rail renewal, formation, structures and ballast cleaning.
- **Reactive renewals** – reflects the inclusion of an allocation for scope in response to changes in asset condition in the year of execution. In this year, it is predominantly related to turnout components, formation, mainline excavator and turnout ballast undercutting.
- **Strategic scope** – reflects the continuation of the Optic Fibre, Train Control (UTC/DTC), Autotransformer and TETRA Radio rollout renewal programs, a mainline pantograph monitoring (PanCam) renewal and scope development relating to the Electrical Substation Renewal Program.
- **Future scope** – incorporates the cost of designs relating to structures, level crossings, turnouts and formation to be delivered in future years. Further information in relation to the scope categorisation used by Aurizon Network in the development of the FY26 Final Draft Proposal is outlined in Table 66.

2.4.2 Details of the FY26 Renewals Strategy and Budget

This section provides further information on the rationale for renewal in FY26.

Section 9, Strategies by Asset Class, as well as Appendix 3, Options for Renewal, provide further information on the rational for renewal, the risks being managed and alternate approaches considered when planning a renewal.

Additional information is provided in relation to strategic scope items given these are either new or continuing programs of scopes that are not typical of scope seen in previous years.

This section should be read in conjunction with Appendix 1 Aurizon Network's Renewal Scope Detail Report. This Power BI report provides detail on the individual scope items including works location and Combined Risk Assessment (CRA) score.

The maps included in this section indicate the location of the scope proposed in FY26.

Aurizon Network notes that the prioritisation of renewals scope is based on currently available information and that this prioritisation may change over the period prior to execution due to environmental factors, relative degradation rates or other considerations. Changes to the proposed scope will be dealt with through the reporting and change management processes as appropriate.

2.5 Civil Assets – Permanent Way

2.5.1 Permanent Way Renewal Program

Aurizon Network's FY26 Final Draft Proposal provides $23.2m to deliver the scope of permanent way renewals in the Blackwater System. Table 12 summarises the scope and budget for each relevant renewal item.

Table 12 FY26 Permanent Way Renewal Program

Renewal Item	Scope Type	FY26 Scope	Scope Unit	FY26 Budget ($m)
Rail Renewal	Baseload	15.9	Rail km	7.7
Sleeper Renewal	Baseload	1,244	Sleepers	1.4
Track Upgrade	Baseload	4.55	Track km	3.9
Turnout Renewals	Baseload	2	Turnout	3.2

Renewal Item	Scope Type	FY26 Scope	Scope Unit	FY26 Budget ($m)
Turnout Components	Reactive Renewals		Lumpsum	3.3
Turnouts Designs	Future Scope	15	Turnouts	0.3
Permanent Way Other	Baseload	0.1	Track km	2.5
	Future Scope		Lumpsum	0.1
	Reactive Renewals		Lumpsum	0.8
Total				**23.2**

The FY26 Rail Renewal program includes a large renewal at Grantleigh, driven through rail wear in the tighter radius curves in this section. Multiple sites have been combined to be delivered as one large site. 3.7 rail km are assessed at a future condition of 3.8 and will reach renewal limits late CY 2025. This site has seen 17 cancelled services and over 4000 delay minutes attributed to rail defects (FY21 to FY24).

The Track Upgrade at Duaringa includes 65 rails across 5 sites (a total of 7.0 rail km) assessed at a future condition of 3.8, with wear rates forecast to reach renewal limits early in FY27. This site has seen 13 cancelled services, 11,000 delay minutes and 250 delayed services over the past 5 years associated with rail defects.

Permanent Way Other Baseload Scope includes planned Slab Track renewal at Callemondah Provisioning Shed and Kinrola TLO. Both sites have a future condition rating of 4 with severe rail and fastener corrosion as well as supporting concrete slab degradation.

The FY26 Turnout renewal program includes two turnouts at Callemondah to be delivered in line with the multi-year Callemondah strategy. Turnout Designs are delivered over a multi-year program and are grouped where possible for efficiency, which can lead to variations between design costs each year.

All sleeper renewal scope and track upgrade scopes will involve upgrading existing fist clip sleepers with concrete pandrol e-clip sleepers. For the remaining scope, a like-for-like renewal has been adopted. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.1 provides a summary of the Asset strategy for Permanent Way.

Figure 10 Rail, Sleepers, Track Upgrade and Turnouts Renewal Sites - Blackwater

2.5.2 FY26 Permanent Way Scope – Asset Condition and Criticality Assignment

Figure 11 plots the permanent way renewals against asset condition and location / operational criticality. All planned FY26 renewals are either advanced in wear or degradation and / or located in track sections identified as critical to maximising throughput.

While the track upgrade site at Kinrola TLO has a contextually low criticality index of 1.7, the asset condition is rated 4 due to the severe corrosion through the loadout.

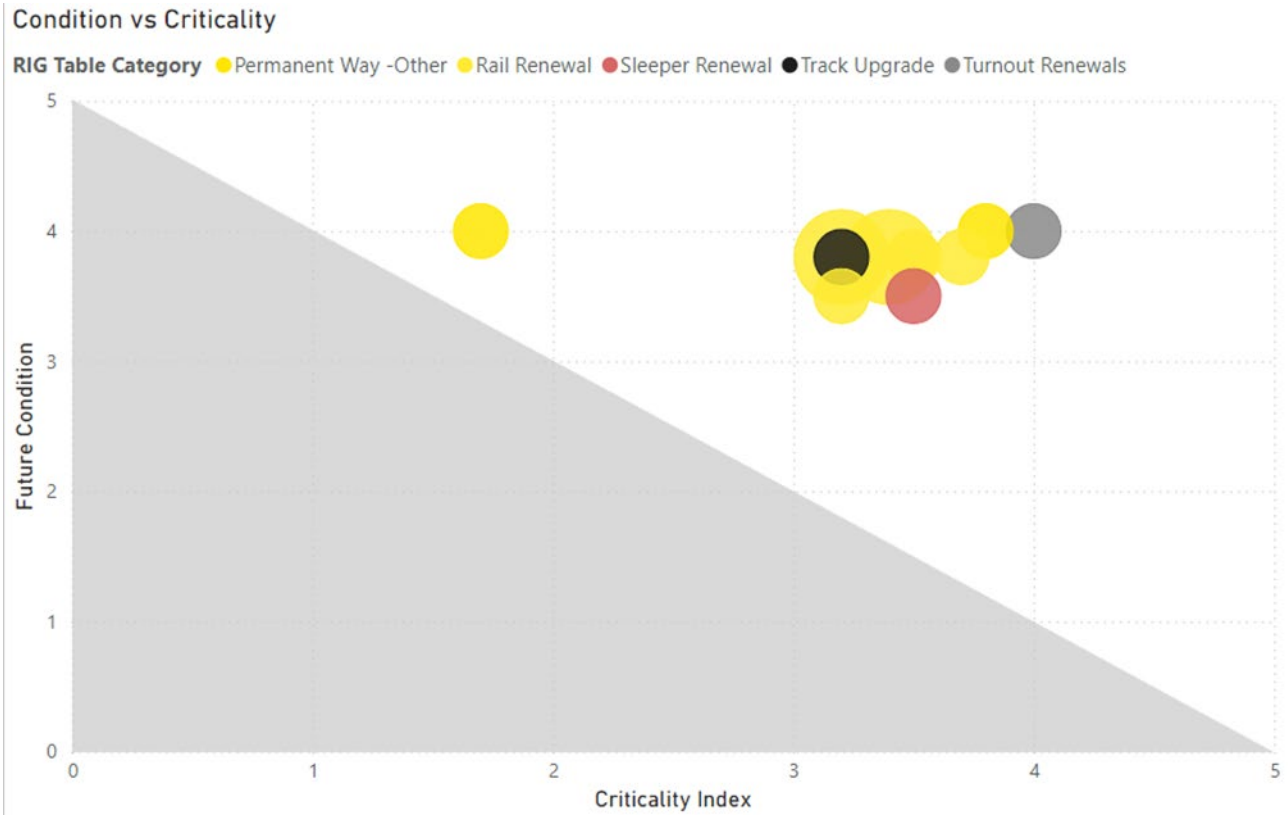


Figure 11 Permanent Way - FY26 Scope Priority Ratings - Blackwater System

2.6 Civil Assets – Ballast Cleaning and Renewals

2.6.1 Ballast Cleaning Renewal Program

In FY26, Aurizon Network proposes to undertake 55.0km of Ballast Cleaning, across mainline undercutting, reactive undercutting works and Bridge Rollouts, at a cost of $51.8m. Table 13 summarises the scope and budget for each relevant renewal item.

It should be noted that for Ballast Cleaning, historical performance indicates that approximately 10% of scope can be lost each year from unplanned impacts (e.g. wet weather, incidents). In such circumstances, a loss of scope will not directly translate to a proportional reduction in cost given the predominantly fixed-cost nature of Ballast Undercutting.

Table 13 FY26 Ballast Cleaning Renewal Program

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Mainline Undercutting	Baseload	51.8	Track km	38.7
Mainline Excavator Undercutting	Baseload	0.4	Track km	0.5
	Reactive Renewals	2.7	Track km	1.9
Turnout Undercutting	Baseload	14	Turnout	3.4
	Reactive	3	Turnout	1.1
Bridge Rollout	Baseload	4	Site	4.7
Monumenting	Baseload	1	Site	0.6
Ground Penetrating Radar	Future Scope		Lumpsum	0.9
Total				**51.8**

Actual ballast condition can vary significantly between locations and can lead to fluctuations in the actual return rates compared to the assumed amount. In circumstances where ballast condition and return rates are lower than assumed, this can slow ballast undercutting production, and result in scope not being completed within the assigned access opportunity.

In FY26, pre-digs have been completed for a high proportion of Mainline Undercutting scope locations resulting in an average return rate for the crib (centre of the track) and shoulder at 11% and 27% respectively. Pre-dig results have helped to inform planning assumptions, including the volume of material to process (ballast profile) and screenability. Within the Blackwater scopes, this deeper understanding of latent ballast condition indicates that an increased volume of ballast will be required given the high spoiling rates of the selected locations. This increase in ballast material required, coupled with the need to remove the spoiled ballast from the worksite, has contributed to an increase in estimated unit cost compared to prior years. The pre-dig information has enabled an improved level of certainty of closure requirements for site specific scope items.

Below are two of the Mainline Undercutting activities that are the driving scope for closures in FY26 at Mt Larcom, Rocklands, and Kabra.

At Mt Larcom, 1.78km will be undercut. This site has a future condition rating of 3.9 with fouling between 40 and >60 PVC. Both locations have seen cancellations, TSR's and associated delays because of track alignment and ballast condition. Ballast undercutting at this site will improve ballast condition and reinstate free drainage of track structure resulting in an improvement in track alignment and stability. Additionally, there have been several unplanned track access requirements to rectify mud holes due to lack of drainage from fouled ballast.

At Rocklands, 3.3km will be undercut. This site has a future condition rating of 3.9 with fouling between 40 and >60. Ballast undercutting at this site will improve ballast condition and reinstate free drainage of track structure resulting in an improvement in track alignment and stability.

FY26 will see reduced Mainline Excavator Undercutting as RM902 Mainline Undercutting is more suited to the required scope to be completed. There are further reductions in Mainline Excavator Undercutting scope adjacent to the Turnout Undercuts sites, where these smaller sections are now included within the Turnout Undercutting scope adjacent to the Turnout Undercuts sites, where these smaller sections are now included within the Turnout Undercutting scope.

In FY26, there are 4 Bridge Rollout sites at a total of 0.8km compared to FY25 that included 11 sites at a total of 1.0km with similar condition ratings. Cost drivers within the program are more dependent on-site mobilisation/demobilisation as well as site specific scope (e.g. rail/sleepers/formation renewal, the requirement for temporary works and requisite establishment of access).

The MacKenzie River Bridge scope forms over half the scope quantity of the bridge ballast renewal program and is a driving scope item with 500m of bridge ballast replacement due to severely fouled ballast with mud holes forming at bridge ends and on the bridge itself. At this location Maintenance teams have been topping up ballast at the bridge ends in order to maintain safe track geometry, due to track transition issues, resulting from degradation at the formation and relieving slab interface at the bridge abutments, as well as observable sink holes in a high embankment near the bridge. Additionally, there have been pumping sleepers and multiple geometry exceptions requiring holding works. 5 corrective maintenance activities to correct top and line issues on the bridge have been undertaken since 2021 and three mud hole repairs. Failure to complete these works will see additional corrective repair activities required.

At Kabra, a 48m bridge ballast replacement will be undertaken. This site has a future condition rating of 3.7 with fouling between 40 and >60 PVC. There have been four corrective maintenance incidents since 2022 and over 3,000 delay minutes attributed. The renewal will reinstate clean ballast and reduce corrective maintenance requirements at this location.

An allocation to re-establish a portion of monuments is included in the Ballast Cleaning Program in FY26. This includes detailed survey, design and installation of new track data plaques. This ensures that future track maintenance activities reinstate track to the design alignment. The alignment and height of track moves over time due to temperature changes, train operations, maintenance and construction activities which can give rise to track buckles, breaks, accelerated rail wear, contact wire geometry exceptions (in electrified systems) and impacts to rollingstock. Track monuments are located within the rail corridor immediately adjacent to track as fixed in-ground posts or on electrical masts to indicate the correct level and position of the track. Measurements are taken from these to confirm the correct level and position of the track to ensure that the ballast cleaning activity and associated resurfacing correctly locates the track to the design alignment.

Ground Penetrating Radar (GPR) data provides important information to help understand ballast and sub-soil conditions. This information is used to measure fouling and to allow comparison of the FY26 data against prior data sets to understand fouling degradation and plan for future renewal requirements. GPR is a critical input to the Aurizon Ballast Condition Analyser tool that utilises historical GPR, historical undercutting and track resurfacing data to predict ballast fouling growth at the site level to identify future scope locations.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.5 provides a summary of the Asset strategy for Ballast Cleaning.

Detailed information on the development of the ballast cleaning program is included in Section 10.3 Budget Setting and Procurement.

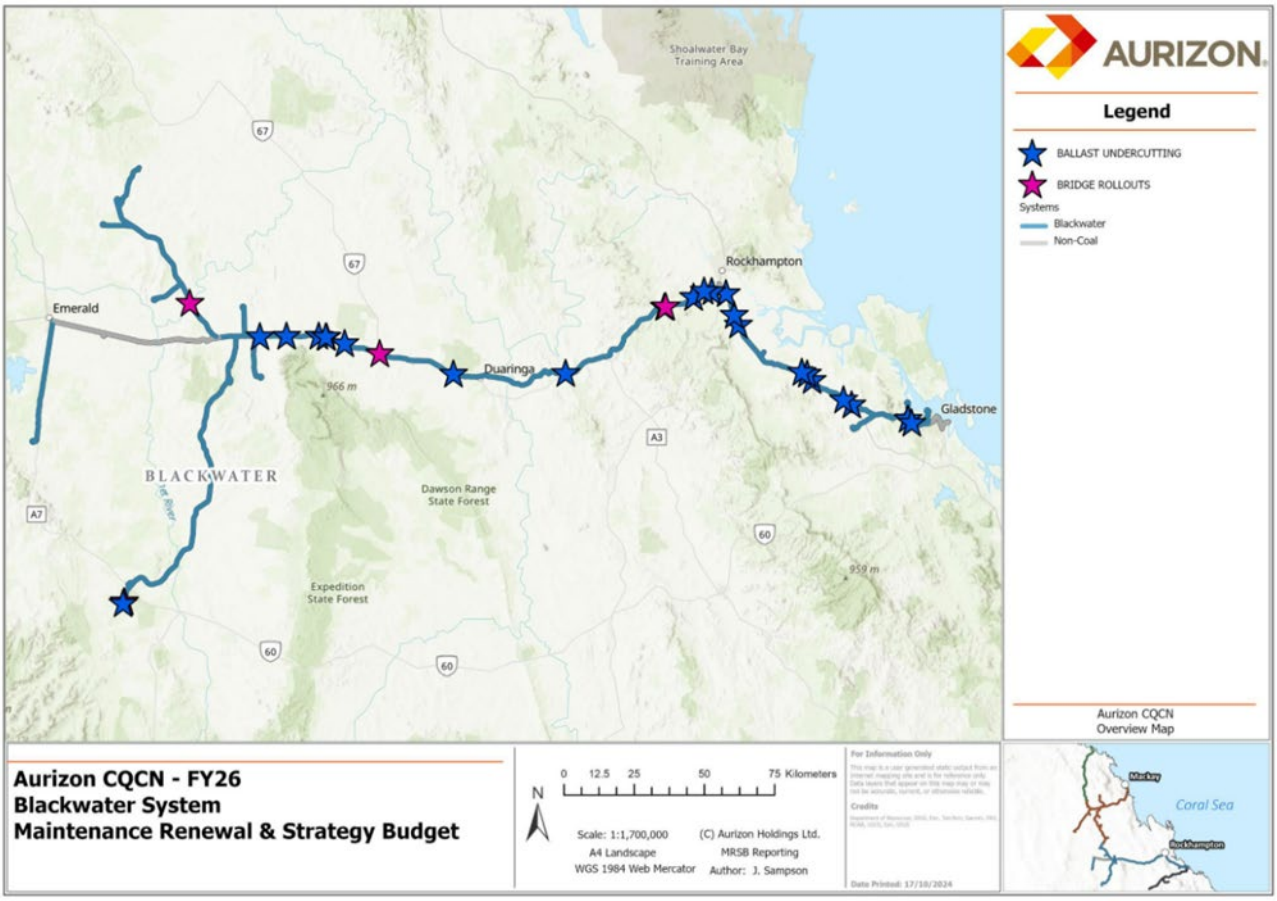


Figure 12 Ballast Cleaning and Bridge Rollout Sites - Blackwater System

2.6.2 Ballast Cleaning FY26 Scope – Asset Condition and Criticality Assignment

Figure 13 plots planned Ballast renewals against asset condition and location / operational criticality. All sites have a condition of 3 or above with most sites being in more critical track sections of the Blackwater System. The sites that have lower Criticality Index, have a Condition Score of 4.4 or above, that have been prioritised for renewal due to their high condition ratings. These sites are a Bridge Rollout and Turnout Undercutting at Rolleston and a Bridge Rollout at MacKenzie River.

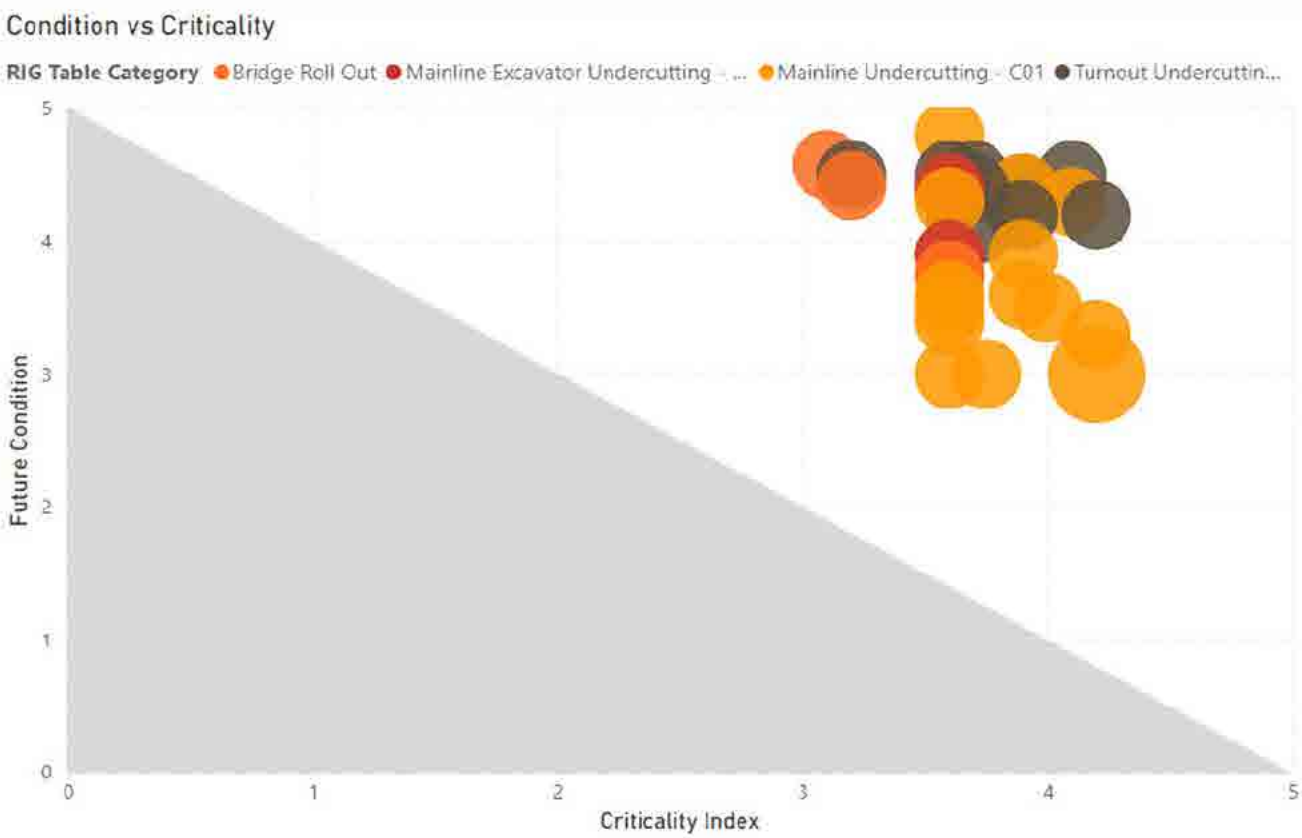


Figure 13 Ballast Cleaning - FY26 Scope Priority Ratings - Blackwater System

2.7 Civil Assets – Structure Renewals

2.7.1 Structures Renewal Program

The Blackwater System has a total of 150 Bridges and 1,473 Culverts which are designed to allow the natural flow of water through the rail network. In FY26, Aurizon Network proposes to undertake the renewal of 12 structures and design of an additional 27 sites at a cost of $13.2m.

Table 14 FY26 Structures Renewal Scope - Blackwater System

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Bridges Design	Future Scope	1	Site	0.1
Bridges (Component) Renewal	Baseload	1	Site	0.5
Culvert Design	Future Scope	26	Site	1.0
Culvert Renewals	Baseload	12	Site	11.6
Total				**13.2**

The FY26 Final Draft Proposal for Bridge Renewal scope in the Blackwater system is lower than FY25, as FY25 included a large strategic bridge renewal at Archer. The Bridge (Component) Renewal Program in FY26 will see the relieving slab (approach/transition slab) renewed at MacKenzie River bridge – integrated into the bridge ballast renewal program.

Similar to FY25, the FY26 Culvert renewal program will see 12 renewals planned for FY26. However, the

mix has changed with more Reinforced Concrete Box Culvert renewals than in FY25, which are circa double the cost of Reinforced Concrete Pipelining and four times the cost of eliminating or removing the culvert. In FY26, it is proposed to undertake nine Reinforced Concrete Box Culvert renewals and one Reinforced Concrete Pipelining as well as the removal of two culverts. Each of the RCBC renewals involve either the removal and replacement of existing concrete culverts or upgrade the existing culvert to a longer life asset. The Culvert renewal at Callemondah will see the removal and replacement of a 31m culvert under 4 tracks (11 cells) including concrete aprons on both the inlet and outlet. The existing culverts are aged and showing an ever-increasing number of defects that are of both a minor and moderate nature. The current structure has a future condition score 4.5. Failure of one or multiple cells of culvert bank would manifest in track alignment defects requiring the imposition of significant operational restrictions and likely require an immediate repair causing significant disruption to the operation of Callemondah Yard.

Where possible, Aurizon Network has adopted alternate approaches for the Structures scope in FY26, by lining aged pipes for 1 of the 12 sites, this will see the existing concrete box culverts sleeved with a reinforced concrete lining system. This option for these locations can be completed without impacting capacity while providing a new load-rated structure, thereby avoiding cost and access impacts associated with a total replacement of the culvert.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.6 provides a summary of the Asset strategy for Structured assets.

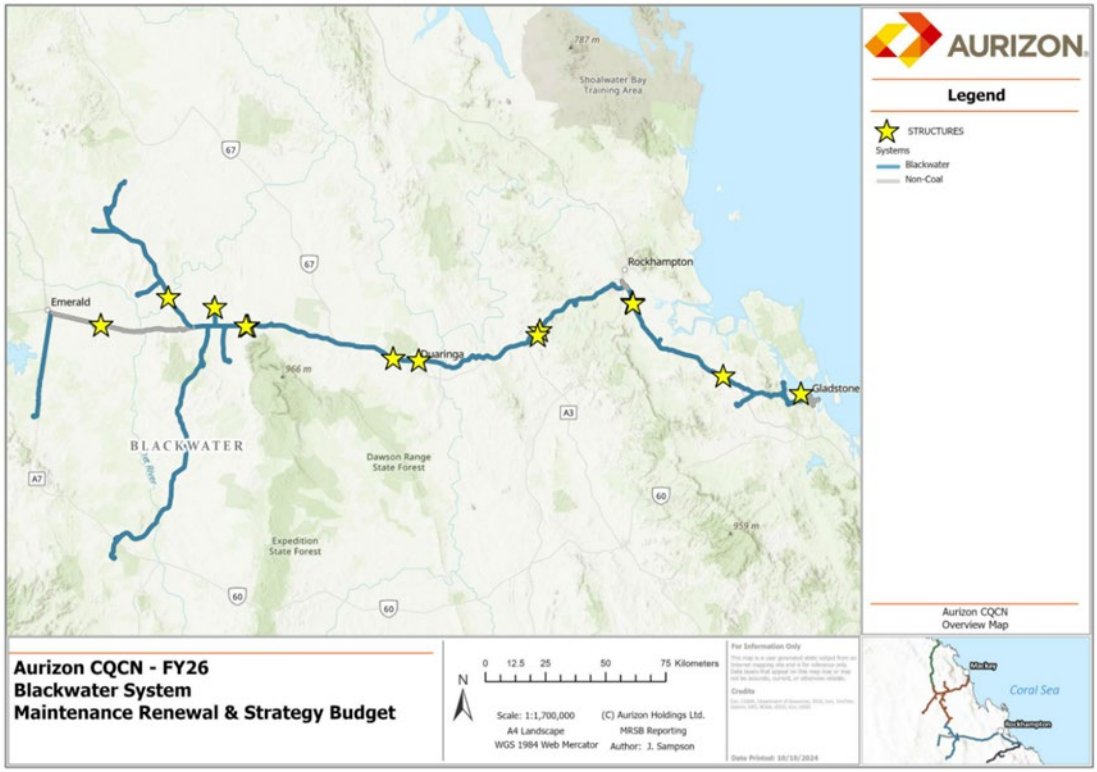


Figure 14 FY26 Structures Renewal Sites - Blackwater System

2.7.2 Structures FY26 Scope – Asset Condition and Criticality Assignment

Figure 15 plots the planned Structures renewals against asset condition and location / operations criticality. All planned FY26 renewals have poor to near end of life condition.

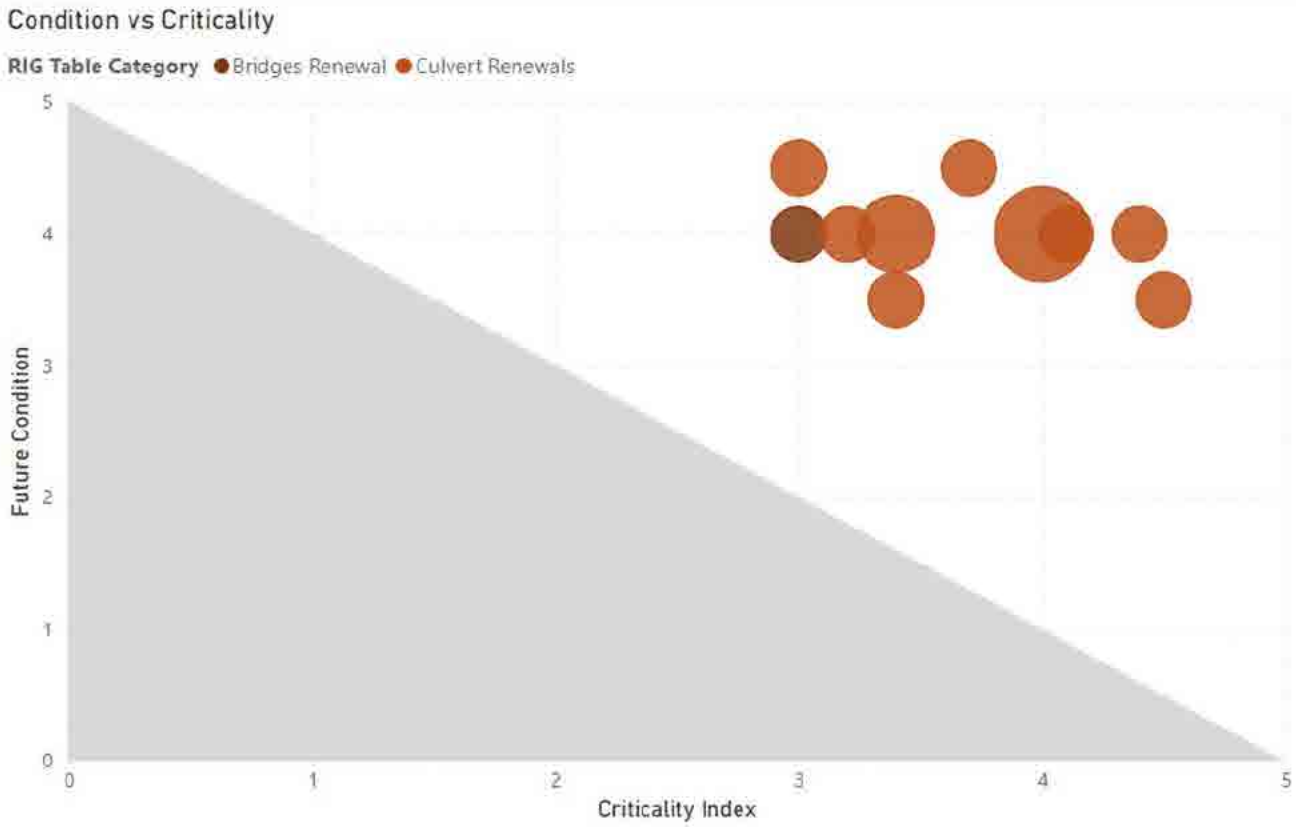


Figure 15 Structures - FY26 Scope Priority Ratings - Blackwater System

2.8 Civil Assets – Civil Renewals

2.8.1 Civil Asset Renewal Program

In FY26, Aurizon Network proposes to undertake the scope listed below at a cost of $17.6m. Table 15 below summarises the scope and budget for each relevant renewal item.

Table 15 FY26 Civil Asset Renewal Program - Blackwater System

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Level Crossing Renewals	Baseload	3	Site	3.3
Level Crossing Design	Future Scope	4	Site	0.2
Level Crossing Other	Reactive Renewals		Lumpsum	0.4
Formation Renewals	Baseload	1.1	km	5.7
Formation Other	Future Scope		Lumpsum	0.2
Formation Reactive	Reactive Renewals		Lumpsum	2.4
Formation Renewals	Baseload	1.1	km	5.7
Formation Other	Future Scope		Lumpsum	0.2
Slope Stability	Baseload	1	Site	3.0
Corridor Fencing & Security Fencing	Baseload	21.5	Lumpsum	1.4

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
	Reactive Renewals			0.4
Access Points & Roads	Future Scope	3	Site	0.1
	Reactive Renewals		Lumpsum	0.5
Total				**17.6**

The FY26 Formation Renewal program will see two planned renewals at Warren & Marmor. The 0.7km of formation renewal at Warren is driving scope for integrated closures. The formation scope is integrated with the installation of a new mainline weigher at Kalapa in FY26. This formation renewal is required to remediate known weak formation in conjunction with weighbridge installation to ensure sustained weigher reliability. This forms part of the ongoing multiyear scope in this location to address known weak formation across the Kalapa flats. This section has a history of several reactive formation failures with associated TSRs and adjacent locations have previously been closed to loaded traffic prior to renewals in FY24 and FY25.

The FY26 Level Crossing program will see 3 major renewals at Warren, Raglan and Callemondah. The scope at Warren and Raglan are driving scope for closures.

- At Warren there is 92m of formation renewal at the active crossing on the Blackwater mainline at the 36.715km point. The condition of the formation under the road surface has degraded and requires renewal. The future condition score is 3.4, with the level crossing site experiencing over 10 corrective maintenance incidents over the past 5 years including track and road surface resurfacing.
- At Raglan the renewal will include formation and flangeway installation at the active crossing on the North Coast Line (588.800km). The condition of the formation under the road surface has degraded and requires renewal. The future condition score is 4.0. At this level crossing there have been 5 corrective maintenance tasks since 2019 including 3 requiring resealing of the road surface and 2 requiring track resurfacing.

The FY26 Slope Stability program includes a major renewal at Rocklands, this renewal is rated condition state 5 as the rock face has failed. In 2014, there was an initial wedge failure at Rocklands and a subsequent failure in April 2024. Options for stabilisation and renewal are to be developed through design optioneering following geotechnical investigation, rock joint mapping & kinematic analysis with the specialist contractor. The slope failure in April 2024 caused 5 cancelled services and 4,631 delay minutes with one train service at the start of the incident contacting a dislodged rock that came to rest adjacent to the track. Works have been allocated over three closure windows. Failure to conduct slope stabilisation works at this site will increase the risk of future rock face failures resulting in debris on track, associated collision and derailment risk as well as delay and cancelation impacts.

Corridor Security and Fencing has increased in FY26 to allow for the completion of targeted scope to manage the condition of fencing. In late 2023, 493 km of fencing was condition assessed in Blackwater, of which 170km was assessed as a condition of 3 (poor) or worse. The planned renewal program in Blackwater is targeted at locations with a high risk or history of livestock strikes, livestock or trespass in the corridor or cancellations or delays as a result of livestock strikes, or livestock or trespass in the corridor. In previous years Corridor Security and Fencing was managed through a reactive budget only.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.7 provides a summary of the Asset Strategy for Civil Assets.

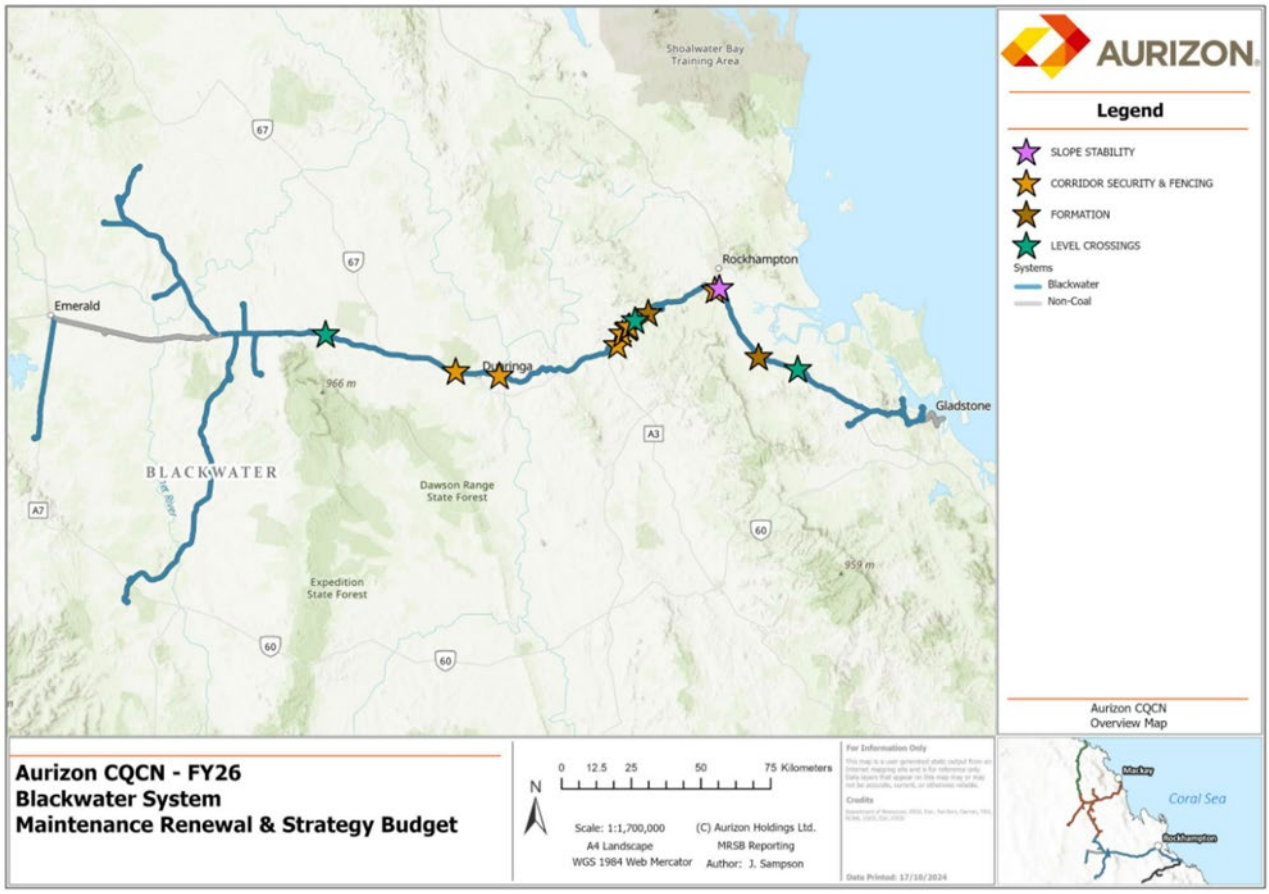


Figure 16 Formation and Level Crossing Renewal Sites - Blackwater

2.8.2 Civil Renewals FY26 Scope – Asset Condition and Criticality Assignment

Figure 17 plots the Civil renewals against asset condition and location/operational criticality.

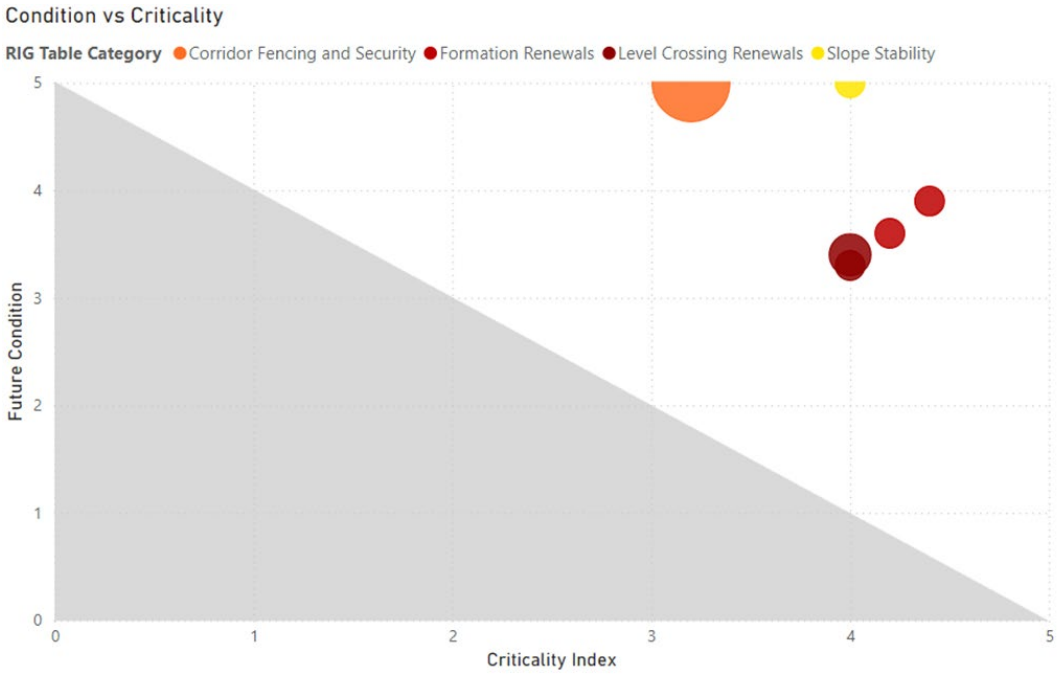


Figure 17 Civil Renewals - FY26 Scope Priority Ratings - Blackwater System

2.9 Control Systems Assets

2.9.1 Control Systems Renewal Program

In FY26, Aurizon Network proposes to undertake the following Control Systems Renewals or enhancements in the Blackwater System, representing at a total cost of $14.8m. Of the proposed FY26 scope. $1.2m of scope relates to design works for renewals in future years. Table 16 summarises the scope and budget for each relevant renewal item.

Table 16 FY26 Control Systems Renewal Program – Blackwater System

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Safe Working Systems – Asset Protection	Strategic	1	Unit	1.5
	Future Scope	1	Site	0.1
Safe Working Systems – Interlockings	Baseload	1	Site	1.6
	Baseload	7	Unit	5.9
Safe Working Systems – Minor	Baseload	7	Unit	0.1
	Future Scope	1	Unit	1.1
Telecommunication Asset (optic fibre)	Strategic	8,000	Metres	1.1
Transmission & Data Renewals	Baseload		Lumpsum	0.1
	Baseload	15	Site	0.5
	Baseload	31	Unit	0.9
	Future Scope		Lumpsum	0.1
	Reactive Renewals		Lumpsum	0.1
	Strategic	1	Site	0.4
UTC DTC	Baseload	3	Unit	0.3
	Strategic	1	Unit	1.0
Total				**14.8**

In FY26, the major Safeworking – Asset Protection scope will be the renewal of the Blackwater Mainline Weighbridge and Pantograph Monitoring (PANCAM), which will be designed in FY25.

The Safeworking – Interlocking baseload scope will renew signals for Front of Post (FOP) locations and Callemondah Strategy staged building and commissioning works. Safeworking - Interlocking at Callemondah is driving scope for completion over multiple closures in FY26.

Safeworking Systems – Minor future scope includes the major designs and procurement with an external vendor for the Callemondah interlocking renewals as part of the Callemondah Strategy. Baseload scope includes the renewal of 7 Diagnostic Computers at Callemondah. Future scope included in the Interlocking Program will complete the design for the Relay to Processor Based Interlocking at Midgee.

In FY26, the Optical Fibre Renewal within the Telecommunications Asset category will renew a smaller distance compared to FY25. The unit rate is comparable to the FY25 forecast with the basis of the estimate using a rate schedule and detailed site investigations (i.e., location of rock, existing conduits, etc). Actual site requirements may drive variation in unit rates.

Transmission and Data Renewals include the renewal of data network routers and firewalls as well as 6

power supplies and batteries and the replacement of two Dehydrators (a device that reduces the humidity in a microwave transmission system to improve signal strength and prevent corrosion to extend life).

Transmission and Data Renewal TETRA Radio Scope will focus on minor renewals to improve coverage of TETRA Radio.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Given the high proportion of these renewals being triggered by obsolescence, Aurizon Network will generally seek to replace the current technology with modern-day equivalents that provide an uplift in speed and/or capacity.

Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.8. provides a summary of the Asset strategy for Control Systems.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Given the high proportion of these renewals being triggered by obsolescence, Aurizon Network will generally seek to replace the current technology with modern-day equivalents that provide an uplift in speed and/or capacity.

Strategic Scope:

Callemondah Strategy for Interlockings ($5.5m) and Turnouts ($2.2m)

A multi-year strategy has been developed and is forecast to stage the replacement of the interlocking, cabling and power supplies in Callemondah yard using modern networked interlockings. The majority will be delivered within the access constraints for this yard.

In FY26, the Callemondah yard renewal strategy will continue coordinated renewal of interlocking and turnout assets to renew life expired assets and minimise, where possible, track outage requirements. Note the completion of some tasks at the same time will not be possible due to the sequencing of turnout removal, formation works, turnout install, overhead alignment then signalling changes. These elements are planned to de-risk works within required closures times.

This critical and complex interlocking is beyond service life, and cabling between the interlocking and field equipment is in very poor condition. The new interlocking architecture replaces large multi-core copper cables with Optical Fibre cabling in a staged programme. This reduces cost and supports and eliminates the need for yard closures that would be far longer than conventional closure pattern. Power supplies supporting signalling are also beyond service life and are being renewed in conjunction with each interlocking renewal stage.

TETRA Radio ($0.4m)

The digital based Terrestrial Trunked Radio (TETRA) network has been in operation since late 2019 and its use is widespread in the Blackwater Coal System. Work has commenced to remove the analogue train control radio bases, which are more than 20 years old and occupies radio frequencies that need to be handed back to the federal government. The TETRA radio system primarily provides vital voice communications between Network Control Officers and Rail Traffic Crew throughout the CQCN. It also allows Rail Traffic Crew to communicate with Rail Transfer Facilities (RTF) and corridor maintenance workers to communicate to Network Control Officers.

In FY26, an additional tower and base will be installed at Callemondah and improvements to existing sites will continue to improve coverage to address identified areas of poor radio coverage and increase radio base capacity where there is increased usage.

Optic Fibre Renewal ($1.1m)

This is the sixth year of the Optic Fibre Renewal Program renewing life expired 6 core fibre optic cable installed in 1980's with modern 24 core optic fibre. This modernisation also supports the increasing data network security and capacity requirements between field and control centre systems, and for monitoring asset condition in real time. FY26 will see the continuation of this renewal program (8km), which is forecasted to be complete in FY31.

UTC/DTC ($1.3m)

Safety and Operational Improvements for Network Train Control system scope includes train control system applications, user interface changes and engineering controls for safety processes. Operational requirements for delivery of individual scope items are subject to change due to criticality requirements, e.g. post an incident or process breakdown.

Pantograph Monitoring (PANCAM) ($1.5M)

The pantograph monitoring system provided in Callemondah facility is life expired and the software is no longer supported by the vendor. A main line pantograph monitoring system is proposed to replace this system and improve coverage for all operators. An off the shelf global system has been selected and is being deployed in Goonyella system in FY25 to validate operation.

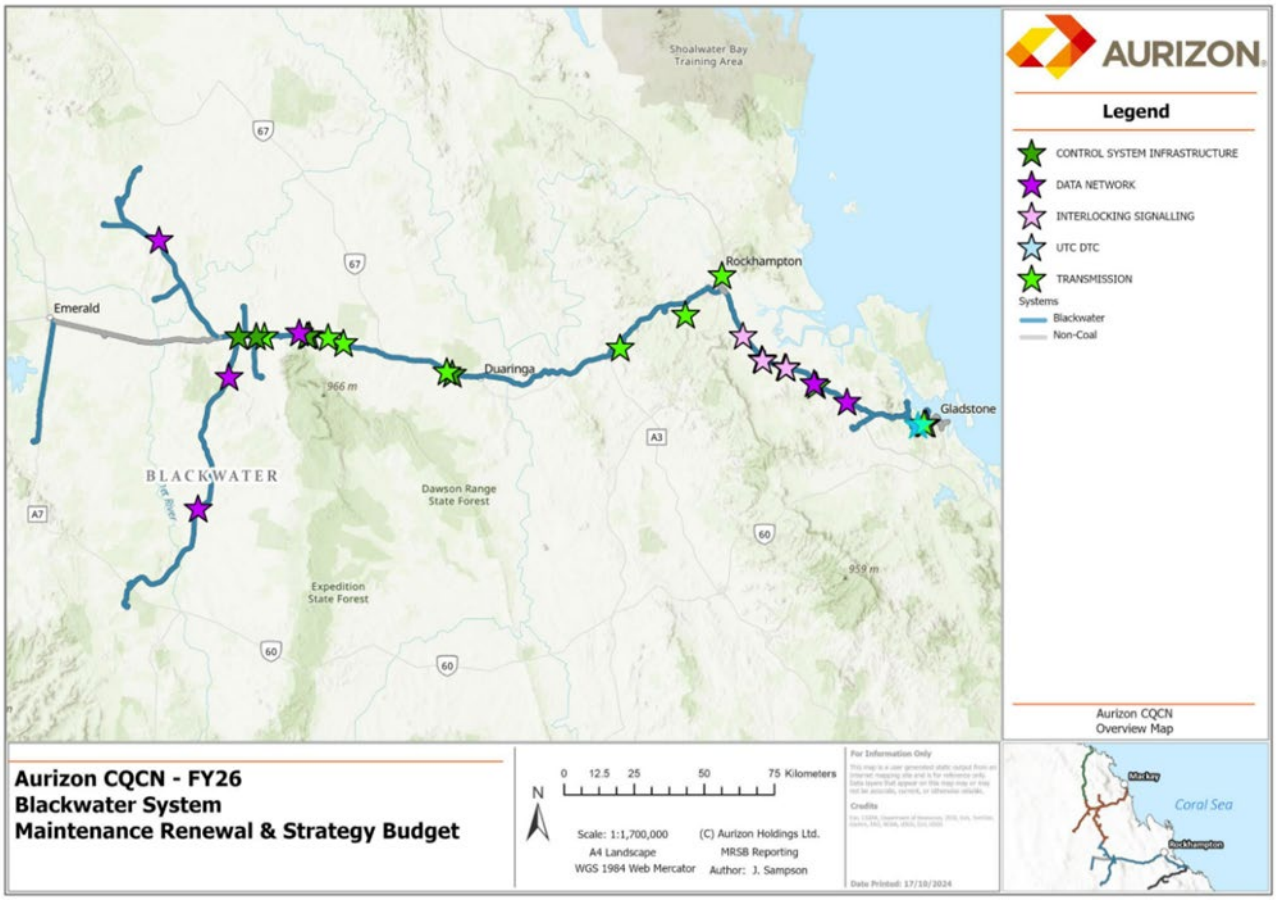


Figure 18 FY26 Control Systems Renewal Locations – Blackwater

2.9.2 Control Systems Assets – FY26 Scope Asset Condition and Criticality Assignment

Figure 19 plots the planned Control Systems renewals against asset condition and location / operational criticality.

All scope items are listed as condition rating 4 or above. This reflects the age of assets targeted for renewal in FY26. Control Systems assets are mostly electronic, and renewal is trigger by lack of available support, spare parts or software obsolescence. As such, condition is more a matter of asset age against design life rather than a physical demonstration of wear.

While some of the criticality scores are lower on the scale as a function of the geographical criticality model, these assets are necessary for the safe operation of the system and for the delivery of system capacity.

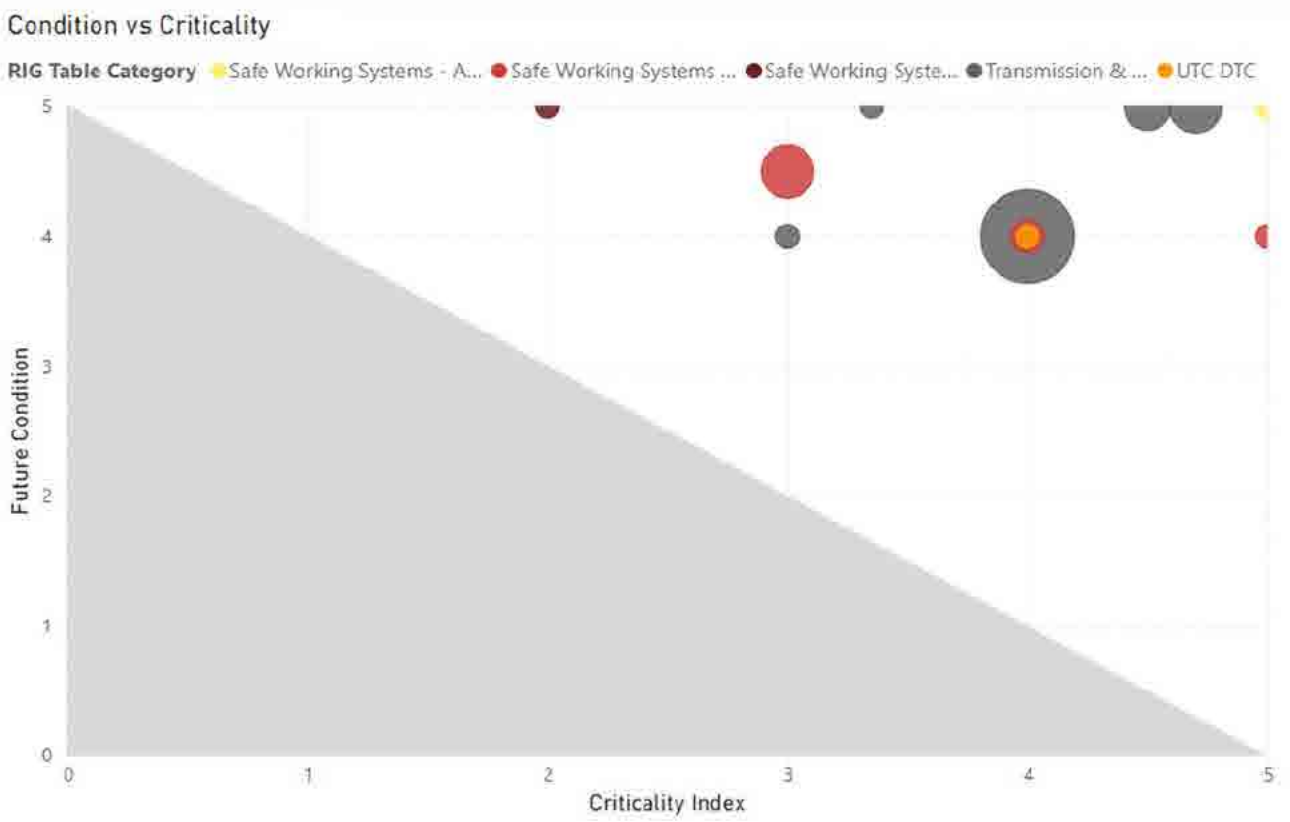


Figure 19 Control Systems Assets - FY26 Scope Priority Ratings - Blackwater System

2.10 Electrical Assets

2.10.1 Electrical Renewal Program

Several of Aurizon Network's power systems assets are nearing the end of their design life. Aurizon Network is progressing its analysis to better understand options with respect to future power systems renewal requirements. As this work develops, Aurizon Network will engage with the RIG in relation to the preferred options.

In FY26, Aurizon Network proposes to undertake the following Electrical Renewals or enhancements in the Blackwater System at a cost of $7.1m. Table 17 summarises the scope and budget for each relevant renewal item.

Table 17 FY26 Electrical Renewal Program – Blackwater

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Overhead Line Equipment Renewal	Baseload		Lumpsum	1.0
	Baseload	1	Site	0.8
	Baseload	13	Structures	1.2
Power Systems Renewal	Baseload	1	Unit	0.0
	Future Scope	3	Site	0.0
	Future Scope	12	Unit	0.2
	Strategic	8	Site	1.5
	Strategic	3	Unit	2.3
Total				**7.1**

The FY26 Overhead Line Equipment renewal scope will include 13 termination portals across 7 sites. One major renewal will be completed for Feeder Wire Clearance Improvements at Rocklands in FY26 to address reliability issues due to inadequate clearance between the high voltage wires and the structures they are mounted on which allows wildlife to breach the gap contributing to 'trips' of the OHLE.

Power Systems Baseload scope will renew 3 Auto Transformers (2 at Grantleigh & 1 at Burngrove) and 1 DC Supply at Tunnel. Future Scope designs will be completed for 3 Autotransformers, 6 Relays, 3 Motorised Isolators and 3 PSC (Power Sectioning Cabins).

The electrical asset is a composition of different components that make up the electrical traction asset. The mix of scope and asset type can vary year to year as the asset condition is addressed through renewal.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.9. provides a summary of the Asset strategy for Electrical Assets.

Strategic Scope:

Autotransformer Renewal ($2.4m)

The autotransformer renewal program seeks to renew aged equipment that is operating beyond its design life.

Following identification of a bow wave of electrical asset renewal activity as the assets installed in the 1980's approached end of life, Aurizon Network has been proactively managing the renewals task by smoothing the work overtime. This approach sees Aurizon Network target the renewal of three autotransformer sites per year in Blackwater. Sites are prioritised based on asset condition.

Traction Substation Renewals ($1.5m)

The FY25 scope covers the completion of the Prefeasibility phase which includes a Risk Assessment and a comprehensive Prefeasibility report as part of the undertaking requirement (UT5).

The works proposed for FY26 will comprise the Feasibility phase of the project.

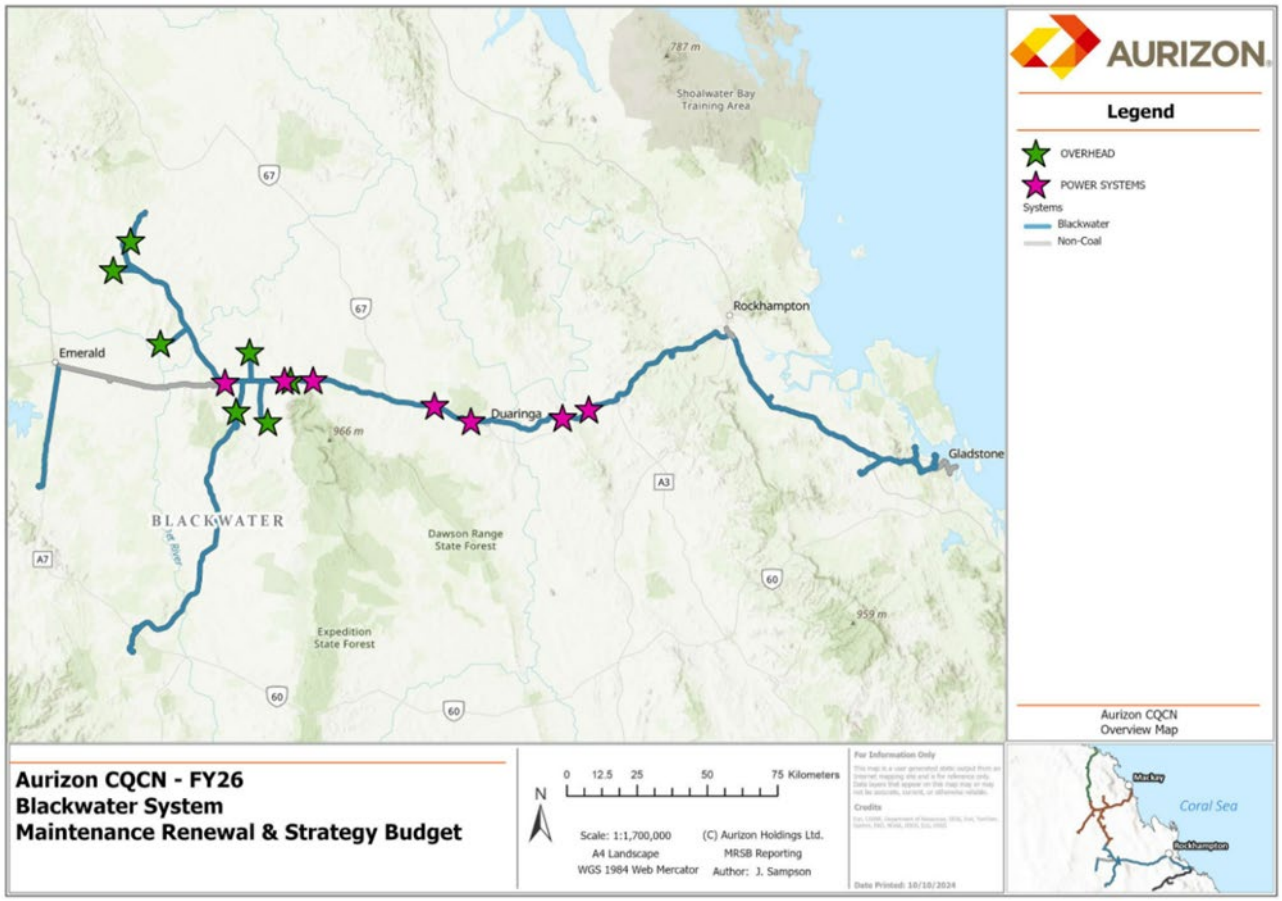


Figure 20 FY26 Electrical Renewal Sites - Blackwater System

2.10.2 Electrical Assets – FY26 Scope Asset Condition and Criticality Assignment

Figure 21 plots the planned Electrical renewals against asset condition and location / operational criticality. Although these renewal scope items have lower condition scores, they are important assets in the traction network and must be renewed as they are reaching end of life.

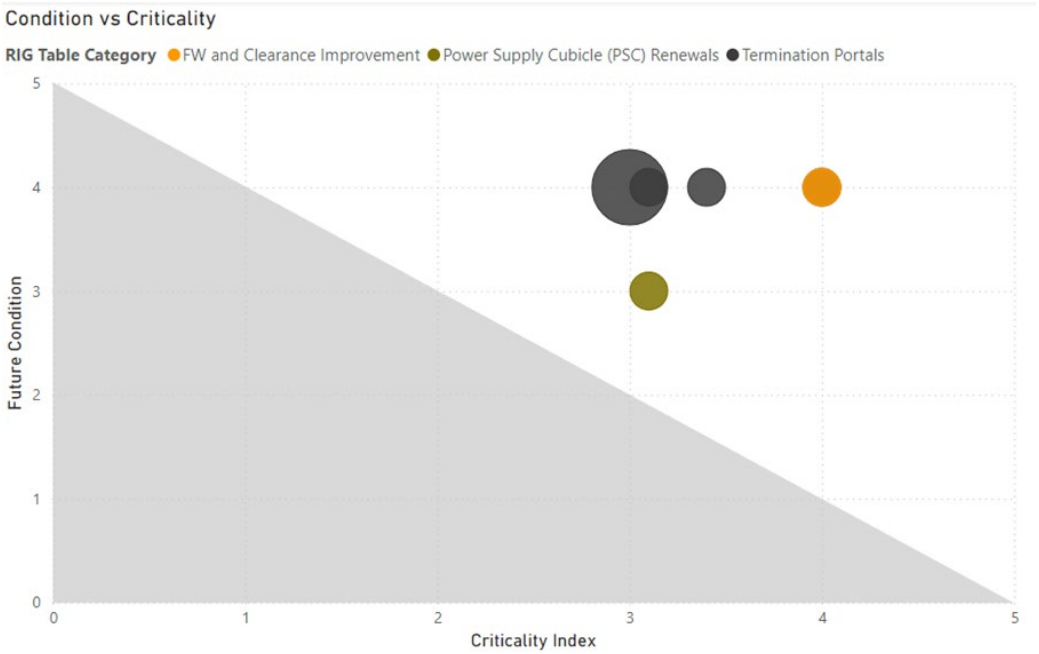


Figure 21 Electrical Assets - FY26 Scope Priority Ratings - Blackwater System

2.11 Likelihood of Change Assessment – Maintenance and Renewals

Aurizon Network estimates known risks during the MRSB development and submission phases, then reacts to typical change impacts as they materialise during the MRSB delivery year. Most opportunities for change occur in the delivery year rather than during the development phase.

The identification and evaluation of MRSB scope for inclusion in the submission are based on currently available information, which may change over the period prior to works execution (between 6 and 18 months) due to environmental factors, relative degradation rates, supply and resource impacts, or other considerations.

The majority of the MRSB scope consists of baseload renewals or preventative maintenance tasks, making the likelihood of change low. These activities are typical for Aurizon Network and often involve similar tasks at different locations across the systems. For example, the process for a rerail renewal is well-known and well-practiced, hence it is a baseload activity with a low likelihood of change. Consequently, Aurizon Network does not assign a system-based program contingency or consider a risk provision across the program. When changes do occur, their impact on the program is assessed in terms of approved cost (budget), scope, and access. The opportunity for change is also relative to the complexity or time pressure of a project.

To mitigate these risks, Aurizon Network applies a phased planning approach to complex or strategic scopes and separates design from delivery for projects involving multiple asset disciplines, requiring both design management and project management. When changes occur, their impact on the program is assessed across approved cost (budget), scope, access and resources. Aurizon Network has developed a change management review and approval process to react to changes as they arise. The following tables detail the likelihood of change across the different scopes proposed for FY26, along with project-specific costs and mitigations.

Further information on the change management review and approval process, as well as generic risk types and treatments, is provided in Section 1.2 Likelihood of Change. Most of the change opportunity occurs in the year of delivery, whilst the MRSB forecast the system renewals and Maintenance requirements.

Table 18 Potential Areas of Change at Program Level in the Blackwater System

Type	Likelihood of Change	Projects in FY26	Value % FY26[5]	Change Mitigations
Strategic Renewals	Moderate	2 Active (Optic Fibre, PanCam) 2 in Concept (AT Renewals & Substations)	8.2%	• Phased planning approach providing time to increase scope and assumptions ahead of delivery. • Type testing of new equipment to consider installation and operations impacts.
Baseload Renewals	Low	126 Sites Across 18 Programs	80.0%	• Prior year program reviews • Program Management processes to minimise day of delivery risk

[5] % of costs across the FY26 Capital Asset Renewal scope in this system.

Type	Likelihood of Change	Projects in FY26	Value % FY26[5]	Change Mitigations
				• Site walk outs, pre-digs to understand site conditions ahead of day of delivery
Future Design	Moderate	72 Designs across 11 Programs	3.4%	• Separation of design activity for delivery to allow time for design staging and construction review. • Design Management application to ensure multi discipline design is built to solve site requirements.
Reactive Renewals	High (due to short time to execute)	12 Programs	8.4%	• Use of standard designs • Works completed by local teams with local knowledge with Project Engineering support.
Maintenance	Preventative – Low Corrective – Moderate Reactive – High			• Preventative inspections based on standard that is periodically reviewed. • Corrective and reactive maintenance informed by historic levels of activity. • Engineering support available to provide defect reliability analysis and management.

Goonyella

AURIZON

3 Goonyella System

This section presents Aurizon Network's Draft Maintenance and Renewal Strategy and Budget for the Goonyella System during FY26. In line with 7A.11.3 of UT5, this section will be subject to vote by the relevant Goonyella End Users.

Aurizon Network's FY26 Final Draft Proposal for the Goonyella System provides for:

A strategy to maintain stable level of service over the long-term

The asset management strategy for the Goonyella system recognises the high utilisation rate and seeks to minimise the capacity impact of unplanned outages due to infrastructure failures. Aurizon Network's strategy seeks to rectify faults in a planned manner and prior to failure to mitigate potential impacts to Train Services.

A Direct Maintenance Cost Allowance of $80.7m

The proposed Direct Maintenance Cost Allowance, which excludes ballast undercutting plant depreciation, represents an increase of $3.0m compared to Aurizon Network's current FY25 full year maintenance forecast and an increase of $8.0m compared to the approved FY25 Maintenance Strategy and Budget.

The increase in maintenance spend against the FY25 approved budget is predominantly driven by:

- additional internal labour cost relating to annual Enterprise Agreement uplifts
- additional internal resource allocation to support maintenance activity levels across Civil and Electrical disciplines
- reduction in external contractor costs for telecommunications maintenance and General Track maintenance activities
- cost escalation on contractor, materials and other cost categories
- increase in rail maintenance activity levels
- costs associated with capacity enhancement initiatives to remove overhead maintenance windows
- additional external contractors to deliver targeted drainage program;

A Renewals Allowance of $133.3m

This represents an increase of $18.5m compared to Aurizon Network's current FY25 renewals forecast and an increase of $22.7m compared to the approved FY25 Renewals Strategy and Budget.

The increase in renewal spend is due to an increase in scope in Permanent Way, Ballast Cleaning, Structures, Civil Renewals and Electrical Assets which is directly related to the condition and age of these assets. This network sees the highest tonnage of the four Coal Systems and the highest train density.

Integrated Closures

There are eight integrated closures planned in Goonyella for FY26.

13% YoY decrease in planned System Integrated Closure hours inclusive of the contingency closure. Should the contingency closure not be required, a 1% increase in hours would occur.

Aurizon Network capacity assessment highlighting risk around system usable capacity versus ACAR 2024 FY26 DNC during Q1, primarily due to Port in-loader outages. Q2 – Q4, except for May 2026, showing adequate system usable capacity to deliver the DNC. May 2025 impacted by Port in-loader outage.

Aurizon Network is reviewing initiatives to support additional capacity and reliability in Goonyella, for presentation to Goonyella customers ahead of the FY26 Final Draft proposal in January 2025. The proposal will focus on alternate options for delivery of maintenance works, including access benefits and reliability, performance, resourcing and cost trade-offs. No change will be proposed to the FY26 Integrated Closures, which have already been optimised based on driving path asset renewals.

In FY26, we have removed the contingency closure, a strategy that was implemented in FY25, due to the transition back to a six-weekly cycle. This adjustment, which results in additional closures over the course of the year, mitigates the risk of requiring a contingency closure by more evenly distributing major renewal projects and their associated resource demands.

Additionally, this revised approach enhances alignment between internal maintenance teams and supply chain stakeholders, leading to fewer isolated activities that could otherwise impact system capacity outside of scheduled Integrated closures.

Likelihood of Change

Completion of prior year scope and weather remain key program risks for the Goonyella system. Where prior year scope is replanned for completion during FY26, this could impact the ability to complete planned FY26 renewal scope.

3.1 Goonyella System – Characteristics and Corridor Strategy

The Goonyella System is Aurizon Network's largest Coal System by coal volume throughput. The Goonyella System services coal mines in the central and northern Bowen Basin, predominantly carrying product to the ports at Dalrymple Bay and Hay Point. The Goonyella System includes approximately 1,006km of electrified track.

Trains move predominantly east towards the ports at Dalrymple Bay, but interconnectivity between Coal Systems permits trains originating in the Goonyella system to rail north to Abbot Point via the Newlands System, or south to Gladstone via Blackwater System, so loaded trains operate in both directions in the western areas.

Maintenance and renewal activities in the Goonyella System are primarily delivered from depots located in Jilalan and Moranbah, with mobile mechanised plant based in Yukan and Rockhampton.

Aurizon Network's depots are strategically located to enable incident response times within approximately two and a half hours, depending on whether significant travel is required within the rail corridor, such as between South Walker Creek and Hail Creek. Mechanised plant (e.g., resurfacing) is typically able to respond to an urgent defect (e.g., a buckle or geometry defect) in the Goonyella System within one day.

Figure 22 Depot Locations - Goonyella System

Aurizon Network has considered asset conditions specific to this Coal System when developing the FY26 Final Draft Proposal, particularly in relation to:

- **Civil Assets** – The civil assets in the Goonyella System see the highest tonnage of the four Coal Systems and the highest train density, this decreases the expected time between intervention for renewal and maintenance activities that are linked to usage or wear. The Great Dividing Range crossing at Black Mountain is a significant rail crossing with steep grades and tight curves resulting in significant train dynamics and inertia forces applied to the rail, sleeper and formation assets. Given the steepness of the terrain and the fact that the area can record high rainfall in short periods, there is a significant network of drains, culverts, and spillways to assist water to shed from the mountainous areas, aiming to minimise impact on rail operations.
- **Control Systems Assets** – A significant proportion of the Control Systems assets in the Goonyella System are original 1980's infrastructure from the initial installation. These assets are nearing or beyond their nominal service life, in particular signal interlockings. The radio system across Goonyella was upgraded in recent years to a digital based Terrestrial Trunked Radio (TETRA) system. Trains are detected through a mix of track circuits and axle counter track sections with ongoing renewals programmed for life expired track circuit assets. A program to modernise the optic fibre in Goonyella commenced in FY22 and continues in FY26.
- **Electrical Assets** – The Electrical assets were largely installed during the mid-1980's Main Line Electrification Project. A significant proportion of the substation assets are approaching the end of their 30 to 40-year design life. A focus of FY26 is the Feasibility phase of the Substation Renewals Program. The OHLE assets nearest the ports see significant corrosion due to the coastal environment and will be addressed as part of the Goonyella Ports OHLE renewal program.

Corridor Strategy

The Goonyella System is a purpose-built Coal System and has seen significant expansions both in terms of extensions and section duplications. There is a mix of asset conditions given age and use.

The Goonyella system is highly utilised and as such, the maintenance focus seeks to minimise the capacity impact of unplanned outages due to infrastructure failures. Aurizon Network's strategy seeks to rectify faults in a planned manner and prior to failure to mitigate potential impacts to Train Services.

The arrangement of the Black Mountain range crossing requires good condition and robust assets including track structure to operate under the train load and intensity, but also significant drainage structures to move water away from the railway in rain events.

The system is predominately serviced by electric traction, so feeder stations are located closer together in Goonyella than in Blackwater, and the impact of an outage is magnified in the system with little ability to substitute rollingstock during electrical outages.

The below graphs in Figure 23 indicate some deterioration in performance and reliability metrics against the 4-year average due, in part, to high impact events and wet weather. Scope has been prioritised based on asset condition and balanced with resource and access availability.

The number of incidents, cancellations, delays (including TSRs) and OTCI provide

- an indication of the performance of the system over time
- are triggers for Event Threshold Reporting that seeks to inform the asset management approach for each asset class
- Contribute to (amongst other factors) specific scope identification and selection

Delays and Cancellations measure the impact of incidents on the supply chain and are influenced by multiple factors including:

- Type and location of defect
- Incident response time
- Planning and scheduling
- Traffic management decisions

The OTCI index is a measure that trends track geometry at a system level. OTCI predominantly relates to the effectiveness over time of the Ballast Renewal and Resurfacing programs. It does not measure electrical or control system assets.

Further work is required to understand why, in recent years, incidents have been more impactful from a cancellations and delays perspective than in previous years

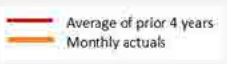
Please refer to the Glossary for further information on interpretation of these graphs.

Of note:

- The number of months with over 50 below rail caused cancellations in Goonyella has increased from 3 in the period FY14- FY19 to 6 in the period FY20 – FY25, driven by high impact incidents.
    - December 2014: Derailment Coppabella-Broadlea (86 cancellations)
    - May 2017: NETCON 3 declared weather event (26 cancellations), Broken feeder wire (17 cancellation), Broken rail (9 cancellations)
    - January 2019: Derailment Middlemount (46 cancellations)
    - February – March 2019: Significant TSR imposed (46+29 cancellations)
    - May 2021: Dewirement Mindi (115 cancellations) (Chart cut of at 100)
    - May 2022: Mudholes Black Mountain (39 cancellations)

- January 2023: Double trip Black Mountain (16 cancellations)
- March 2023: Overcurrent trip Peak downs (20 cancellations) + Track circuit failure Black Mountain (16)
- November 2023: Dewirement South Walker (43 cancellations)
- January 2024: Broken Rail Hatfield (52 cancellations)
- March 2024: Dewirement Daly Bay (25 cancellations)
- May 2024: Telemetry Failure Daly bay (20 cancellations) + broken rail (11) + Dewirement (9)
- June - July 2024: Pantograph damage due to Section insulator issues (42 cancellations)

- The 4-year average for delays has been tracking higher every year.
  - Approximately half of the increase (2.4min) is due to the introduction of the delay code "Network Stowing Delay" in FY2022.
  - The remaining increase can be attributed to increases in TSR delays (1.1min), Network control decisions (1.0min), track defects (0.8min), train scheduling (0.6min), Track circuit failures (0.6min), track maintenance and repairs (0.5min) and Network possessions (0.5min).
- The OTCI index has recently increased from 21 to 22, resulting from challenges during the prolonged wet period between Nov 2021 – March 2023. OTCI does not account for localised reliability impacts, traction or control systems assets.
- Incidents have tracked lower over time while cancellations and delays have increased. The Goonyella and Moura systems both exhibit this pattern, while less so in Blackwater and Newlands. There is a noticeable increase in the impact of incidents from FY22, causing increased delays and cancellations, which coincides with the onset of the prolonged wet period. FY24 was a particularly challenging year for Goonyella in terms of cancellations, while incident numbers were only slightly elevated from the previous year.
  - The Electrical asset is aging, and individual OHLE failures tend to have a larger impact on operations than other types of incidents. The Goonyella ports renewal and Vegetation Management are areas of focus to address the number and severity of OLHE failures.
  - The impact of civil defects has increased over time in terms of cancellations and delays. The prolonged wet period between Nov 2021 – March 2023, and problematic weather conditions in FY24 have been contributing factors to this trend. Particularly, the part of the Goonyella network from the Port to Balook have seen an increase in the impact of track defects over time. The Ballast and Civil Renewal programs, resurfacing and on-going drainage works seek to address these conditions The reduction in incidents over time is primarily driven by a reduction of less impactful control systems incidents.



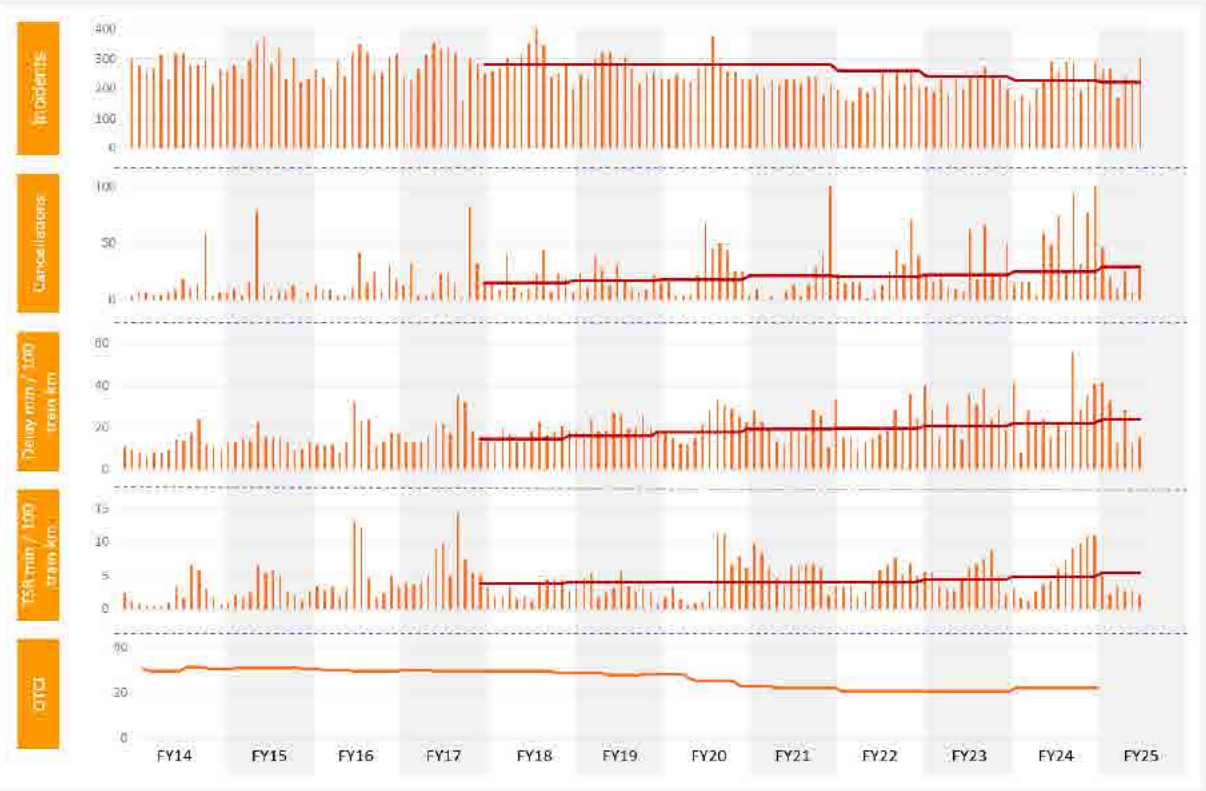


Figure 23 Goonyella Below Rail Performance 4-year average trends using monthly performance from FY2014 to October 2025.

3.2 Goonyella System – Integrated Closure Plan

Specific Goonyella Supply Chain considerations

Port operating mode and mine stockpile capacity

Goonyella Ports have somewhat independent operating modes, but the system operates in demand-pull/cargo assembly mode with 49 limited Port inventories and larger mine buffers.

Aligning and structuring work considerate of port stockpile capacities and cross-system traffic requirements and optimisation

Key focus on alignment of high impact Network maintenance in the shadow of extended Port in-loader outages to mitigate supply chain impacts.

Closure timing

Closure planning considers peak demand periods of December and June, and closure conflicts with adjacent corridors/branch lines are avoided where possible

Table 19 outlines the proposed Goonyella System integrated closure hours for FY26, including integrated system and branch line closures.

Table 19 Planned Closures and Branch Closures - Goonyella System

FY26 Integrated System Closures													
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Hours	60	0	84	56	0	0	36	36	60	0	60	0	392
Location					Wotonga to Blair Athol and North Goonyella								
Hours			0	0	60	0	0	0	0	0	0	0	60

In addition to these Integrated System and Branch Line closures, single line maintenance activities have also been planned throughout the year. Timing and durations are tested against delivering DNC (ACAR 2024 FY26) and more broadly, Committed Capacity as well as being coordinated with other supply chain participants, where possible, to maximise supply chain alignment and throughput. MRSB Single Line Planned Possession hours for FY26 are 991 hours consistent with Asset Activities. Note hours are not reflective of customer impact as it does not consider works planned in the shadow of port outages or other works to reduce impact. These hours do not include moving products such as rail grinders, resurfacing, Ultrasonic Rail Inspections and Road Patrols; maintenance works to be planned throughout the year or asset activity planned around train services (Plan throughs) as they do not impact capacity or services.

Driving path activities listed in Table 20 have determined the duration of the planned integrated closures and access requirements in the Goonyella System during FY26

Table 20 Driving Path Activities – Goonyella System

Closure	Driving Path Activity	Location
July 60-hour	Turnout Commissioning	Balook
	Formation Renewal	Winchester
	Culvert Renewal	Black Mountain and Hatfield
	Level Crossing Renewal	Hay Point
	RM902 Ballast Renewal	Saraji to Lake Vermont
September 84-hour	Excavator Ballast Renewal	Hatfield to Bolingbroke
	RM902 Ballast Renewal	Dalrymple Bay to Praguelands
	Culvert Renewal	Waitara
	Formation Renewal	Millenium Junction to Red Mountain
October 56-hour	Rail Renewal	Hatfield to Bolingbroke
	Rail Renewal	Hatfield to Bolingbroke

Closure	Driving Path Activity	Location
	Rail Renewal	Hatfield to Bolingbroke
	Rail Renewal	Bolingbroke to Balook
	Excavator Ballast Renewal	Mindi to Tootoolah
November 60-hour	Digital Telemetry Renewal	Various Locations
January 36-hour	Digital Telemetry Renewal	Various Locations
	RM902 Ballast Renewal	Yukan to Hatfield
	Overhead Renewal	Dalrymple Bay
February 36-hour	RM902 Ballast Renewal	Tootoolah to Coppabella
	Excavator Ballast Renewal	Mindi to South Walker
March 60-hour	Excavator Ballast Renewal	Dalrymple Bay to Praguelands
	Overhead Renewal	Dalrymple Bay
	Section Insulator Renewal	Broadlea
	Interlocking Renewal	Wandoo
	Train Detection	Millennium Balloon Loop
	Train Detection	Saraji Balloon Loop
May 60-hour	Section Insulator Renewal	Broadlea
	RM902 Ballast Renewal	Yukan to Hatfield
	Formation Renewal	Winchester
	Overhead Renewal	Dalrymple Bay

Figure 24 illustrates the historical Goonyella integrated system closure hours in comparison to the FY26 Final Draft Proposal.

INTEGRATED CLOSURE: HOURS

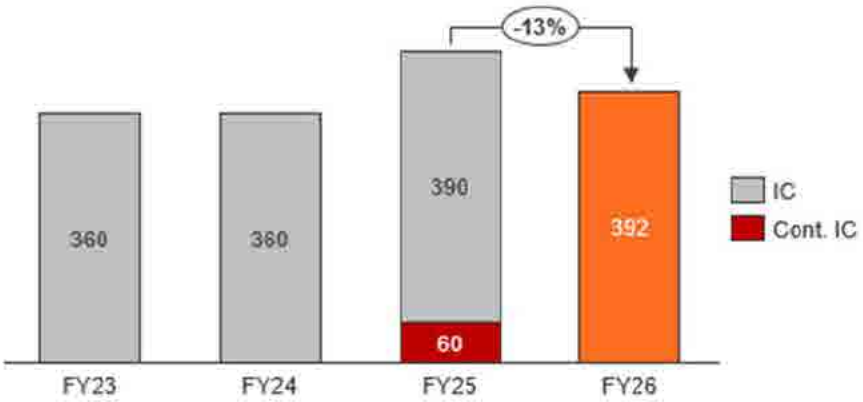


Figure 24 Trend of Integrated Closure Hours from FY23 to FY26 Goonyella System

Aurizon Network's assessment of Useable Capacity for FY26 in the Goonyella system indicates an elevated level of risk (particularly during Q1 FY26, September 2025 and May 2026) of the system being able to deliver the proposed renewals and maintenance program as well as both Committed Capacity and DNC (ACAR 2024 FY26) from a Planning and Scheduling perspective.

These periods of high risk in Q1 FY26 and May 2026 are being driven primarily by extended in-loading outages at either one or both Ports. Aurizon Network has aligned as much high impact Network maintenance in the shadow of the in-loader outages to take advantage of the reduced system capacity and therefore mitigate the impacts of this work.

3.3 Goonyella System – FY26 Maintenance Strategy and Budget

Aurizon Network has developed its Draft Maintenance Strategy and Budget for the Goonyella System having regard to all relevant matters outlined in clause 7A.11 of UT5, including the Maintenance Objectives. Aurizon Network considers its FY26 Final Draft Proposal provides an appropriate level of asset activity that will promote the safety, reliability and performance of Goonyella System Rail Infrastructure and seeking to deliver Committed Capacity.

3.3.1 Summary of Historic, Forecast and FY26 Maintenance Strategy and Budget

Aurizon Network's FY26 Draft Maintenance Strategy and Budget for the Goonyella System provides for a Direct Maintenance Cost Allowance of $80.7m (excluding ballast undercutting plant depreciation) which is:

- $8.0m higher than the approved FY25 Maintenance Strategy and Budget
- $3.0m higher than Aurizon Network's current FY25 full-year forecast.

Figure 27 provides a summary of historic direct maintenance costs as well as the proposed direct maintenance cost allowance in respect of FY26.

To ensure comparability with prior periods, the direct maintenance costs shown in Figure 25 and Figure 26 exclude depreciation on ballast undercutting plant.

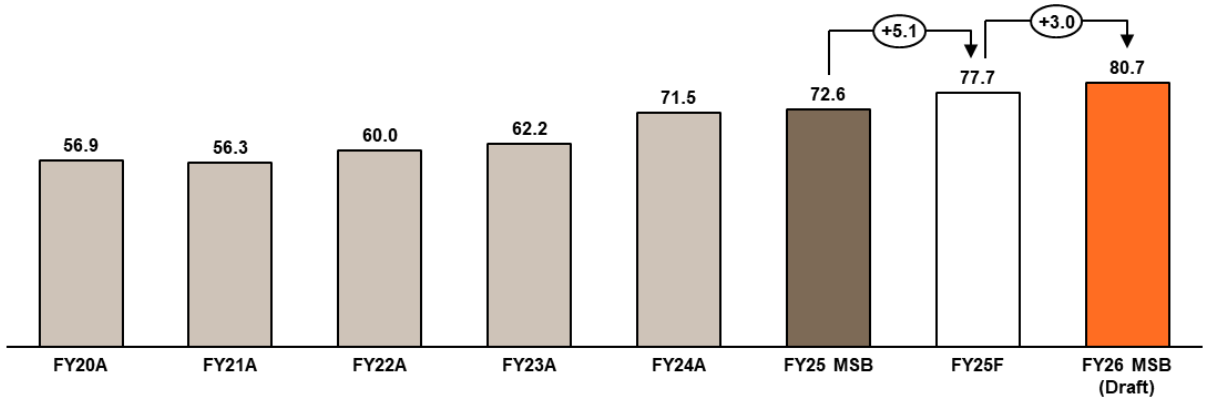


Figure 25 Direct Maintenance Costs - Goonyella System

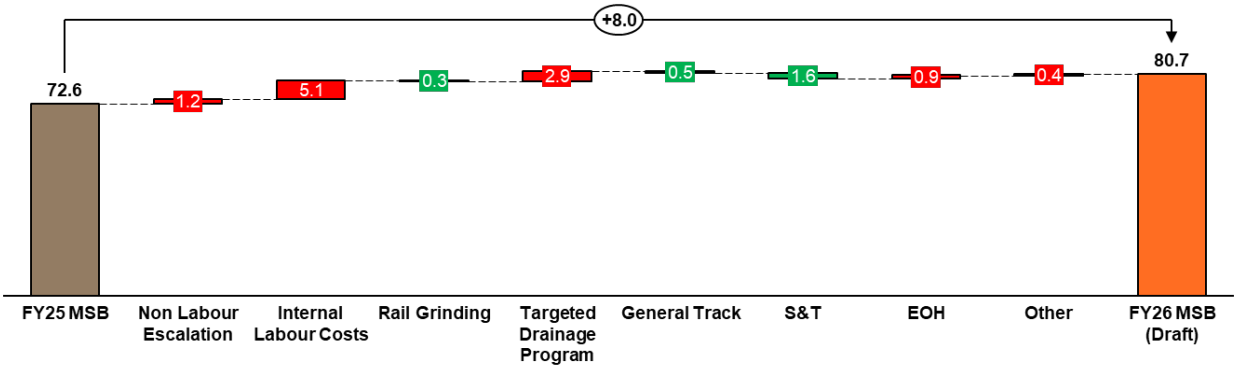


Figure 26 Direct maintenance Cost Movement - Goonyella System

FY26 Draft Maintenance costs (excluding ballast undercutting plant depreciation) are budgeted at $80.7m. The increase in spend of $8.0m against the approved FY25 Maintenance Strategy and Budget is primarily driven by:

- **Non-labour cost escalation (+$1.2m)** - on contractors, materials, plant and other consumables.
- **Internal labour costs (+$5.1m)** – additional internal labour costs driven by:
  - annual increase required under the Infrastructure Enterprise Agreement and other Staff Agreements ($1.6m)
  - correction of labour cost error identified in the FY25 approved budget which had the effect of understating labour costs by $0.4m
  - additional FTE to support internalisation of telecommunications maintenance activities
  - additional contract labour hire to support apprentice and trainee levels and support critical skill shortages in Control Systems North teams
  - additional internal labour support from Civil Infrastructure to support corrective maintenance activity levels.
- **Rail Grinding (-$0.3m)** – reflects reduction in cyclic grinding requirements across turnouts and mainline scope.
- **Targeted drainage program (+$2.9m)** – reflects additional contractor support to execute targeted program to improve track and corridor drainage at sites where formation degradation is evident.
- **General Track (-$0.5m)** – reflects reduction in external contractor support following increase in internal labour support from Civil Infrastructure team.
- **Electrical OH (+$0.9m) –** predominately driven by the capacity enhancement initiative requiring engagement of contractor resources to support reduction in Overhead Maintenance Windows.
- **Signalling & Telecommunications (-$1.6m)** – reduction in contractor spend following internalisation of telecommunications maintenance activities.
- **Efficiency** – FY26B reflects target efficiencies of $1.6m, which is broadly consistent with the efficiency target assumed in the FY25 approved budget. Initiative focus areas include labour, indirect costs, contractor spend and procurement activities. These are discussed further in Section 10.4.7 which describes areas of focus since the FY25 MRSB.

The FY25 forecast is $5.1m higher than the approved FY25 budget[6], with the General Track maintenance category expected to breach the materiality thresholds set in UT5. This is predominately driven by the targeted drainage program (+$2.9m). The FY25 forecast is subject to review and will be updated at the end of Q2 FY25.

An overview of the methodology used to establish the FY26 maintenance cost budget is provided in Section 10.3 Budget Setting and Procurement.

3.3.2 FY26 Maintenance Strategy and Budget

The maintenance program includes preventative, planned corrective and reactive maintenance activities.

The planned and preventive maintenance activities and inspections, as well as the planned mechanised production scope, are derived in line with the intervention periods as detailed in Aurizon Network's Asset

[6] Refer to Q1 FY25 Quarterly Performance Report for more detailed information on costs expected to be incurred

Maintenance and Renewal Policy. This policy determines the inspection regime and period based on asset type condition and location.

The scope of planned corrective and reactive maintenance tasks is heavily dependent on the faults identified via the planned inspection programs. Aurizon Network has assumed that in FY26 the Coal System will see a similar level of faults that require planned corrective or immediate response as in prior years.

Section 9, Strategies by Asset Class, outlines the different approaches with regards to maintaining the Rail Infrastructure. These approaches lead to the application of the maintenance tasks across the system.

The proposed FY26 maintenance scope and budget for the Goonyella System is outlined in Table 21.

Table 21 FY26 Final Draft Proposal – Maintenance – Goonyella System

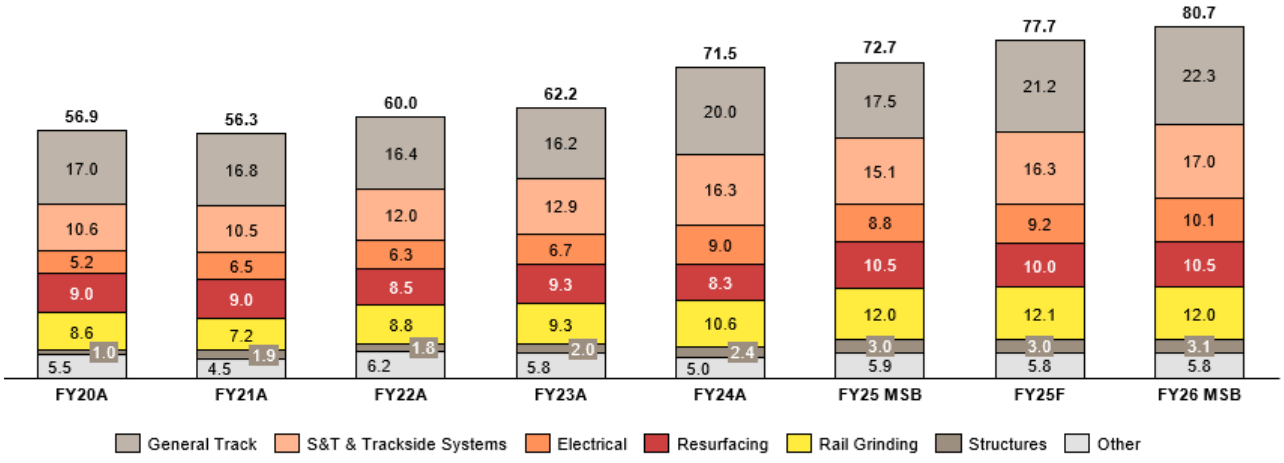
Maintenance Item	Scope Units	FY25 Budget Scope	FY25 Budget ($m)	FY25 Forecast Scope	FY25 Forecast ($m)	FY26 Budget Scope	FY26 Budget ($m)
Resurfacing			10.5		10.0		10.5
Mainline	Km	956	8.6	837	8.2	956	8.6
Turnout	Site	189	1.9	189	1.9	189	1.9
Rail Grinding			12.0		12.1		12.0
Mainline	Km	[redacted]	9.0	[redacted]	9.3	[redacted]	9.4
Turnout	Site	[redacted]	2.9	[redacted]	2.6	[redacted]	2.5
Level Crossing	Track LX	[redacted]	0.1	[redacted]	0.1	[redacted]	0.1
General Track Maintenance			17.4		21.2		22.3
General Track	Activity		14.7		16.5		17.3
Corridor Maintenance	Activity		2.0		4.1		4.3
Ultrasonic Testing	Km	5,042	0.7	5,010	0.6	5,042	0.7
Signalling and Telecoms			13.0		14.6		15.1
Signalling Corrective	Activity		3.6		3.2		4.1
Signalling Preventative	Inspection		6.4		7.9		7.1
Telecoms Corrective	Activity		0.3		0.4		0.6
Telecoms Preventative	Inspection		2.7		3.1		3.4
Electrical			8.8		9.2		10.1
OHLE Corrective	Activity		2.8		2.1		2.8
OHLE Preventative	Inspection		3.5		4.9		5.2
Power Systems Corrective	Activity		0.7		0.8		1.0
Power Systems Preventative	Inspection		1.7		1.4		1.0
Structures and Facilities			3.0		3.0		3.1
Trackside Systems			2.1		1.7		1.8
Other Civil Maintenance			3.4		3.5		3.6
Other General Maintenance			2.5		2.3		2.2
Sub-Total			**72.6**		**77.7**		**80.7**
Ballast Undercutting Plant Depreciation			2.3		2.3		2.3
Total Direct Maintenance Costs			75.0		80.1		83.0
Non-Coal Allocation			(0.1)		(0.1)		(0.1)
Total			**74.9**		**80.0**		**83.0**

Notes: Figures may not add due to rounding.

For the Goonyella System:

- **Direct Maintenance Costs** (excluding ballast undercutting plant depreciation) are budgeted to increase by $8.0m from the FY25 Budget. Key movements in RIG maintenance categories are:
  - **General Track (+$4.9m)** – increase driven by additional internal labour, contractor support and rail materials to support Civil Infrastructure discipline in delivering an uplift in corrective maintenance levels predominantly relating to rail maintenance activities[7]. The FY26 budget also reflects additional contractor support to execute the targeted drainage improvement program, which is partly offset by a reduction in other contractor spend following the inclusion of additional internal labour support.
  - **Signalling & Telecommunications (+$2.1m)** - increase driven by higher Internal Labour cost with the annual increase required under the Infrastructure Enterprise Agreement and other Staff Agreements (including shift count allowances), additional contract labour hire to support apprentice and trainee levels and support critical skill shortages in Control Systems North teams as well as the correction of labour cost error identified in the FY25 approved budget which resulted in an understatement of labour costs. This is offset by a reduction in Contractor spend following internalisation of telecommunications maintenance activities.
  - **Electrical (+$1.3m)** - increase predominately driven by the capacity enhancement initiative requiring engagement of contractor resources to support reduction in Overhead Maintenance Windows.
  - **Rail Grinding ($0.0m)** – contract escalation offset by a reduction in updated cyclical requirements resulting in decreased Turnouts [redacted] scope.
- **Ballast Undercutting Plant Depreciation** – ballast undercutting plant depreciation in total is largely in line with FY25B, with the allocation between systems based on the number of days that the ballast plant is expected to be operating in the Goonyella system in FY26.
- **Non-Coal Allocation** – this adjustment reflects an allocation of costs to non-coal services and is calculated by applying the actual non-coal volumes railed in Goonyella during FY23 to the QCA-approved AT1 Reference Tariff for FY26.

Figure sets out a summary of historic, forecast and budgeted direct maintenance costs by maintenance category. To ensure comparability between periods, the direct maintenance costs presented in the chart exclude depreciation on ballast undercutting plant.



[7] Refer to additional information presented to RIG Producer Group – FY26 v FY25 Draft Overview 17.01.2025

Figure 27 Direct Maintenance Costs - Goonyella System

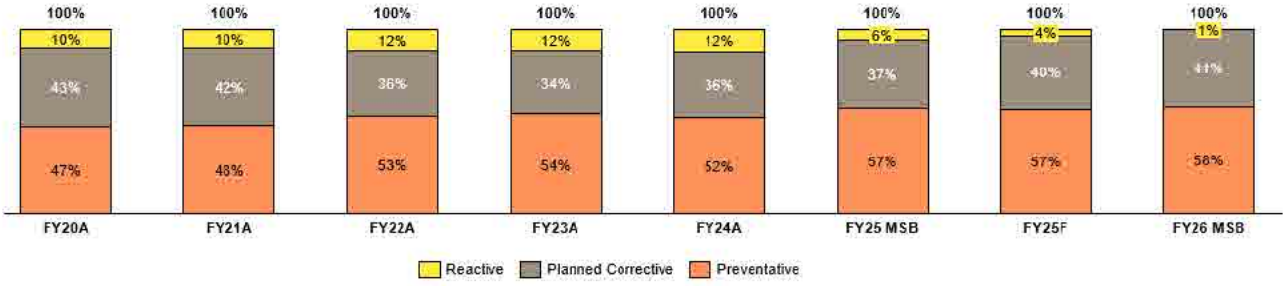


Figure 28 Preventative/Corrective Maintenance Spend Composition - Goonyella System

Figure 28 illustrates the proportion of preventive, planned corrective and reactive maintenance expense in the Goonyella System over time. Approximately 58% of the Goonyella System maintenance spend in FY26 is expected to be preventive in nature.

Additional detail in relation to the make-up of costs for each maintenance activity has also been provided to the RIG Expert Advisor.

3.4 Goonyella System – FY26 Renewals Strategy and Budget

Aurizon Network has developed its Draft Renewals Strategy and Budget for the Goonyella System having regard to all relevant matters outlined in clause 7A.11 of UT5. Aurizon Network considers its FY26 Final Draft Proposal provides an appropriate level of asset activity that will promote the safety, reliability and performance of Goonyella System Rail Infrastructure and seeking to deliver Committed Capacity.

3.4.1 Summary of FY26 Renewals Strategy and Budget

Aurizon Network's FY26 Draft Renewals Strategy and Budget for the Goonyella system provides for an asset Renewals requirement of $133.2m which is:

- $22.7m higher than the FY25 approved Renewals Strategy and Budget
- $18.5m higher than Aurizon Network's current FY25 forecast.

The detail of the changes to the FY25 program are summarised within Quarterly RIG performance reports.

A summary of the FY26 renewals budget for the Goonyella System is outlined below.

Table 22 FY26 Final Draft Proposal - Renewals - Goonyella System

Renewals Item ($m)	Assets Included	FY25 Approved Budget	FY25 Forecast	FY26 Draft Budget
Civil Assets		86.1	88.6	107.6
Permanent Way	Rail, Track, Sleeper, Turnouts	30.8	33.1	33.1
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	35.8	37.3	45.2
Structures	Culverts, Bridges	8.2	7.3	10.9

Civil Renewals	Formation, Level Crossings, Access Points	11.3	10.9	18.3
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission	14.7	16.8	12.0
Electrical Assets	Overhead Line Equipment and Power Systems	9.8	9.4	13.8
Total		**110.6**	**114.8**	**133.3**

Note: Figures may not add due to rounding.

The FY26 budget variance to the approved FY25 Renewals Strategy and Budget is primarily driven by:

- **Cost escalation** – Variations across program largely impacted by labour and non-labour escalation outlined in Section 10.3 Budget Setting and Procurement.
- **Permanent Way (+$2.3m)** – Scope (and cost) increases in Rail and Turnout Renewals are offset by the reduction in the Track Upgrade program. Rail Renewals have increased compared to the FY25 budget by $7.5m driven by an increase in scope requirements. Rail renewal scope fluctuates from year to year based on the quantity of rail kilometres that will reach wear limits or will require replacement due to surface defects or corrosion. Total rail replacement to achieve the annual strategic target is delivered through a combination of Rail Renewal and Track Upgrade scope. Track Upgrade cost (a combination of sleeper and rail renewal) has reduced by $11.3m compared to the FY25 budget predominantly due to a deliberate reduction in scope to allow for increased scope within the rail renewals program. In FY25 the Turnout Renewal program focused on the development of designs to increase program stability. Six Turnout Renewals are now proposed in FY26.
- **Ballast Cleaning (+$9.4m)** – Cost estimates have been informed by expected ballast return rates which have been based on information collected through pre-dig assessments. Pre-dig information has been used to help inform ballast quantity requirements, ballast delivery costs and ballast removal (spoil) costs.
- **Structures (+$2.8m) –** The Culvert Renewal at Waitara will remove and replace a 19m culvert across three tracks with Reinforced Concrete Box Culverts. This larger site is the primary driver of the increase in FY26 compared to FY25 approved budget.
- **Civil Renewals (+$7.0m)** – Variance driven by an increase in planned Formation Renewal, and 30.3km of planned Corridor Security and Fencing compared to prior years forecast. From FY26, the Corridor Fencing renewal program will include a quantity of planned renewals scope. These renewals will be focussed at locations of higher risk (local to more populated areas) identified through trespass incidents as well as locations where livestock are more able to enter the corridor due to the condition of the fence. At an annualised renewal rate of approximately 2.1% of the asset base, this investment will serve to improve the overall condition of the Corridor Fencing in Goonyella and support underpinning legislative (Transport Infrastructure Act) requirements.
- **Electrical (+$4.0m)** – Increase in strategic scope to deliver Goonyella Ports Overhead Renewals and Traction Substation Renewals compared to prior years.
- **Control Systems (-$2.8m)** - To provide stability in the delivery of the program year on year, scope to be delivered in FY26 has been reduced to allow for prior year scope that has been deferred to FY26. This will assist in reducing variability of flow of works between years. 'Rollover' scope will continue to be reported as FY25 approved scope (or for the year in which it was approved) in line with the reporting approach agreed with the Rail Industry Group.

Figure 29 below shows the distribution of scope locations as well as the relative spend per scope. As is typical of prior years in the Goonyella system the works completed are most concentrated on the Goonyella mainline aligned

to these track sections seeing 100% of system traffic. There is also investment on branch lines and individual mine balloon loops.

The largest single scope item for FY26 is the Formation renewal at Winchester at 31.1km to 32.1km on the Goonyella mainline.

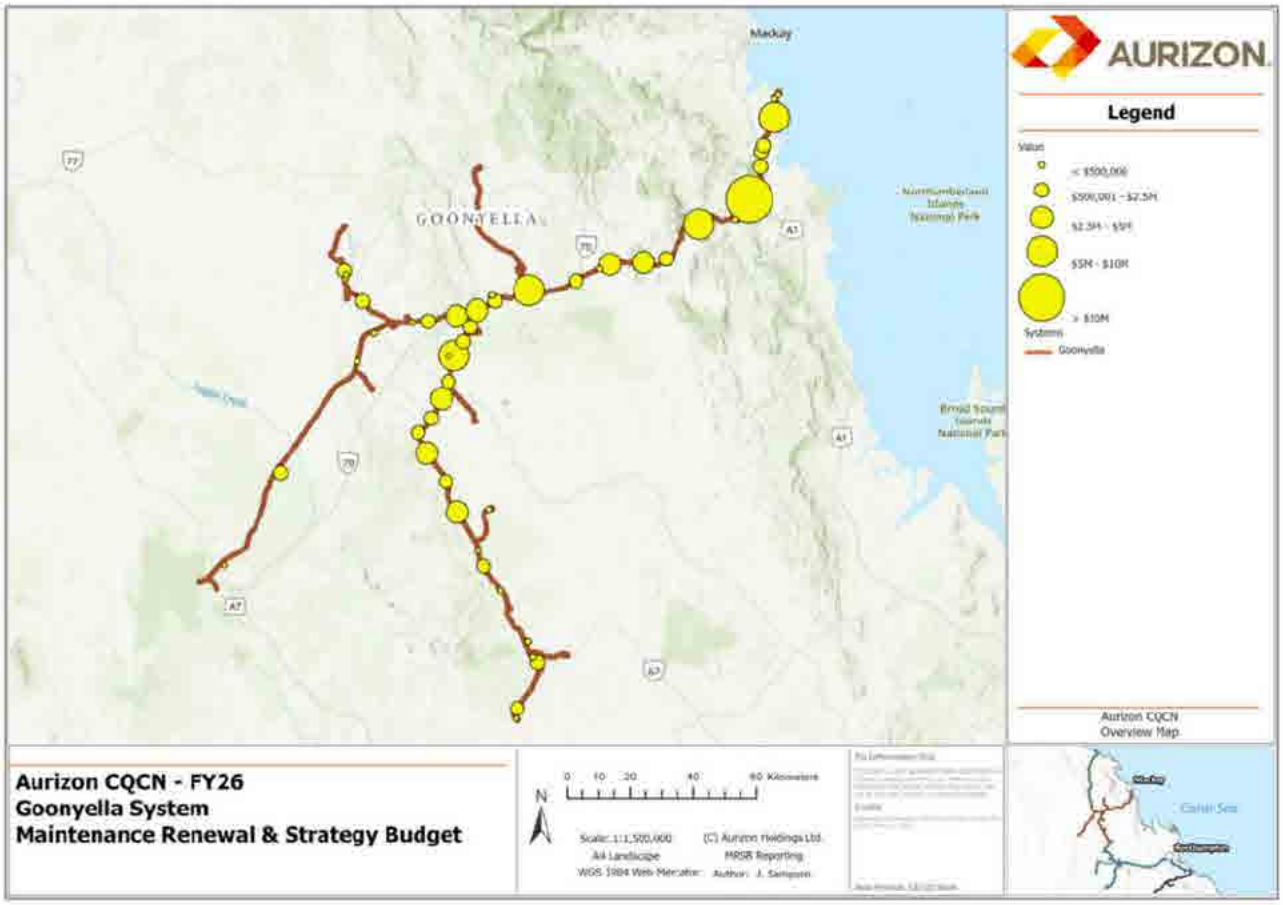


Figure 29 Map of Scope Location and Spend FY26

Table 23 details a summary of Goonyella system asset renewals as a percentage of total system assets.

Table 23 FY26 Final Draft Proposal - Renewals as a % of Total System Assets - Goonyella System

Renewals Item	Assets Include:	Total system Assets	FY25 RIG Approved Scope	FY26 Proposed Scope	FY26 scope % Total System Assets
Civil Assets					
Permanent Way	Rail, Track, Sleeper, Turnouts	2,032 rail km Rail 1,016km sleepers 1,016km track 399 turnouts	24.0 rail km Rail 0km sleepers 8.3km track upgrade 0 turnouts	40.5 rail km Rail 0.4km sleepers 2.0km track upgrade 6 turnouts	2.0% 0.04% 0.2% 1.5%
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	1,016km track 399 turnouts 103 bridges	50.1km Mainline 19 Turnouts 0 bridge	40.0km Mainline 13 Turnouts 2 bridge	3.9% 3.3% 1.9%

Renewals Item	Assets Include:	Total system Assets	FY25 RIG Approved Scope	FY26 Proposed Scope	FY26 scope % Total System Assets
Structures	Culverts, Bridges	103 bridges 1,169 culverts	0 bridge 8 culverts	0 bridge 7 culverts	Nil 0.6%
Civil Renewals	Formation, Level Crossings, Access Points, Corridor Security and Fencing	1,016km formation 277 level crossings 1463km Fencing	0.6km formation 2 level crossings 0km	2.0km formation 1 level crossings 30.3km	0.2% 0.4% 2.1%
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission		39 Sites 9 Units	19 Sites 78 Units 1 Station 1 Link	
Electrical Assets	Overhead Line Equipment, Feeder Stations, Autotransformers, SCADA system		3 Sites 31 Units 14 Structures	3 Sites 29 Units 8 Structures	

Note:

- *Control Systems count of assets is a collective of sites, nodes, cable routes, communications assets and systems and is included to indicate level of work comparable to prior year.*
- *Electrical count of assets is a collective of sites, earthing and bonding, current detection, insulator renewal, transformer renewal, protection relay replacement etc.*

Figure 30 illustrates the FY25 Approved Budget and draft FY26 asset renewal program by renewal type (categorised as baseload scope, reactive renewals, strategic scope, future scope).

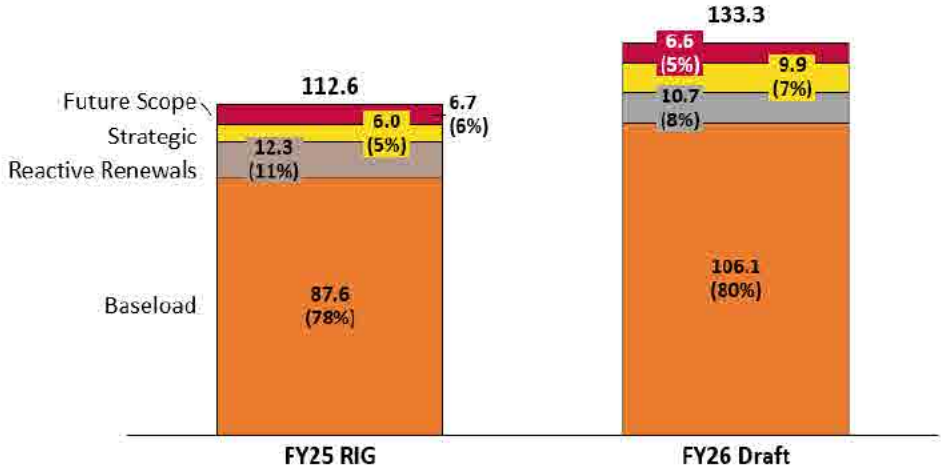


Figure 30 Split of Renewals by Category FY25B and FY26 - Goonyella System ($)

In relation to the above chart, the following comments are made:

- **Baseload renewal** – represents the majority of the proposed FY26 Asset Renewal program. Reduction against prior period is driven by a reduction in permanent way renewals triggered by condition.
- **Reactive renewal** – reflects the inclusion of an allocation for Civil reactive scopes, including 2.7km allowance for ballast cleaning reactive scopes and Control System – Tele Battery reactive renewal scope.
- **Strategic scope** – includes the continuation of the renewal programs for Goonyella Ports OHLE, Train Control (UTC/DTC), Autotransformer and TETRA Radio rollout renewal programs and scope development of the Substation Renewal Program.
- **Future scope** – includes cost of designs relating to structures, level crossings, turnouts and formation to be delivered in future years.

Further information in relation to the scope categorisation used by Aurizon Network in the development of the FY26 Final Draft Proposal is outlined in Table 66.

3.4.2 Details of the FY26 Renewals Strategy and Budget

This section provides further information on the rationale for renewal in FY26.

Section 9, Strategies by Asset Class, as well as Appendix 3, Options for Renewal, provide further information on the rational for renewal, the risks being managed and alternate approaches considered when planning a renewal.

Additional information is provided in relation to strategic scope items given these are either new or continuing programs of scope that are not typical of scope seen in previous years.

This section should be read in conjunction with Appendix 1 Aurizon Network's Renewal Scope Detail Report. This Power BI report provides detail on the individual scope items including works location and Combined Risk Assessment (CRA) score.

The maps included in this section indicate the location of the proposed scope.

Aurizon Network notes that the prioritisation of renewals scope is based on currently available information and that this prioritisation may change over the period prior to execution due to environmental factors, relative degradation rates or other considerations. Changes to the proposed scope will be dealt with through the reporting and change management processes as appropriate.

3.5 Civil Assets – Permanent Way

3.5.1 Permanent Way Renewal Program

Aurizon Network's FY26 Final Draft Proposal provides $33.1m to deliver the scope of permanent way renewals in the Goonyella System. Table 24 summarises the scope and budget for each relevant renewal item.

Table 24 FY26 Permanent Way Renewals - Goonyella System

Renewal Item	Scope Type	FY26 Scope	Scope Unit	FY26 Budget ($m)
Rail Renewal	Baseload	40.5	Rail km	18.5
Track Upgrade	Baseload	2.0	Track km	3.0
Sleepers	Baseload	584	Sleepers	0.1
Turnout Renewals	Baseload	6	Site	6.7
Turnout Components	Reactive Renewals		Lumpsum	3.6

Turnouts Designs	Future Scope	9	Turnout	0.3
Permanent Way Other	Future Scope	0.1	Track KM	0.1
	Reactive Renewals		Lumpsum	0.8
Total				**33.1**

The FY26 Rail Renewal program includes renewals across 14 sites in Goonyella with large renewals in Black Mountain, Hatfield, Bolingbroke, Wandoo and Millenium. Hatfield and Bolingbroke are driving scope for closures.

The combination of 3 sites reaching rail wear limits at Hatfield will renew 64 rail lengths (6.9 rail km). There have been over 110 incidents in this track section over the past 5 years, increasing in frequency in recent years. These incidents have resulted in 44 cancelled services, 7,000 delay minutes and 1200 delayed services,

At **Bolingbroke to Balook**, 31 rail lengths (3.3 rail km) will be renewed at two sites. One site is a tight radius curve with extreme wear and the other tangential rail that is fatigued and has required multiple rail defect repairs.

The following proposed rail renewal sites in FY26 provide context to the selection of various sites to reduce the risk of further defects affecting throughput:

- At **Black Mountain** the renewal of 65 rail lengths (6.9 rail km) is proposed due to a future condition rating of 4.1 due to high rail wear from the tight curves in this section. This site has seen 21 cancelled services and 19,585 delay minutes attributed to rail defects in FY26 renewals footprint (FY21 to FY24).
- At **HPCT**, renewal of 15 rail lengths (1.2 rail km) is proposed. The future condition score is 3.5 with a poor condition of the track structure is poor and degraded road surface requiring renewal. The root cause is poor drainage, so establishment of centre drain is required to remove water from the centre of tracks. 14 cancelled services, 16,000 delay minutes and 110 delayed services have occurred over the past 5 years. The renewal will reduce thre risk of further defects affecting throughput.
- At **Praguelands** the renewal of 12 rail lengths (1.3 rail km) is proposed. The future condition has been assessed at 3.8 and wear rates will see rail reach wear limits late in FY26. This site has seen 12 cancelled services, 10,000 delay minutes and 400 delayed services over the past 5 years.
- At **Jilalan** the renewal of 4 rail lengths (0.4 rail km) is to address a future condition rating of 3.8. The rail is estimated to reach the wear limits in FY26 due to wear rates. This site has seen 37 cancelled services, 25,000 delay minutes and 600 delayed services over the past 5 years.

The Track Upgrade program is smaller in FY26 due to the larger rail renewal program. One large Track Upgrade is planned at German Creek (2.0km) requiring the replacement of 730 sleepers and 4.1 km of rail.

The FY26 Turnout renewal program includes 6 turnouts; specifically, 1 at Balook, 1 at Wandoo and enabling works for 4 turnouts at Praguelands.

The renewal of the aged 1:12 turnout at Balook is with a new 1:12 swing nose turnout and new catchpoints. The existing turnout has a future condition rating of 4.0 and the renewal will reduce the reactive maintenance currently evident at this site.

The Wandoo turnout renewal is of an aged 1:16 turnout with a new 1:16 swing nose tangential turnout . The existing turnout has a future condition rating of 4.0. There have been 9 corrective maintenance tasks, 16 immediate maintenance tasks including loss of points detection and over 6,500 delay minutes attributed to the current condition of the turnout.

The final commissioning of the turnouts at Praguelands are planned to occur in H1 of FY27. The turnouts have been grouped into one project due to the improved design of the crossovers geometry (to remove the current 119m height differential) which will result in increased reliability and performance of both the civil and electrical (OHLE) aspects of the crossover.

Turnout Designs are delivered over a multi-year program and are grouped where possible for efficiency, which can lead to variations between design costs each year.

Aurizon Network has continued in FY26 the previously adopted alternate approaches for the Permanent Way scope of replacing with a longer life asset. All sleeper renewal scopes and track upgrade scopes will involve renewing existing fist clip sleepers with concrete pandrol e clip sleepers. For the remaining scope listed above, a like-for-like renewal has been adopted. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.1 provides a summary of the Asset strategy for Permanent Way.

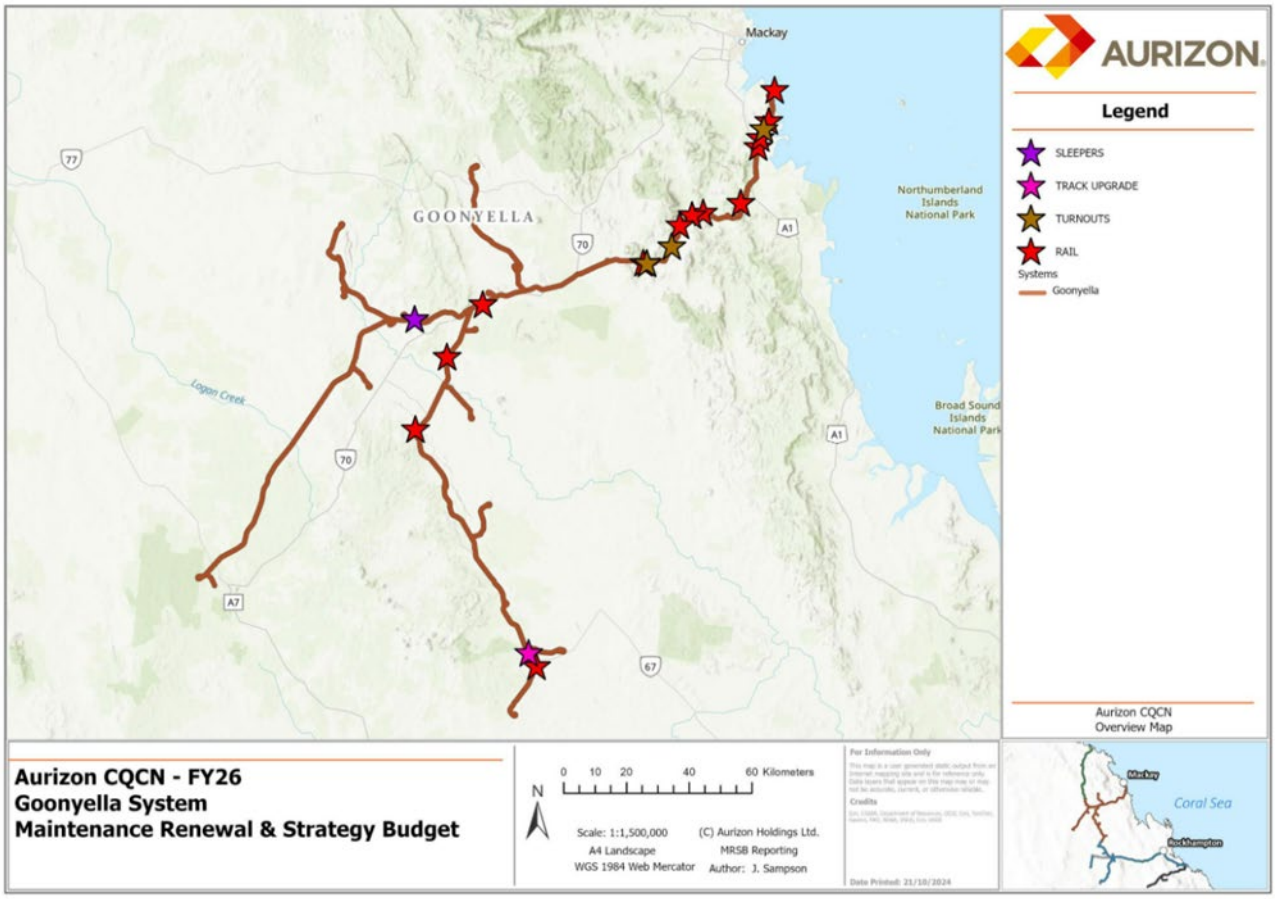
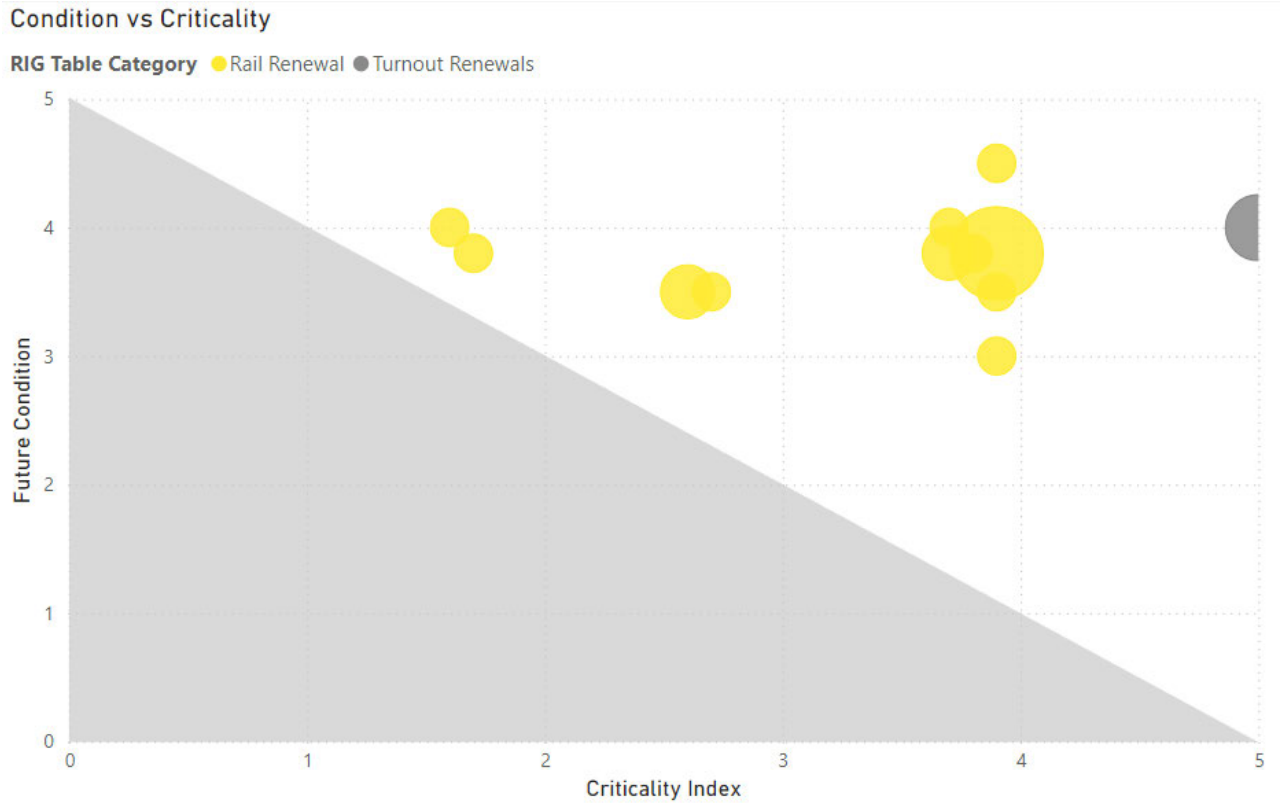


Figure 31 Rail Renewal, Track Upgrade and Turnout Sites - Goonyella System

3.5.2 Permanent Way FY26 Scope – Asset Condition and Criticality Assignment

Figure 32 plots the planned permanent way renewals against asset condition and location or operational criticality. All planned FY26 renewals are either advanced in wear or degradation and/or located in track sections identified as critical to maximising throughput. All rail renewal sites and track upgrade sites have a condition score above 3.0.



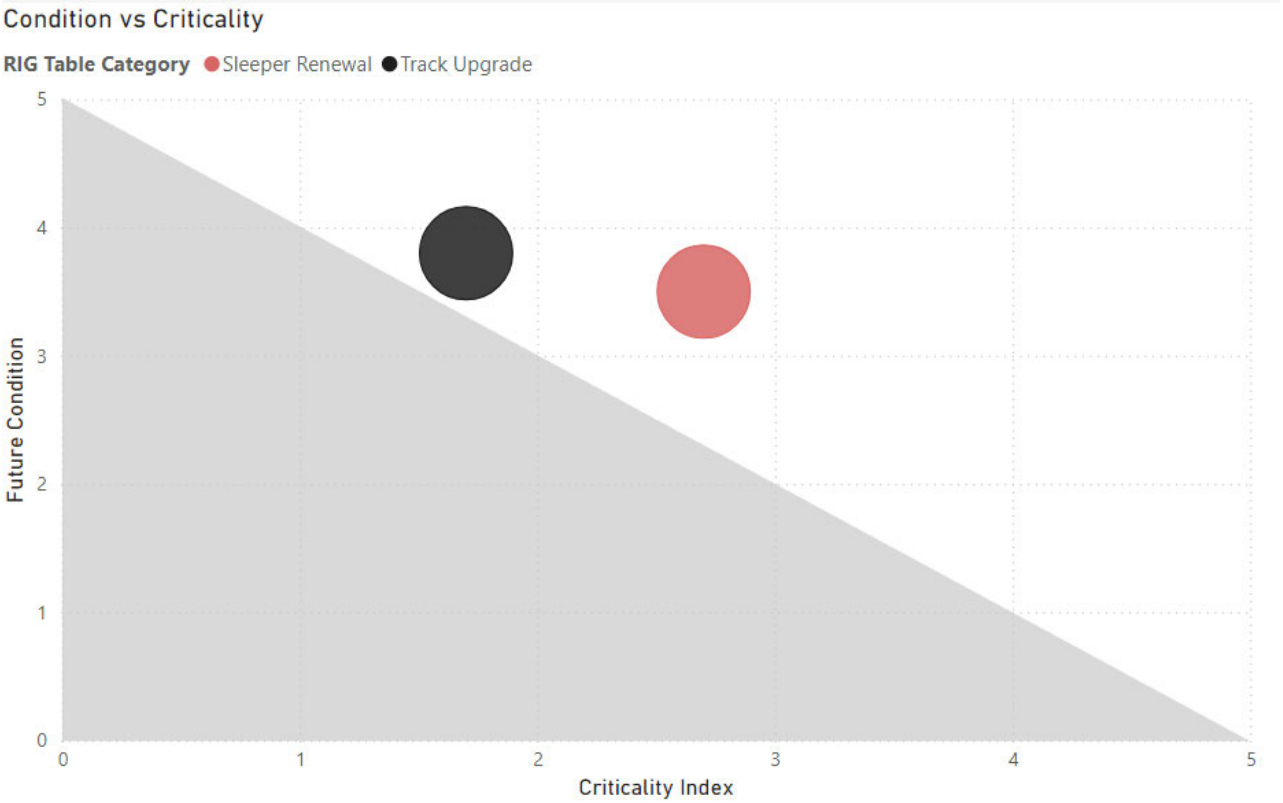


Figure 32 Permanent Way - FY26 Scope Priority Ratings - Goonyella System

3.6 Civil Assets – Ballast Cleaning and Renewals

3.6.1 Ballast Cleaning Renewal Program

In FY26, Aurizon Network proposes to undertake 44.8km of ballast cleaning across mainline undercutting

and reactive undercutting works at a cost of $45.2m.Table 25 below summarises the scope and budget for each relevant renewal item.

It should be noted that for Ballast Cleaning, historical performance indicates that approximately 10% of scope can be lost due to unplanned impacts (e.g., wet weather, incidents). In such circumstances, a loss of scope will not directly translate to a proportional reduction in cost given the predominantly fixed-cost nature of Ballast Undercutting.

Table 25 FY26 Ballast Cleaning Program - Goonyella System

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Mainline Undercutting	Baseload	40.0	km	34.7
Mainline Excavator Undercutting	Baseload	4.8	km	2.9
	Reactive Renewals	2.7	km	2.2
Turnout Undercutting	Baseload	11	Turnout	2.4
	Reactive Renewals	2	Turnout	0.6
Bridge Rollout	Baseload	2	Site	1.1
Monumenting	Baseload	1	Site	0.4
Ground Penetrating Radar	Future Scope		Lumpsum	0.8
Total				**45.2**

Actual ballast condition can vary significantly between locations and can lead to fluctuations in the actual return rates compared to the assumed amount. In circumstances where ballast condition and return rates are lower than assumed, this can slow ballast undercutting production, and result in scope not being completed within the assigned access opportunity.

In FY26, pre-digs have been completed for a high proportion of Mainline Undercutting scope locations resulting in an average return rate for the crib (centre of the track) and shoulder at 15% and 27% respectively. Pre-dig results have helped to inform planning assumptions, including the volume of material to process (ballast profile) and screenability assumptions. Within the Goonyella scopes, this deeper understanding of latent ballast condition indicates that an increased volume of ballast will be required given the high spoiling rates of the selected locations. This increase in ballast material required coupled with the need to remove the spoiled ballast from the worksite has contributed to an increase in estimated unit cost compared to prior years. The pre-dig information has enabled an improved level of certainty with respect to closure requirements for site specific scope items.

The following scope are driving scope for closures and have seen TSRs and associated delays because of track alignment and ballast condition. The ballast undercutting will improve ballast condition and reinstate free drainage of track structure resulting in reduction in track alignment issues.

- Local to Dalrymple Bay Junction, two ballast undercutting sites have been combined to undercut 4.3km due to a future condition rating of 4.1 and 4.0 respectively. Both of these sites have high levels of coal fouling and are in operationally impactful sections close to the Goonyella Ports.
- At Black Mountain, 5.7 km will be undercut over 3 sites. The future condition rating of 3.9 with fouling between 40 and >60 PVC.
- At Saraji, 3.6km will be undercut due to a future condition rating of 4.3 with fouling between 40 and >60 PVC.

FY26 will see reduced Mainline Excavator Undercutting as Mainline (RM902) Undercutting delivery methodology is more suited to the required scope locations. A reduction will also be seen due to Mainline Excavator Undercutting scope adjacent to the Turnout Undercuts sites, now included within the Turnout

Undercutting scope. Mainline excavator undercutting has been planned concurrently with RM902 operations to maximise the scope completed inside of integrated closures, therefore reducing single line possession impacts.

There are two Bridge Rollouts planned for FY26 at Willy Creek and the NCL overpass, with a combined scope of 92m bridge ballast replacement. These sites have severely fouled ballast on both bridges and near 100% fouling, presenting an increased risk to infrastructure reliability.

An allocation to re-establish a portion of monuments is included in the Ballast Cleaning Program in FY26. This includes detailed survey, design and installation of new track data plaques. This ensures that future track maintenance activities reinstate track to the design alignment. The alignment and height of track moves over time due to temperature changes, train operations, maintenance and construction activities which can give rise to track buckles, breaks, accelerated rail wear, contact wire geometry exceptions (in electrified systems) and impacts to rollingstock. Track monuments are located within the rail corridor immediately adjacent to track as fixed in-ground posts or on electrical masts to indicate the correct level and position of the track. Measurements are taken from these to confirm the correct level and position of the track to ensure that the ballast cleaning activity and associated resurfacing correctly locates the track to the design alignment.

Ground Penetrating Radar (GPR) data provides important information to help understand ballast and sub-soil conditions. This information is used to measure fouling and to allow comparison of the FY26 data against prior data sets to understand fouling degradation and plan for future renewal requirements. GPR is a critical input to the Aurizon Ballast Condition Analyser tool that utilises historical GPR, historical undercutting and track resurfacing data to predict ballast fouling growth at the site level to identify future scope locations.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.5 provides a summary of the Asset strategy for Ballast Cleaning.

Detailed information on the development of the ballast cleaning program is included in Section 10.3 Budget Setting and Procurement.

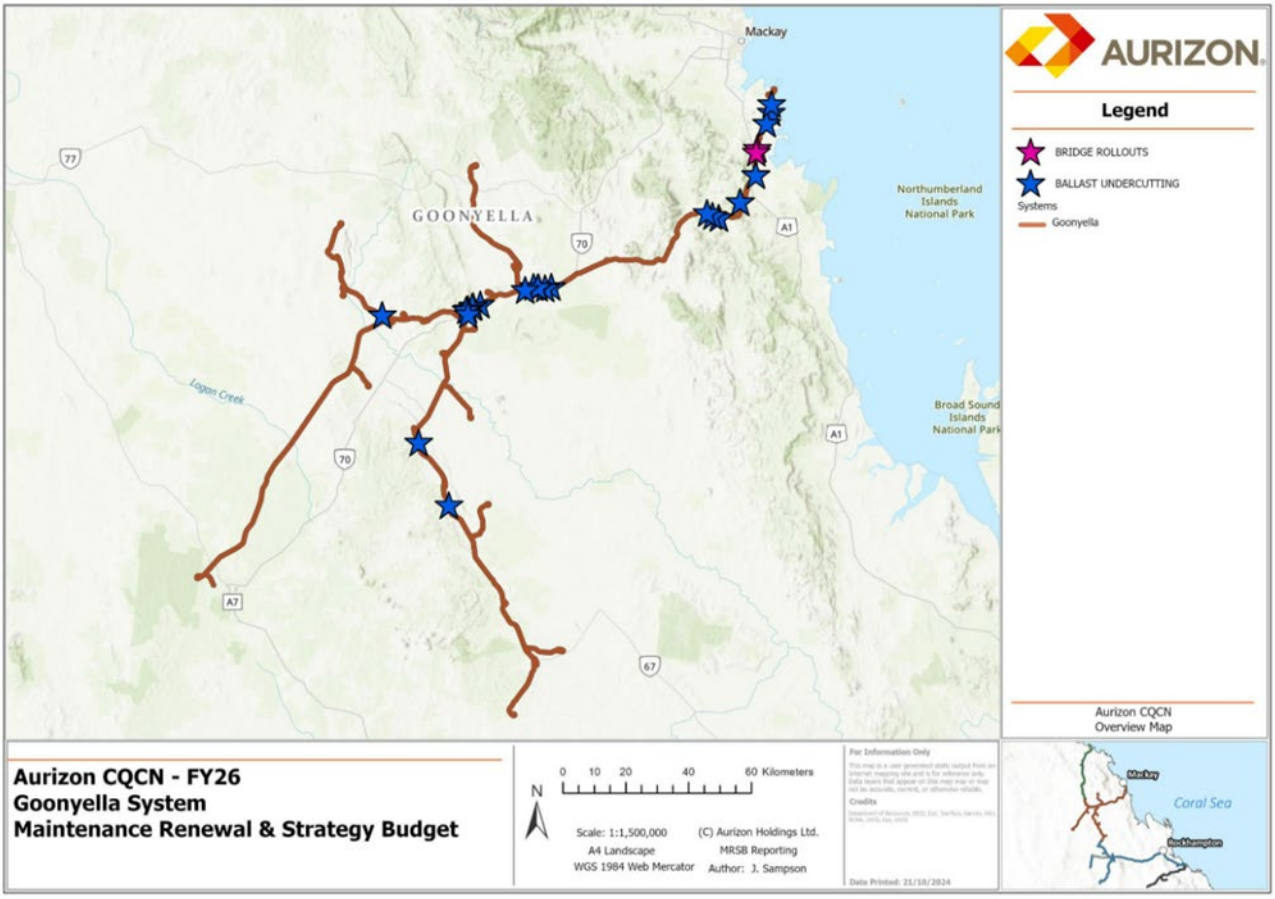


Figure 33 Ballast Cleaning Sites - Goonyella System

3.6.2 Ballast Cleaning FY26 Scope – Asset Condition and Criticality Assignment

Figure 34 plots the planned Ballast renewals against asset condition and location or operational criticality. All identified Ballast Undercutting scope has a current condition of 3.1 or above. The average condition for the FY26 program is 3.9.

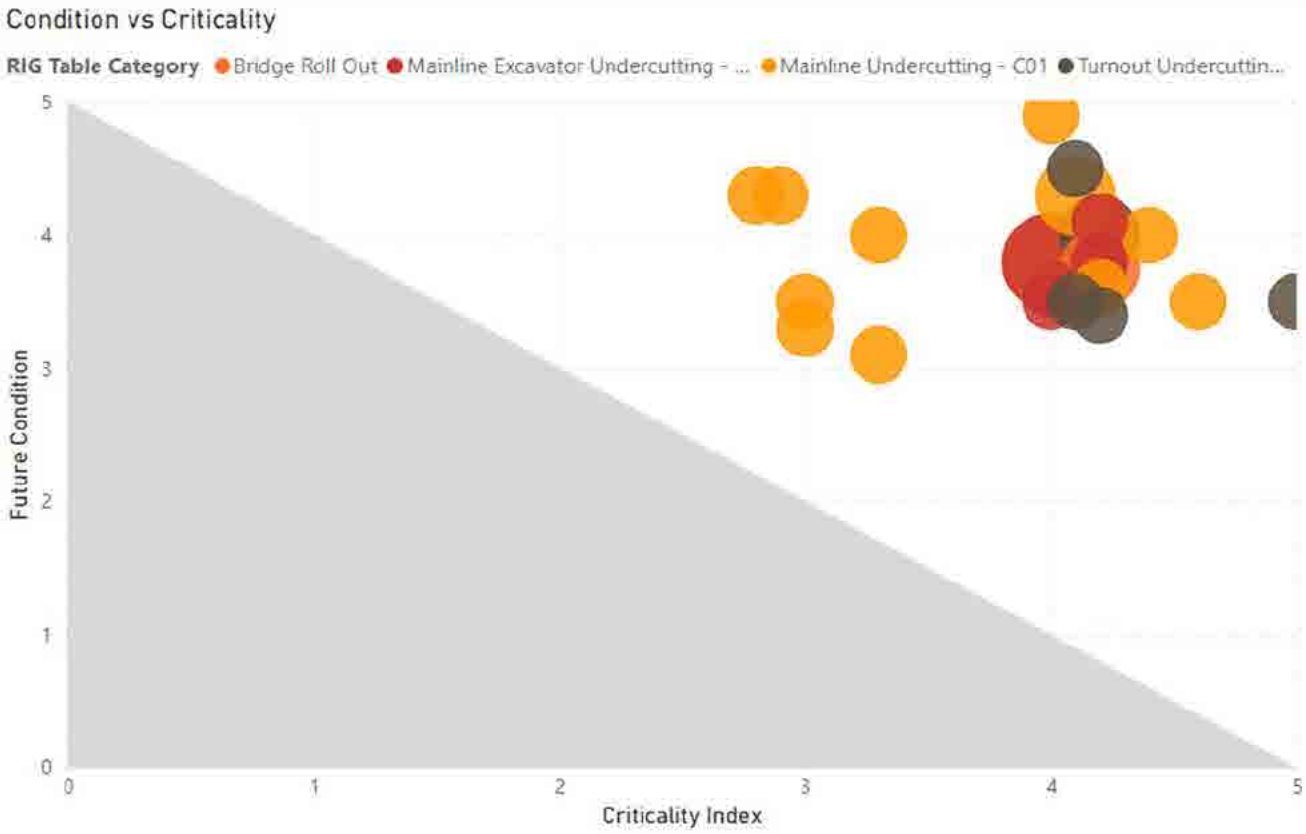


Figure 34 Ballast Cleaning - FY26 Scope Priority Ratings - Goonyella System

3.7 Civil Assets – Structure Renewals

3.7.1 Structure Renewals Program

The Goonyella System has a total of 103 Bridges and 1,169 Culverts which are designed to allow the natural flow of water through the rail network. Aurizon Network proposes to undertake $10.9m of structures renewal works in FY26. Table 26 summarises the scope and budget for each relevant renewal item.

Table 26 FY26 Structure Renewals - Goonyella System

Description	Scope Type	FY26 Scope	Scope Unit	FY26 Budget ($m)
Bridges Design	Future Scope	2	Site	0.3
Culvert Design	Future Scope	13	Site	0.5
Culvert Renewals	Baseload	7	Site	10.2
Total				**10.9**

The FY26 Culvert renewal program will see 7 renewals planned for FY26 (compared to 9 in FY25), with 5 Reinforced Concrete Box Culvert renewals, 1 Cured-In-Place-Pipe (CIPP) and 1 Reinforced Concrete Pipe lining. FY25 saw more CIPP and Culvert removals (Eliminates) then FY26, which is consistent with the

increase forecast seen in FY26 as culvert lining and culvert (diversion and) elimination cost less to deliver then full renew and replace.

Where possible Aurizon Network has adopted alternate approaches for the Structures scope in FY26. By lining aged pipes for 2 of the 7 sites, this will see the existing concrete box culverts sleeved with a reinforced concrete lining system for 1 site and a poor condition pipe lined with CIPP for the other site. These solutions, are preferable and appropriate when conditions allow, as opposed to a full remove and replace. These options for these locations can be completed without impacting capacity while providing a new load-rated structure, thereby avoiding access (and cost) impacts associated with a total renewal or replacement of the culvert.

Culvert renewals at Black Mountain and Waitara are two of the larger sites in FY26.

- At Black Mountain the Culvert Renewal consists of the removal and renewal of concrete pipe culverts (3 pipes). 2 (of 3) of the pipes have sunk. The remaining structure has been temporarily lined but is showing degradation. As the pipes have deformed too significantly (excessive misalignment and no longer free-draining), CIPP is not an applicable remediation option. As such removal and replacement is required to ensure the new culverts are aligned and enable the waterway to free-drain.
- At Waitara the Culvert Renewal will remove and replace 9 x 18m long culverts (8 cells each, total 72 cells). There is significant degradation in culverts 9, 4 and 5. Culverts 3, 7 and 8 are currently propped to slow degradation and reduce the risk of unplanned failure. The future condition is 4.5. This bank of culverts has over 100 defects including pumping/movement, cracking, spalling, exposed reinforcement and reinforcement section loss under track. Given the current condition, failure to renew these culverts would see further degradation leading to individual cell collapse and associated track geometry defects. The rectification of such defects would require track closure and immediate cell replacement or filling of the culvert cell decreasing hydrology flow. Temporary propping is in place to provide stability until the determined renewal date.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.6 provides a summary of the Asset strategy for Structured assets.

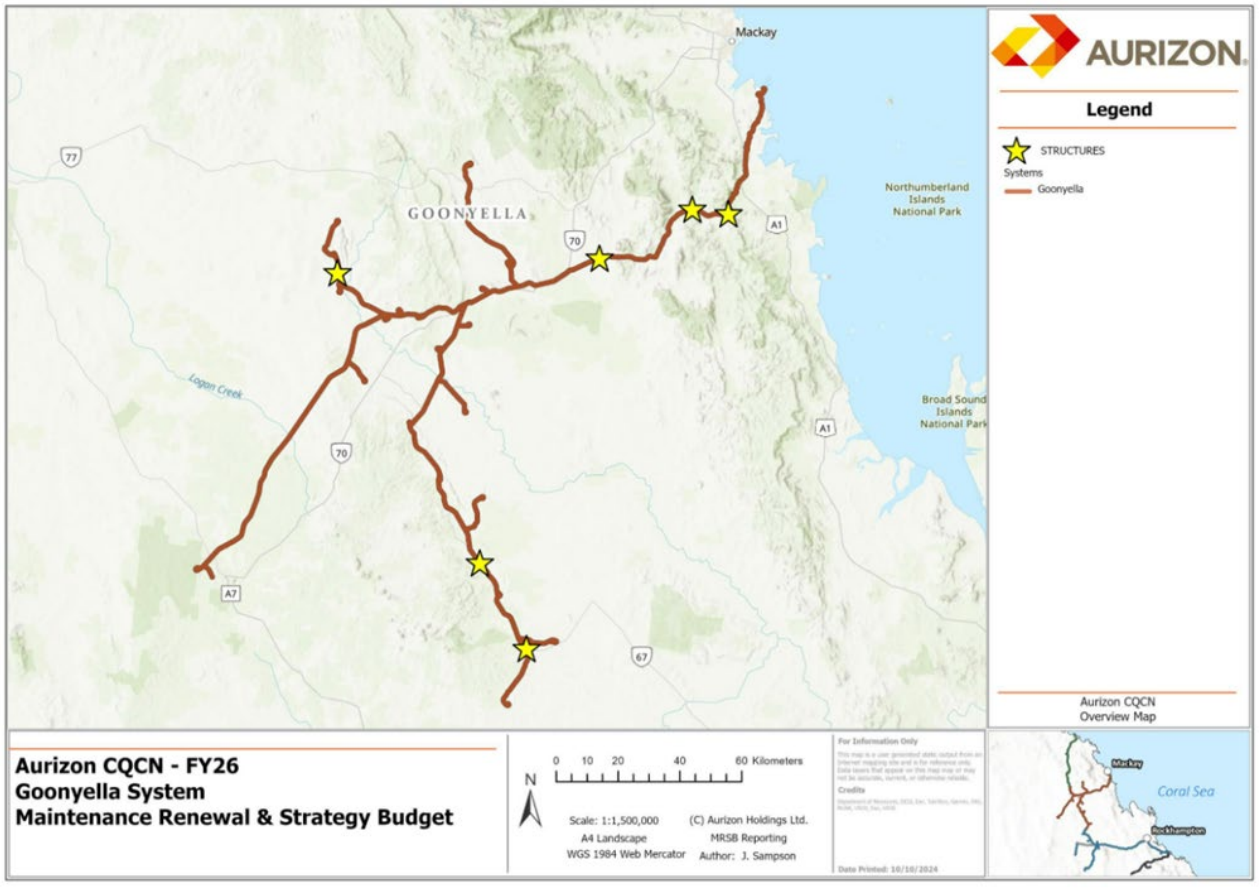


Figure 35 Structures Renewal Sites - Goonyella System

3.7.2 Structures FY26 Scope – Asset Condition and Criticality Assignment

Figure 36 plots the Structures against asset condition and location or operational criticality. The average condition for the FY26 program is 3.8.

While the Stephens and Bundoora culvert renewals are identified as in a lower criticality area, the condition ratings of 3.5 sees this renewal prioritised for FY26. The lower criticality rating reflects a determination that the section has a lesser tonnage profile and any impact of failure can be mitigated to minimise the loss of services.

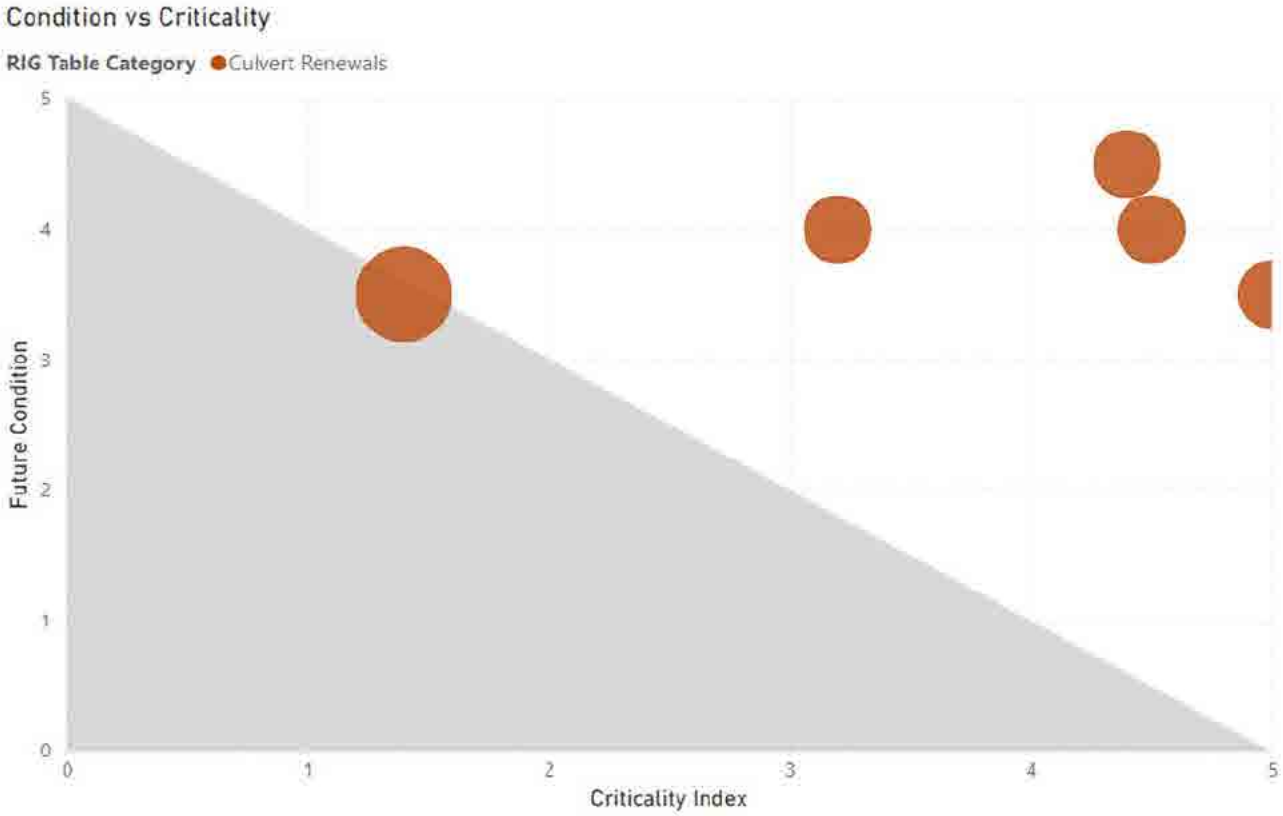


Figure 36 Structures Renewals - FY26 Scope Priority Ratings - Goonyella System

3.8 Civil Assets – Civil Renewals

3.8.1 Civil Asset Renewal Program

In FY26, Aurizon Network proposes to undertake $18.3m in renewals for these assets. Table 27 summarises the scope and budget for each relevant renewal item.

Table 27 Civil Asset Renewal Program - Goonyella System

Description	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Level Crossing Renewals	Baseload	1	Site	1.5
Level Crossing Design	Future Scope	6	Site	0.4
Level Crossing Other	Reactive Renewals		Lumpsum	0.2
Formation Renewals	Baseload	2.0	km	9.8

Description	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Formation Other	Future Scope		Lumpsum	0.5
Formation Reactive	Reactive Renewals		Lumpsum	2.4
Slope Stability	Future Scope	3	Site	0.5
Corridor Fencing & Security Fencing	Baseload	30.3	Lumpsum	2.0
	Reactive Renewals			0.4
Access Points & Roads	Future Scope	4	Site	0.2
	Reactive Renewals		Lumpsum	0.5
Total				**18.3**

The FY26 Formation Renewal program will see 3 planned renewals at Broadlea, Millenium Jct & Winchester. The scope at Winchester is driving scope for two closures in FY26. It will see 1.0km formation renewal due to a future condition rating of 4.8. The area has had multiple small repairs (deemed as holding works) however now requires an extended section of formation rebuild to provide a longer-term solution. Latest GPR shows heavy fouling throughout (Level 6, >60% PVC) and 11 reactive formation repairs have been done in selected sections since FY18 with holding works no longer effective. Significant resurfacing effort to restore track alignment, associated TSR's and minor formation failures has also been undertaken. Not doing the full formation renewal would see a continued increase of this pattern increasing the likelihood of derailment.

The FY26 Level Crossing program will see 1 major renewal at Hay Point. This renewal will be delivered in conjunction with the Culvert renewals at this same site, targeting cost efficiencies in delivery of these renewal sites.

The FY26 Slope Stability program includes 3 future designs, two locations at Black Mountain and one location at Broadlea. This design effort is expected to ensure the early contractor engagement occurs which will provide the necessary information and guidance is provided around fit-for-purpose solutions for future renewals at these sites.

Corridor Security and Fencing has increased in FY26 to allow for the completion of targeted scope to manage the condition of fences. In late 2023, 160km of fencing was condition assessed in Goonyella, all of which was assessed as a condition of 3 (poor) or worse. The planned renewal program in Goonyella is targeted at locations with a high risk or history of livestock strikes, livestock or trespass in the corridor or cancellations or delays as a result of livestock strikes, or livestock or trespass in the corridor. In previous years Corridor Security and Fencing was managed through a reactive budget only.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.7 provides a summary of the Asset Strategy for Civil Assets.

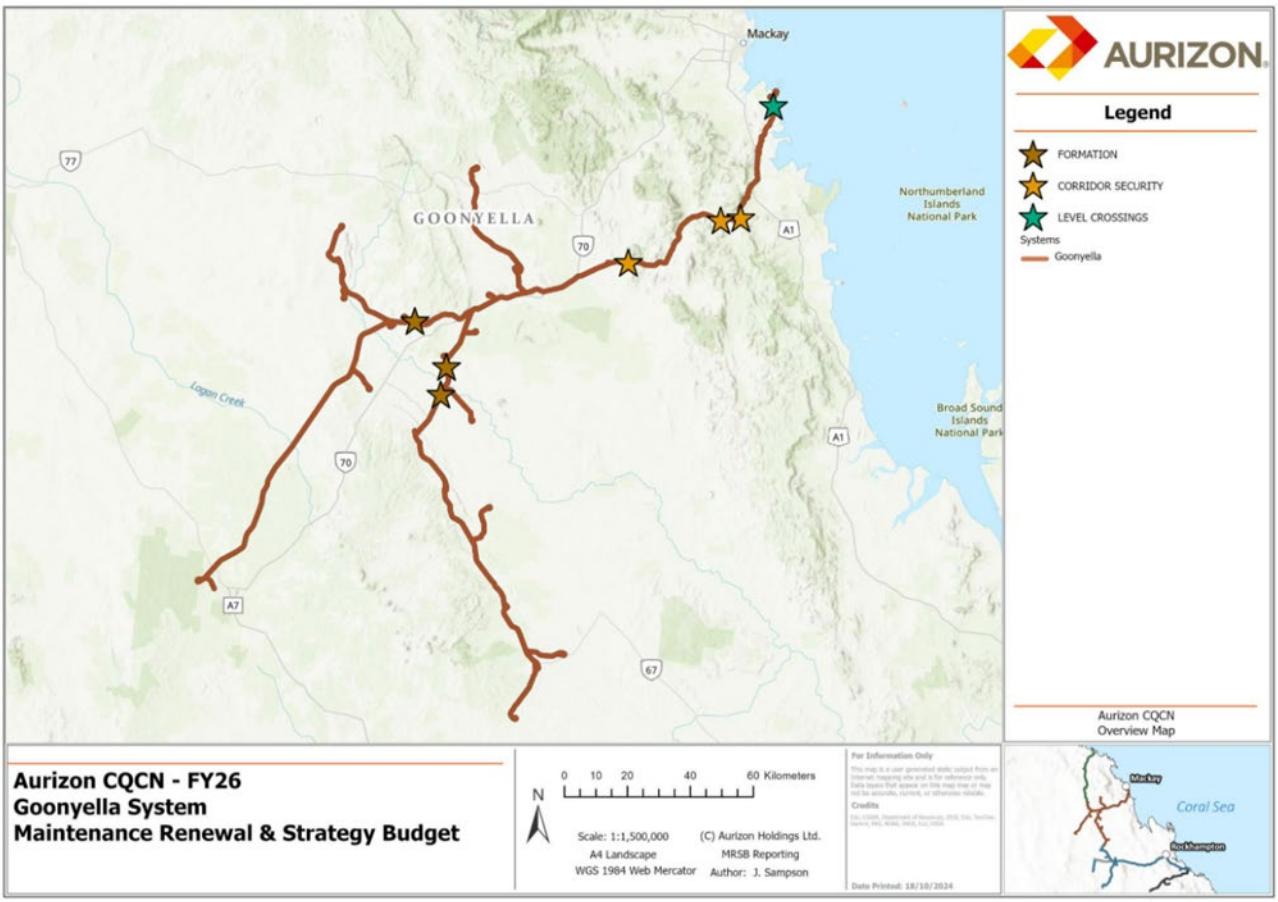


Figure 37 Formation and Level Crossing Renewal Sites - Goonyella System

3.8.2 Civil Renewal FY26 Scope – Asset Condition and Criticality Assignment

Figure 38 plots the civil renewals against asset condition and location or operational criticality.

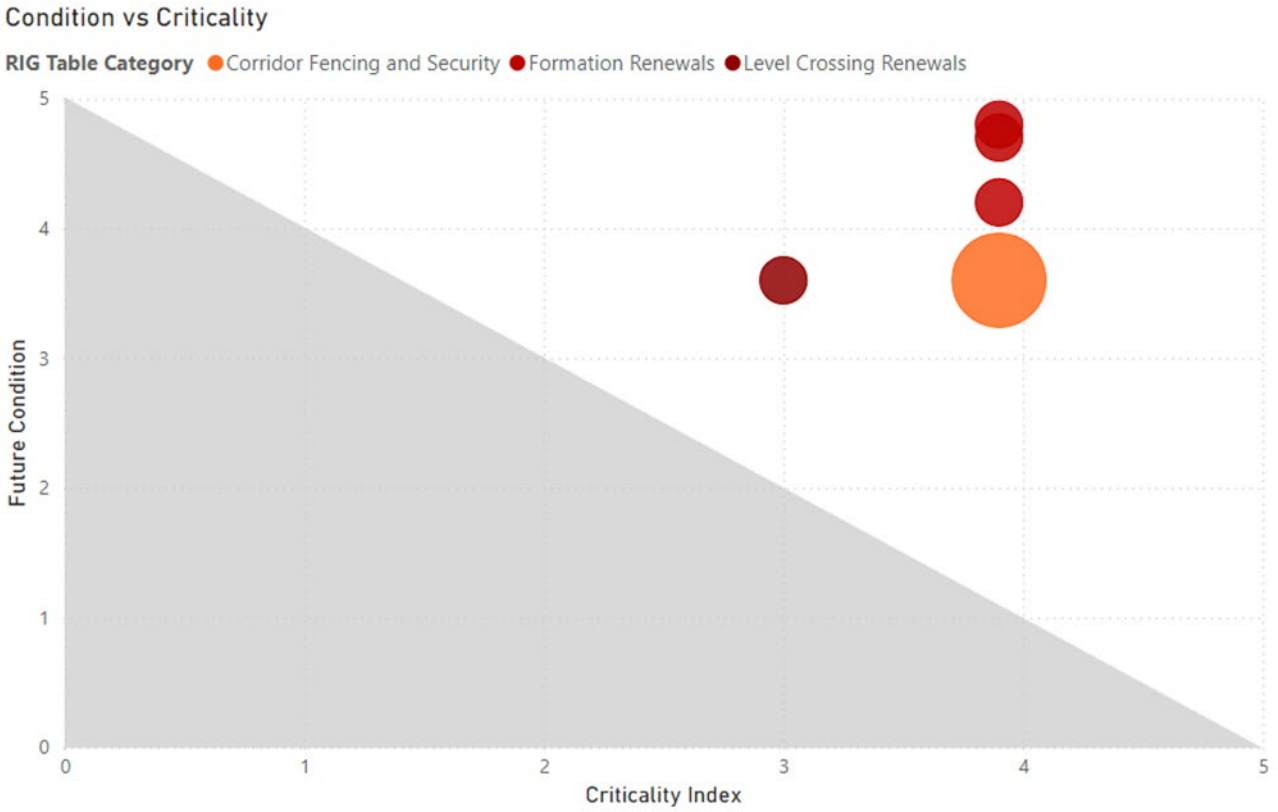


Figure 38 Civil Renewals - FY26 Scope Priority Ratings - Goonyella System

3.9 Control Systems Assets

3.9.1 Control Systems Renewal Program

In FY26, Aurizon Network proposes to undertake the following Control systems renewal in the Goonyella system at an estimated cost of $12.0m. Table 28 summarises the scope and budget for each relevant renewal item.

Table 28 Control Systems Renewal Program

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Safe Working Systems – Asset Protection	Future Scope	1	Unit	0.1
Safe Working Systems – Train Detection	Baseload	14	Unit	4.0
	Future Scope	22	Unit	1.7
Safe Working Systems – Minor	Baseload	10	Unit	0.8
	Future Scope	1	Station	0.7
	Future Scope	10	Unit	0.4
Transmission & Data Renewals	Baseload	1	Link	0.4
	Baseload	10	Site	0.4
	Baseload	20	Unit	1.0
	Baseload		Lumpsum	0.2
	Reactive Renewals		Lumpsum	0.1
	Strategic		Lumpsum	0.1
	Strategic	2	Site	0.3
UTC DTC	Baseload	7	Site	0.7
	Strategic	1	Unit	1.0
Total				**12.0**

In FY26 Safe Working Systems – Train Detection, Baseload Scope will include Train Detection renewal at Millennium Junction and Saraji.

The Safe Working Systems Minor program includes Points Improvements with contactor upgrades at 9 sites as well as design for future programs.

Transmission and Data Renewals includes the renewal of 17 data network routers and firewalls as well as 4 power supplies and batteries, replacement a Dehydrator, Digital Mobile Radio Link, Generator and a communications structure at Colston Park. A Dehydrator monitors air quality in the waveguide and ensures that it remains dry as moisture would attenuate the signal from the equipment and eventually corrode the tube.

Transmission and Data Renewal TETRA Radio Scope will focus on minor renewals to improve coverage of TETRA Radio.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.8. provides a summary of the Asset strategy for Control Systems. Given the high proportion of these renewals being triggered by obsolescence, the technology will be typically the modern-day equivalents and provide an uplift in speed and/or capacity.

Strategic Scope:

TETRA Radio ($0.4m)

The digital based Terrestrial Trunked Radio (TETRA) network has been in operation since late 2019 and its use is widespread in the Goonyella Coal System. Work has commenced to remove the analogue train control radio bases, which are more than 20 years old and occupies radio frequencies that need to be handed back to the federal government. The radio system primarily provides vital voice communications between Network Control Officers and Rail Traffic Crew throughout the CQCN. It also allows Rail Traffic Crew to communicate with Rail Transfer Facilities (RTF) and corridor maintenance workers to communicate to Network Control Officers.

In FY26, TETRA radio bases and software will be upgraded to address coverage for identified areas of poor radio coverage and increase radio base capacity where there is increased usage.

In FY26, an additional tower and base will be installed at Lake Vermont and Riverside, which will improve radio coverage.

UTC/DTC ($1.0m)

Safety and Operational Improvements for Network Train Control system. Scope includes train control system applications, user interface changes and engineering controls for safety processes. Operational requirements for delivery of individual scope items are subject to change due to criticality requirements, e.g. post an incident or process breakdown.

3.9.2 Control Systems Assets – FY26 Scope Asset Condition and Criticality Assignment

Figure 39 plots the Control Systems renewals against asset condition and location / operational criticality.

All scope items are listed as condition rating 4. This reflects the age of assets targeted for renewal in FY26. Control Systems assets are mostly electronic, so renewal is triggered by a lack of software support, spare parts, or obsolescence. As such, condition is more a matter of asset age against design life rather than a physical demonstration of wear.

The diagnostic computer renewal site at Hay Point has a criticality index of 2, however this site is part of a wider strategy to renew life expired diagnostic PCs with new technology.

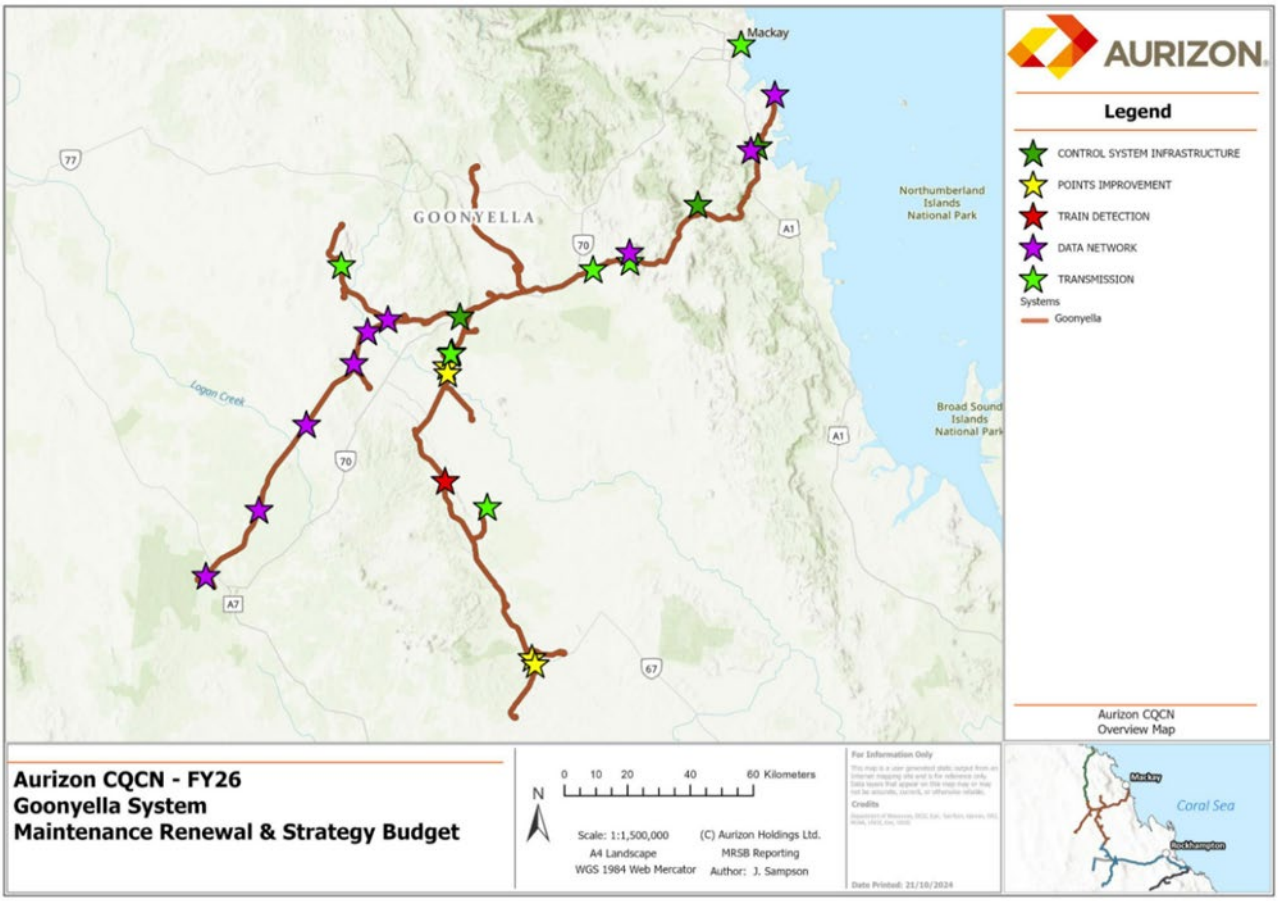


Figure 39 FY26 Control Systems Renewals - Goonyella System

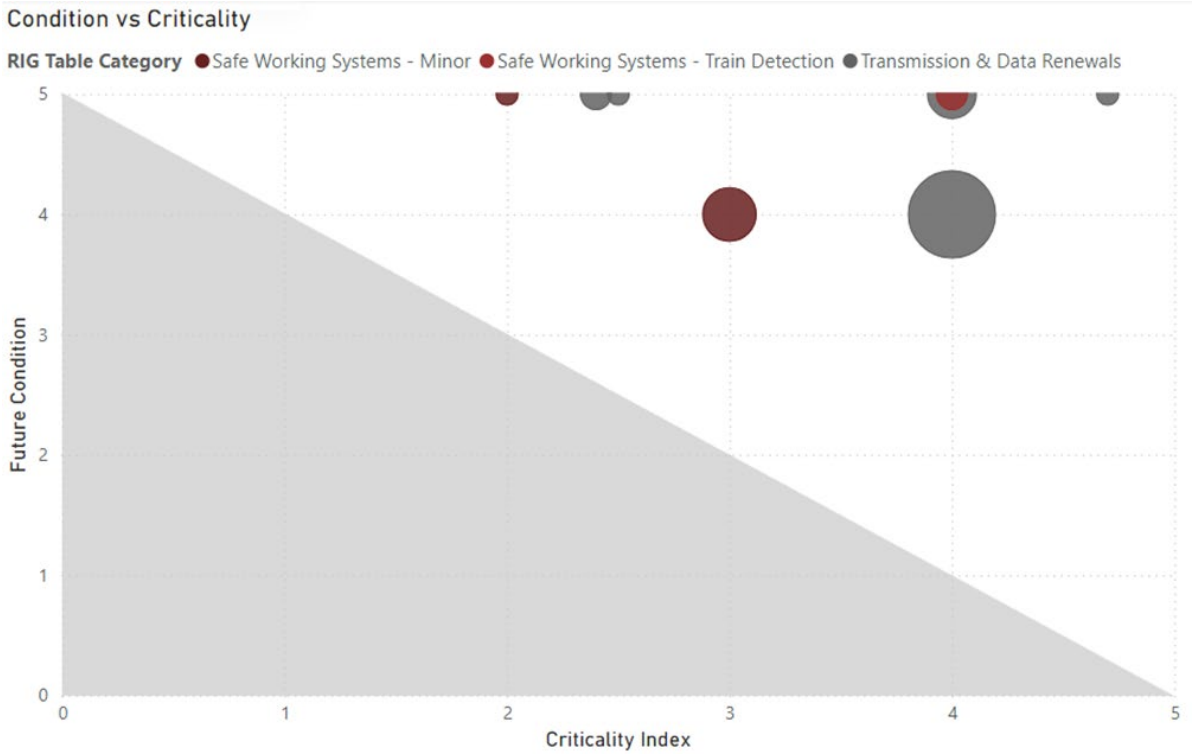


Figure 40 Control Systems - FY26 Scope Priority Ratings - Goonyella System

3.10 Electrical Assets

3.10.1 Electrical Renewal Program

Several of Aurizon Network's power systems assets are nearing the end of their design life. Aurizon Network is progressing its analysis to better understand options with respect to future power systems renewal requirements. As this work develops, Aurizon Network will engage with the RIG in relation to the preferred options.

In FY26, Aurizon Network proposes to undertake the following Electrical renewals or enhancements in the Goonyella system at a cost of $13.8m. Table 29 summarises the scope and budget for each relevant renewal item.

Table 29 Electrical Asset Renewal Program - Goonyella System

Renewal Item	Scope Type	FY26 Scope	Scope Unit	FY26 Budget ($m)
Overhead Line Equipment Renewal	Baseload		Lumpsum	1.0
	Baseload	8	Structures	0.7
	Baseload	6	Unit	2.7
	Future Scope	1	Site	0.0
	Future Scope	1	Unit	0.0
	Strategic	1	Site	4.6
Power Systems Renewals	Baseload	10	Unit	0.6
	Future Scope	1	Site	0.0
	Future Scope	9	Unit	0.2
	Strategic	14	Site	1.5
	Strategic	3	Unit	2.5
Total				**13.8**

The FY26 the Overhead Line Equipment renewal scope will include 8 termination portals across 4 sites, 2 section insulators at Broadlea and 4 Headspan renewals across 1 site at Peak Downs. One major design will be completed for Feeder Wire Clearance Improvements at Yukan in FY26 to address reliability issues due to inadequate clearance between the high voltage wires and the structures they are mounted on which allow wildlife to breach the gap contributing to 'trips' of the OHLE. Additionally, as part of the Goonyella Ports OHLE strategic program, component renewal of identified corroded assets are to be renewed within integrated closures across FY26.

Power Systems Baseload scope will renew 3 Auto Transformers (2 at German Creek & 1 at Villafranca), 9 Motorised Isolators and 1 Earthing & Bonding. Future Scope designs will be completed for 3 Autotransformers, 5 Motorised Isolators and 2 PSC (Power Sectioning Cabins).

The electrical asset is a composition of different components that make up the electrical traction asset. The mix of scope and asset type can vary year to year as the asset condition is addressed through renewal.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.9. provides a summary of the Asset strategy for Electrical Assets.

Strategic Scope:

Autotransformer Renewal ($2.5m)

The autotransformer renewal program seeks to renew aged equipment that is operating beyond its design life.

Following identification of a bow wave of electrical asset renewal activity as the assets installed in the 1980's approached end of life, Aurizon Network has been proactively managing the renewals task by smoothing the work over time. This approach sees Aurizon Network targets the renewal of three autotransformer sites per year in Goonyella. Sites are prioritised based on asset condition.

Goonyella Ports Overhead Renewals ($4.6m)

In November 2018, a dewirement occurred at Dalrymple Bay Coal Terminal (DBCT) on Departure Road 2. This single event resulted in 18 train service cancellations, 11,976 minutes of train service delays and closure of DBCT. This incident highlighted some inherent weaknesses in the Overhead Line (OHL) infrastructure at the critical ports section of the Goonyella System and triggered an investigation into how such failure events could be addressed.

Building on the investigation and analysis, Aurizon Network has developed a new OHL Asset Management Strategy and conducted a review of the OHL configuration at the Goonyella Ports. Several key observations have been made which are pertinent to the Goonyella Ports:

- The levels of corrosion in OHL supporting steelwork are very high due to its coastal, high corrosion environment, and if not addressed will substantially reduce the reliability, safety, and service life of the traction asset in this region.
- Inherent weakness in the original OHL configuration design for this region, specifically the mechanical coupling between adjacent roads, results in two disadvantages. Firstly, the configuration does not enable single line isolations to make use of small access windows. Secondly, the operational impact of a dewirement can be quite extensive (as experienced in November 2018).

The works proposed for FY26 include completion of mechanical separation of wire-runs and continuation of corrosion remediation activities.

Traction Substation Renewals ($1.5m)

The FY25 scope covers the completion of the Prefeasibility phase which includes a Risk Assessment and a comprehensive Prefeasibility report as part of the undertaking requirement (UT5).

The works proposed for FY26 will comprise the Feasibility phase of the project.

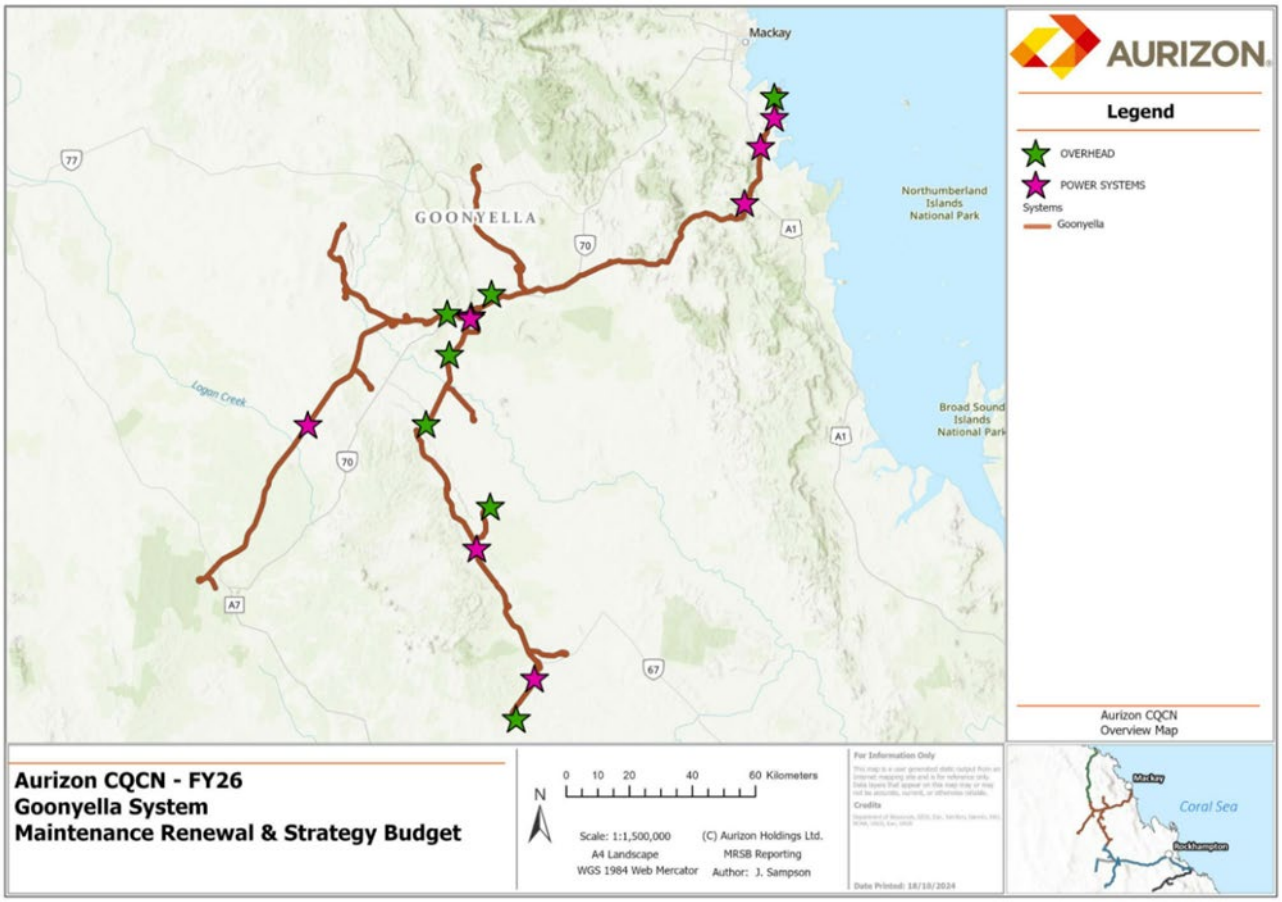


Figure 41 FY26 Electrical Renewal Sites - Goonyella System

3.10.2 Electrical Assets – FY26 Scope Asset Condition and Criticality Assignment

Figure 42 plots the Electrical renewals against asset condition and location or operational criticality. Headspan renewals have a future condition of 3 however, the 4 headspans nominated for renewal at Peak Downs in FY26 have been selected because their masts are leaning inwards towards the track resulting in unstable wire geometry. This presents an elevated risk of overhead line asset failure, which would impact train operations.

The Section Insulator Renewal at Broadlea the condition rating of 3.5 sees this renewal prioritised for FY26.

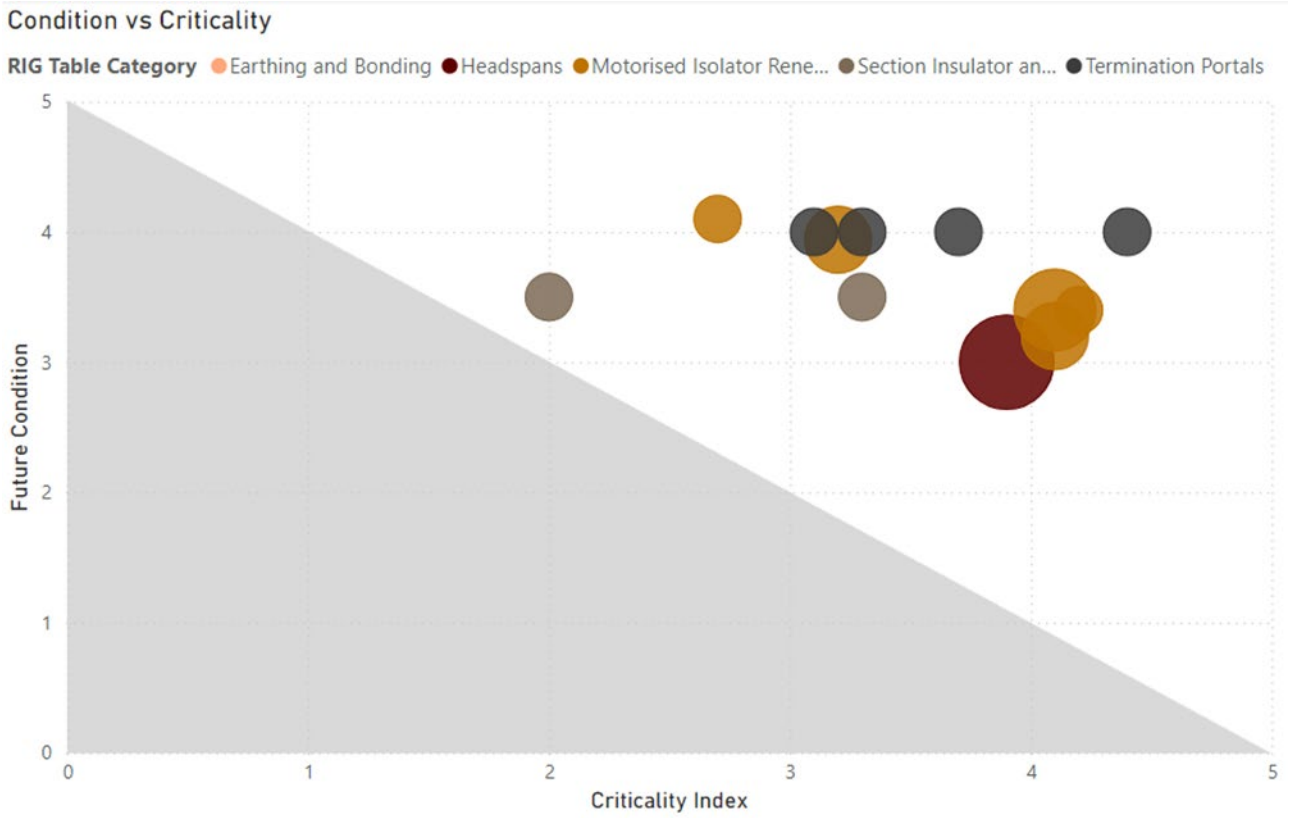


Figure 42 Electrical Assets - FY26 Scope Priority Ratings - Goonyella System

3.11 Likelihood of Change Assessment – Maintenance and Renewals

Aurizon Network estimates known risks during the MRSB development and submission phases, then reacts to typical change impacts as they materialise during the MRSB delivery year. Most opportunities for change occur in the delivery year rather than during the development phase.

The identification and evaluation of MRSB scope for inclusion in the submission are based on currently available information, which may change over the period prior to works execution (between 6 and 18 months) due to environmental factors, relative degradation rates, supply and resource impacts, or other considerations.

The majority of the MRSB scope consists of baseload renewals or preventative maintenance tasks, making the likelihood of change low. These activities are typical for Aurizon Network and often involve similar tasks at different locations across the systems. For example, the process for a rerail renewal is well-known and well-practiced, hence it is a baseload activity with a low likelihood of change. Consequently, Aurizon Network does not assign a system-based program contingency or consider a risk provision across the program. When changes do occur, their impact on the program is assessed in terms of approved cost (budget), scope, and access.

The opportunity for change is also relative to the complexity or time pressure of a project. To mitigate these risks, Aurizon Network applies a stage gate methodology to complex or strategic scopes and separates design from delivery for projects involving multiple asset disciplines, requiring both design management and project management.

When changes occur, their impact on the program is assessed across approved cost (budget), scope, and access. Aurizon Network has a developed change management review and approval process to react to changes as they arise.

This following table details the likelihood of change across the different scopes proposed for FY26, along with project-specific costs and mitigations. Further information on the change management review and

approval process, as well as generic risk types and treatments, is provided in Section 10.2.4 Likelihood of Changes.

Table 30 Potential Areas of Change at Program Level in the Goonyella System

Type of Project	Likelihood of change	Projects in FY26	%value FY26[8]	Change Mitigations
Strategic	Moderate	1 active (GN Ports) 2 in Concept (AT Renewals & Substations	7.3%	• Stage gate approach (Concept to Feasibility) providing time to increase scope definition and assumptions ahead of delivery • Type testing of new equipment to consider installation and operations impacts
Baseload	Low	134 Sites across 19 Programs	79.3%	• Prior year program reviews • Program Management processes to minimise day of delivery risk • Site walkouts pre-digs to understand site conditions ahead of day of delivery
Future	Moderate	57 Designs across 14 Programs	5.0%	• Separations of design activity for delivery to allow time for design staging and construction review • Design management application to ensure multi discipline design is built to solve site requirements
Reactive Renewals	High (due to time pressure	13 Programs	8.38%	• Use of standard designs • Works completed by local teams with local knowledge with Project Engineering support
Maintenance	Preventative – Low Planned Corrective – Moderate Reactive - Moderate	N/A	N/A	• Preventative inspections based on standard that is periodically reviewed • Correctio and reactive maintenance informed by historic levels of activity • Engineering support available to provide defect reliability analysis and management

[8] % of costs across the FY26 Capital Asset Renewal scope in this system.

Moura

AURIZON

4 Moura System

This section presents Aurizon Network's Draft Maintenance and Renewal Strategy and Budget for the Moura System during FY26. In line with 7A.11.3 of UT5, this section will be subject to vote by the relevant Moura End Users.

Aurizon Network's FY26 Final Draft Proposal for the Moura System provides for:

A strategy to maintain stable level of service over the long-term

The asset management strategy for the Moura system recognises the lower tonnage profile which facilitates a greater reliance on corrective maintenance than renewals and results in a higher maintenance to capital ratio than other systems.

This strategy can mean lower operational performance including unplanned outages in conjunction with longer periods of temporary speed restrictions than other systems.

A Direct Maintenance Cost Allowance of $19.5m

The proposed Direct Maintenance Cost Allowance, which excludes ballast undercutting plant depreciation, represents an increase of $2.0m compared to Aurizon Network's current FY25 full year maintenance forecast and an increase of $2.9m compared to the approved FY25 Maintenance Strategy and Budget.

The increase in maintenance spend against the FY25 approved budget is predominantly driven by:

- additional internal labour cost relating to annual Enterprise Agreement uplifts
- cost escalation on contractor, materials and other cost categories
- additional external contractors to deliver targeted drainage program
- increase in corrective activity levels, including rail maintenance.
- an increase in grinding frequencies across critical locations driven by asset condition.

A Renewals Allowance of $29.6m

This represents an increase of $7.9m compared to Aurizon Network's current FY25 asset renewals forecast and an increase of $7.3m compared to the approved FY25 Renewals Strategy and Budget.

The increase in renewal spend is a function of an increase in Level Crossing, Track Upgrade, Turnout Renewal and Structures scope, partly offset by a reduction in Control Systems.

Integrated Closure

Two integrated closures are planned in Moura for FY26, totalling 168hrs, exclusive of Blackwater cross-system impact, Moura will be impacted for the 60hr from the Blackwater cross-system impact in April 2026.

FY26 sees no increase in YoY hours.

Aurizon Network's capacity assessments indicate a low risk of inability to provide adequate network usable capacity to deliver DNC (ACAR 2024 FY26) and contracts across FY26.

Likelihood of Change

Completion of prior year scope and weather remain key program risks for the Moura system. Where prior year scope is replanned for completion during FY26, this could impact the ability to complete planned FY26 renewal scope.

4.1 Moura System – Characteristics and Corridor Strategy

The Moura System is the smallest of Aurizon Network's Coal Systems in terms of both tonnage and distance. The Moura System services coal mines in the Moura region and Callide Basin, with coal being hauled to Gladstone for use at domestic industrial plants, Gladstone Power Station or for export via RG Tanna coal export terminal. The system is not electrified. However, the 7km section near Gladstone which forms part of the Blackwater System electric asset base provides an alternate path from Gladstone back to Callemondah.

Maintenance and minor renewal activities in the Moura System are primarily delivered from Aurizon Network's depot located in Gladstone, with mobile mechanised plant based in Rockhampton. Aurizon Network's depots are strategically located to enable incident response times within approximately two and a half hours. Mechanised plant (e.g., resurfacing) is typically able to respond to an urgent defect (e.g., a buckle or geometry defect) in the Moura System within 2 days.

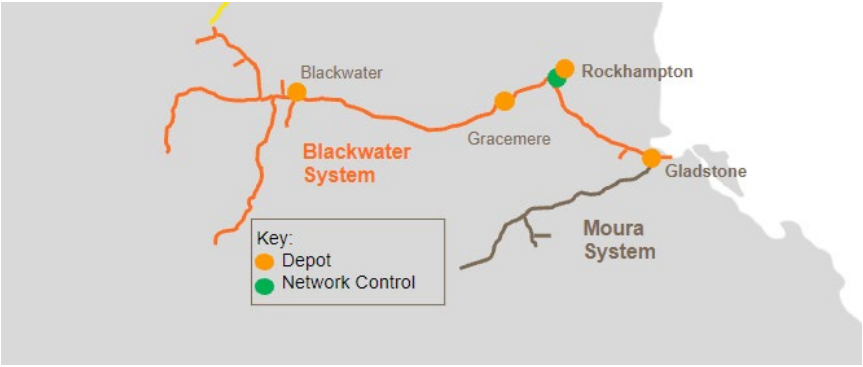


Figure 43 Depot Locations - Blackwater and Moura System

Aurizon Network has considered asset conditions specific to this Coal System when developing the FY26 Final Draft Proposal, particularly in relation to:

- **Civil Assets** – The Moura System was constructed in the 1960's as a purpose-built coal line. However, the assets installed did not consider the axle loads nor train sizes now being operated in the system. The Moura system also has unique geographical characteristics including challenging access to the corridor and track alignment that provides for tight radius curves and steep grades, in particular at Mt Rainbow. The Moura System traverses extended sections of black soil leading to formation and track geometry defects when the soil conditions alternate between periods of extended wet and very dry. Mt Rainbow can be characterised as a large range crossing, comprising tight radius curves, steep grades, several original corrugated metal pipe culverts inside large embankments and generally flat terrain (resulting in poor drainage) west of Mt Rainbow. The lower volumes on the Moura System mean that the time between tonnage-based inspection and interventions is longer than in higher-volume systems.
- **Control Systems Assets** – Processor based interlockings installed in the Moura System in the 1990's are nearing the end of their design life, with two of these interlockings identified for design works in FY25 and one site planned to be renewed in FY26. Trains are detected through a mix of track circuits and axle counter track sections with ongoing renewals programmed for life expired axle counter assets in future years. There is no optic fibre linkage in the Moura System, with telecommunications carried by the microwave radio systems. As a result, multiple failures of microwave links can result in lost communications. A single link failure is not generally an issue. The radio system across Moura was upgraded in recent years to a digital based Terrestrial Trunked Radio (TETRA) system.

Corridor Strategy:

The Moura System is subject to asset inspection and intervention requirements consistent with the three other Coal Systems, however, the lower tonnage profile results in less frequent intervention and a longer time between renewals for those assets that wear (such as rail). For example, rail in tight radius curves in Blackwater has an average life of 8 years, whilst rail in the same arrangement in Moura has an average life of 33 years.

Due to fewer services associated with lower tonnages, the Moura system can achieve the required throughput with more reliance on corrective maintenance and reactive renewals and longer periods of temporary speed restrictions than other systems.

Maintenance and Renewal activity is planned to hold the system in a fit for purpose manner to achieve the required throughput while maintaining sufficient operational performance and safety at an efficient cost. In most years, the Moura system will see a closer mix of maintenance and renewal spend. As shown in Table 31, in FY26, there is a higher proportion of renewal spend than on average due to the additional Bridge Ballast Rollout and Level Crossing scope this year.

Table 31 FY26 Final Draft Proposal - Maintenance and Renewal Spend% Split - System Compliance - Moura System

MRSB	Renewals and Maintenance Cost ($m)	% Maintenance	% Renewal
FY25	38.9	43%	57%
FY26	49.9	37%	63%

The below graphs in Figure 44 indicate the asset management strategy is largely effective in maintaining performance and reliability consistent with 4-year averages.

The number of incidents, cancellations, delays (including TSRs) and OTCI provide

- an indication of the performance of the system over time
- are triggers for Event Threshold Reporting that seeks to inform the asset management approach for each asset class
- Contribute to (amongst other factors) specific scope identification and selection

Delays and Cancellations measure the impact of incidents on the supply chain and are influenced by multiple factors including:

- Type and location of defect
- Incident response time
- Planning and scheduling
- Traffic management decisions

The OTCI index is a measure that trends track geometry at a system level. OTCI predominantly relates to the effectiveness over time of the Ballast Renewal and Resurfacing programs. It does not measure electrical or control system assets.

Please refer to the Glossary for further information on interpretation of these graphs.

Of note:

- The derailment in FY22 is largely responsible for the rise in cancellation 4-year average in FY23, with the increase in FY25 reflective of higher level of cancellations in FY24, noting Moura volumes in FY24 were significantly higher than previous years.

- February 2018: Callide Coalfields track defect (19 cancellations)
- October - November 2021: Derailment Mr Rainbow (61 cancellations) (chart cuts off at 20)
- November 2023: Track defects Konkool and Mt Rainbow (17 cancellations)

- Single line running on Moura results in more planning delays than other systems with duplicated track. Planning delays are dependent on traffic volume, e.g. the more trains in the corridor, the more crossing delays need to be scheduled. Notwithstanding the increase in volumes in the Moura system in recent years there has been some improvement in delays across FY24 and FY25.
- The OTCI index has reduced over time indicating an overall improvement to the average track geometry condition. OTCI does not account for localised reliability impacts, traction or control systems assets.
- There has been a significant decline in incident numbers starting FY21, driven by a reduction in less impactful control systems incidents. Cancellations have increased during the same period, driven by the Mt Rainbow derailment and FY24 performance.

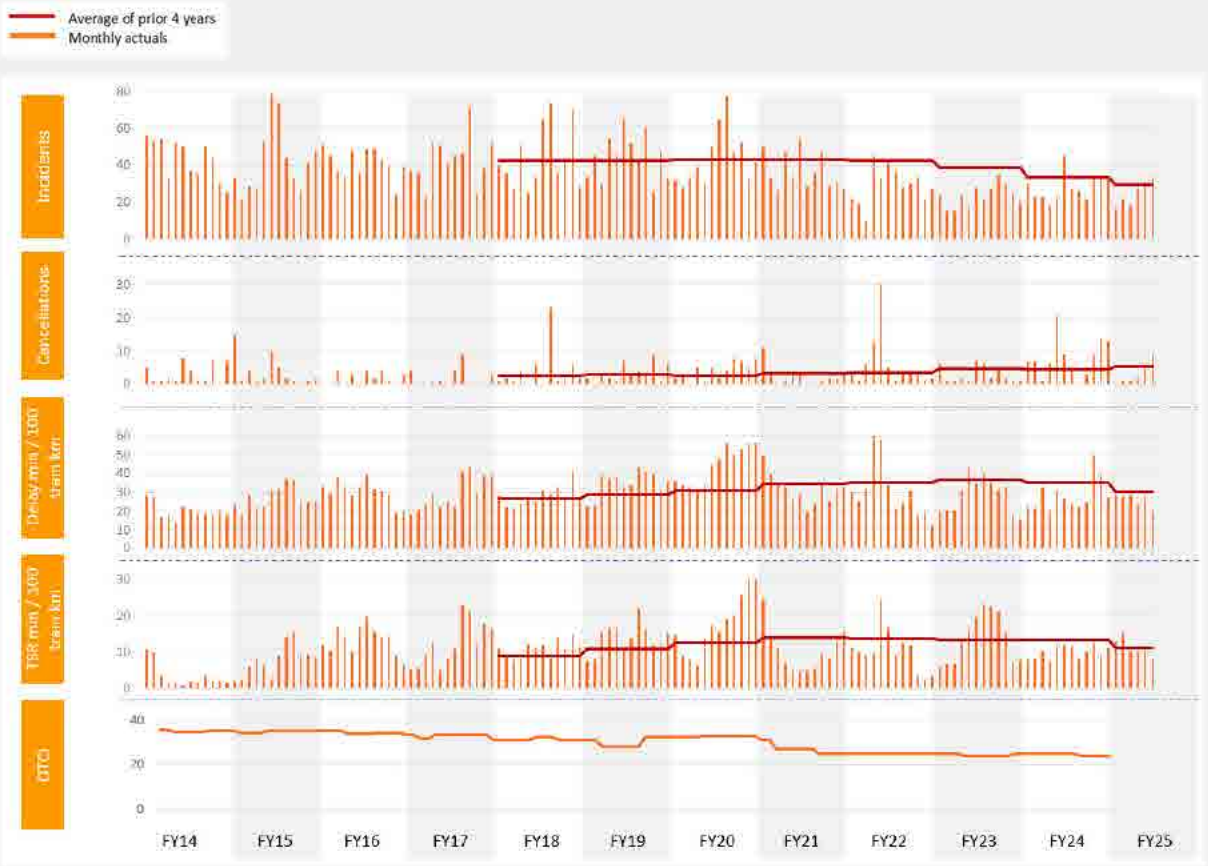


Figure 44 Moura Below Rail Performance 4-year average trends using monthly performance from FY2014 to October 2025

4.2 Moura System – Integrated Closure Plan

Specific Moura Supply Chain considerations

Avoiding closure conflicts with adjacent corridors

Integrated closures in the Moura System are typically aligned with those in the Blackwater System to minimise capacity impacts from closures in the adjacent system.

Reducing impact of major closures

Major scope delivery is packaged and executed in extended integrated closures twice per year (scope dependent).

All other planned maintenance activities are completed in scheduled maintenance blocks or in-between trains. The execution of works in-between trains is favoured due to the higher frequency of available time in-between trains, which enables asset activity to be completed outside of closures with minimal disruption to throughput.

Closure timing

Where possible, peak demand periods of December and June are avoided to maximise railings at these times.

Table 32 outlines the proposed closure hours for FY26.

Table 32 Planned Integrated Closures – Moura System

FY26 Integrated System Closures													
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Hours	0	84	0	0	0	0	84	0	0	60* BW IC Impact	0	0	228

Moura will be impacted for 60 hours in April due to the signal interlocking at the Cooling Channel bridge in Callemondah, and on the Moura short line affecting all access to RGTCT and QAL. Opportunities to complete maintenance or renewals scope during this period will be pursued as part of routine in-year planning processes and pending resource availability.

In addition to the planned integrated closures, single line maintenance activities have also been planned throughout the year. Timing and durations are tested against DNC (ACAR 2024 FY26) and more broadly, Committed Capacity as well as being coordinated with other supply chain participants, where possible, to maximise supply chain alignment and throughput. Note hours are not reflective of customer impact as it does not consider works planned in the shadow of port outages or other works to reduce impact. These hours do not include moving products such as rail grinders, resurfacing, Ultrasonic Rail Inspections and Road Patrols; maintenance works to be planned throughout the year or asset activity planned around train services (Plan throughs) as they do not impact capacity or services.

Driving path activities listed in Table 33 have determined the duration of the planned integrated closures and access requirements in the Moura System during FY26.

Table 33 Driving Path Activities - Moura System

Closure	Driving Path Activity	Location
August 84-hour	Track Upgrade	Dakenba to Callide Mine
	Culvert Renewals	Fry to Mount Rainbow
	Culvert Renewals	Fry to Mount Rainbow
	RM902 Ballast Renewal	Belldeen to Moura Mine
January 84-hour	Interlocking Renewal	Annandale
	Level Crossing Renewal	Earlsfield
	Level Crossing Renewal	Earlsfield
	Bridge Rollout	Byellee to Stowe
	Level Crossing Renewal	Callemondah
	Level Crossing Renewal	South Gladstone (QAL)
	Culvert Renewals	Byellee to Parana

Figure 45 illustrates the historical Moura integrated system closure hours in comparison to the FY26 Final Draft Proposal.

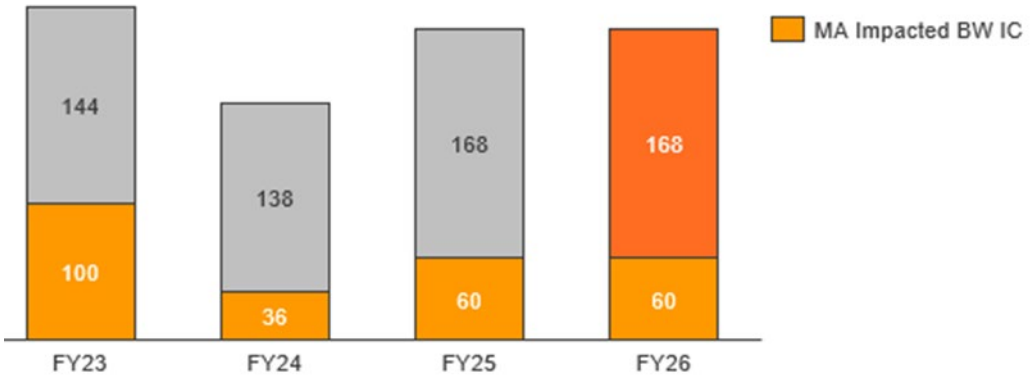


Figure 45 Trend of Integrated System Closure Hours FY23 to FY26 – Moura

4.3 Moura System – FY26 Maintenance Strategy and Budget

Aurizon Network has developed its Draft Maintenance Strategy and Budget for the Moura System having regard to all relevant matters outlined in clause 7A.11 of UT5, including the Maintenance Objectives. Aurizon Network considers its FY26 Final Draft Proposal provides an appropriate level of asset activity that will promote the safety, reliability and performance of Moura System Rail Infrastructure and seeking to deliver DNC and more broadly, Committed Capacity.

4.3.1 Summary of Historic, Forecast and FY26 Maintenance Strategy and Budget

Aurizon Network's FY26 Draft Maintenance Strategy and Budget for the Moura System provides for a Direct Maintenance Cost Allowance of **$19.5m** (excluding ballast undercutting and plant depreciation) which is:

- $2.9m higher than the approved FY25 Maintenance Strategy and Budget
- $2.0m higher than Aurizon Network's current FY25 full-year forecast.

Figure 46 provides a summary of historic direct maintenance costs as well as the proposed direct maintenance cost budget in respect of FY26.

To ensure comparability with prior periods, the direct maintenance costs shown in Figure 46 exclude depreciation on ballast undercutting plant.

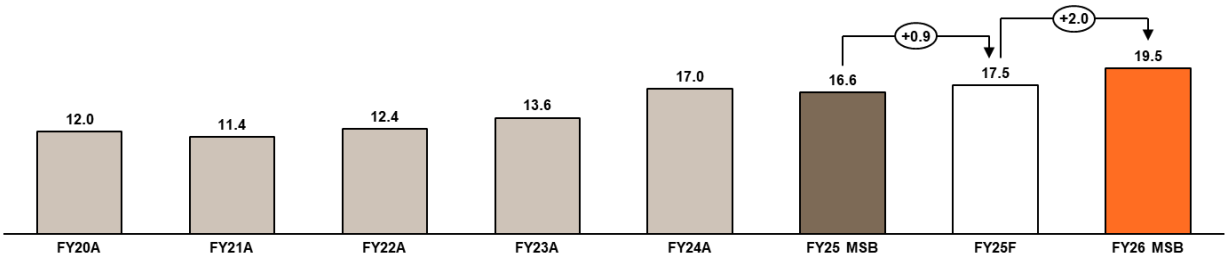


Figure 46 Direct Maintenance Costs - Moura System

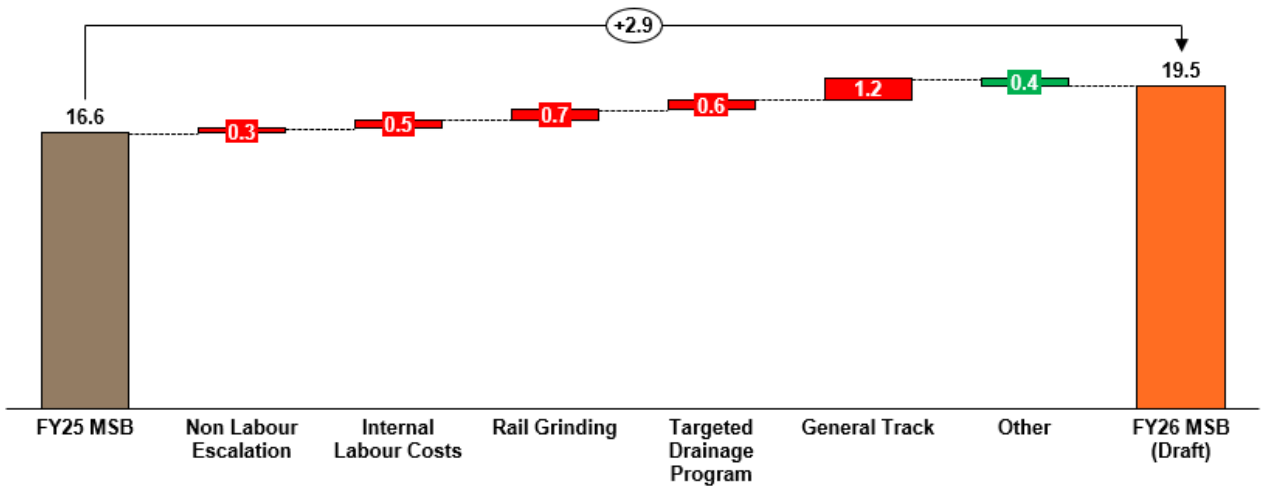


Figure 47 Direct Maintenance Cost Movement - Moura System

FY26 Draft Maintenance costs (excluding ballast undercutting plant depreciation) are budgeted at $19.5m. The increase in spend of $2.9m against the approved FY25 Maintenance and Strategy Budget is primarily driven by:

- **Non labour cost escalation (+$0.3m)** – on contractors, materials, plant and other consumables.
- **Internal labour costs (+$0.5m)** – driven by annual increase required under the Infrastructure Enterprise Agreement and other Staff Agreements.
    - Additional internal labour resource to support Civil Infrastructure discipline in uplift corrective maintenance levels.
- **Rail Grinding (+$0.7m)** – Reflects the inclusion of passing loops into the planned grinding cycle frequencies similar to mainline and turnout grinding uplift due to the cycles applied to the Callide branchline.
- **Targeted drainage program (+$0.6m)** – reflects additional contractor support to execute targeted program to improve track and corridor drainage at sites where formation degradation is evident.
- **General Track (+$1.2m)** – reflects increase driven by additional materials and consumables cost to support ballast maintenance activities & corrective rail maintenance activities required to support asset condition.
- **Efficiency** – FY26B reflects target efficiencies of $0.6m, which is broadly consistent with the efficiency target assumed in the FY25 approved budget. Initiative focus areas include labour, indirect costs, contractor spend and procurement activities. Refer Section 10.4.7 which describes areas of focus since the FY25 MRSB.

The FY25 forecast is $0.9m higher than the approved FY25 budget.[9]. All items are currently within the indicative materiality thresholds set in UT5. The FY25 forecast is subject to review and will be updated at the end of Q2 FY25.

An overview of the methodology used to establish the FY26 maintenance cost budget is provided in Section 10.3.1

[9] Refer to Q1 FY25 Quarterly Performance Report for more detailed - information on costs expected to be incurred.

4.3.2 FY26 Maintenance Strategy and Budget

The maintenance program includes preventative, planned corrective and reactive maintenance activities.

The planned and preventive maintenance activities and inspections, as well as the planned mechanised production scope, are derived in line with the intervention periods as detailed in Aurizon Network's Asset Maintenance and Renewal Policy. This policy determines the inspection regime and period based on asset type condition and location.

The scope of planned corrective and reactive maintenance tasks is heavily dependent on the faults identified via the planned inspection programs. Aurizon Network has assumed that in FY26 the Coal System will see a similar level of faults that require planned corrective or immediate response as in prior years.

Section 9 Strategies by Asset Class, outlines the different approaches with regards to maintaining the Rail Infrastructure. These approaches lead to the application of the maintenance tasks across the system.

The proposed FY26 maintenance scope and budget for the Moura System is outlined in the Table 34.

Table 34 FY26 Final Draft Proposal - Maintenance - Moura System

Maintenance Item	Scope Units	FY25 Budget Scope	FY25 Budget ($m)	FY25 Forecast Scope	FY25 Forecast ($m)	FY26 Budget Scope	FY26 Budget ($m)
Resurfacing			1.9		2.0		2.0
Mainline	Km	170	1.7	235	1.9	170	1.9
Turnout	Site	10	0.1	10	0.1	10	0.2
Rail Grinding			1.2		1.6		2.0
Mainline	Km	[redacted]	0.9	[redacted]	1.2	[redacted]	1.7
Turnout	Site	[redacted]	0.2	[redacted]	0.2	[redacted]	0.3
Level Crossing	Track LX	[redacted]	0.1	[redacted]	0.1	[redacted]	-
General Track Maintenance			7.2		7.8		9.2
General Track	Activity		6.6		6.7		7.9
Corridor Maintenance	Activity		0.6		1.0		1.2
Ultrasonic Testing	Km	380	0.1	307	0.1	380	0.0
Signalling and Telecoms			2.8		2.6		2.8
Signalling Corrective	Activity		0.9		0.8		1.0
Signalling Preventative	Inspection		1.4		1.2		1.3
Telecoms Corrective	Activity		0.1		0.1		0.1
Telecoms Preventative	Inspection		0.4		0.5		0.4
Electrical			-		-		-
Structures and Facilities			1.6		1.6		1.7
Trackside Systems			0.3		0.3		0.3
Other Civil Maintenance			1.1		1.1		1.1
Other General Maintenance			0.3		0.4		0.4
Sub-Total			**16.6**		**17.5**		**19.5**
Ballast Undercutting Plant Depreciation			0.3		0.3		0.3
Total Direct Maintenance Costs			16.9		17.7		19.7
Non-Coal Allocation			(0.1)		(0.1)		(0.1)
Total			**16.8**		**17.6**		**19.7**

Note: Figures may not add due to rounding.

For the Moura System:

- **Direct maintenance costs** (excluding ballast undercutting plant depreciation) are budgeted to increase by $2.9m from the FY25 Budget. Key movements in RIG maintenance categories are summarised below:
  - **Rail Grinding (+$0.7m)** – increase driven by contract escalation and planned grinding cycle frequencies resulting in an increase in Mainline [redacted] and Turnouts [redacted] offset by a reduction to Level Crossing [redacted] scope.
  - **General Track (+$1.9m)** – increase driven by additional internal resource to support Civil Infrastructure discipline in delivering an uplift in corrective maintenance levels predominantly relating to rail maintenance activities[10]. Additional increase driven by additional materials and consumables cost to support ballast maintenance and corrective activities required to support asset condition. The FY26 budget also reflects additional contractor support to execute the targeted drainage improvement program.
- **Ballast Undercutting Plant Depreciation** – ballast undercutting plant depreciation as a total is largely in line with FY25B, with the allocation between systems based on the number of days that the ballast plant is expected to be operating in the Moura system in FY26.
- **Non-Coal Allocation** – this adjustment reflects an allocation of costs to non-coal services and is calculated by applying the actual non-coal volumes railed in Moura during FY23 to the QCA-approved AT1 Reference Tariff for FY26.

Figure 48 sets out a summary of historic, forecast and budgeted direct maintenance costs by maintenance category. To ensure comparability between periods, the direct maintenance costs presented in the chart exclude depreciation on ballast undercutting plant.

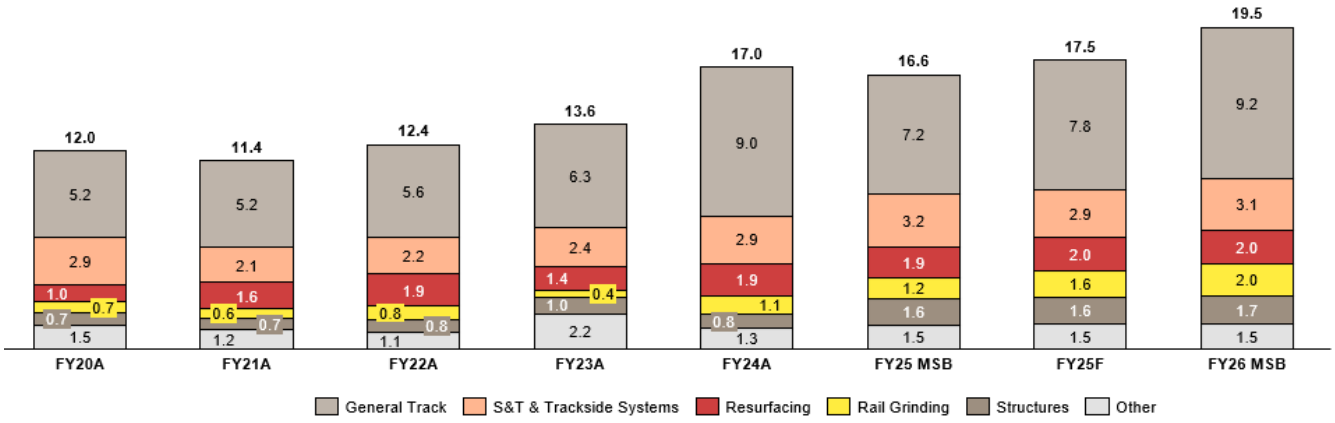
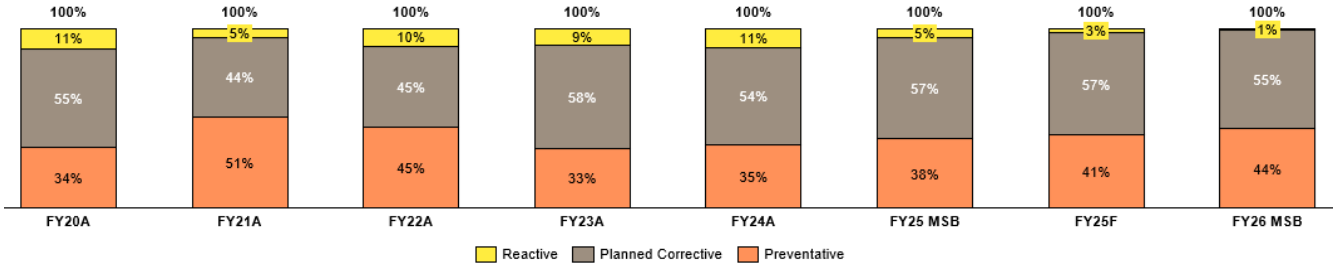


Figure 48 Direct Maintenance Costs - Moura System



[10] Refer to additional information presented to RIG Producer Group – FY26 v FY25 Draft Overview 17.01.2025

Figure 49 Preventative/Corrective Maintenance Spend Composition - Moura System

Figure 49 illustrates the proportion of preventive, planned corrective and reactive maintenance costs in the Moura System over time. Approximately 44% of the Moura System maintenance spend in FY26 is expected to be preventive in nature, which is lower when compared to the other Coal Systems in the CQCN. It reflects the asset management approach and operational performance.

Additional detail in relation to the make-up of costs for each maintenance activity has also been provided to the RIG Expert Advisor.

4.4 Moura System – FY26 Renewals Strategy and Budget

Further information in relation to the costing methodology used by Aurizon Network in the development of the FY26 Final Draft Proposal is outlined in Section 10.3, Budget Setting and Procurement. Additional detail in relation to the make-up of costs for each maintenance activity has also been provided to the RIG Expert Advisor.

4.4.1 Summary of FY26 Renewals Strategy and Budget

Aurizon Network's FY26 Draft Renewal Strategy and Budget for the Moura System provides for an asset Renewals requirement of $29.6m which is:

- $7.3m higher than the approved FY25 Renewals Strategy and Budget; and
- $7.9m higher than Aurizon Network's current FY25 forecast.

The changes to the FY25 program have been detailed as part of the Quarterly RIG reporting process.

A summary of the FY26 renewals budget for the Moura System is outlined in Table 35.

Table 35 FY26 Final Draft Proposal - Renewals - Moura System

Renewals Item ($m)	Assets Include	FY25 Approved Budget	FY25 Forecast	FY26 Draft Budget
Civil Assets		17.6	16.7	26.0
Permanent Way	Rail, Track, Sleeper, Turnouts	5.5	3.7	6.1
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	5.2	7.1	7.3
Structures	Culverts, Bridges	2.7	2.0	3.0
Civil Renewals	Formation, Level Crossings, Access Points	4.3	3.9	9.5
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission	4.7	5.0	3.6
Total		**22.3**	**21.7**	**29.6**

Notes: Figures may not add due to rounding.

The FY26 budget variance to the approved FY25 Strategy and Budget is primarily driven by:

- **Cost Escalation** – Variations across program largely impacted by labour and non-labour escalation outlined in Section 10.3 Budget Setting and Procurement.
- **Permanent Way (+$0.7m)** – Increase driven by 2 Turnout Renewals at Gladstone largely offset by reduced track upgrade scope in FY26 compared to FY25.

- **Ballast Cleaning (+$2.2m)** – Scope across Mainline and Excavator undercutting has reduced, offset by 104m of Bridge Rollout renewals at Mt Rainbow and Stowe and increases in the cost estimates for Mainline Undercutting. Cost estimates for Mainline Undercutting have been informed by expected ballast return rates which have been based on information collected through pre-dig assessments. Pre-dig information has been used to help inform ballast quantity requirements, ballast delivery costs and ballast removal (spoil) costs.
- **Civil Renewals (+$5.2m)** – Variance is driven by an increase in level crossing scope. The FY26 Level Crossing program will see 2 major renewals at Earlsfield (including installation of active protection) and 1 at Callemondah. The level crossing renewal at Callemondah will be completed at the same time as the level crossing renewal at Parana, enabling cost efficiencies in delivery of these renewals. An application has been made for the 2 sites at Earlsfield to access funds from the (Federal) Regional Level Crossing Upgrade Fund (RLCUF), which will cover up to 50% of the cost of delivering priority level crossing upgrades from 2026–2027. These Level Crossings have met the safety risk criteria and the first stage gate of presenting to the Federal Government. A condition of the funding is for the projects to be approved projects. No allowance has been included in this proposal for the prospective funding, which is identified as an opportunity to reduce the cost to End Users of this renewal.
- **Structures (+$0.4m)** – Variance is driven by increases in culvert renewal and culvert design scope. The FY26 Culvert Renewal program will see 4 sites renewed compared to 3 sites in FY25. In FY26, 2 of the 4 sites are renewing with lining replacements, which are less intrusive and of a lower cost to deliver.
- **Control Systems (-$1.1m)** - To provide stability in the delivery of the program year on year, scope to be delivered in FY26 has been reduced to allow for prior year scope that has been deferred to FY26. This will assist in reducing variability of flow of works between years. ‘Rollover’ scope will continue to be reported as FY25 approved scope (or for the year in which it was approved) in line with the reporting approach agreed with the Rail Industry Group.

Figure 50 below shows the distribution of scope locations as well as the relative spend per scope. The FY26 scope is distributed across the full length of the system including works on mainline and individual mine balloon loops.

The largest single scope item for FY26 is the mainline ballast undercutting between the 166.8km and 172.4km point of the Moura system.

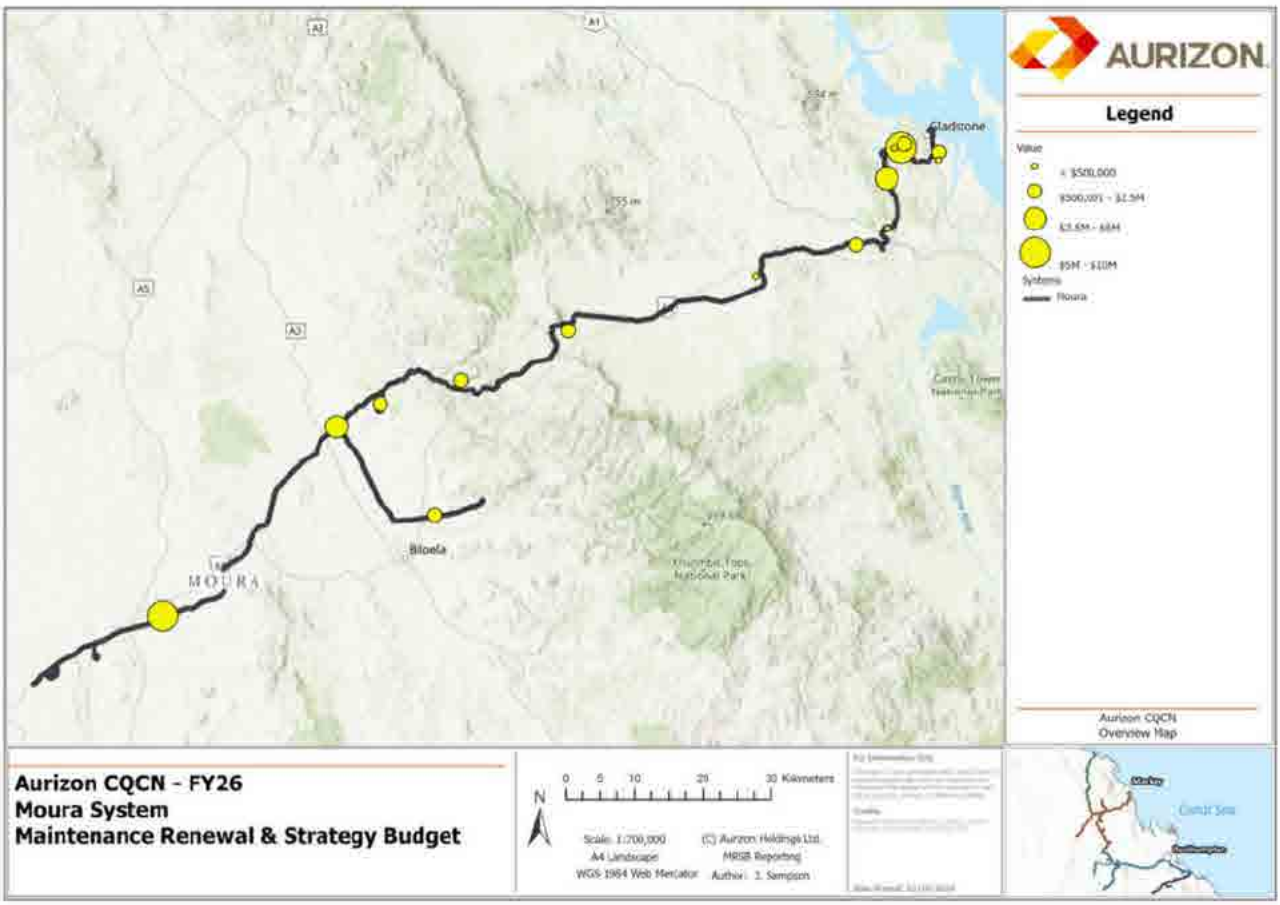


Figure 50 Map of Scope Location and Spend FY26

Table 36 details a summary of Moura system asset renewals as a percentage of total system assets.

Table 36 FY26 Final Draft Proposal - Renewals as a % of Total System Assets - Moura System

Renewals Item	Assets Include	Total system Assets	FY25 RIG Approved Scope	FY26 Proposed Scope	FY26 Scope % Total system Assets
Civil Assets					
Permanent Way	Rail, Track, Sleeper, Turnouts	550km rail 275km sleepers 275km track 62 turnouts	4.9km rail 0km sleepers 0.9km track upgrade 0 turnout	6.7km rail 0km sleepers 0.6km track upgrade 2 turnout	1.2% Nil 0.2% 3.2%
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	275km Mainline 62 turnouts 39 bridges	8.4km Mainline 2 turnouts 0 bridge	5.4 km Mainline 2 turnouts 2 bridge	2.0% 3.2% 5.1%
Structures	Culverts, Bridges	39 bridges 550 culverts	0 bridges 3 culverts	0 bridges 4 culverts	Nil 0.7%
Civil Renewals	Formation, Level Crossings, Access Points	275km formation 148 level crossings	0.0km formation 1 level crossings	0.0km formation 3 level crossings	Nil 2.0%

Renewals Item	Assets Include	Total system Assets	FY25 RIG Approved Scope	FY26 Proposed Scope	FY26 Scope % Total system Assets
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission		5 sites 3 units 1 Link	2 sites 5 units 1 Station	

Note: Control Systems count of assets is a collective of sites, nodes, cable routes, communications assets and systems and is included to indicate level of work comparable to prior year. Detail of actual scope is provided later in this Moura section.

Figure 51 illustrates the FY25 Approved Budget and FY26 proposed asset renewals categorised as (baseload scope, reactive renewals, strategic scope, future scope).

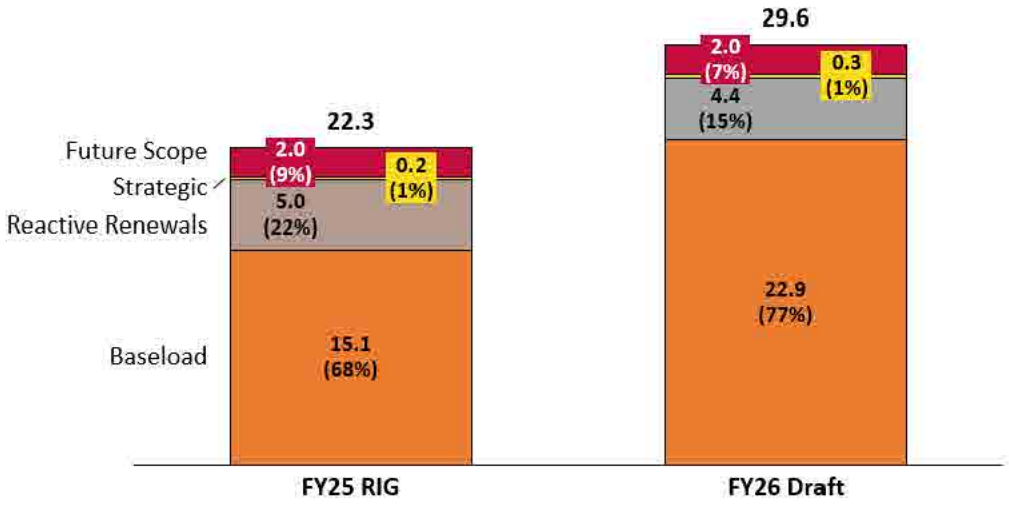


Figure 51 Split of Renewals by Category FY25B and FY26 - Moura System ($m)

Note:

- **Baseload scope** – represents the majority of the proposed Asset Renewal program and includes rail renewal, formation, and ballast cleaning.
- **Reactive renewals** –reflects the inclusion of an allocation for Civil reactive scopes. The average 20% for Reactive Renewals is aligned to the asset strategy in Moura of investing at a level that maintains tonnage demand with the higher rate of Reactive Renewals and Reactive Maintenance.
- **Strategic scope** – includes the continuation of the Train Control (UTC/DTC) program.
- **Future scope** – increases as a percentage of the total in FY26 driven by the strategy to extend design over multiple years for Control Systems projects, particularly Process Based Interlockings, to improve information for construction and access planning.

Further information in relation to the scope categorisation used by Aurizon Network in the development of the FY26 Final Draft Proposal is outlined in Table 66.

4.4.2 Details of the FY26 Renewals Strategy and Budget

This section provides further information on the rationale for renewal in FY26.

Section 9, Strategies by Asset Class, as well as Appendix 3, Options for Renewal, provide further information on the rational for renewal, the risks being managed and alternate approaches considered when planning a renewal.

More detailed information is provided in relation to strategic scope given it is not typical scope seen in previous years.

This section should be read in conjunction with the Appendix 1 Aurizon Network's Renewal Scope Detail Report. This Power BI report provides detail on the individual scope items including works location and Combined Risk Assessment (CRA) score.

The maps included in this section indicate the location of the proposed scope.

Aurizon Network notes that the prioritisation of renewals scope is based on currently available information and that this prioritisation may change over the period prior to execution due to environmental factors, relative degradation rates or other considerations. Changes to the proposed scope will be dealt with through the reporting and change management processes as appropriate.

4.5 Civil Assets – Permanent Way

4.5.1 Permanent Way Renewal Program

Aurizon Network's FY26 Final Draft Proposal provides $6.1m to deliver permanent way renewals in the Moura System. Table 37 summarises the scope and budget for each relevant renewal item.

Table 37 FY26 Permanent Way Renewal Program – Moura System

Description	Scope Type	FY26 Scope	Scope Unit	FY26 Budget ($m)
Rail Renewal	Baseload	6.7	Rail km	3.1
Track Upgrade	Baseload	0.6	Track km	1.0
Turnout Renewals	Baseload	2	Site	1.3
Turnout Components	Reactive Renewals		Lumpsum	0.7
Permanent Way Other	Reactive Renewals		Lumpsum	0.1
Total				**6.1**

Rail renewal scope fluctuates from year to year based on the quantity of rail kilometres that will reach wear limits or will require replacement due to fatigue type defects or corrosion. Total rail replacement to achieve the annual strategic target is delivered through a combination of Rail Renewal and Track Upgrade (a combination of sleeper and rail renewal) scope. FY26 includes larger sections of rail renewal compared to prior years., which is seeing cost efficiencies of an average of 15% in cost/ rail km. In all rail renewal cases for FY26, the drivers of each renewal is rail wear, each with a future condition rating of 3.8. The Rail Renewal program is targeting 4 sections across three locations in Belldeen (5.3km), Stowe (0.8km) and Mount Rainbow (0.5km).

The Track Upgrade program in FY26 will target a large section at Dakenba. The future condition rating is 3.5 reflecting the requirement to remove worn 47kg rail approaching wear limits and replace derailment damaged sleepers. Approximately 9 rail lengths and 453 sleepers will be replaced. Aurizon Network continues to follow the approach for sleepers of replacing with a longer life asset, by renewing existing fist-clip sleepers with concrete pandrol e-clip sleepers.

The FY26 Turnout renewal program includes for the multi-component renewal of 2 turnouts at Gladstone. These turnouts have been grouped into one site due to the proximity to each other it is not efficient to execute independently. The future condition rating of 5 reflects the poor condition state of the asset [has

failed / has impending failure to one or more primary functions / Asset integrity is severely compromised]. The criticality indices of 4 for this asset is indicative of the operational impact should adverse reliability of this asset occur. The performance impact (consequence of failure), without intervention, would affect the operation of Gladstone Yard.

Turnout Designs are delivered over a multi-year program and are grouped where possible for efficiency, which can lead to variations between design costs each year.

Unless otherwise mentioned, a like-for-like renewal has been adopted for the scope listed above. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.1 provides a summary of the Asset strategy for Permanent Way.

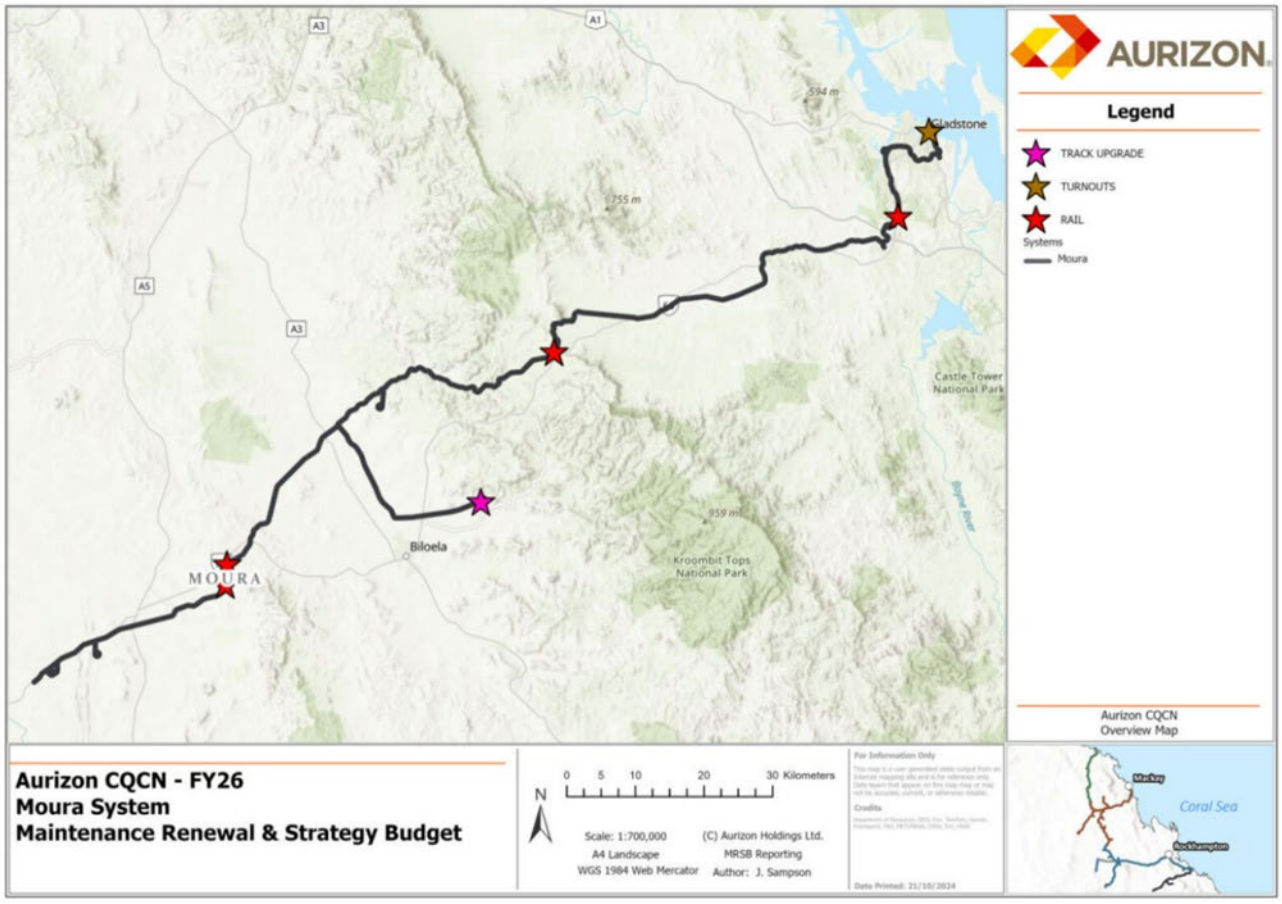


Figure 52 Rail renewal and Turnout Sites - Moura System

4.5.2 Permanent Way FY26 Scope – Asset Condition and Criticality Assignment

Figure 53 plots the planned permanent way renewals against asset condition and location / operational criticality, all renewal scopes have a condition score of 3.5 or above. The Moura system generally has a lower assignment of criticality index, this is attributable to lower tonnages compared to other coal systems.

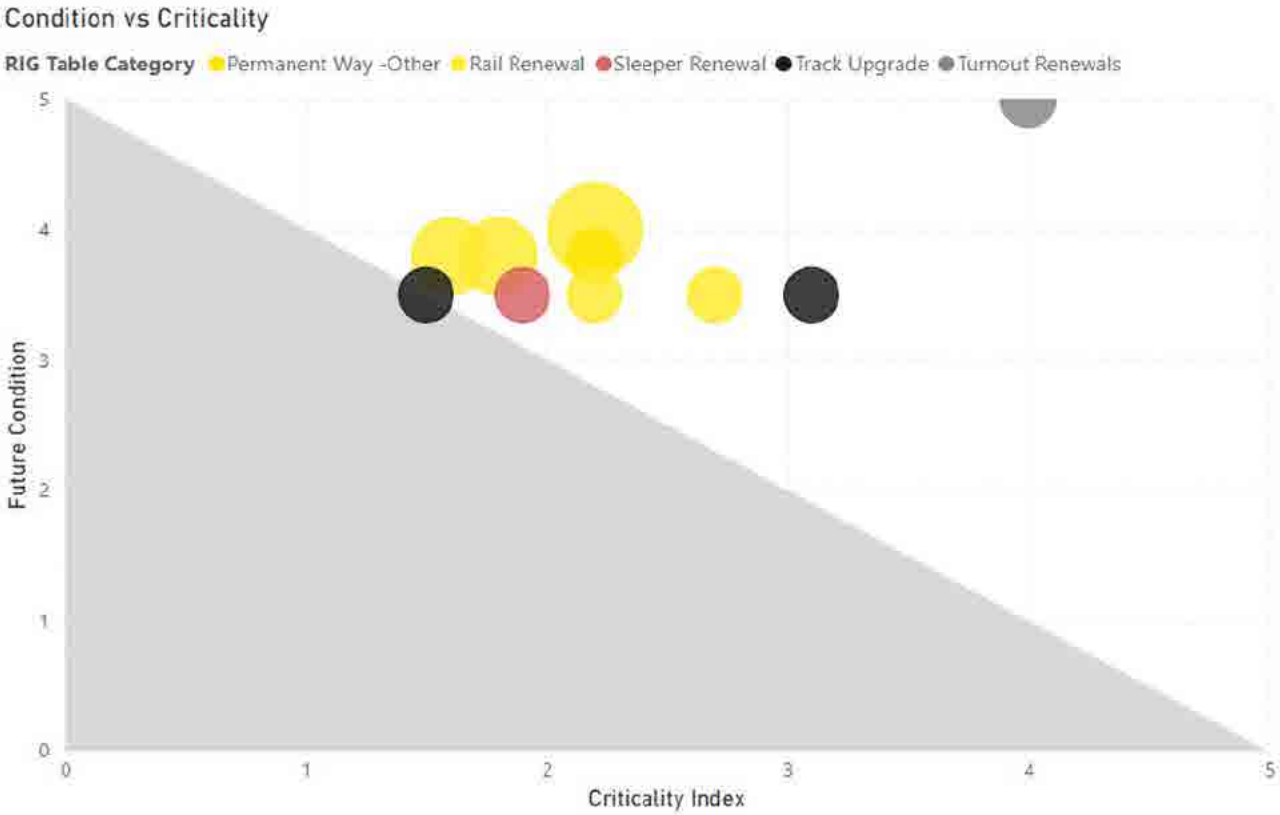


Figure 53 Permanent Way - FY26 Scope Priority Ratings - Moura System

4.6 Civil Assets – Ballast Cleaning and Renewals

4.6.1 Ballast Cleaning Program – Moura System

In FY26, Aurizon Network proposes to undertake 5.7km of ballast cleaning across mainline and reactive undercutting works at a cost of $7.3m. Table 38 summarises the scope and budget for each ballast cleaning renewal item.

Table 38 Ballast Cleaning Program - Moura System

Description	Scope Type	FY26 Scope	Scope Unit	FY26 Budget ($m)
Mainline Undercutting	Baseload	5.4	Km	4.5
Mainline Excavator Undercutting	Reactive Renewals	0.3	Km	0.2
Turnout Undercutting	Baseload	2	Turnout	0.4
Bridge Rollout	Baseload	1	Site	1.4
Monumenting	Baseload	1	Site	0.6
Ground Penetrating Radar	Future Scope		Lumpsum	0.2
Total				**7.3**

Actual ballast condition can vary significantly between locations and can lead to fluctuations in the actual return rates compared to the assumed amount. In circumstances where ballast condition and return rates are lower than assumed, this can slow ballast undercutting production, and result in scope not being completed within the assigned access opportunity.

In FY26, pre-digs have been completed for a high proportion of Mainline Undercutting scope locations resulting in an average return rate for the crib (centre of the track) and shoulder at 20% and 46% respectively. Pre-dig results have helped to inform planning assumptions, including the volume of material to process (ballast profile) and screenability assumptions. Within the Moura scopes, this deeper understanding of latent ballast condition indicates that an increased volume of ballast will be required given the high spoiling rates of the selected location. This increase in ballast material required coupled with the need to remove the spoiled ballast from the worksite has contributed to an increase in estimated unit cost compared to prior years. The pre-dig information has enabled an improved level of certainty with respect to closure requirements for site specific scope items.

In FY26, the Ballast Cleaning Machine will complete approximately 5.4km of scope at Belldeen with a future condition rating of 3.2. This site has also seen over the last 5 years 2 cancellations, 9 delay impacts and 2 TSRs. Additionally, 16 ballast lift and packs and resurfacing corrective maintenance tasks have been undertaken which are no longer effective to hold the condition of the asset. Given the length of this site and the poor access for excavator undercutters, the use of the Ballast Undercutting machine is considered the most efficient method to undercut. A reduction will also be seen in the Mainline Excavator Undercutting scope adjacent to the Turnout Undercutting sites, now included within the Turnout Undercutting scope.

Detailed information on the development of the ballast cleaning program is included in Section 10.3 Budget Setting and Procurement.

An allocation to re-establish a portion of monuments is included in the Ballast Cleaning Program in FY26. This includes detailed survey, design and installation of new track data plaques. This enables future track maintenance activities to align to the design alignments. The alignment and height of track moves over time due to temperature changes, train operations, maintenance and construction activities which can give rise to track buckles, breaks, accelerated rail wear and contact wire geometry exceptions (in electrified systems). Track monuments are located within the rail corridor immediately adjacent to track as fixed in-ground posts or on electrical masts to indicate the correct level or position of the track. Measurements are taken from these to confirm the correct position of the track to ensure that the ballast cleaning activity and associated resurfacing correctly locates the track to the design alignment.

The bridge lengths in the FY26 Bridge Rollout program are similar to prior years with the majority being smaller lengths. Cost drivers within the program are more dependent on-site mobilisation/demobilisation as well as site specific scope (e.g. rail/sleepers/formation renewal).

Ground Penetrating Radar (GPR) data provides important information to help understand sub ground conditions. This information is used to measure fouling and to allow comparison of the FY26 data against prior data sets to plan for future renewal requirements. GPR is a critical input to the Aurizon Ballast Condition Analyser tool that utilises historical GPR, historical undercutting and track resurfacing and rainfall data to predict ballast fouling growth at the site level to identify future scope locations and volume.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.5 provides a summary of the Asset strategy for Ballast Cleaning.

Detailed information on the development of the ballast cleaning program is included in Section 10.3 Budget Setting and Procurement.

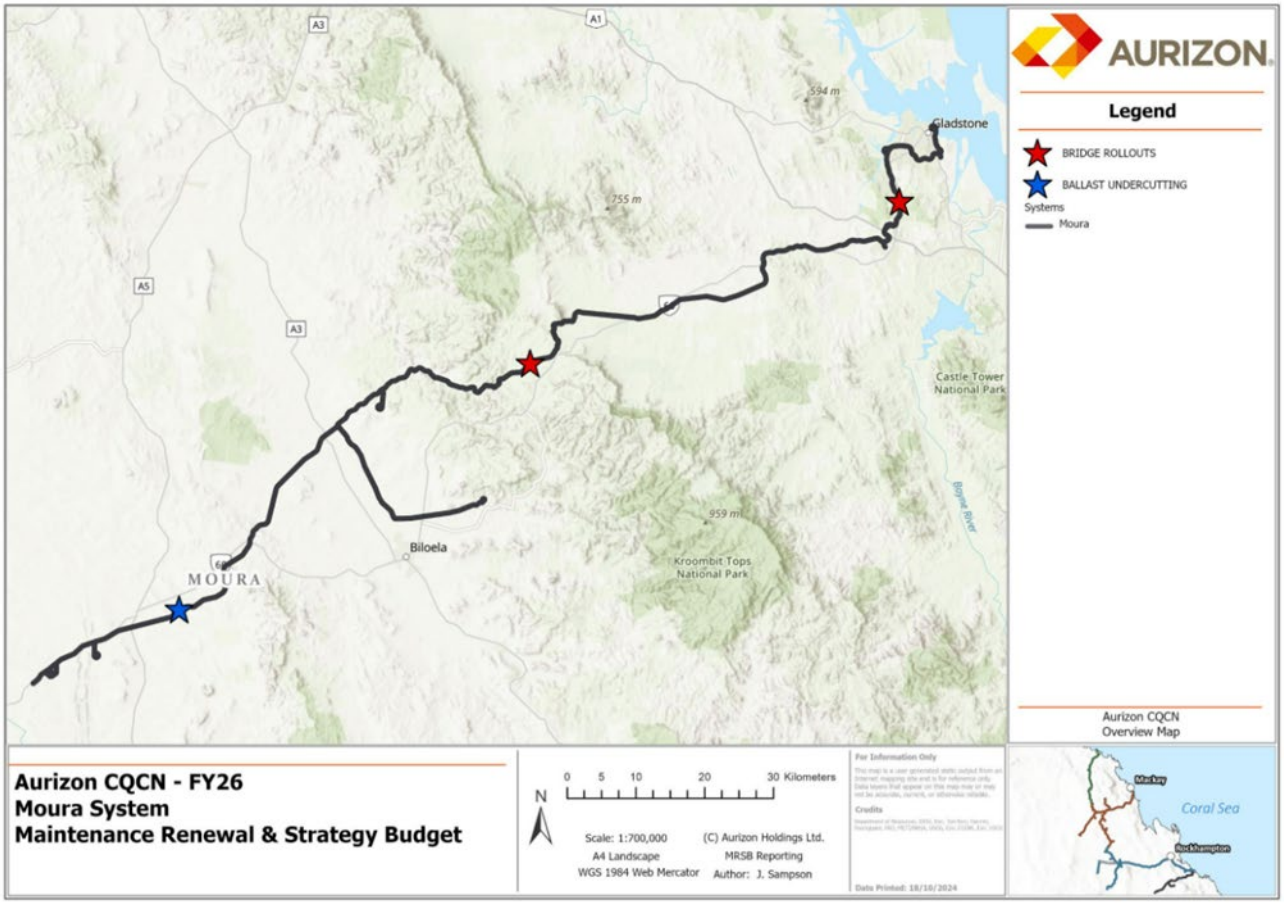


Figure 54 Ballast Cleaning Sites - Moura System

4.6.2 Ballast Cleaning FY26 Scope – Asset Condition and Criticality Assignment

Figure 55 plots the Ballast renewals against asset condition and location/ operational criticality. All sites identified for undercutting in FY26 have an identified future condition above 3.25 with criticality as low as 1.1 which is typical of locations in the Moura System which see lower traffic.

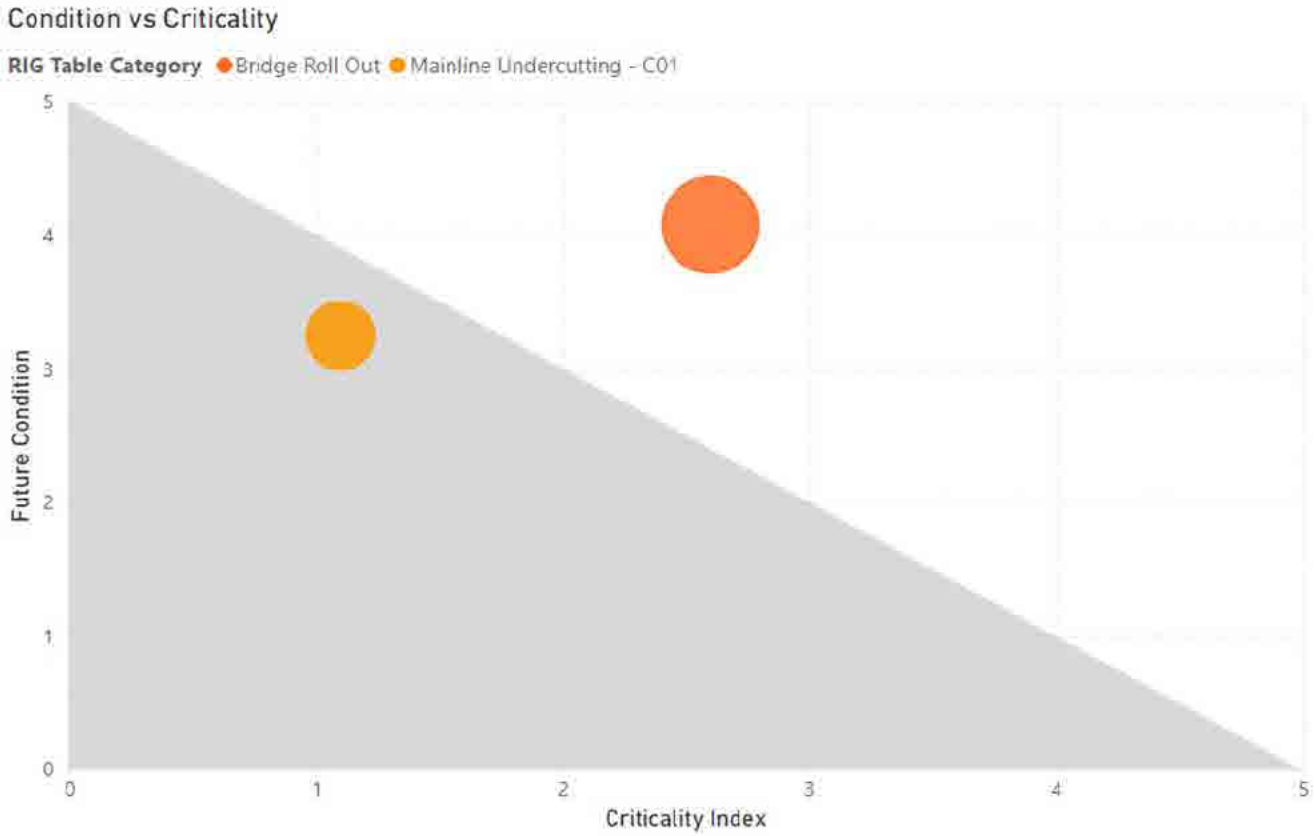


Figure 55 Ballast Cleaning - FY26 Scope Priority Ratings - Moura System

4.7 Civil Assets – Structure Renewals

4.7.1 Structure Renewals Program

The Moura System has a total of 39 bridges and 550 culverts which are designed to allow the natural flow of water through the rail network. In FY26, Aurizon Network proposes to undertake $3.1m of structures renewal works in the Moura System. Table 39 summarises the scope and budget for each relevant renewal item.

Table 39 FY26 Structure Renewals - Moura System

Renewal Item	Scope Type	FY26 Scope	Scope Unit	FY26 Budget ($m)
Culvert Design	Future Scope	7	Site	0.3
Culvert Renewals	Baseload	4	Site	2.8
Total				**3.1**

The FY26 Culvert Renewal program will see 3 out of the 4 culvert renewals at Fry, with the other renewal at Belldeen.

The multiple culvert renewals at Fry will include the removal and replacement of 32m of culverts and 13 cells and lining of one cell of aged pipes. The renewals are driven by significant outlet scouring and reduced flow capacity (than required), multiple washouts over the last 10 years due to inadequate capacity, supported by site hydrology studies. Upon completion of these sites, together with other recent culvert renewals in this section, this section will see improved drainage and reduced impact from storm flows.

At Belldeen, Cured in Place Pipe (CIPP) renewal and the reinstatement of inlet and outlet aprons, headwalls and wingwalls will be undertaken. There have been over 10 incidents in this track section over the past 5

years, increasing in frequency over recent years. 6 corrective maintenance tasks have been required on the culvert since FY20 including scour repair, and track resurfacing due to geometry defects due to pipe deformation. The CIPP will reinstate the pipe rigidity and extend the structure life for approximately 15 years.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. However, Aurizon Network has adopted alternate approaches for the Structures scope in FY26, by lining aged pipes for 2 of the 4 sites, this will see the existing concrete box culverts sleeved with a reinforced concrete lining system for 1 site and aged pipes lined with CIPP for the other site, as opposed to a full remove and replace. These options for these locations can be completed much less intrusively and without impacting capacity while providing a new load-rated structure, thereby avoiding cost and access impacts associated with a total renewal / replacement of the culvert.

Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.6 provides a summary of the Asset strategy for Structured assets.

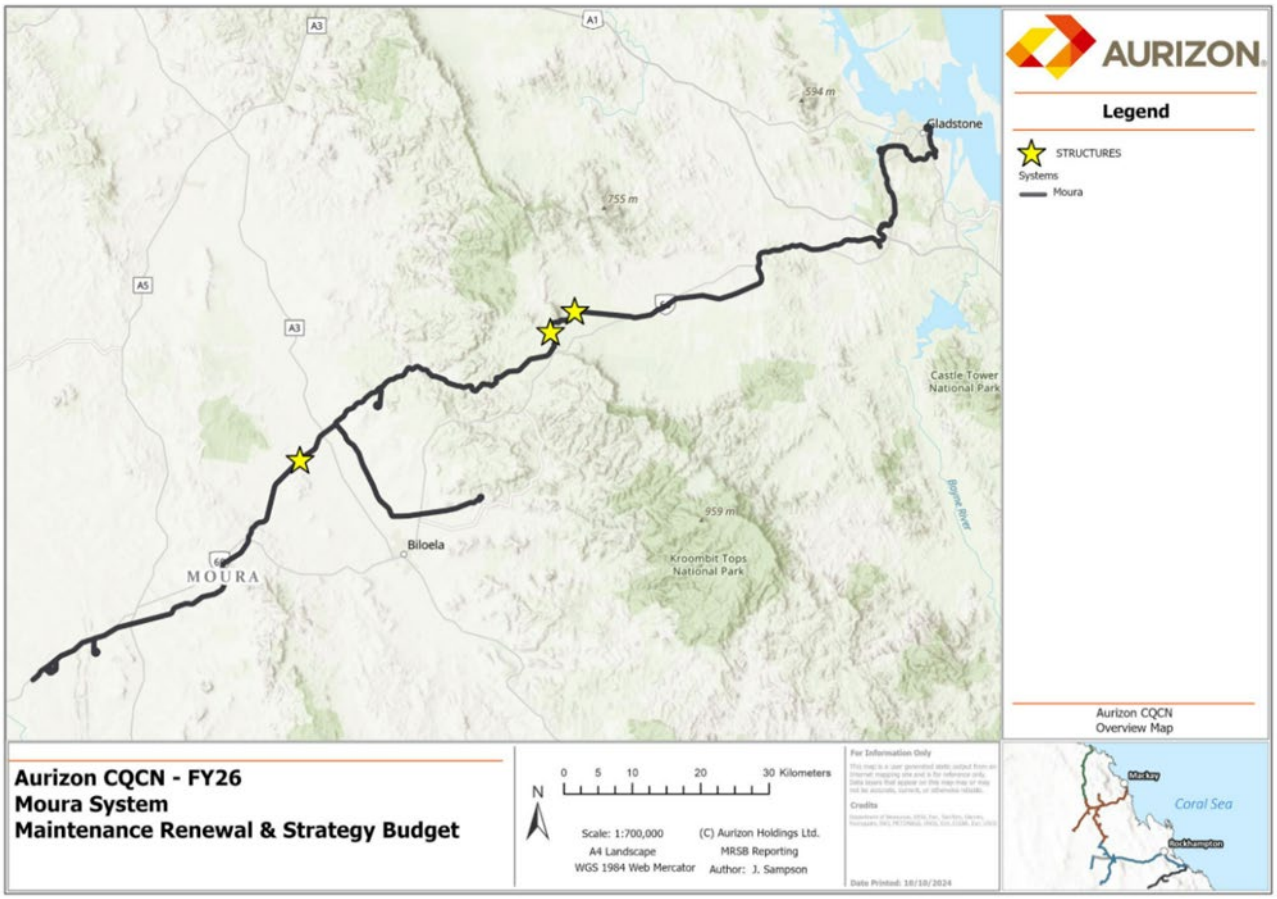


Figure 56 Structures FY26 Scope - Asset Condition and Criticality Assignment

4.7.2 Structure FY26 Scope – Asset Condition and Criticality Assignment

Figure 57 plots the Structure renewals against asset condition and location / operations criticality. All planned FY26 renewals have poor to near end of life condition.

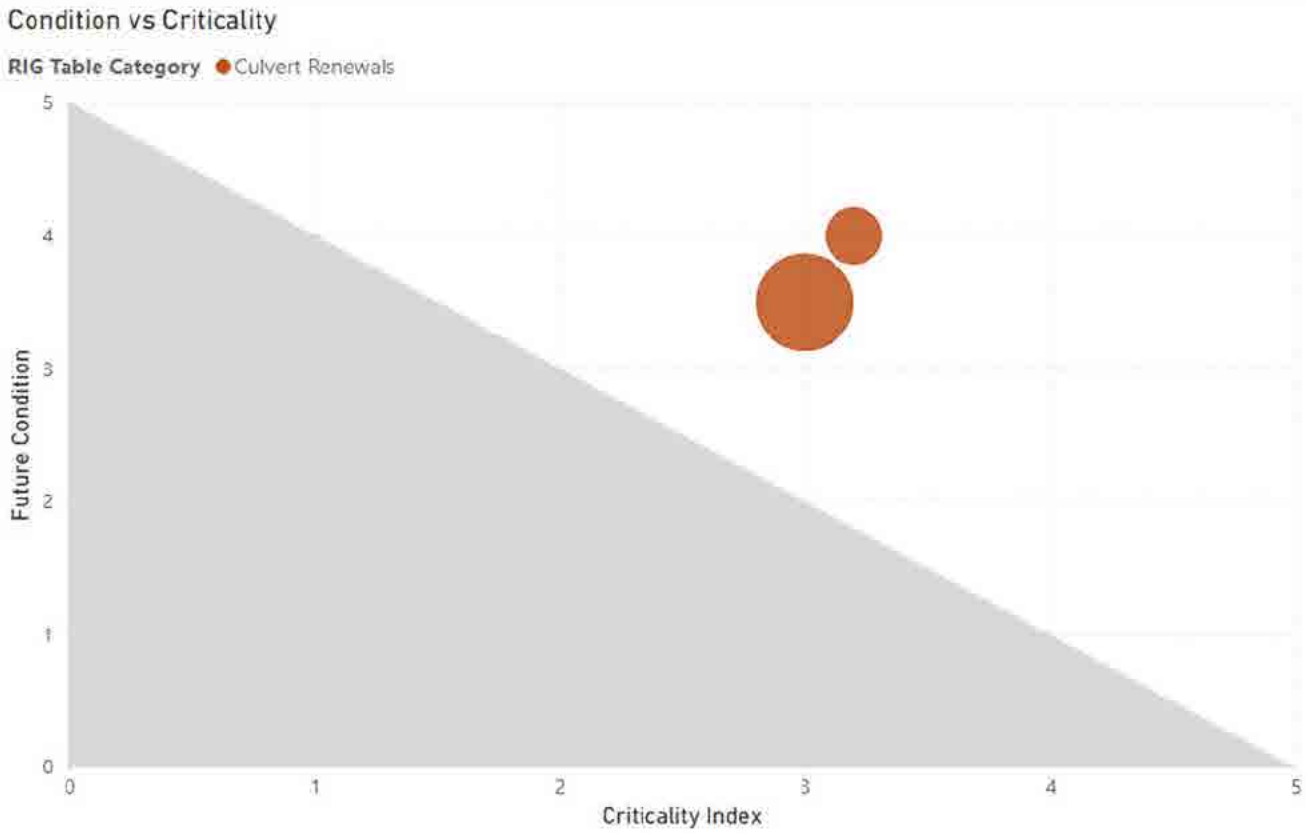


Figure 57 Structures - FY26 Scope Priority Ratings - Moura System

4.8 Civil Assets – Civil Renewals

4.8.1 Civil Asset Renewal Program

In FY26, Aurizon Network proposes to undertake $9.5m in renewals for these assets. Table 40 summarises the scope and budget for each relevant renewal item.

Table 40 Civil Assets Renewal Program - Moura System

Description	Scope Type	FY26Scope	Scope Units	FY26 Budget ($m)
Level Crossing Renewals	Baseload	3	Site	2.8
Level Crossing Design	Future Scope	3	Site	0.1
Level Crossing Other	Baseload	2	Site	3.3
	Reactive Renewals		Lumpsum	0.4
Formation Other	Future Scope		Lumpsum	0.1
Formation Reactive	Reactive Renewals		Lumpsum	2.0
Corridor Fencing & Security Fencing	Reactive Renewals		Lumpsum	0.4
Access Points & Roads	Future Scope	2	Site	0.1
	Reactive Renewals		Lumpsum	0.3
Total				**9.5**

The FY26 Level Crossing program will see 3 major renewals at Earlsfield and Callemondah and include 2 Signal Upgrades at Earlsfield, one of which will be delivered at the same time as the major renewal at the same site, seeing cost efficiencies in delivery of these renewal sites.

At Earlsfield, the upgrade is to 2 adjacent level crossings servicing Jambin-Dakenba Road. The scope is to upgrade both crossings from passive controls (Road signage only) to active controls (flashing lights) motivated by multiple safety incidents which are detailed below:

- The level of risk assessed in the Australian Level Crossing Assessment Model (ALCAM), has these two-level crossings within the high-risk band. This is a result of an increase over time in traffic count and mix of heavy vehicles as well as incident history.
- The site has seen 6 near miss incidents and 2 collisions since 2012, with the most recent collision in March 23 between a fuel tanker truck and coal train.
- Multiple concerns raised by the local road manager, Banana Shire Council, Above Rail operators and infrastructure maintenance teams of the observed continued non-obeyance of the current passive control (stop sign).
- The near miss and collision incidents to date have resulted in 11 train cancelations and over 40,000 delay minutes since 2012.

As mentioned in Section 4.4.1 above, Aurizon Network has applied for Federally-funded, Regional Level Crossing Upgrade Funding (RLCUF), which requires projects put forward for funding relief and support, to be approved projects. Stakeholders will be informed on the success or otherwise of the application.

The Callemondah level crossing services Callemondah Drive (primary access to Callemondah Yard). This Level Crossing supports three separate tracks. The future condition of this level crossing is 3.8 and continuing to deteriorate. The site has seen recurring track geometry defects on the associated tracks (Top & Line, Twist, Cant), as well as contaminated ballast and track ‘pumping’. There have been 50,000 delay minutes and 500 delayed services over the past 5 years. Included in the renewal, formation and road surface renewal will reduce the risk of further defects affecting throughput.

Callemondah Drive level crossing renewal will be completed at the same time as the Earlsfield level crossings upgrade, targeting cost efficiencies in delivery.

The future scope includes design for 3 level crossings, at Jim Whyte Way, Jefferies Road and the Maintenance Access Road at the 89.560km point and 2 access points at Stirrat and Graham.

The allowance for level crossing, formation, corridor security and fencing and access point and roads reactive renewals will be utilised to the extent it is required during FY26 to manage the asset condition.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.7 provides a summary of the Asset Strategy for Civil Assets.

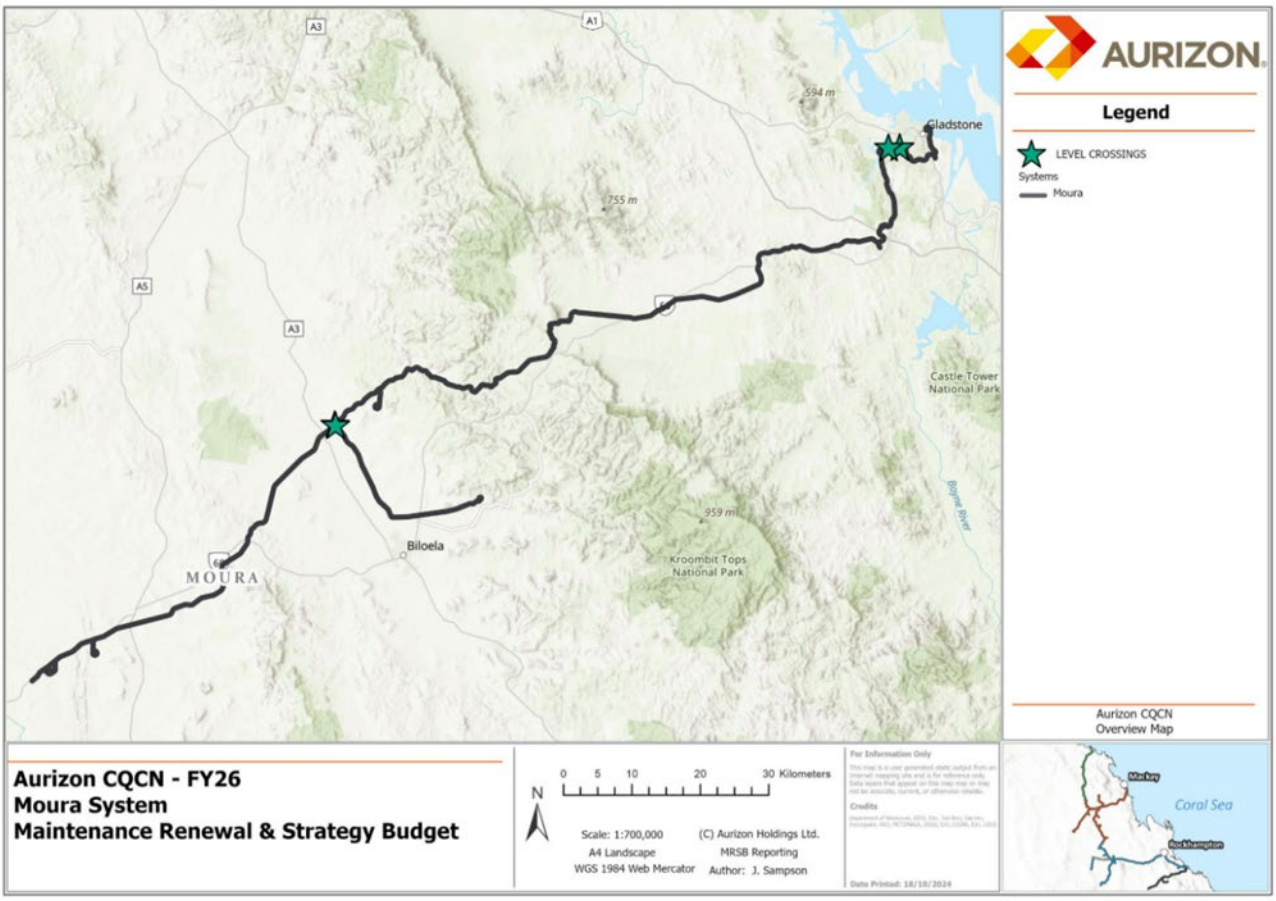


Figure 58 Level Crossing Renewal Sites - Moura System

4.8.2 Civil Renewals FY26 Scope – Asset Condition and Criticality Assignment

Figure 59 plots the civil renewals against asset condition and location/ operational criticality. There are two level crossing renewal sites planned at Earlsfield for FY26 with a poor condition score of 4.5.

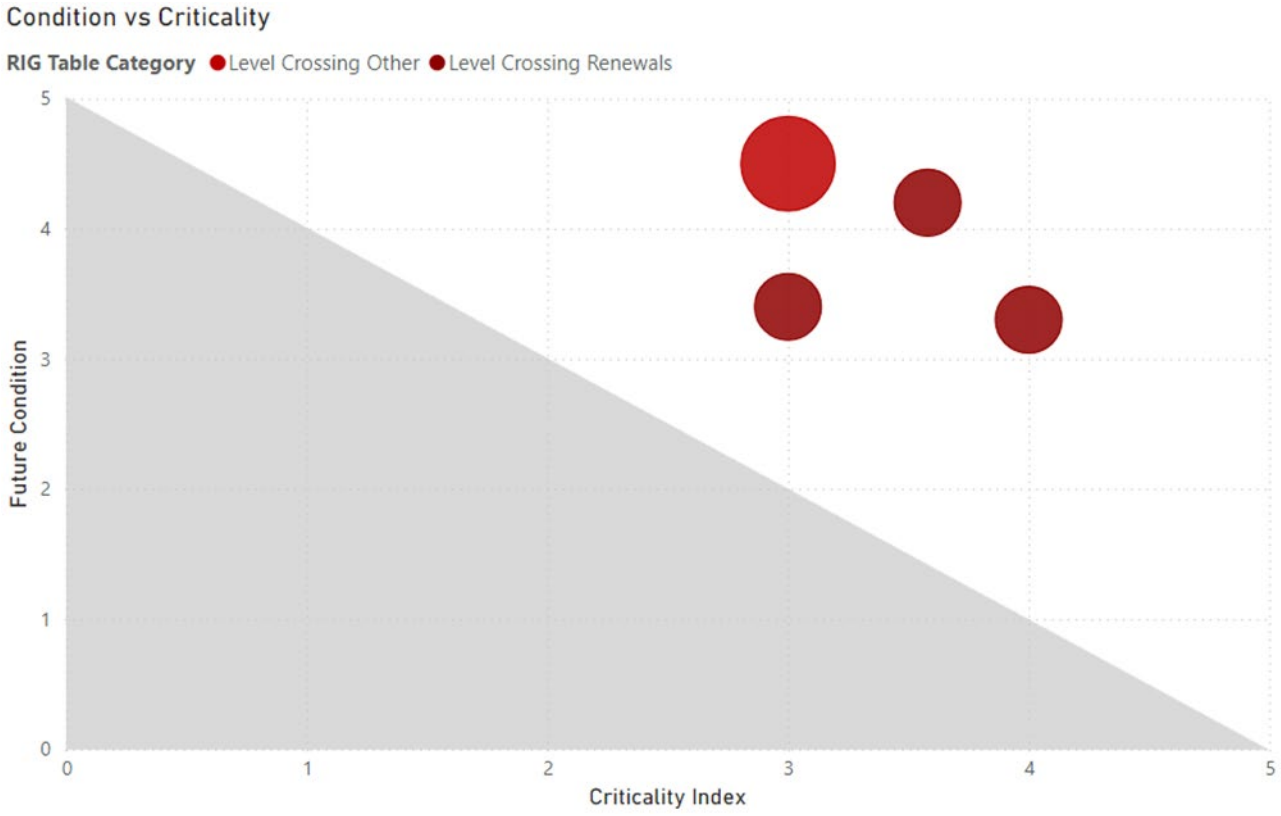


Figure 59 Civil Renewals - FY26 Scope Priority Ratings - Moura System

4.9 Control Systems Assets

4.9.1 Control Systems Renewal Program

In FY26, Aurizon Network proposes to undertake $3.6m of Control Systems renewals or replacement in the Moura System. Of the $3.6m proposed in FY26, $1.3m across 2 sites are assigned to future works for design for renewals in future years.

Table 41 summarises the scope and budget for each relevant renewal item.

Table 41 Control Systems Renewal Program – Moura System

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Safe Working Systems – Asset Protection	Baseload	1	Unit	0.5
Safe Working Systems – Interlockings	Baseload	1	Site	1.7
	Future Scope	1	Site	1.2
Safe Working Systems – Minor	Future Scope	1	Station	0.1
Transmission & Data Renewals	Baseload	3	Unit	0.1
UTC DTC	Strategic	1	Unit	0.1
Total				**3.6**

In FY26, the Safe Working Systems - Asset Protection scope will renew the Bearing Acoustic Monitor (RailBAM) at Graham that provides early warning and trending of rolling stock bearing health.

The Safe Working Systems – Interlockings scope will renew the Vital Processor Interlocking (VPI) at Annandale which was commenced in FY25. The VPI is a safety critical programmable logic controller used to control signalling and to prevent conflicting train movements and collisions. The Moura system VPIs were installed in the mid-1990's and are no longer supported for spare equipment. An ongoing program of work is planned to recover obsolete equipment to replenish inventory until all interlockings are eventually renewed. The program also includes design for a future renewal site at Dumgree, which is intended to be delivered in FY27.

In FY26, the Transmission and Data Renewals includes the renewal of 3 data network routers and firewalls.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.8. provides a summary of the Asset strategy for Control Systems.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Given the high proportion of these renewals being triggered by obsolescence, Aurizon Network will generally seek to replace the current technology with modern-day equivalents that provide an uplift in speed and/or capacity.

Strategic Scope:

UTC/DTC ($0.1m)

Safety and Operational Improvements for Network Train Control system. Scope includes train control system applications, user interface changes and engineering controls for safety processes. Operational requirements for delivery of individual scope items are subject to change due to criticality requirements e.g. post an incident or process breakdown.

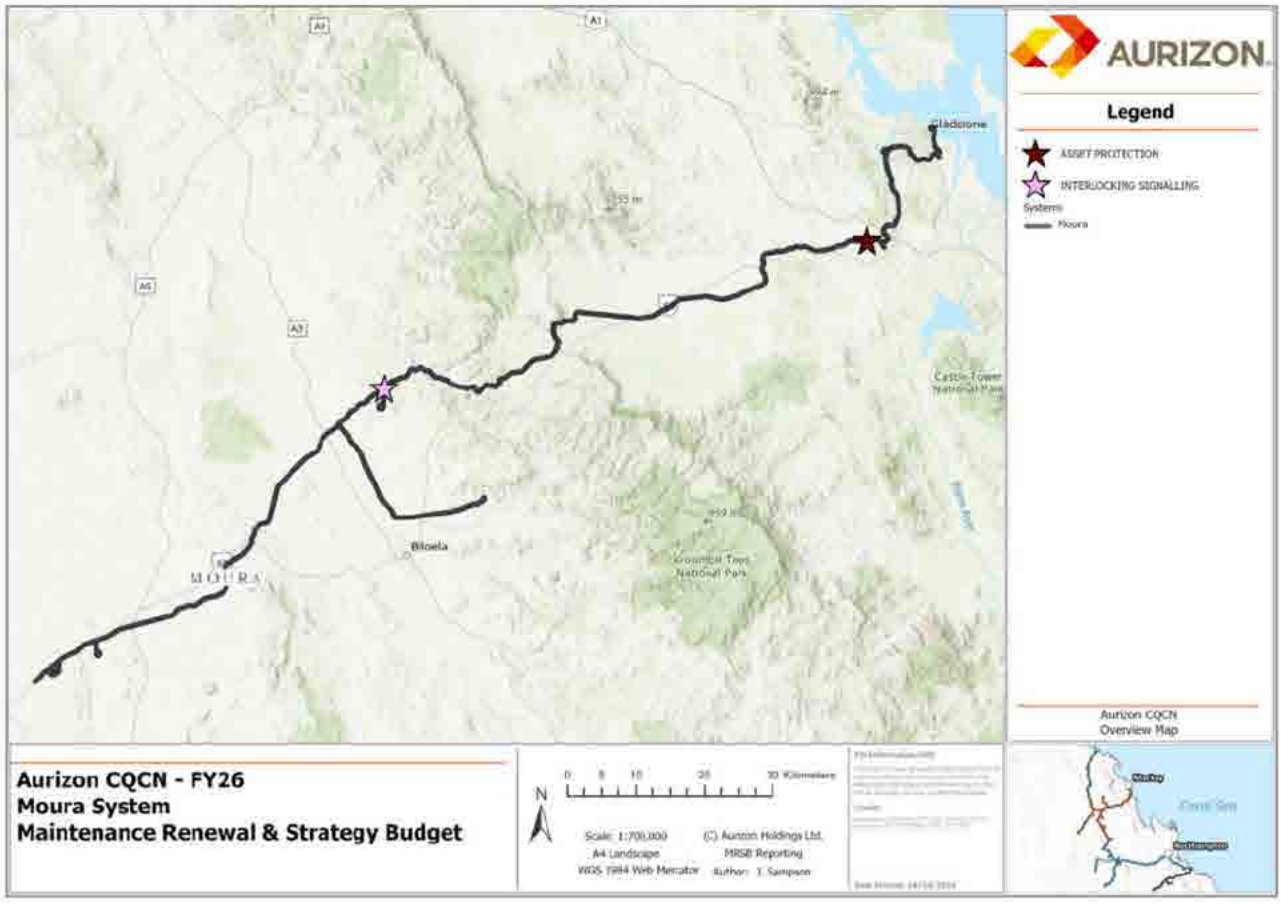


Figure 60 FY26 Control Systems - Moura System

4.9.2 Control Systems Renewals FY26 Scope – Asset Condition and Criticality Assignment

Figure 61 plots Control Systems renewals against asset condition and location/ operational criticality. All scope items are listed as condition rating 4 or above. This reflects the age of assets targeted for renewal in FY26. Control Systems assets are mostly electronic, so renewal is a trigger of support, spare parts or software obsolescence. As such condition is more a matter of asset age against design life rather than a physical demonstration of wear.

The RailBAM renewal site at Graham Creek has a criticality index of 2, the condition rating of 5 sees this renewal prioritised for FY26.

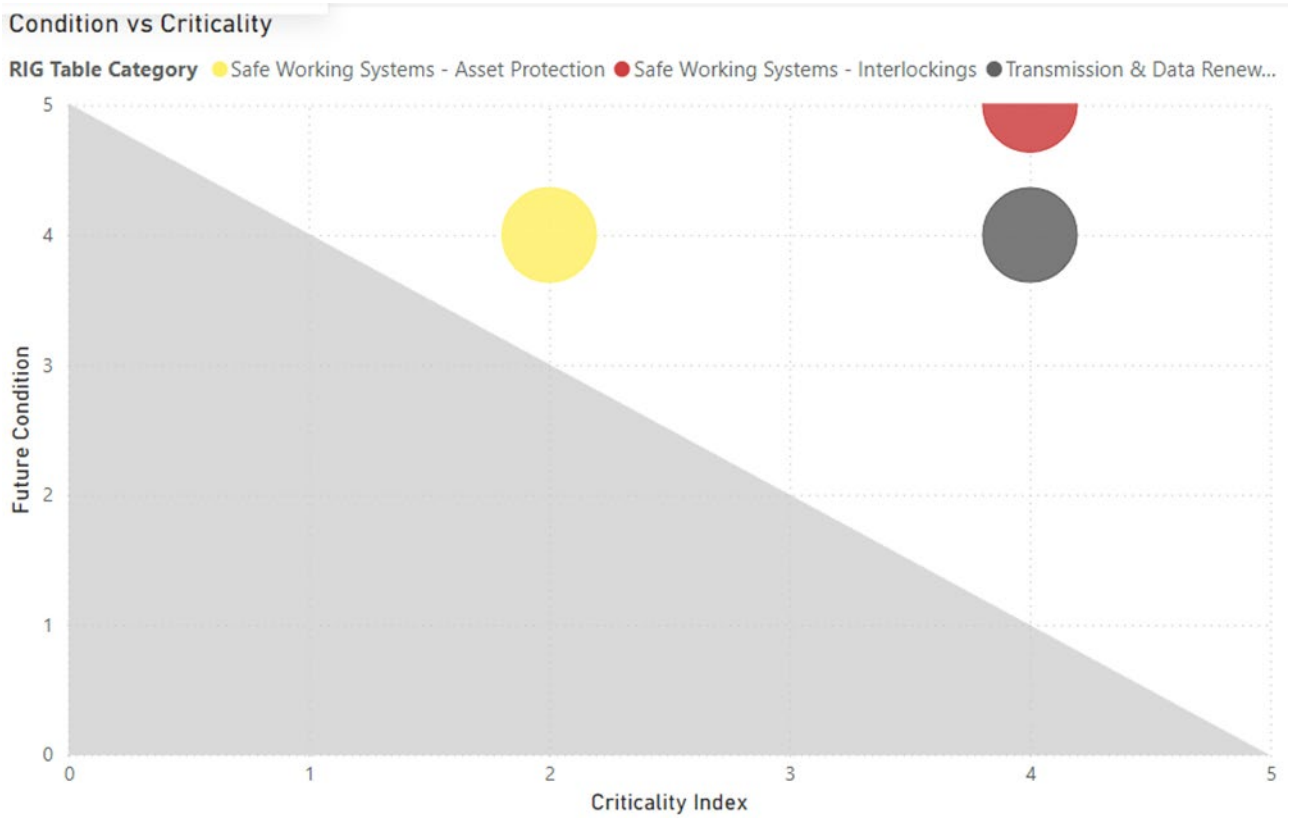


Figure 61 Likelihood of Change Assessment – Maintenance and Renewal

Aurizon Network estimates known risks during the MRSB development and submission phases, then reacts to typical change impacts as they materialise during the MRSB delivery year. Most opportunities for change occur in the delivery year rather than during the development phase.

The identification and evaluation of MRSB scope for inclusion in the submission are based on currently available information, which may change over the period prior to works execution (between 6 and 18 months) due to environmental factors, relative degradation rates, supply and resource impacts, or other considerations.

The majority of the MRSB scope consists of baseload renewals or preventative maintenance tasks, making the likelihood of change low. These activities are typical for Aurizon Network and often involve similar tasks at different locations across the systems. For example, the process for a rerail renewal is well-known and well-practiced, hence it is a baseload activity with a low likelihood of change. Consequently, Aurizon Network does not assign a system-based program contingency or consider a risk provision across the program. When changes do occur, their impact on the program is assessed in terms of approved cost (budget), scope, and access.

The opportunity for change is also relative to the complexity or time pressure of a project. To mitigate these risks, Aurizon Network applies a stage gate methodology to complex or strategic scopes and separates design from delivery for projects involving multiple asset disciplines, requiring both design management and project management.

When changes occur, their impact on the program is assessed across approved cost (budget), scope, and access. Aurizon Network has a developed change management review and approval process to react to changes as they arise.

This following table details the likelihood of change across the different scopes proposed for FY26, along with project-specific costs and mitigations. Further information on the change management review and approval process, as well as generic risk types and treatments, is provided in Section 10.2.4 Likelihood of Changes.

Table 42 Potential Areas of Change at Program Level in the Moura System

Type	Likelihood of Change	Projects in FY26	Value % FY26[11]	Change Mitigations
Strategic Renewals	Moderate	1 active (UTC Upgrades)	0.3%	• Stage gate approach (Concept to Feasibility) providing time to increase scope definition and assumptions ahead of delivery • Type testing of new equipment to consider installation and operations impacts
Baseload Renewals	Low	23 Sites Across 10 Programs	77.7%	• Prior year program reviews • Program Management processes to minimise day of delivery risk • Site walk outs, pre-digs to understand site conditions ahead of day of delivery
Future Design	Moderate	16 Designs across 6 Programs	7.2%	• Separation of design activity for delivery to allow time for design staging and construction review • Design Management application to ensure multi discipline design is built to solve site requirements
Reactive Renewals	High (due to time pressure)	9 Programs	15.1%	• Use of standard designs • Works completed by local teams with local knowledge with Project Engineering support
Maintenance	Preventative – Low Corrective – Moderate Reactive – High			• Preventative inspections based on standard that is periodically reviewed • Corrective and reactive maintenance informed by historic levels of activity. • Engineering support available to provide defect reliability analysis and management

[11] % of costs across the FY26 Capital Asset Renewal scope in this system

Newlands System And GAPE

AURIZON

5 Newlands System and GAPE

This section presents Aurizon Network's Draft Maintenance and Renewal Strategy and Budget for the Newlands System and the Goonyella to Abbot Point Expansion (GAPE) during FY26. In line with 7A.11.3 of UT5, each of the Newlands and GAPE sections will be subject to vote by the relevant Newlands and GAPE End Users.

Aurizon Network's FY26 Final Draft Proposal for the Newlands System and GAPE provides for:

A strategy to maintain stable level of service over the long-term

The asset management for the Newlands System and GAPE is reflective of the current tonnage profiles and asset age mix. Asset Renewals seek to renew or replace aged assets ahead of unplanned failure or obsolescence to minimise supply chain interruption.

Direct Maintenance Cost Allowance of $18.1m

The proposed Direct Maintenance Cost Allowance, which excludes ballast undercutting plant depreciation, represents an increase of $1.6m compared to Aurizon Network's current FY25 full year maintenance forecast and an increase of $1.4m compared to the approved FY25 Maintenance Strategy and Budget. The increase in maintenance spend against the FY25 approved budget is predominantly driven by an increase is rail maintenance activity levels.

This includes an adjustment for non-coal traffic and provides for a total Maintenance Indicator of $17.2m. Aurizon Network proposes to allocate the total Maintenance Indicator as follows:

- $7.3m allocation to Newlands System Allowable Revenues and Reference Tariffs; and
- $9.9m allocation to GAPE Allowable Revenues and Reference Tariffs.

The increase in maintenance spend is predominantly driven by escalation and commencement of targeted corridor drainage program in Newlands offset by reduced cyclic grinding requirements.

A Renewals Allowance of $31.8m

This represents an increase of $7.4m compared to Aurizon Network's current FY25 renewals forecast and decrease of $0.5m compared to the approved FY25 Renewals Strategy and Budget.

Aurizon Network proposes to allocate the total Capital Indicator as follows:

- $18.4m allocation to Newlands System Allowable Revenues and Reference Tariffs; and
- $13.4m allocation to GAPE Allowable Revenues and Reference Tariffs.

The increase in renewal spend is predominantly due to an increase in scope in Permanent Way, Structure, Level Crossing and Control Systems renewals.

Integrated System Closures

A key feature of the Newlands Integrated System Closure plan is that major scope items are delivered in extended integrated closures aligned to the port outages once or twice per year (scope dependent). All other planned maintenance activities are completed in scheduled maintenance blocks or in-between trains where possible.

Planned Integrated System Closures in the Newlands System and GAPE in FY26 total 168 hours

Likelihood of Change

Completion of prior year scope and weather remain key program risks for the Newlands System and GAPE. Where prior year scope is replanned for completion during FY26, this could impact the ability to complete planned FY26 renewal scope.

5.1 Newlands System and GAPE – Characteristics and Corridor Strategy

The Newlands System is located at the northern end of the Bowen Basin connecting to the port at Abbot Point. The system serves mines located in the Newlands System, as well as mines located in the Goonyella System via the GAPE Link and coal services from the Galilee coal basin. The Newlands System and GAPE are not electrified.

Maintenance and renewal activities in the Newlands System and GAPE are primarily delivered from depots located in Moranbah and Merinda, with mobile mechanised plant based in Yukan and Rockhampton.

Aurizon Network's depots are strategically located to enable incident response times across the Newlands and GAPE Systems within approximately two and half hours. Mechanised plant (e.g., resurfacing) is typically able to respond to an urgent defect (e.g., a buckle or geometry defect) in the Newlands and GAPE Systems within 2 days.

Figure 62 Depot Locations - Newlands System and GAPE

Aurizon Network has considered asset conditions specific to this Coal System when developing the FY26 Final Draft Proposal, particularly in relation to:

- **Civil Assets** – The GAPE project built a 65km greenfield connection between the Goonyella and existing Newlands Systems in 2011. This project also upgraded select sections of the pre-existing Newlands System, already enabled for 20 tonne axle load consists to 26.5 tonne axle load. These upgrades included localised sections of rail replacement and formation strengthening. Structures renewals to support the change in axle load have been occurring since 2011 and are expected to continue in FY26. The renewal drivers are based primarily on condition and imposed long-term operational restrictions. Renewal activities are centred around the sections that were not upgraded in 2011 which include sections of 53kg rail and fist fastener sleepers associated with the original 20 tonne axle load operations. There is approximately 213km of track in the Newlands system with a combination of 53kg and 60kg rail (including passing loops and balloon loops). Network's strategy is to replace approximately 118 rails or 6.37km of track each year in Newlands, of which approximately 5.1km is targeting fatigued, 53kg rail. Prioritisation of rail renewal locations is decided based on condition which includes rail wear, fatigue (identified through rail defect history), whether the condition aligns to the specific section under consideration (i.e. fit-for-purpose) and location criticality. The quantity replaced in future years may increase dependant on annualised tonnage profiles (and forecast) as well as ongoing monitoring of defect quantities.
- **Control Systems Assets** – This asset class was also modernised during the GAPE project with upgraded sections making use of the installed optical fibre cable which was part of GAPE. Like the civil assets, these upgrades are intermixed with aged assets. Trains are detected through a mix of track circuits and axle counter track sections with ongoing renewals programmed for life expired axle counter assets in future years. The radio system across Newlands was upgraded in recent years to a digital based Terrestrial Trunked Radio (TETRA) system. The non-upgraded sections of the Newlands System attract most of the maintenance and renewal activity given these assets are aged and there are sections of 53kg rail and fist fastener sleepers, and short span bridges associated with the original 20 tonne axle load operations.

Corridor Strategy

The Newlands System (which includes Rail Infrastructure constructed as part of the GAPE project) is a mix of new, recently upgraded, and original assets. As such most of the maintenance and renewal efforts are focused on the aged assets in the shared Newlands Rail Corridor that were not upgraded or renewed during the GAPE.

The asset management strategy for the Newlands System and GAPE is to hold availability required in a fit for purpose manner. The Newlands System and GAPE rail infrastructure is being maintained for forecast tonnages and not name plate capacity.

The maintenance approach is consistent with the other Coal Systems being planned inspections and planned corrective maintenance to address identified defects, and reactive maintenance to address service interrupting asset failures and incident response.

Asset Renewals seek to renew or replace aged assets ahead of unplanned failure or obsolescence to minimise supply chain interruption.

The below graphs in Figure 63 indicate the asset management strategy is effective in maintaining performance and reliability consistent with 4-year averages. Increases in delays from FY23 are driven by increased traffic, increasing planning delays.

The number of incidents, cancellations, delays (including TSRs) and OTCI provide

- an indication of the performance of the system over time
- are triggers for Event Threshold Reporting that seeks to inform the asset management approach for each asset class
- Contribute to (amongst other factors) specific scope identification and selection

Delays and Cancellations measure the impact of incidents on the supply chain and are influenced by multiple factors including:

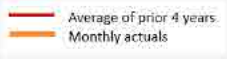
- Type and location of defect
- Incident response time
- Planning and scheduling
- Traffic management decisions

The OTCI index is a measure that trends track geometry at a system level. OTCI predominantly relates to the effectiveness over time of the Ballast Renewal and Resurfacing programs. It does not measure electrical or control system assets.

Please refer to the Glossary for further information on interpretation of these graphs.

Of note, from FY23, cancellations and planning delays in Newlands have increased as traffic volumes have increased:

- The major spike in the cancellation chart relates to a derailment at Havila in September 2016: (84 cancellations) (chart truncated to 40)
- 4-year average of TSRs has improved although overall system delays have increased
- OTCI index has reduced over time indicating an overall improvement to average track geometry condition. OTCI does not account for localised reliability impacts, traction or control systems assets.
- Incident numbers in Newlands have held steady over time, while cancellation performance has improved from FY24.



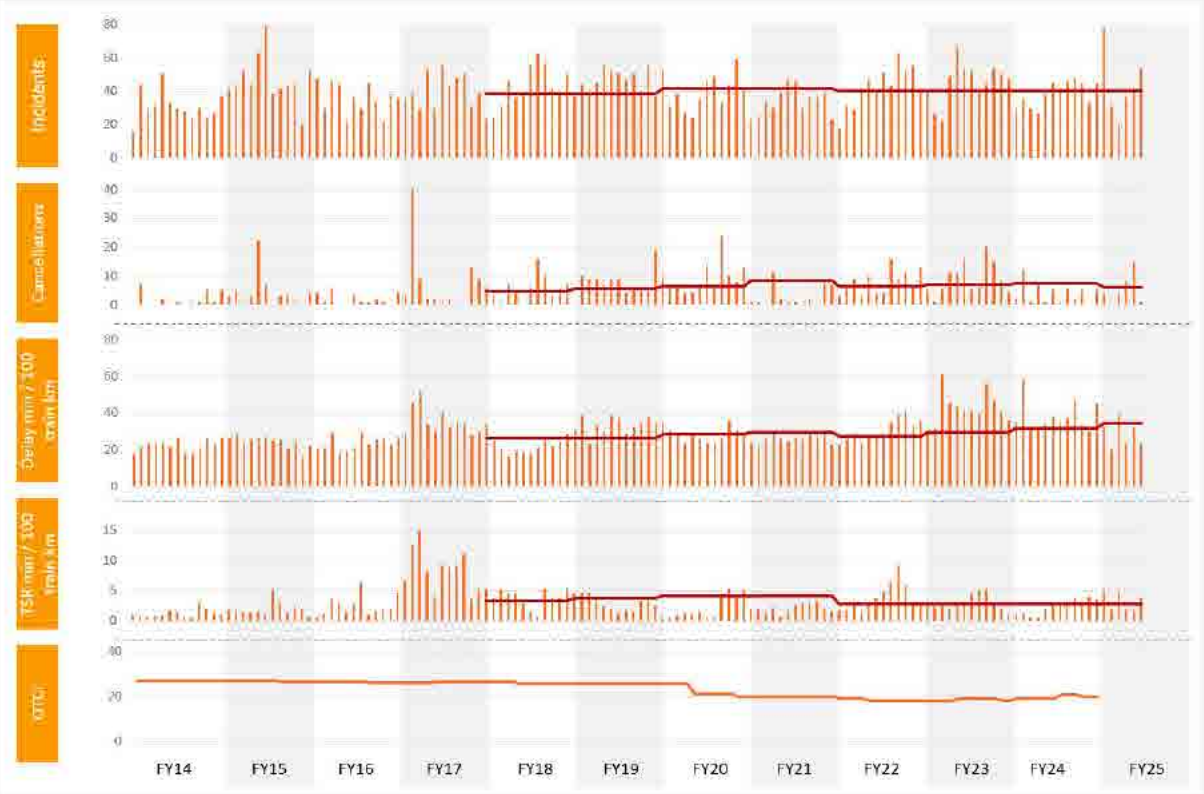


Figure 63 Newlands and GAPE Below Rail Performance 4-year average trends using monthly performance from FY2014 to October 2025

5.2 Newlands System and GAPE – Integrated Closure Plan

Specific Newlands System and GAPE Supply Chain considerations

Port alignment

Major scope delivery is preferably aligned with port outages.

Reducing impact of major closures

Major scope delivery is packaged and executed in extended integrated closures once or twice per year (scope dependent)

All other planned maintenance activities are completed in scheduled maintenance blocks or in-between trains.

Closure timing

December and June are avoided to provide the opportunity to maximise railings for the end of calendar and financial year respectively.

Transitional Arrangements

No allowance has been made for construction works related to Transitional Arrangements in FY26. Any approved Transitional Arrangements may require further closure hours. Timing of works would be subject to refinement of costs, available resources, availability of long lead items as well as the prudency and efficiency assessment by the IE prior to construction as per clause 7A.5(i) of UT5.

Table 43 outlines the proposed closure hours for FY26.

Table 43 Planned and Integrated Closures - Newlands System and GAPE

FY26 Integrated System Closures													
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Hours	0		108						60				168

Discussions with Abbot Point Coal Terminal have identified FY26 port in-loader closures will be in line with previous years and consistent timing.

Timing and duration of both the Integrated Closures and single line possessions are tested against delivering both DNC (ACAR 2023 FY26) and Committed Capacity as well as being coordinated with other supply chain participants where possible, to maximise supply chain alignment and throughput. The final Critical Asset Activities Power BI report that aligns with this FY26 Final Draft Proposal is available from 30 November 2024. Driving path activities listed in Table 44 have determined the duration of the planned integrated closures and access requirements in the Newlands System and GAPE during FY26. Note hours are not reflective of customer impact as it does not consider works planned in the shadow of port outages or other works to reduce impact. These hours do not include moving products such as rail grinders, resurfacing, Ultrasonic Rail Inspections and Road Patrols; maintenance works to be planned throughout the year or asset activity planned around train services (Plan throughs) as they do not impact capacity or services.

Table 44 Driving Path Activities – Newlands System and GAPE

System and GAPE Closure	Driving Path Activity	Location
September 108-hour	Bridge Renewal	Armuna
	Bridge Renewal	Armuna
March 60-hour	Track Upgrade	Kaili to Durroburra
	Track Upgrade	McNaughton Balloon
	Level Crossing	Durroburra
	Bridge Renewal	Armuna

Figure 64 illustrates the historical Newlands and GAPE integrated system closure hours in comparison to the FY26 Final Draft Proposal. The increase in Integrated Closure hours between FY25 and FY26 is reflective of the inclusion of RCS commissioning as part of the Transitional Arrangements to address the Existing Capacity Deficit.

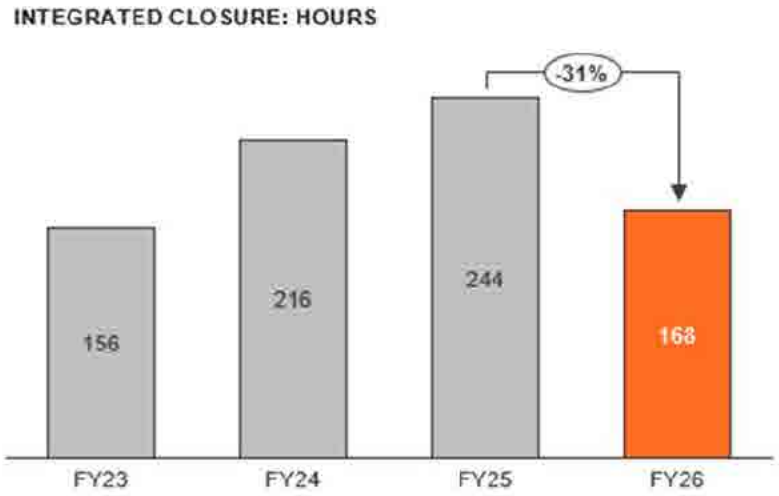


Figure 64 Trend of Integrated System Closure Hours from FY23 to FY26 - Newlands System and GAPE

5.3 Newlands System and GAPE – FY26 Maintenance Strategy and Budget

Aurizon Network has developed its Draft Maintenance Strategy and Budget for the Newlands System and GAPE having regard to all relevant matters outlined in clause 7A.11 of UT5, including the Maintenance Objectives. Aurizon Network considers that its FY26 Final Draft Proposal provides an appropriate level of asset activity that will promote the safety, reliability and performance of the Newlands System and GAPE Rail Infrastructure.

5.3.1 Summary of Historic, Forecast and FY26 Maintenance Strategy and Budget

Aurizon Network's FY26 Draft Maintenance Strategy and Budget for the Newlands System and GAPE provides a Direct Maintenance Cost Allowance of $18.1m (excluding ballast undercutting plant depreciation) which is:

- $1.4m higher than the approved FY25 Maintenance Strategy and Budget; and
- $1.6m higher than Aurizon Network's current FY25 full-year forecast.

Figure 65 provides a summary of historic direct maintenance costs as well as the proposed direct maintenance cost allowance in respect of FY26.

To ensure comparability with prior periods, the direct maintenance costs shown in Figure 65 and Figure 66 exclude depreciation on ballast undercutting plant.

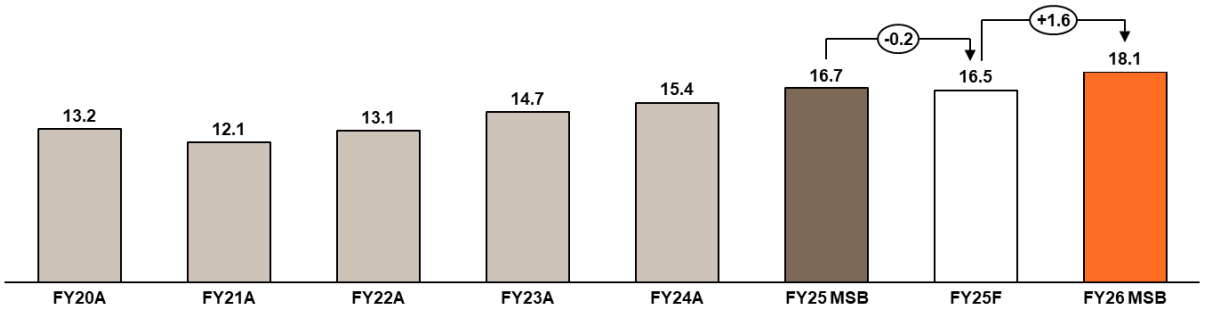


Figure 65 Direct Maintenance Costs - Newlands System and GAPE

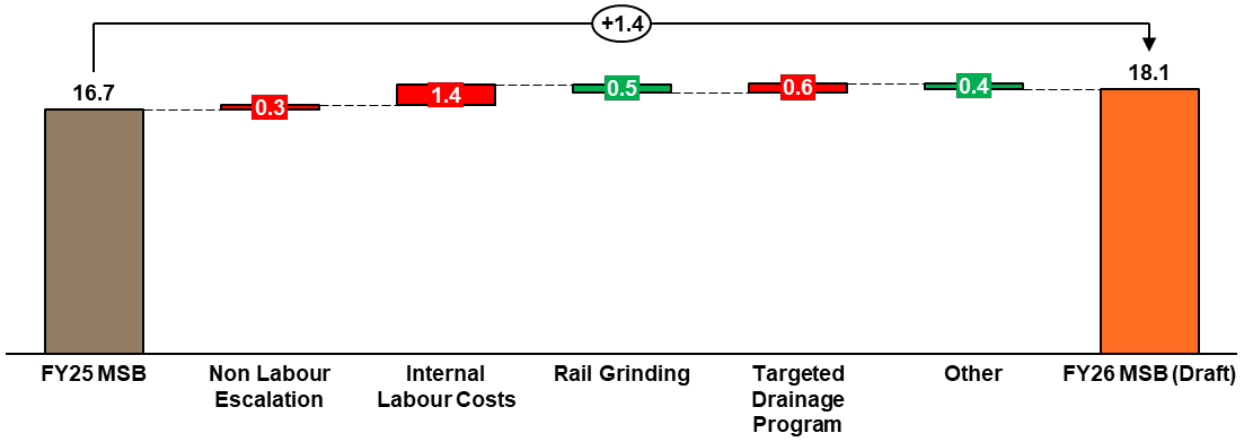


Figure 66 Direct Maintenance Cost Movement - Newlands System and GAPE

FY26 Draft Maintenance costs (excluding ballast undercutting plant depreciation) are budgeted at $18.1m. The increase in spend of $1.4m against the FY25 Maintenance and Strategy Budget is primarily driven by:

- **Non labour cost escalation (+$0.3m)** - on contractors, materials, plant and other consumables.
- **Internal labour cost (+1.4m)** - additional internal labour costs expected driven by:
  - annual increase required under the Infrastructure Enterprise Agreement and other Staff Agreements ($0.3m)
  - higher level of engineering support from Network Asset Management to support asset condition.
  - Additional internal labour resource to support Civil Infrastructure discipline in uplift corrective maintenance levels.
- **Rail Grinding (-$0.5m)** – Reflects reduction in mainline and turnout undercutting scope aligned to cyclic grinding frequencies.
- **Targeted drainage program (+$0.6m)** – reflects additional contractor support to execute a targeted program to improve track and corridor drainage at sites where ponding water and formation degradation is evident.
- **Efficiency** – FY26B reflects target efficiencies of $0.4m, which is broadly consistent with the efficiency target assumed in the FY25 approved budget. Initiative focus areas include labour, indirect costs, contractor spend and procurement activities. Refer Section 10.4.7 which describes areas of focus since the FY25 MRSB.

The FY25 forecast is $0.2m lower than the approved FY25[12] budget. All items are currently within the indicative materiality thresholds set in UT5. The FY25 forecast is subject to review and will be updated at the end of Q2 FY25.

An overview of the methodology used to establish the FY26 maintenance cost budget is provided in Section 10.3 Budget Setting and Procurement.

5.3.2 FY26 Maintenance Strategy and Budget

The maintenance program includes preventative, planned corrective and reactive maintenance activities.

The planned and preventive maintenance activities and inspections, as well as the planned mechanised production scope, are derived in line with the intervention periods as detailed in Aurizon Network's Asset Maintenance and Renewal Policy. This policy determines the inspection regime and period based on asset type condition and location.

The scope of planned corrective and reactive maintenance tasks is heavily dependent on the faults identified via the planned inspection programs. Aurizon Network has assumed that in FY26 the Coal System will see a similar level of faults that require planned corrective or immediate response as in prior years.

Section 9 Strategies by Asset Class outlines the different approaches with regards to maintaining the Rail Infrastructure. These approaches lead to the application of the maintenance tasks across the system.

The proposed FY25 maintenance scope and budget for the Newlands System and GAPE is outlined in Table 45.

[12] Refer to Q1 FY25 Quarterly Performance Report for more detailed - information on costs expected to be incurred.

Table 45 FY26 Final Draft Proposal - Maintenance - Newlands System and GAPE

Maintenance Item	Scope Units	FY25 Budget Scope	FY25 Budget ($m)	FY25 Forecast Scope	FY25 Forecast ($m)	FY26 Budget Scope	FY26 Budget ($m)
Resurfacing			1.8		1.5		1.9
Mainline	Km	188	1.5	188	1.3	188	1.6
Turnout	Site	21	0.3	21	0.2	21	0.3
Rail Grinding			3.0		2.9		2.5
Mainline	Km	[redacted]	2.5	[redacted]	2.5	[redacted]	2.2
Turnout	Site	[redacted]	0.4	[redacted]	0.4	[redacted]	0.3
Level Crossing	Track LX	[redacted]	0.0	[redacted]	0.0	[redacted]	0.0
General Track Maintenance			5.4		5.5		7.1
General Track	Activity		4.5		5.0		6.0
Corridor Maintenance	Activity		0.7		0.3		0.9
Ultrasonic Testing	Km	2,254	0.2	2,294	0.2	2,254	0.2
Signalling and Telecoms			3.8		3.8		3.9
Signalling Corrective	Activity		1.3		0.8		1.0
Signalling Preventative	Inspection		1.8		2.3		2.1
Telecoms Corrective	Activity		0.1		0.0		0.1
Telecoms Preventative	Inspection		0.6		0.7		0.8
Electrical			-		-		-
Structures and Facilities			1.6		1.6		1.6
Trackside Systems			0.4		0.3		0.4
Other Civil Maintenance			0.3		0.3		0.3
Other General Maintenance			0.5		0.5		0.5
Sub-Total			**16.7**		**16.5**		**18.1**
Ballast Undercutting Plant Depreciation			0.3		0.3		0.3
Total Direct Maintenance Costs			17.0		16.8		18.4
Non-Coal Allocation			-		-		(0.1)
Total			**16.9**		**16.8**		**18.3**

Note: Figures may not add due to rounding.

For the Newlands System and GAPE:

- **Direct maintenance costs** (excluding ballast undercutting plant depreciation) are budgeted to increase by $1.4m from the FY25 Budget.. Key movements in RIG maintenance categories are summarised below:
  - **General Track (+$1.6m)** – increase driven by additional internal resource to support Civil Infrastructure discipline in delivering an uplift in corrective maintenance levels predominantly relating to rail maintenance activities[13]. The FY26 budget also reflects additional contractor support to execute the targeted drainage improvement program.
  - **Resurfacing (+$0.1m)** - spend expected to be broadly in line with FY25 budget .
  - **Rail Grinding (-$0.5m)** – decrease driven by a reduction in updated cyclical requirements resulting in decreased Mainline [redacted] and Turnouts [redacted] scope offset by contract escalation.

[13] Refer to additional information presented to RIG Producer Group – FY26 v FY25 Draft Overview 17.01.2025

- **Ballast Undercutting Plant Depreciation** - ballast undercutting plant depreciation as a total is largely in line with FY25B, with the allocation between systems based on the number of days that the ballast plant is expected to be operating in the Newlands system in FY26.
- **Non-Coal Allocation** – this adjustment reflects an allocation of costs to non-coal services and is calculated by applying the actual non-coal volumes railed in the Newlands System and GAPE during FY24 to the QCA-approved AT1 Reference Tariff for FY26.

Figure 67 is a summary of historic, forecast and budgeted direct maintenance costs by maintenance category.

To ensure comparability between periods, the direct maintenance costs presented in the chart exclude depreciation on ballast undercutting plant.

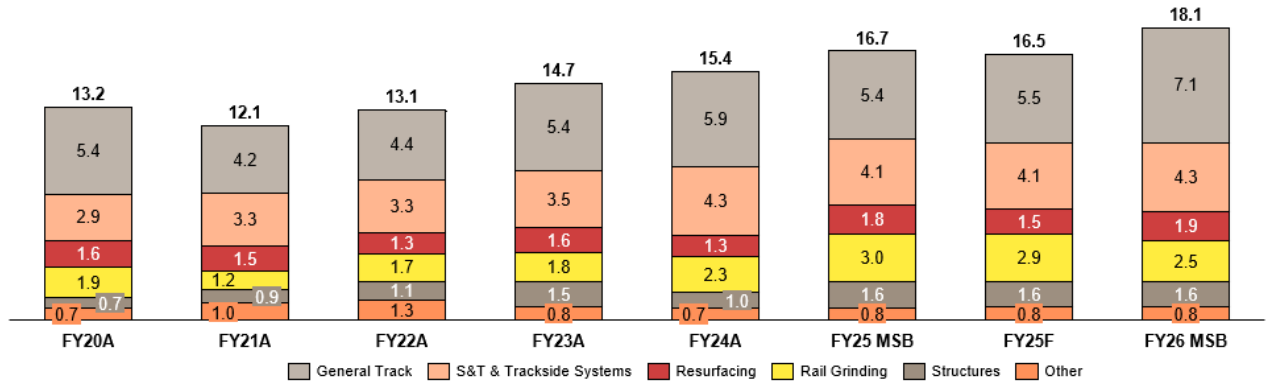


Figure 67 Direct Maintenance Costs - Newlands System and GAPE

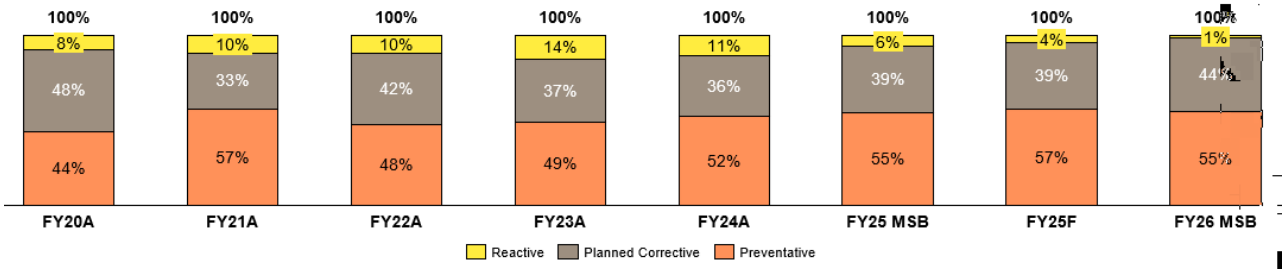


Figure 68 Preventative/Corrective Maintenance Spend Composition - Newlands System and GAPE

Figure 68 illustrates the proportion of preventive, planned corrective and reactive maintenance expenses in the Newlands System and GAPE over time. Approximately 55% of the Newlands System and GAPE maintenance spend in FY26 is expected to be preventive in nature. The cyclic nature of the rail grinding program contributes to the variation between preventative maintenance activity proportions year on year.

Additional detail in relation to the make-up of costs for each maintenance activity has also been provided to the RIG Expert Advisor.

5.4 Newlands System and GAPE – FY26 Renewals Strategy and Budget

Aurizon Network has developed its Draft Renewals Strategy and Budget for the Newlands System and GAPE having regard to all relevant matters outlined in clause 7A.11 of UT5. Aurizon Network considers that its FY26 Final Draft Proposal provides an appropriate level of asset activity that will promote the safety, reliability and performance of Newlands System and GAPE Rail Infrastructure and seeks to deliver DNC and more broadly, Committed Capacity.

5.4.1 Summary of FY26 Renewals Strategy and Budget

Aurizon Network's FY26 Draft Renewal Strategy and Budget for the Newlands System and GAPE provides for an asset Renewals requirement of $31.8m which is:

- $0.5m lower than the approved FY25 Renewals Strategy and Budget; and
- $7.4m higher than Aurizon Network's current FY25 forecast.

The detail of the changes to the FY25 program are summarised within the RIG Quarterly performance reports.

A summary of the FY26 renewals budget for the Newlands System and GAPE is outlined in Table 46.

The summary has been further separated in Table 47 to call out the proposed FY26 scope relating to the replacement of assets constructed as part of the GAPE infrastructure enhancements.

Table 46 FY26 Final Draft Proposal - Renewals - Newlands System and GAPE

Renewals Item ($m)	Assets Include	FY25 Approved Budget	FY25 Forecast	FY26 Draft Budget
Civil Assets		31.4	23.2	29.1
Permanent Way	Rail, Track, Sleeper, Turnouts	9.2	6.0	8.1
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	7.8	6.7	6.5
Structures	Culverts, Bridges	9.2	6.1	8.9
Civil Renewals	Formation, Level Crossings, Access Points	5.1	4.4	5.6
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission	1.0	1.2	2.8
Total		**32.3**	**24.4**	**31.8**

Notes: Figures may not add due to rounding.

The FY26 budget variance to the approved FY25 Strategy and Budget is primarily driven by:

- **Cost Escalation** – Variations across program largely impacted by labour and non-labour escalation outlined in Section 10.3 Budget Setting and Procurement.
- **Permanent Way (-$1.1m)** – Reductions in Track Upgrade scope (-3.5 track km) and Turnout (-2 sites) are partly offset by an increase in Rail Renewal program to target large sections at Briaba (3 sites at a total of 9.5km of rail), Armuna (1.7km) and Collinsville (0.7km).
- **Ballast Cleaning (-$1.4m)** – Reduction due to lower levels of mainline excavator undercutting and no Bridge Rollouts, partly offset by Mainline Undercutting increases. In FY26, while the scope of ballast mainline undercutting has reduced, forecast costs have increased. Cost estimates have been informed by expected ballast return rates which have been based on information collected through pre-dig assessments. Pre-dig information has been used to help inform ballast quantity requirements, ballast delivery costs and ballast removal (spoil) costs.
- **Structures (-0.3m)** – Variance is driven by additional bridge handrail scope at Deadman Creek, and two culvert renewals of similar complexity to McNaughton renewal included in the FY25 MRSB, offset by the incorporation of cost savings due to changes to the procurement process for Civil Works in FY25 as advised in the FY25 Q1 RIG Report.
- **Civil Renewals (+$0.4m)** – Variance is driven by level crossing renewal scope with the inclusion of a major level crossing renewal which consists of full formations, sleeper and road pavement renewal

across two tracks at Durroburra on the North Coast Line section of the Newlands system. Partly offset by a reduction in formation renewal scope.

- **Control Systems (+$1.8m)** – Increase primarily driven by inclusion of a Tetra Radio Renewal and overall increase in scope for Transmission and Data Renewals, based on condition and age of assets.

Table 47 FY26 Final Draft Proposal - Highlight for GAPE Specific Renewals

Renewals Item ($m)	Assets Included	FY26 Draft Budget
Civil Assets		10.5
Permanent Way	Rail, Track, Sleeper, Turnouts	4.3
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	6.1
Structures	Culverts, Bridges	--
Civil Renewals	Formation, Level Crossings, Access Points	0.1
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission	1.5
Total		**11.9**

Figure 69 below shows the distribution of scope locations as well as the relative spend per scope. The FY26 Newlands System scope is distributed across the full length of the system including works on mainline and individual mine balloon loops.

The largest scope item for FY26 is the mainline ballast undercutting between the 155.58km and 168.26km points on the Newlands system.

Figure 69 Map of Scope Location and Spend FY26

Table 48 details the percentage of total system assets that are proposed to be renewed in FY26.

Table 48 FY26 Final Draft Proposal - Renewals as a % of Total System Assets - Newlands System and GAPE

Renewals Item	Assets Included	Total system Assets	FY25 RIG Approved Scope	FY26 Proposed Scope	FY26 scope % Total System Assets
Civil Assets					
Permanent Way	Rail, Track, Sleeper, Turnouts	634km rail 317km sleepers 317km track 77 turnouts	0.9km rail 0.7km sleepers 4.3km track upgrade 2 turnouts	11.9km rail 0.6km sleepers 1.03km track upgrade 0 turnouts	1.9% 0.2% 0.3% Nil
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	276km Mainline 77 turnouts 50 bridges	10.9km Mainline 3 turnouts 1 bridge	7.2km Mainline 2 turnouts 0 bridge	2.6% 2.6% Nil
Structures	Culverts, Bridges	50 bridges 664 culverts	2 bridges 5 culverts	2 bridges 5 culverts	4.0% 0.8%
Civil Renewals	Formation, Level Crossings, Access Points, Corridor	317km formation 96 level crossings	0.8km formation 1 level crossings	0.6km formation 1 level crossings	0.2% 1.0%

Renewals Item	Assets Included	Total system Assets	FY25 RIG Approved Scope	FY26 Proposed Scope	FY26 scope % Total System Assets
	security and fencing	646km fencing	0km fencing	1.3km fencing	0.2%
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission		10 Sites	7 sites 4 Units 2 Links	

Note: Control Systems count of assets is a collective of sites, nodes, cable routes, communications assets and systems and is included to indicate level of work comparable to prior year.

Figure 70 illustrates the FY25 Approved Budget and Draft FY26 proposed asset renewals (categorised as baseload scope, reactive renewals, strategic scope and future scope).

In FY22, Aurizon Network commenced the strategic renewal of 10 short span bridges between the 6.000km and 16.600km point, planned to be delivered at a rate of two per year. The FY26 Strategic scope is the finalisation of this 5-year program. It also includes the continuation of the UTC/DTC program.

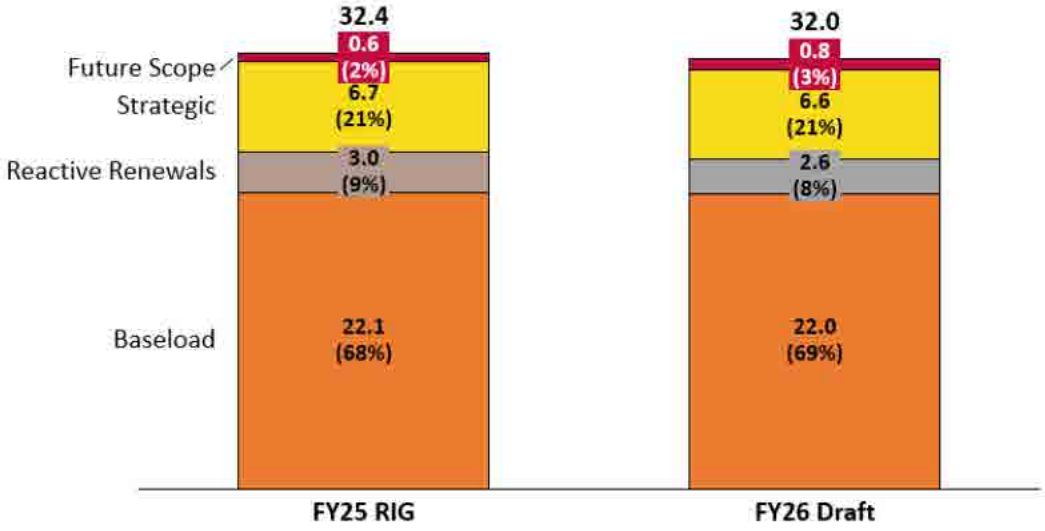


Figure 70 Split of Renewals by Category FY25B and FY26 – Newlands System and GAPE ($M)

In relation to the above chart, the following comments are made:

- **Baseload renewals** – represents the majority of the proposed Asset Renewal program in FY26 and includes rail renewal, formation renewal and ballast cleaning.
- **Reactive renewals** – reflects the inclusion of an allocation for Civil reactive scopes and Control System – Tele Battery reactive renewal scope.
- **Strategic scope** – In FY22, Aurizon Network commenced the strategic renewal of 10 short span bridges between the 6.600 and 16.000 point. The FY26 Strategic scope is the finalisation of this program. The Strategic scope also includes the continuation of the renewal programs for Train Control (UTC/DTC) and TETRA Radio rollout renewal programs.
- **Future scope** - includes design of structures, level crossings, turnouts and formation to be delivered in future years.

Further information in relation to the scope categorisation used by Aurizon Network in the development of the FY26 Final Draft Proposal is outlined in Table 66.

5.4.2 Details of the FY26 Renewals Strategy and Budget

This section provides further information on the rationale for renewal in FY26.

Section 9, Strategies by Asset Class, as well as Appendix 3, Options for Renewal, provide further information on the rational for renewal, the risks being managed and alternate approaches considered when planning a renewal.

More detailed information is provided in relation to strategic scope given it is not typical scope seen in previous years.

This section should be read in conjunction with Appendix 1 Aurizon Network's Renewal Scope Detail Report. This Power BI report provides detail on the individual scope items including works location and Combined Risk Assessment (CRA) score.

The maps included in this section indicate the location of the proposed scope.

Unless otherwise indicated, the asset renewal scope relates to Newlands System Rail Infrastructure and does not relate to the replacement of assets constructed as part of the GAPE infrastructure enhancements.

5.5 Civil Assets – Permanent Way

5.5.1 Permanent Way Renewal Program

Aurizon Network's FY26 Final Draft Proposal provides $8.1m to deliver the scope of permanent way renewals in the Newlands System and GAPE. Error! Reference source not found. summarises the scope and budget for each relevant renewal item.

Table 49 FY26 Permanent Way Renewals - Newlands System and GAPE

Description	Scope Type	FY26 Scope	Scope Unit	FY26 Budget ($m)
Rail Renewal	Baseload	11.9	Rail km	5.1
Sleeper Renewal	Baseload	876	Sleepers	0.2
Track Upgrade	Baseload	0.8	Track km	1.7
Turnout Designs	Future Scope	4	Turnout	0.1
Turnout Components	Reactive Renewals		Lumpsum	0.6
Permanent Way Other	Baseload	0.2	Track km	0.4
	Reactive Renewals		Lumpsum	0.1
Total				**8.1**

The Rail Renewal program in FY26 includes larger sections of rail renewal driven by rail wear. The Rail Renewal program in FY26 is larger than prior years and will see a large renewal in Briaba, Armuna and Collinsville.

The Sleeper Renewal at Cockool in FY26 will be completed with the Formation Renewal at this site, seeing cost efficiencies in delivery of these renewal sites. In relation to the Sleeper Renewal, this site has a future condition rating of 3.5 and will see the replacement of 876 sleepers replaced. The Sleeper Renewal will also support the continuation of the removal of fist clip sleepers from the CQCN systems.

The Track Upgrade program in FY26 will target a large section at Kaili and a renewal at McNaughton mine, local to the Train Loadout. The renewal at Laili will see a complete track renewal across both tracks including the replacement of existing fist-clip (20tal) sleepers with full depth Pandrol e-clip sleepers (26tal). Due to its location of this renewal spanning a level crossing the renewal works will include the construction of temporary level crossing. This site has seen 5 corrective maintenance activities in last 18 months including road resurfacing and formation repairs. The renewal will reduce the risk of further defects affecting throughput. The track upgrade at McNaughton mine will renew heavily corroded rail and fasteners on the entry and exit of the Loadout however also require associated concrete work due to the rail being encased in concrete and also supported by a concrete slab.

Permanent Way Other Baseload Scope includes a planned renewal sites for a Slab Track renewal at McNaughton Balloon.

Turnout Designs are delivered over a multi-year program and are grouped where possible for efficiency, which can lead to variations between design costs each year.

Aurizon Network has continued in FY26 the previously adopted alternate approaches for the Permanent Way scope of replacing with a longer life asset. All sleeper renewal scope and track upgrade scope will involve renewing existing fist-clip sleepers with concrete pandrol e-clip sleepers. For the remaining scope listed above, a like-for-like renewal has been adopted. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.1 provides a summary of the Asset strategy for Permanent Way.

Scope relating to the replacement of assets constructed as part of the GAPE infrastructure enhancements GAPE includes 0.65km of rail renewal at Collinsville, 9.5km rail renewal at Briaba and 3 turnout designs for future turnout renewals at Leichhardt Range and Durroburra.

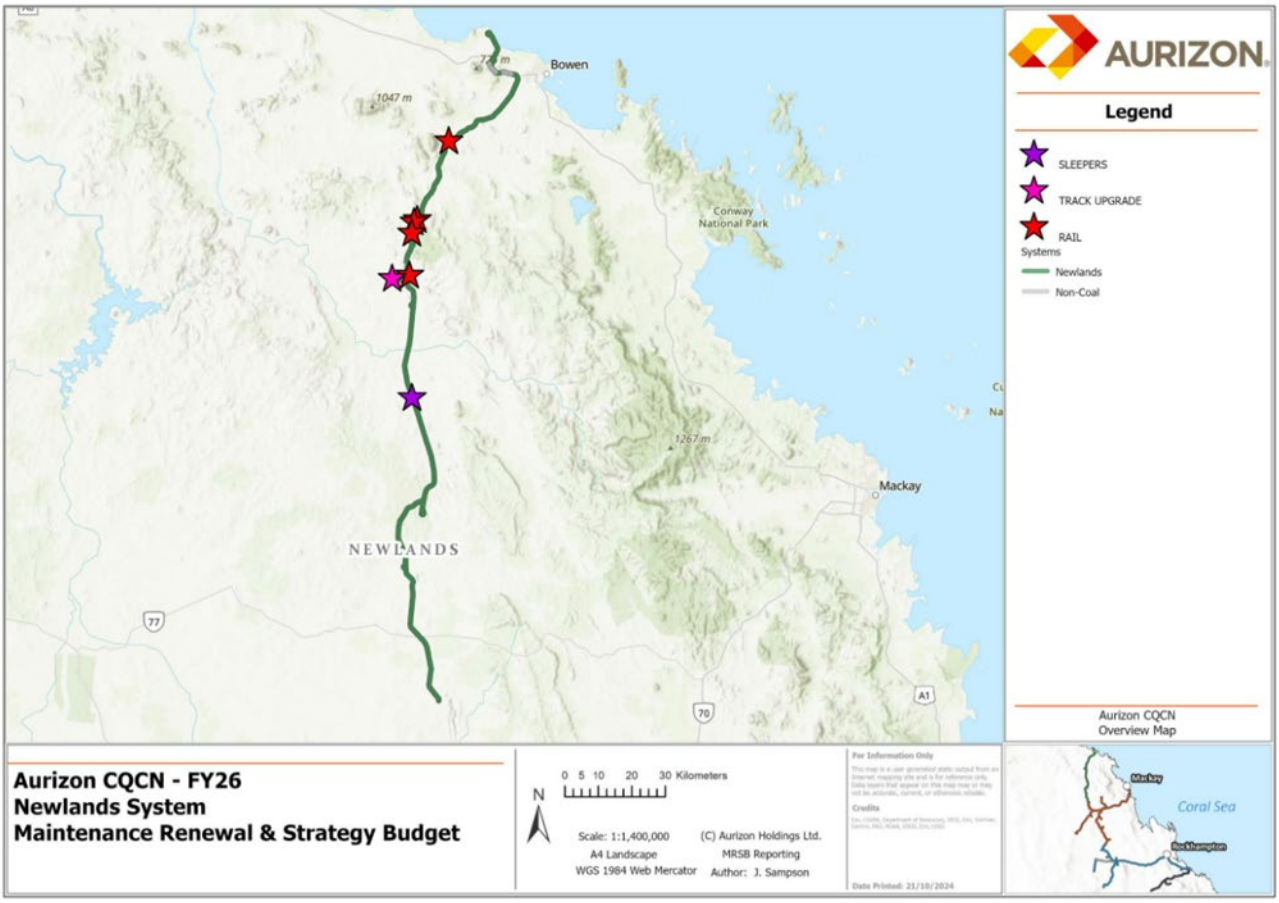


Figure 71 Rail Renewal and Track Upgrade Sites - Newlands System and GAPE

5.5.2 Permanent Way FY26 Scope – Asset Condition and Criticality Assignment

Figure 72 plots the permanent way renewals against asset condition and location / operational criticality.

All planned FY26 renewals are either in an advanced state of wear or degradation. Criticality ratings are lower in the Newlands system with the highest rating being 3.1 and the lowest 1.9. The sleeper renewal at Cockcool has a criticality of 1.9 but is prioritised as it will be completed as part of a Formation Renewal at this section, that has a condition of 4.6.

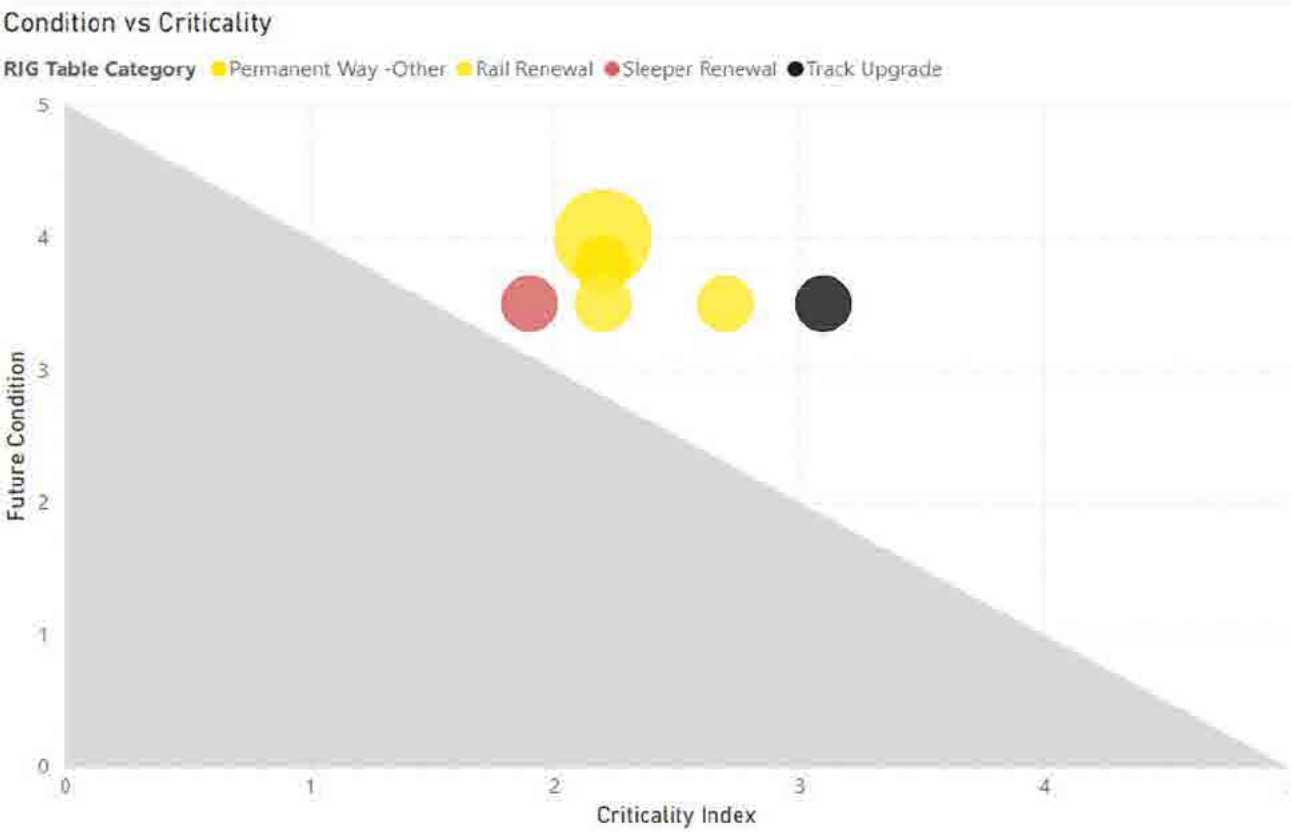


Figure 72 Permanent Way - FY26 Scope Priority Ratings - Newlands Systems and GAPE

5.6 Civil Assets – Ballast Cleaning and Renewals

5.6.1 Ballast Cleaning Renewal Program

In FY26, Aurizon Network proposes to undertake 7.2 km of ballast cleaning via mainline ballast undercutting reactive undercutting using excavator undercutters and bridge ballast renewal at a cost of $6.5m. Table 50 summarises the scope and budget for each relevant renewal item.

Table 50 Ballast Cleaning Program - Newlands System and GAPE

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Mainline Undercutting	Baseload	7.2	km	5.8
Turnout Undercutting	Reactive Renewals	2	Turnout	0.7
Total				**6.5**

Actual ballast condition can vary significantly between locations and can lead to fluctuations in the actual return rates compared to the assumed amount. In circumstances where ballast condition and return rates are lower than assumed, this can slow ballast undercutting production, and result in scope not being completed within the assigned access opportunity.

In FY26, the Ballast Cleaning Machine will complete approximately 7.2km of scope at Leichardt Range. Given the length of this site, the use of the Ballast Undercutting machine is considered the most efficient application to

undercut. The site is showing elevated levels of fouling through GPR which is still to be confirmed through pre-digs. Given the level of fouling seen in GPR it is likely that this site will have a significantly reduced return rate. For the purposes of planning this has been assumed at 0% however this will be adjusted after the pre-digs have been completed closer to execution. This scope relates to the renewal of assets constructed as part of the GAPE infrastructure construction.

Detailed information on the development of the ballast cleaning program is included in Section 10.3 Budget Setting and Procurement.

There are no Bridge Roll Out sites or GPR proposed in FY26 for the Newlands System.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.5 provides a summary of the Asset strategy for Ballast Cleaning.

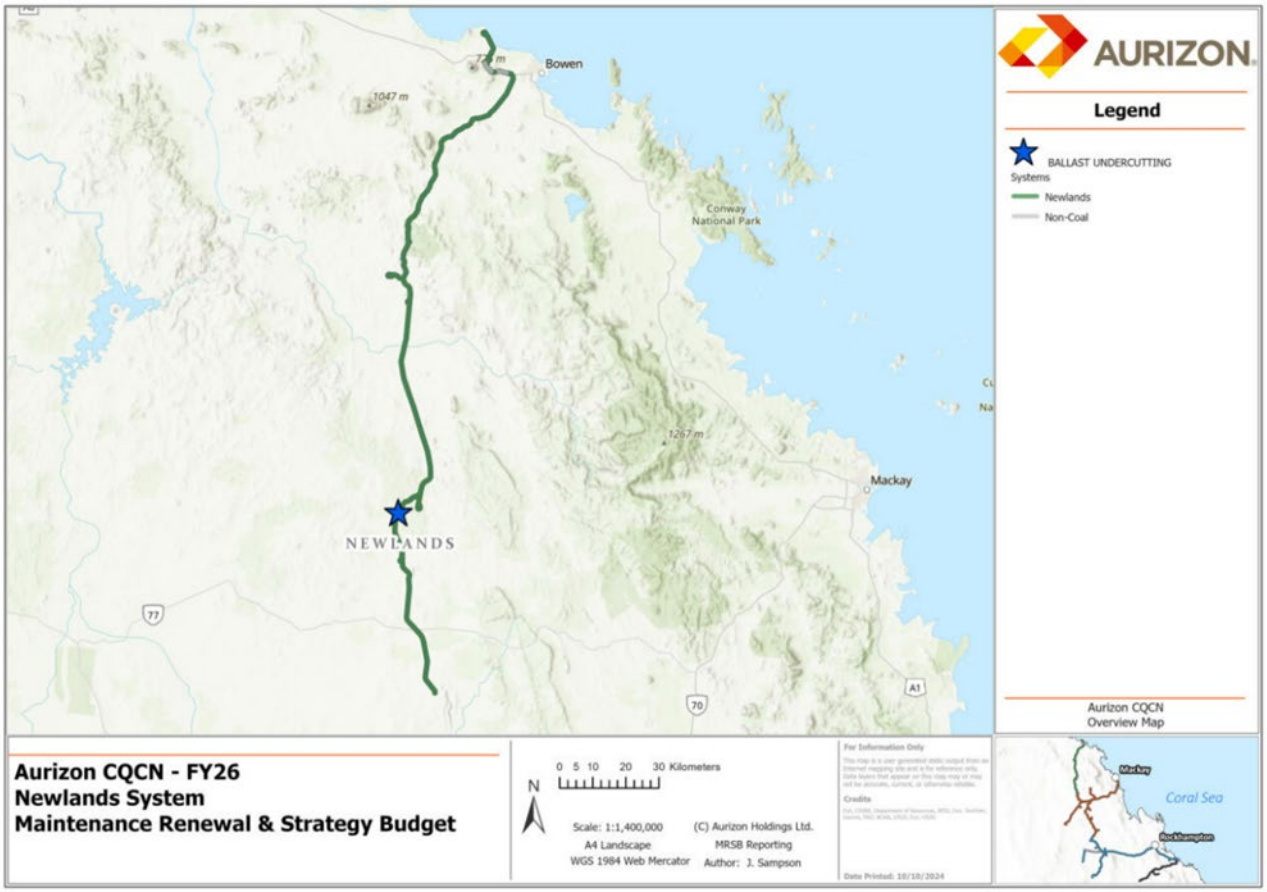


Figure 73 Ballast Cleaning and Bridge Rollout Sites - Newlands System and GAPE

5.6.2 Ballast Cleaning FY26 Scope – Asset Condition and Criticality Assignment

Figure 74 plots ballast renewals against asset condition and location / operational criticality. This illustrates that all identified scope has a current condition of 4.0 or above with advanced fouling which will degrade further without intervention.

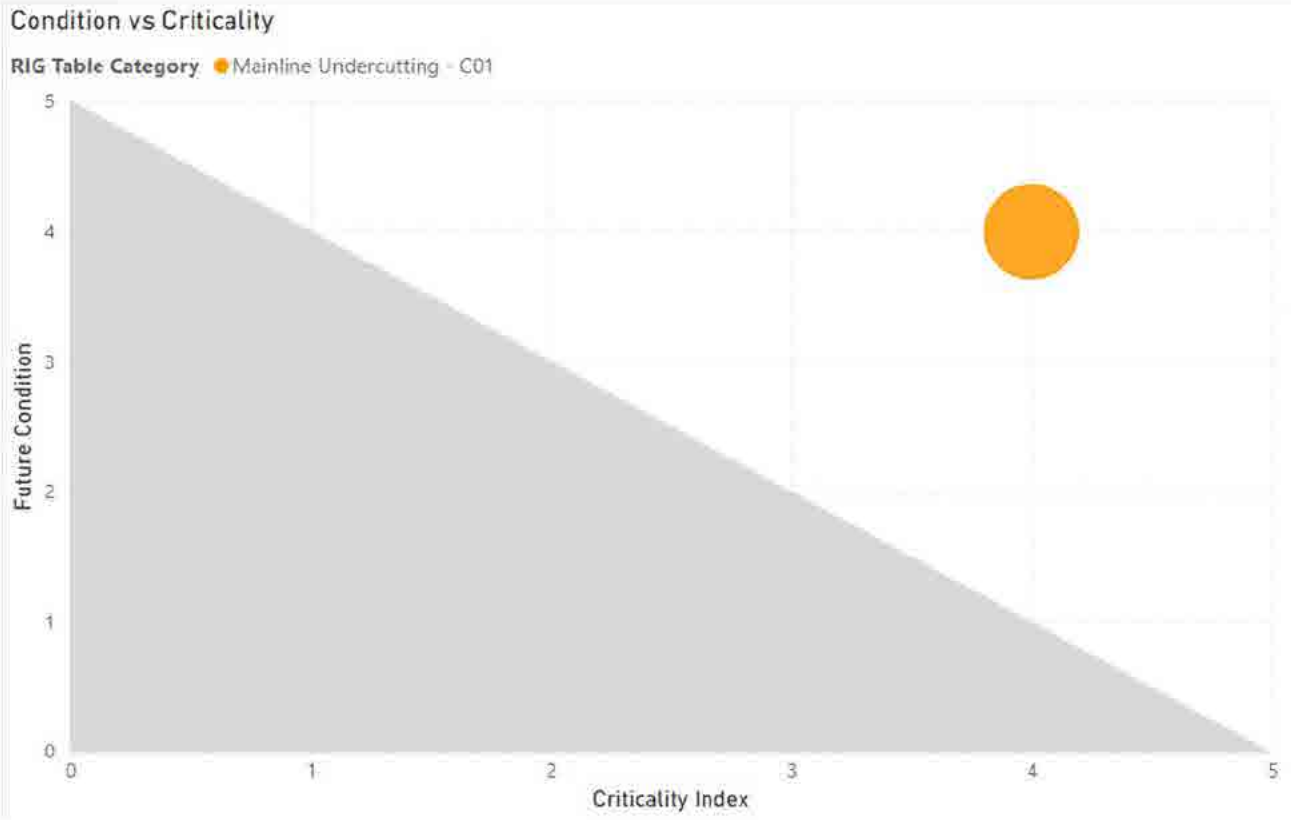


Figure 74 Ballast Cleaning - FY26 Scope Priority Ratings - Newlands System and GAPE

5.7 Civil Assets – Structure Renewals

5.7.1 Structures Renewal Program

The Newlands System and GAPE has a total of 50 bridges and 664 culverts which are designed to allow the natural flow of water through the rail network. In FY26, Aurizon Network proposes to undertake $8.9m of structures renewal works in the Newlands System and GAPE. These works for FY26 are outlined in Table 51.

Table 51 FY26 Structure Renewals Program - Newlands System and GAPE

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Bridge Design	Future Scope	1	Site	0.1
Bridge Renewals	Strategic	2	Site	4.7
Bridge Handrails	Baseload	1	Site	0.5
Culvert Design	Future Scope	6	Site	0.2
Culvert Renewals	Baseload	5	Site	3.4
Total				**8.9**

The Bridges renewal program includes two short-span bridge strategic renewals between Buckley and Armuna, as well as installation of handrails at Deadman Creek bridge at Armuna. The sites in FY25 were located beside each other and could be established as one work site with a shared staging and laydown area. Given the distance between the FY26 sites, they will be delivered as separate work sites and not attract the same cost saving as in FY25. Site 1 at 14.6km will see Bridge Strengthening necessary to

increase structural resilience (due to the 2011 increase in axle load) and site 2 at 15.7km will see the bridge structure renewed with a 6.0m Unicell culvert. The driver to renew these structures is to both improve asset condition and enable the removal of a long-term speed restriction. This will provide an improvement in cycle times by returning the track section to normal operating speed of 80kph. This work will also remove the operational and safety risk of having structurally deficient bridges in this section of the network and minimise potential track washouts because of debris and sediment blocking the waterway where propping exists.

The FY26 Culvert Renewals in the Newlands and GAPE system includes 5 renewals, 3 Reinforced Concrete Box Culvert renewals, 1 removal (Eliminates) and 1 CIPP (Cured In Place Pipe, which is a relatively consistent mix from prior years.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.6 provides a summary of the Asset strategy for Structured assets.

Strategic Scope:

Short Span Bridge Renewals ($4.7m)

Continuing from FY25, two short-span bridges will be renewed in FY26. This scope replaces 20 tonne axle load (tal)-rated short-span bridges with 30tal-rated Uni Cell box culverts and structural strengthening. This is the preferred renewal option when the structure requiring renewal was originally designed to a lesser standard than current standard and originally designed to accommodate reduced axle loads and a lesser traffic task.

This program is expected to be finalised in FY26.

Figure 75 Structures Renewal Sites - Newlands System and GAPE

5.7.2 Structures FY26 Scope – Asset Condition and Criticality Assignment

Figure 76 plots the Structures against asset condition and location / operational criticality.

All planned FY26 renewals have poor to near end of life condition with an average condition of 3.7 for the FY26 program.

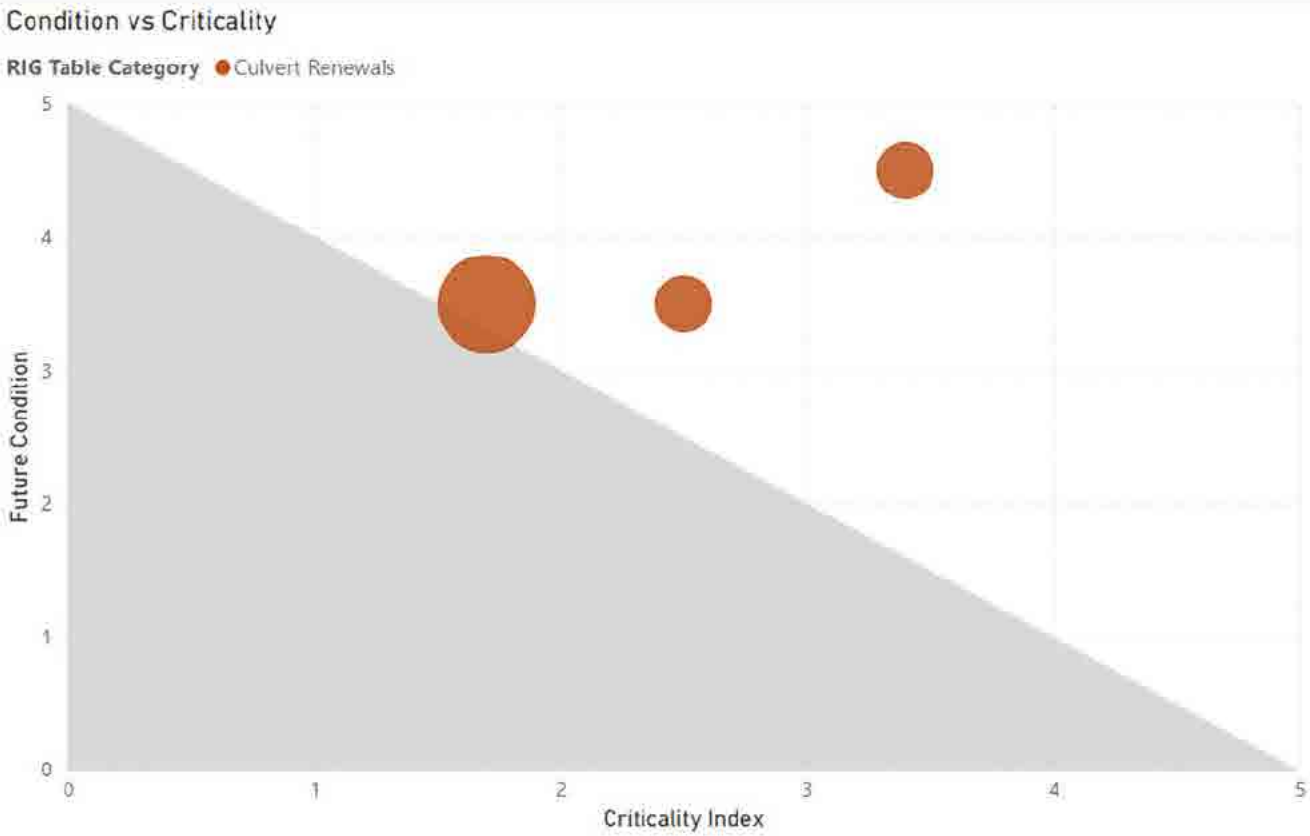


Figure 76 Structures - FY26 Scope Priority Ratings - Newlands System and GAPE

5.8 Civil Assets – Civil Renewals

5.8.1 Civil Asset Renewal Program

In FY26, Aurizon Network proposes to undertake $5.6m in renewals for Civil Assets, summarised in Table 52.

Table 52 Civil Asset Renewal - Newlands System and GAPE

Renewal Item	Scope Type	FY65 Scope	Scope Units	FY26 Budget ($m)
Level Crossing Renewal	Baseload	1	Site	1.2
Level Crossing Design	Future Scope	2	Site	0.1
Level Crossing Other	Reactive Renewals		Lumpsum	0.2
Formation Renewal	Baseload	0.6	km	3.0
Formation Other	Future Scope		Lumpsum	0.1
Formation Reactive	Reactive Renewals		Lumpsum	0.5

Renewal Item	Scope Type	FY65 Scope	Scope Units	FY26 Budget ($m)
Corridor Fencing & Security Fencing	Baseload	1.3	km	0.1
	Reactive Renewals		Lumpsum	0.1
Access Points & Roads	Future Scope	2	Site	0.1
	Reactive Renewals		Lumpsum	0.3
Total				**5.6**

The FY26 Level Crossing program will see one major renewal at Durroburra. This level crossing is the subject of complaints from members of the public and Whitsunday Regional Council due to the poor road surface condition and grease being caught within the crossing surface from rail lubrication. The level crossing is characterised by dual track and active controls (including flashing lights and boom gates) however also fist-fastened sleepers and heavily fouled ballast. The full renewal will reinstate with new materials including flangeways, minimising grease build up on the crossing surface. This renewal will be delivered in conjunction with the Culvert renewals at this same site, seeing cost efficiencies in delivery of these renewal sites. Scope relating to the replacement of assets constructed as part of the GAPE infrastructure enhancements GAPE includes 1.26km of fencing renewal at Leichardt Range.

The Formation Renewal in FY26 at Cockcool will be completed with the Sleeper Renewal at this site, seeing cost efficiencies in delivery of these renewal sites. In respect of the Formation Renewal, this site has a future condition rating of 4.6 and has already had holding works completed but now requires a formation reconstruction. This site has seen 11 corrective maintenance activities completed since 2019. These include manual and mechanised resurfacing, mud hole repair, geometry issues and formation repairs. This site has also seen 16,000 delay minutes and 84 delayed services over the past 5 years. The renewal will minimise the risk of further defects affecting throughput.

Corridor Security and Fencing has increased in FY26 to allow for the completion of targeted scope to manage the condition of fences. The priority target for FY26 includes 1.26km of fencing at Leichardt Range. In addition, Network have also proposed an allowance of $100K for fencing renewals under a reactive arrangement. In late 2023, 16.5km of fencing was condition assessed in Newlands, all of which was assessed as a condition of 3 (poor) or worse. The planned renewal program in Newlands is targeted at locations with a high risk or history of livestock strikes, livestock or trespass in the corridor or cancellations or delays as a result of livestock strikes, or livestock or trespass in the corridor. In previous years Corridor Security and Fencing was managed through a reactive budget only.

The future scope includes design for 2 level crossings, at Buckley and Collinsville and 2 access points between Armuna and Aberdeen and at Birralee as well as Geotech design for future formation renewals.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.6 provides a summary of the Asset strategy for Structured assets.

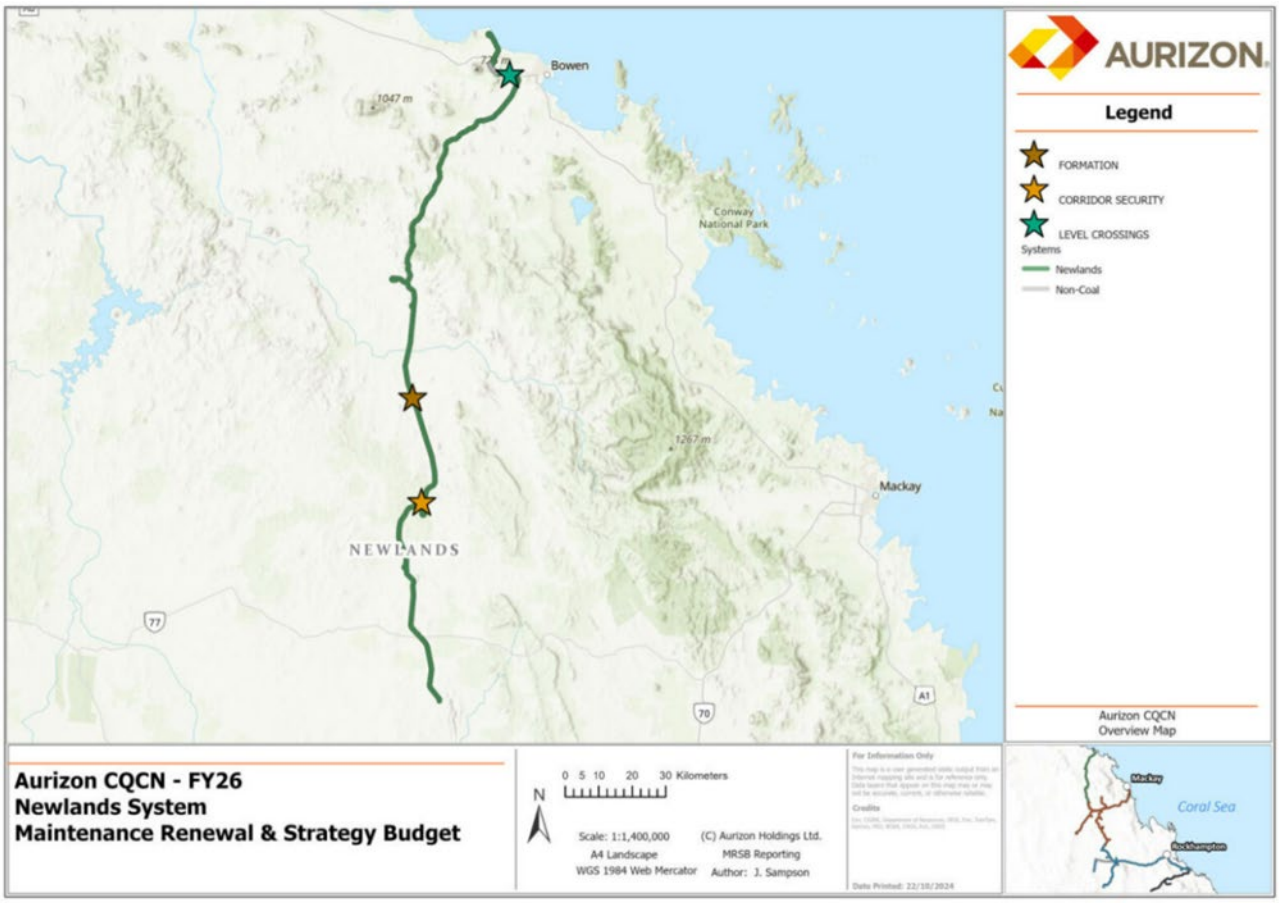


Figure 77 Formation and Level Crossing Renewal Sites – Newlands System and GAPE

5.8.2 Civil Renewals FY26 Scope – Asset Condition and Criticality Assignment

Figure 78 plots the two formation renewals and Corridor Security Fencing at Leichardt Range planned in FY26 against asset condition and location / operational criticality.

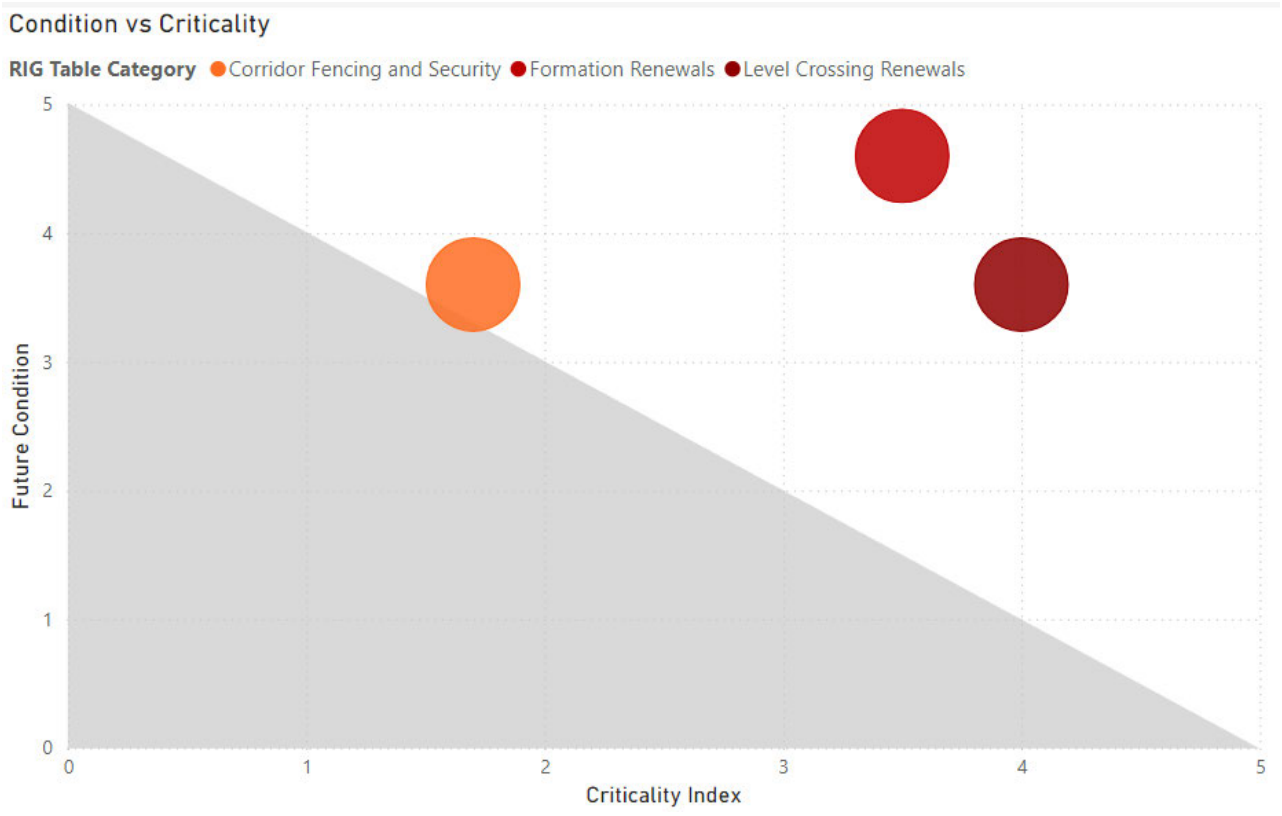


Figure 78 Civil Renewals - FY26 Scope Priority Ratings - Newlands System and GAPE

5.9 Control Systems Assets

5.9.1 Control Systems Renewal Program

In FY26, Aurizon Network proposes to undertake $2.8m of Control Systems renewals or enhancements in the Newlands System and GAPE. Table 53 summarises the scope and budget for each relevant renewal item.

Table 53 Control Systems Program - Newlands System and GAPE

Renewal Item	Scope Type	FY26 Scope	Scope Units	FY26 Budget ($m)
Safe Working Systems – Minor	Baseload	2	Unit	0.0
Transmission & Data Renewals	Baseload	2	Link	0.8
	Baseload	7	Site	1.5
	Baseload	1	Unit	0.1
	Baseload		Lumpsum	0.1
	Reactive Renewals		Lumpsum	0.0
UTC DTC	Strategic	1	Unit	0.4
Total				**2.8**

Safey Working Systems – Minor in FY26 includes the design of two obsolete diagnostic computers at Eaglefield Creek to support the detection of faults in the interlocking system.

Transmission and Data Renewals includes the renewal of a data network router and firewalls as well as 3 power supplies, 2 digital mobile radio links, batteries, replacement of two dehydrators and a communications structure at Redcliffe Tablelands. A dehydrator monitors air quality in the waveguide and ensures that it remains dry as moisture would attenuate the signal from the equipment and eventually corrode the tube.

Transmission and Data Renewal TETRA Radio Scope will focus on minor renewals to improve coverage of TETRA Radio.

Scope relating to the replacement of assets constructed as part of the GAPE infrastructure enhancements GAPE includes a DMR Link at Redcliffe Tableland and a Tetra Radio site at Leichardt Range.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Given the high proportion of these renewals being triggered by obsolescence, the technology will be typically the modern-day equivalents and provide an uplift in speed and/or capacity.

Appendix 3, Options for Renewal Approach, details the alternate options considered when an asset requires renewal and Section 9.8. provides a summary of the Asset strategy for Control Systems.

For the scope listed above, the typical approach is to take forward a like-for-like renewal. Given the high proportion of these renewals being triggered by obsolescence, Aurizon Network will generally seek to replace the current technology with modern-day equivalents that provide an uplift in speed and/or capacity.

Strategic Scope:

TETRA Radio ($1m)

The digital based Terrestrial Trunked Radio (TETRA) network has been in operation since late 2019 and its use is widespread in the Goonyella Coal System. Work has commenced to remove the analogue train control radio bases, which are more than 20 years old and occupies radio frequencies that need to be handed back to the federal government. The radio system primarily provides vital voice communications between Network Control Officers and Rail Traffic Crew throughout the CQCN. It also allows Rail Traffic Crew to communicate with Rail Transfer Facilities (RTF) and corridor maintenance workers to communicate to Network Control Officers.

In FY26, TETRA radio bases and software will be upgraded to address coverage for identified areas of poor radio coverage and increase radio base capacity where there is increased usage.

In FY26, an additional tower and base will be installed to address a coverage blackspot Leichhardt Range – Byerwen.

UTC/DTC ($0.4m)

Safety and Operational Improvements for Network Train Control system. Scope includes train control system applications, user interface changes and engineering controls for safety processes. Operational requirements for delivery of individual scope items are subject to change due to criticality requirements e.g. post an incident or process breakdown.

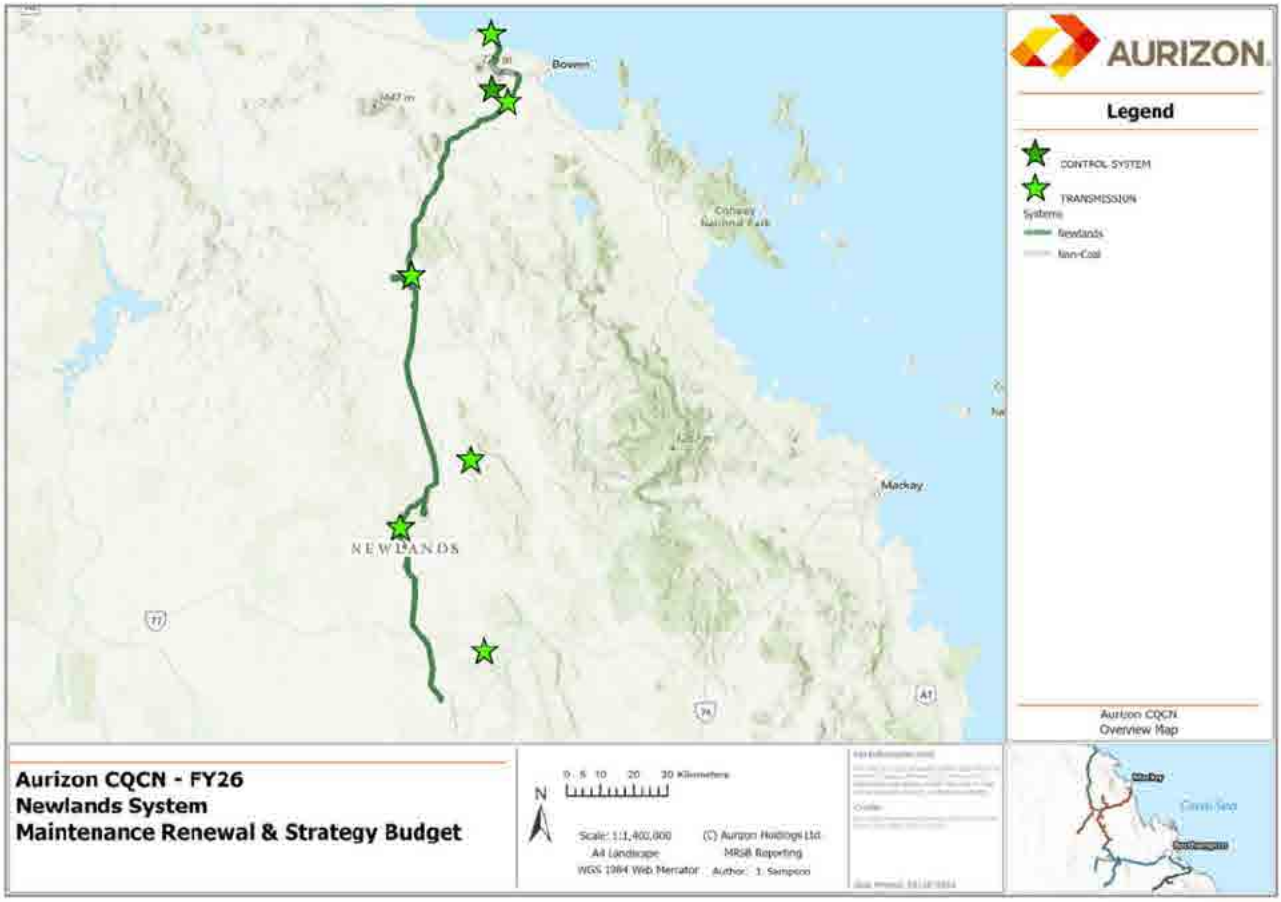


Figure 79 FY26 Control Systems Renewal Sites Newlands System and GAPE

5.9.2 Control Systems FY26 Scope – Asset Condition and Criticality Assignment

Figure 80 plots the Control Systems renewals against asset condition and location/ operational criticality.

The diagnostic computer renewal site at Eaglefield Creek has a criticality index of 2, however this site is part of a wider strategy to renew life expired diagnostic PCs with new technology.

All scope items are listed as condition rating 4 or above. This reflects the age of assets targeted for renewal in FY26. Control Systems assets are mostly electronic, so renewal is typically triggered by support, spare

parts or software obsolescence. As such, condition is more a matter of asset age against design life rather than a physical demonstration of wear.

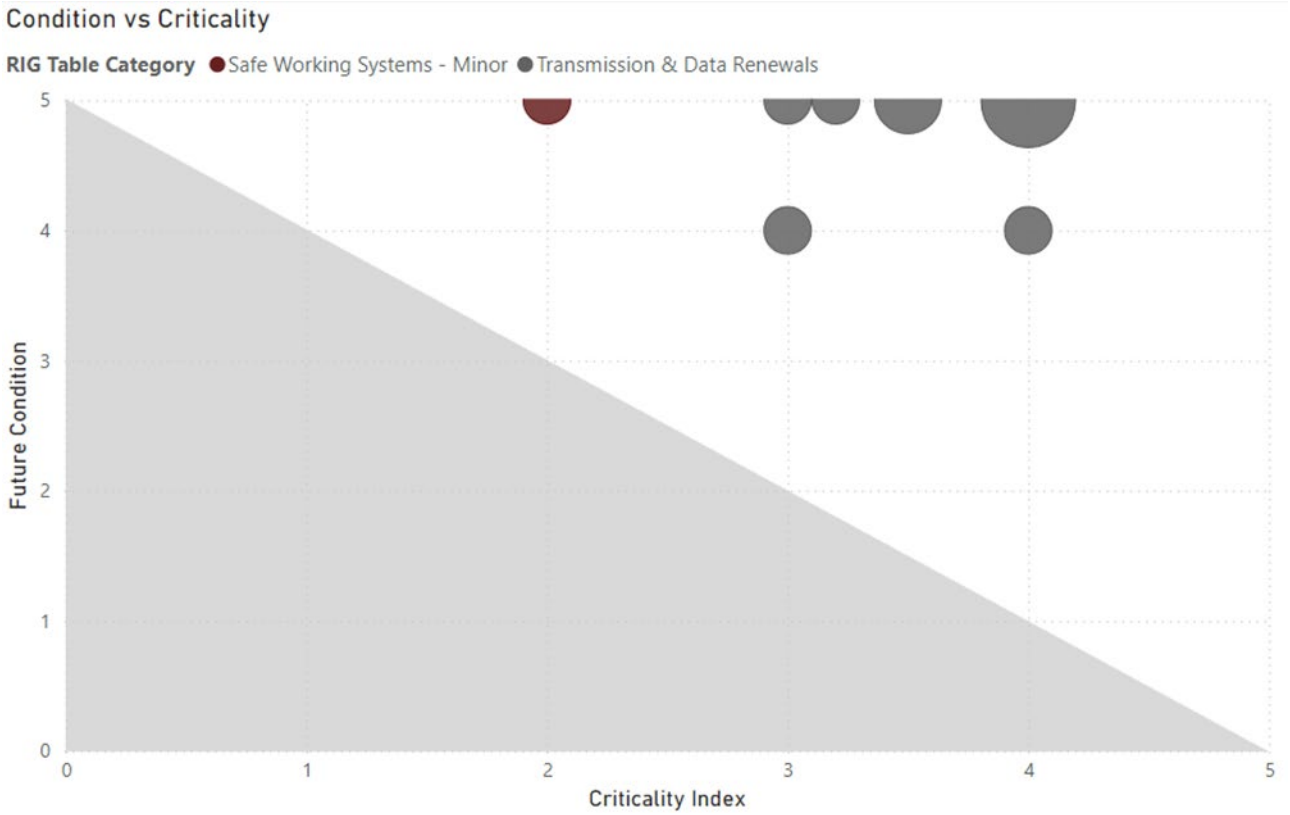


Figure 80 Control Systems - FY26 Scope Priority Ratings - Newlands System and GAPE

5.10 Likelihood of Change Assessment – Maintenance and Renewals

Aurizon Network estimates known risks during the MRSB development and submission phases, then reacts to typical change impacts as they materialise during the MRSB delivery year. Most opportunities for change occur in the delivery year rather than during the development phase.

The identification and evaluation of MRSB scope for inclusion in the submission are based on currently available information, which may change over the period prior to works execution (between 6 and 18 months) due to environmental factors, relative degradation rates, supply and resource impacts, or other considerations.

The majority of the MRSB scope consists of baseload renewals or preventative maintenance tasks, making the likelihood of change low. These activities are typical for Aurizon Network and often involve similar tasks at different locations across the systems. For example, the process for a rerail renewal is well-known and well-practiced, hence it is a baseload activity with a low likelihood of change. Consequently, Aurizon Network does not assign a system-based program contingency or consider a risk provision across the program. When changes do occur, their impact on the program is assessed in terms of approved cost (budget), scope, and access.

The opportunity for change is also relative to the complexity or time pressure of a project. To mitigate these risks, Aurizon Network applies a stage gate methodology to complex or strategic scopes and separates design from delivery for projects involving multiple asset disciplines, requiring both design management and project management.

When changes occur, their impact on the program is assessed across approved cost (budget), scope, and access. Aurizon Network has a developed change management review and approval process to react to changes as they arise.

This following table details the likelihood of change across the different scopes proposed for FY26, along with project-specific costs and mitigations. Further information on the change management review and approval process, as well as generic risk types and treatments, is provided in Section 10.2.4 Likelihood of Changes.

Table 54 Potential Areas of Change at Program Level in the Newlands System and GAPE

Type of Project	Likelihood of change	Projects in FY26	% value FY26[14]	Change Mitigations
Strategic	Moderate	1 active (Bridge Handrails)	2.7%	• Stage gate approach (Concept to Feasibility) providing time to increase scope definition and assumptions ahead of delivery • Type testing of new equipment to consider installation and operations impacts
Baseload	Low	32 Sites across 12 Programs	87.0%	• Prior year program reviews • Program Management processes to minimise day of delivery risk • Site walkouts, pre-digs to understand stie conditions ahead of day of delivery
Future	Moderate	17 Designs across 6 Programs	2.3%	• Separation of design activity for delivery to allow time for design staging and construction review • Design Management application to ensure multi discipline design is built to solve site requirements
Reactive Renewals	High (due to time pressures)	10 Programs	8.0%	• Use of standard designs • Works completed by local teams with local knowledge with Project Engineering support
Maintenance	Preventative – Low Planned Corrective – Moderate Reactive – Moderate	N/A	N/A	• Preventative inspections based on standard that is periodically reviewed • Corrective and reactive maintenance informed by historic levels of activity • Engineering support available to provide defect reliability analysis and management

[14] % of costs across the FY26 Capital Asset Renewal scope in this system.

6 Four-year Forward Indicative Cost Forecast

This section outlines Aurizon Network's indicative cost forecasts for Maintenance and Asset Renewal activity in each Coal System. Information is provided for this FY26 Final Draft Proposal plus a forecast period of four years (FY27 – FY30).

The FY27 – FY30 indicative cost forecasts are provided to increase transparency on forward looking asset renewals and maintenance expenditure. It is a high-level estimate based on currently available information. The outer year forecasts are predominantly based on the age of the asset and the strategic annual scope target to manage known future resourcing and access constraints where a significant number of assets are forecast to require renewal in similar periods (referred to as the 'bow wave' of required investment). For this reason, in a number of circumstances the number of renewals have been identified in each system and the specific site will be identified as further information about asset condition, viability of alternate multi-year asset management approaches, engineering designs, the access footprint and resourcing available to deliver the renewals become available.

Each future forecast will give consideration to the re-phasing of scope from year to year where scope has been deferred into future years or future scope has been brought forward.

Total expenditure for the outlook period is forecast to increase by 2.5% in real terms from FY27 to FY30. The movement in cost is predominantly driven by Control Systems and Electrical asset renewals in Blackwater and Goonyella.

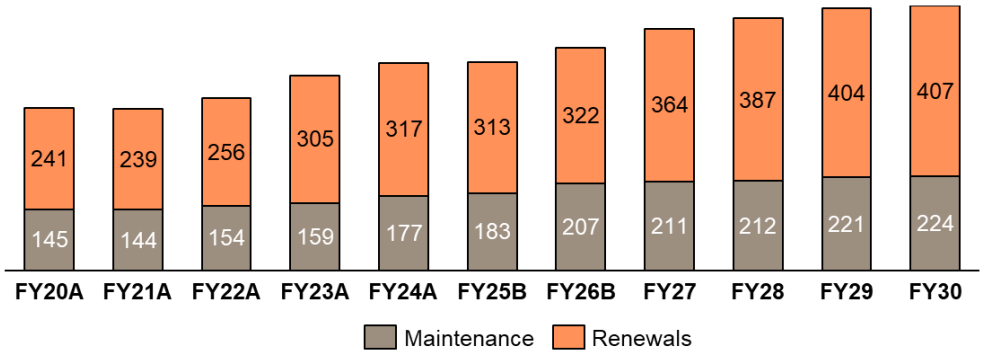


Figure 81 Total Expenditure FY20 – FY30 (Nominal $m)

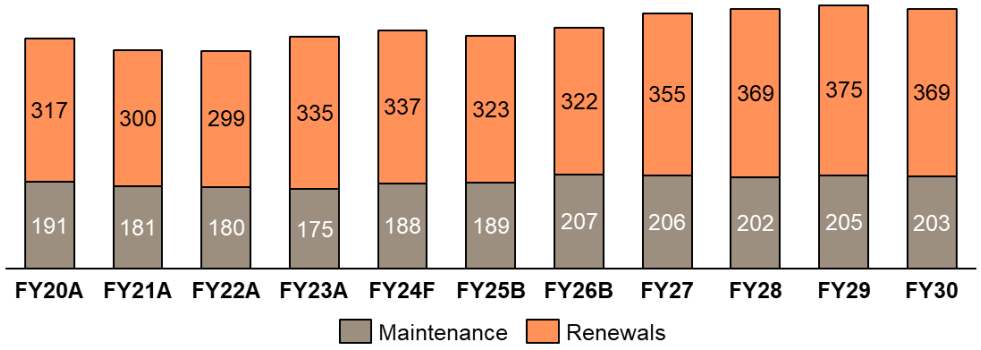


Figure 82 Total Expenditure FY20-FY30 (Real $m FY26)

6.1 Blackwater System – Four-Year Forecasts

Table 55 FY26 Plus Four-year Maintenance Cost Forecast - Blackwater System (Nominal $m)

Blackwater System Maintenance	FY26	FY27	FY28	FY29	FY30
Resurfacing	10.3	10.6	10.9	11.1	11.4
Rail Grinding	11.0	10.1	10.7	11.2	11.4
General Track Maintenance	31.0	31.5	32.2	33.1	33.9
Structures & Facilities Maintenance	5.8	5.9	5.9	6.1	6.2
Other Civil Maintenance	3.0	3.0	3.1	3.2	3.3
Signalling & Telecommunications Maintenance	14.3	14.6	15.0	15.4	15.7
Electrical Overhead	8.8	9.1	9.3	9.6	9.8
Trackside Systems Maintenance	1.3	1.3	1.4	1.4	1.4
Other General Maintenance	3.3	3.4	3.5	3.6	3.7
Total Direct Maintenance Costs (excl. Ballast Undercutting Plant Depreciation)	**88.8**	**89.6**	**92.0**	**94.6**	**96.8**
Ballast Undercutting Plant Depreciation	3.1	3.1	3.1	3.1	3.1
Total Direct Maintenance Costs	**91.9**	**92.7**	**95.1**	**97.7**	**99.9**
Non-Coal Allocation	(0.9)	(0.9)	(0.9)	(0.9)	(0.9)
Total Direct Maintenance Costs	**90.9**	**91.8**	**94.2**	**96.7**	**99.0**

Notes:

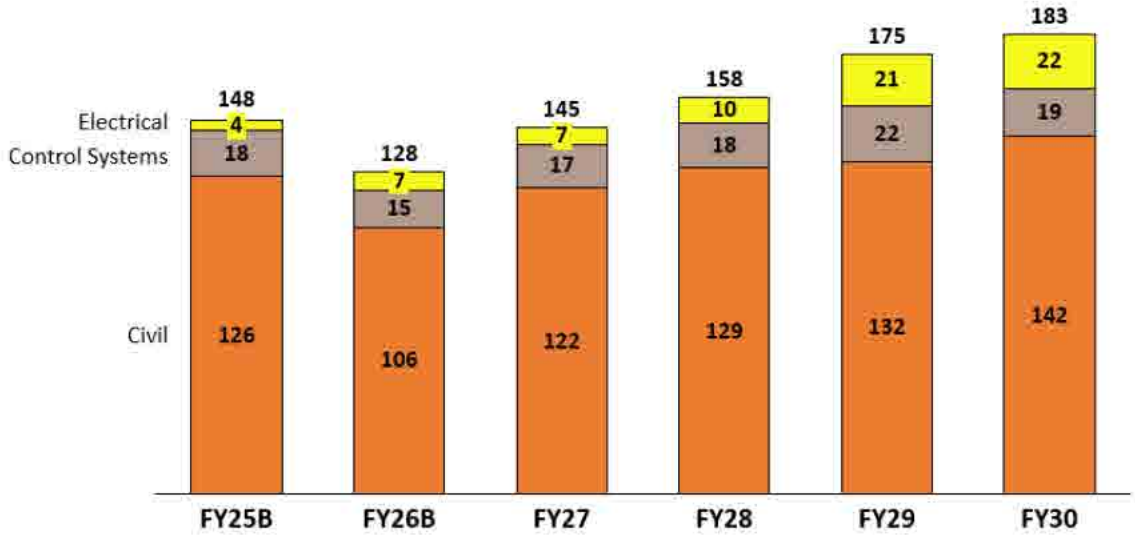
- *Rail Grinding forecast includes cost escalation and scope variation year on year driven by anticipated grinding requirements and stable management of rail asset condition. Future estimates are indicative only and may be subject to change and will be iterated in future MRSB submissions for RIG review and approval.*
- *Resurfacing variation primarily driven by annual plant maintenance cycles.*

Table 56 FY26 Plus Four-year Renewals Cost Forecast - Blackwater System (Nominal $m)

Renewals Item	Assets Included	FY25MRSB	FY26	FY27	FY28	FY29	FY30
Civil Assets		126.0	105.8	121.7	129.4	132.1	141.8
Permanent Way	Rail, Track, Sleeper, Turnouts	33.8	23.2	32.8	36.8	38.0	40.4
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	54.2	51.8	53.8	54.4	55.9	57.6
Structures	Culverts, Bridges	23.6	13.2	18.6	20.7	19.6	21.7
Civil Renewals	Formation, Level Crossings, Access Points	14.4	17.6	16.5	17.6	18.6	22.1

Renewals Item	Assets Included	FY25MRSB	FY26	FY27	FY28	FY29	FY30
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission, Optical Fibre	18.1	14.8	16.8	17.7	21.9	19.0
Electrical Assets	Overhead Renewal, Power systems, Traction Substation Renewals	4.0	7.1	6.9	10.4	20.5	21.8
Total		**148.1**	**127.7**	**145.5**	**157.5**	**174.6**	**182.6**

Note: 2.5% escalation has been included.



Note: 4-year forecast is indicative only and does account for access, resource considerations, detailed design and associated costings.

Figure 83 FY26 Plus Four-Year Renewals Cost by Scope Category - Blackwater System (Nominal $m)

Variances across the FY26 to FY30 are predominantly attributable to:

FY26 to FY27:

- Combination of an increase across Rail Renewals, Sleeper Renewals and Track Upgrade to achieve the rail strategic total over the long term and replace poor condition sleepers or material and fastener upgrades.
- Structures: Additional bridge strengthening renewal and Culvert Renewals to achieve strategic renewal targets and aligned to historical averages

FY27 to FY30:

- Civil: Scope is largely stable. Ballast mainline undercutting assumes a 25% return rate year on year. Level Crossing scope increases to 5 renewals in FY30 representing 2% of the Blackwater system Level Crossings.
- Control Systems: The Control Systems future program is based on a relatively stable delivery of renewals year on year. FY29 peak is attributable to major train detection upgrade for obsolete equipment Westwood to Wycarbah.

- Electrical: Spend driven by the phasing of the Traction Substation renewal program using concept level estimates.

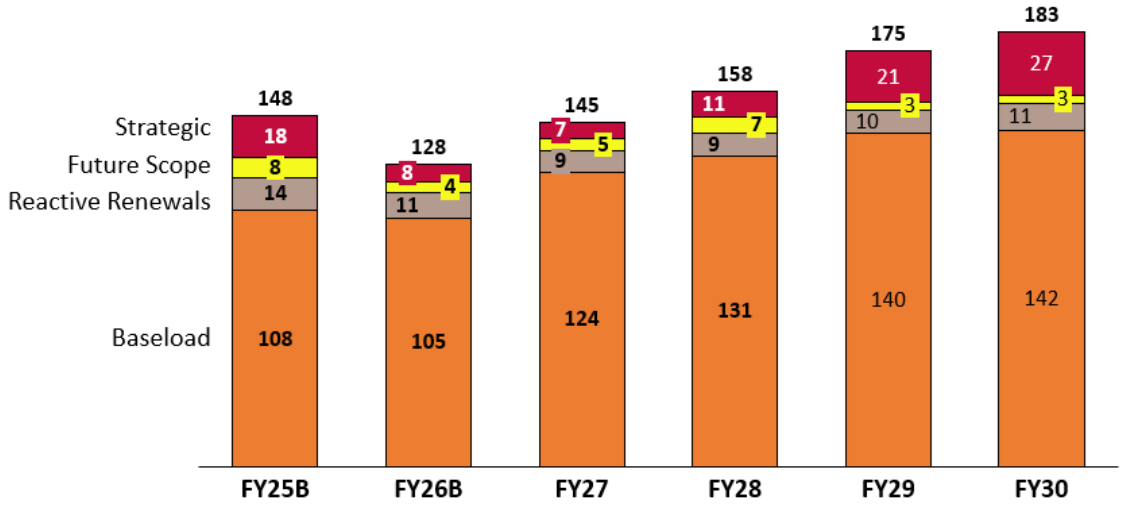


Figure 84 FY26 Plus Four-Year Renewals Cost by Scope Type - Blackwater System (Nominal $m)

- Baseload Reactive and Future Scope: relatively stable over the forecast period with movements largely reflecting civil programs.
- Strategic Scope: driven by the following programs:
  - Electrical Traction Substation Renewals – FY26-FY29 (Based on concept estimates and current status of program)
  - Control Systems – Callemondah interlocking program.
  - Optical Fibre Renewal – Continues to FY31 contributing to peak in FY30.

6.2 Goonyella System – Four-Year Forecast

Table 57 FY26 Plus Four-Year Maintenance Cost Forecast - Goonyella System (nominal $m)

Goonyella System Maintenance	FY26	FY27	FY28	FY29	FY30
Resurfacing	10.5	10.8	11.0	11.3	11.6
Rail Grinding	12.0	13.0	12.5	13.7	13.1
General Track Maintenance	22.3	22.9	23.4	24.0	24.6
Structures & Facilities Maintenance	3.1	3.1	2.1	2.2	2.3
Other Civil Maintenance	3.6	3.7	3.8	3.9	4.0
Signalling & Telecommunications Maintenance	15.1	15.1	15.5	15.9	16.3
Electrical Overhead	10.1	10.0	10.2	10.5	10.8
Trackside Systems Maintenance	1.8	1.9	1.9	2.0	2.0
Other General Maintenance	2.2	2.2	2.3	2.4	2.4
Total Direct Maintenance Costs (excl. Ballast Undercutting Plant Depreciation)	**80.7**	**82.7**	**82.7**	**85.9**	**87.1**
Ballast Undercutting Plant Depreciation	2.3	2.3	2.3	2.3	2.3
Total Direct Maintenance Costs	**83.0**	**85.0**	**85.1**	**88.2**	**89.5**
Non-Coal Allocation	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Total Direct Maintenance Costs	**83.0**	**85.0**	**85.0**	**88.1**	**89.4**

Notes:

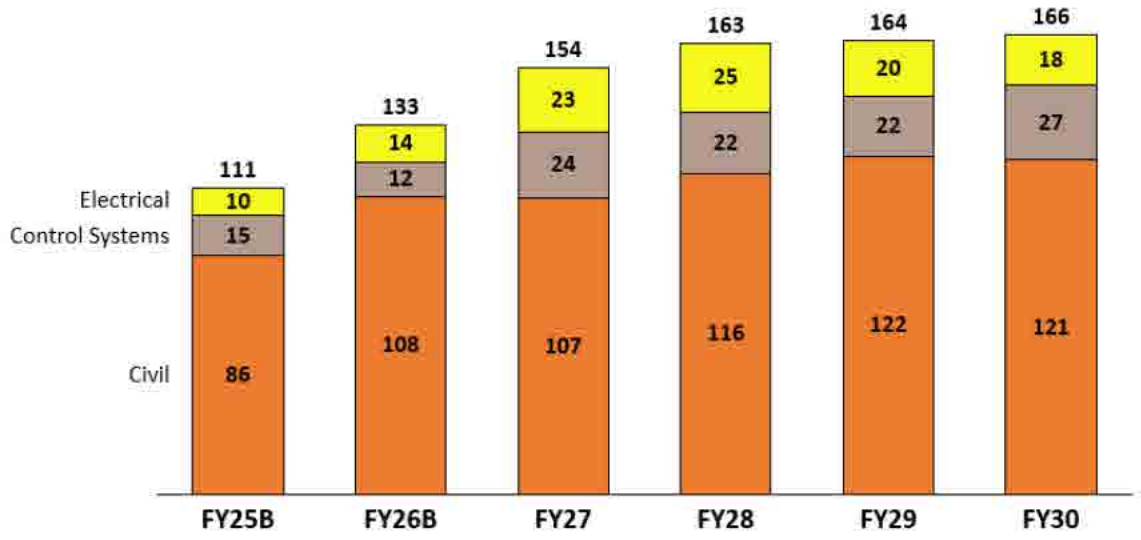
- *Rail Grinding forecast includes cost escalation and scope variation year on year driven by anticipated grinding requirements and stable management of rail asset condition. Future estimates are indicative only and may be subject to change and will be iterated in future MRSB submissions for RIG review and approval.*
- *Resurfacing variation primarily driven by annual plant maintenance cycles.*

Table 58 FY26 Plus Four-Year Renewals Cost Forecast - Goonyella System (Nominal $m)

Renewals Item	Assets Included	FY25 MRSB	FY26	FY27	FY28	FY29	FY30
Civil Assets		86.1	107.6	106.8	115.9	121.9	120.9
Permanent Way	Rail, Track, Sleeper, Turnouts	30.8	33.1	33.5	35.0	42.3	40.6
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	35.8	45.2	45.7	47.8	49.0	49.9
Structures	Culverts, Bridges	8.2	10.9	9.7	11.5	10.1	12.0

Renewals Item	Assets Included	FY25 MRSB	FY26	FY27	FY28	FY29	FY30
Civil Renewals	Formation, Level Crossings, Access Points	11.3	18.3	17.9	21.6	20.5	18.4
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission, Optical Fibre	14.7	12.0	23.7	21.9	21.7	26.6
Electrical Assets	Overhead Renewal, Power systems, Traction Substation Renewals	9.8	13.8	23.3	24.9	19.9	18.4
Total		**110.6**	**133.3**	**153.8**	**162.8**	**163.5**	**165.8**

Note: 2.5% escalation has been included.



Note: 4-year forecast is indicative only and does account for access, resource considerations, detailed design and associated costings.

Figure 85 FY26 Plus Four-Year Renewals Cost by Renewal Category - Goonyella System (Nominal $m)

Variances across the FY26 to FY30 are predominantly attributable to:

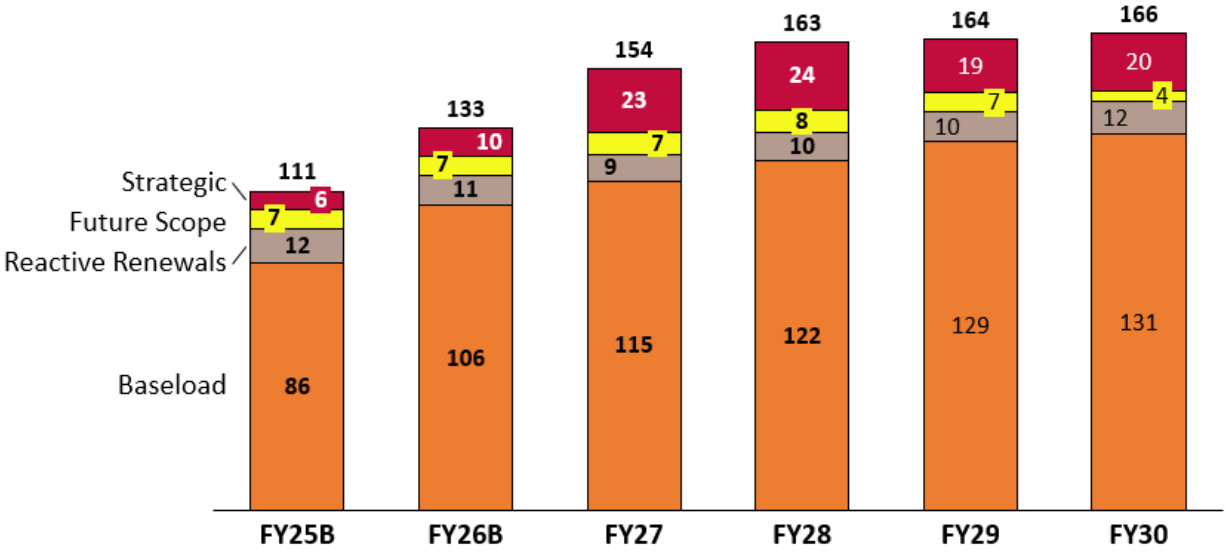
FY26 to FY27:

- Control Systems increased scope in FY27 to return to stable level of renewals to address ageing assets and obsolescence. In FY27, specific increases are seen in Asset Protection, Interlocking, Minor Safeworking and Telecommunication Assets.
- Electrical Systems increase is associated with the two strategic projects, Goonyella Ports OHLE and Electric Traction Substation Renewals

FY27 to FY30:

- Civil Renewals see a largely stable scope across all asset categories, with the exception of the Rail and Sleeper Renewals which see a slight increase over the period. Ballast Mainline Undercutting assumes a 25% return rate year on year.

- The Control Systems future program is based on a relatively stable delivery of renewals year on year. FY27 and FY30 includes scope for the continuation of the strategic Optic Fibre Renewals Program.
- The Electrical Systems future program driven by the strategic Traction Substation and Goonyella Ports OHLE Renewal Projects. Goonyella Ports OHLE Renewal is forecast to be completed in FY29.
- For FY27 to FY30, Civil Renewals see a largely stable scope across all asset categories, with the exception of the Rail and Sleeper Renewals which see a slight increase over the period. Ballast Mainline Undercutting assumes a 25% return rate year on year.
- The Control Systems future program is based on a relatively stable delivery of renewals year on year. FY27 and FY30 includes scope for the continuation of the strategic Optic Fibre Renewals Program.
- The Electrical Systems future program driven by the strategic Traction Substation and Goonyella Ports OHLE Renewal Projects. Goonyella Ports OHLE Renewal is forecast to be completed in FY29.



Note: 4-year forecast is indicative only and does account for access, resource considerations, detailed design and associated costings.

Figure 86 FY26 Plus Four-Year Renewals Cost by Scope Type - Goonyella System (Nominal $m)

- Baseload Scope sees a peak for Track Upgrades in FY29. Other increases year on year are attributable to Rail and Level Crossing Renewals.
- Strategic Scope includes, Electric Traction Substation, Goonyella Ports OHLE and Optic Fibre Renewal Projects. Goonyella Ports OHLE Renewal is forecast to be completed in FY29 and the Optic Fibre Renewal Program is forecasted to be complete in FY31.

6.3 Moura System – Four-Year Forecasts

Table 59 FY26 Plus Four-Year Maintenance Cost Forecast - Moura System (Nominal $m)

Moura System Maintenance	FY26	FY27	FY28	FY29	FY30
Resurfacing	2.0	2.1	2.1	2.2	2.3
Rail Grinding	2.0	1.7	1.8	2.1	1.9
General Track Maintenance	9.2	9.4	9.6	9.9	10.2
Structures & Facilities Maintenance	1.7	1.7	1.0	1.1	1.1
Other Civil Maintenance	1.1	1.1	1.2	1.2	1.2
Signalling & Telecommunications Maintenance	2.8	2.8	2.9	3.0	3.1
Trackside Systems Maintenance	0.3	0.3	0.3	0.4	0.4
Other General Maintenance	0.4	0.5	0.5	0.5	0.5
Total Direct Maintenance Costs (excl. Ballast Undercutting Plant	**19.5**	**19.7**	**19.5**	**20.3**	**20.5**
Ballast Undercutting Plant Depreciation	0.3	0.3	0.3	0.3	0.3
Total Direct Maintenance Costs	**19.7**	**20.0**	**19.8**	**20.6**	**20.8**
Non-Coal Allocation	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Total Direct Maintenance Costs	**19.7**	**19.9**	**19.7**	**20.5**	**20.7**

Notes:

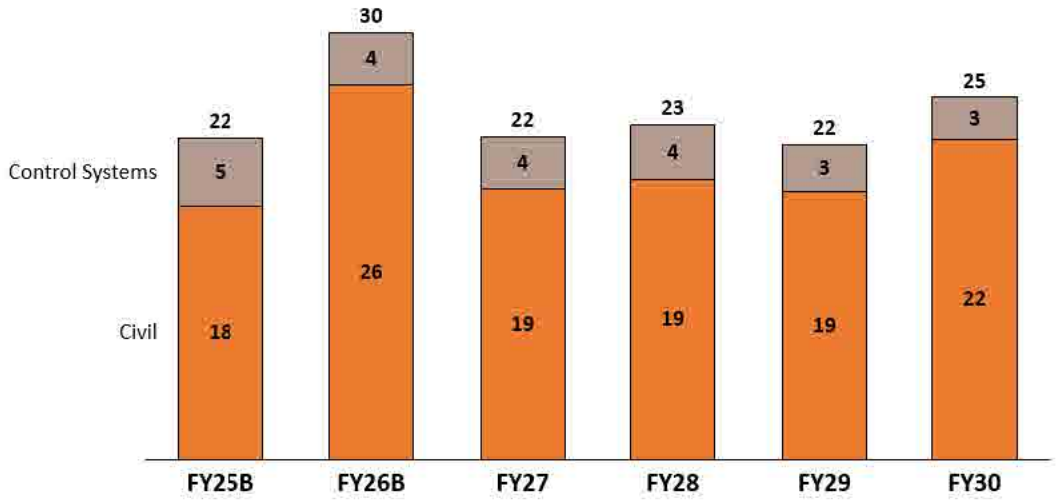
- *Rail Grinding forecast includes cost escalation and scope variation year on year driven by anticipated grinding requirements and stable management of rail asset condition. Future estimates are indicative only and may be subject to change and will be iterated in future MRSB submissions for RIG review and approval.*
- *Resurfacing variation primarily driven by annual plant maintenance cycles.*

Table 60 FY26 Plus Four-Year Renewals Cost Forecast - Moura System (Nominal $m)

Renewals Item	Assets Included	FY25 MRSB	FY26	FY27	FY28	FY29	FY30
Civil Assets		17.6	26.0	18.8	19.4	18.6	22.2
Permanent Way	Rail, Track, Sleeper, Turnouts	5.5	6.1	5.3	5.6	5.2	6.9
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	5.2	7.3	6.4	7.9	7.6	8.3
Structures	Culverts, Bridges	2.7	3.0	1.8	1.8	1.8	1.9
Civil Renewals	Formation, Level Crossings, Access Points	4.3	9.5	5.4	4.1	3.9	5.2

Renewals Item	Assets Included	FY25 MRSB	FY26	FY27	FY28	FY29	FY30
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms, Power Resilience, Transmission, Optical Fibre	4.7	3.6	3.6	3.8	3.2	2.9
Total		**22.3**	**29.6**	**22.4**	**23.2**	**21.9**	**25.1**

Note: 2.5% escalation has been included.

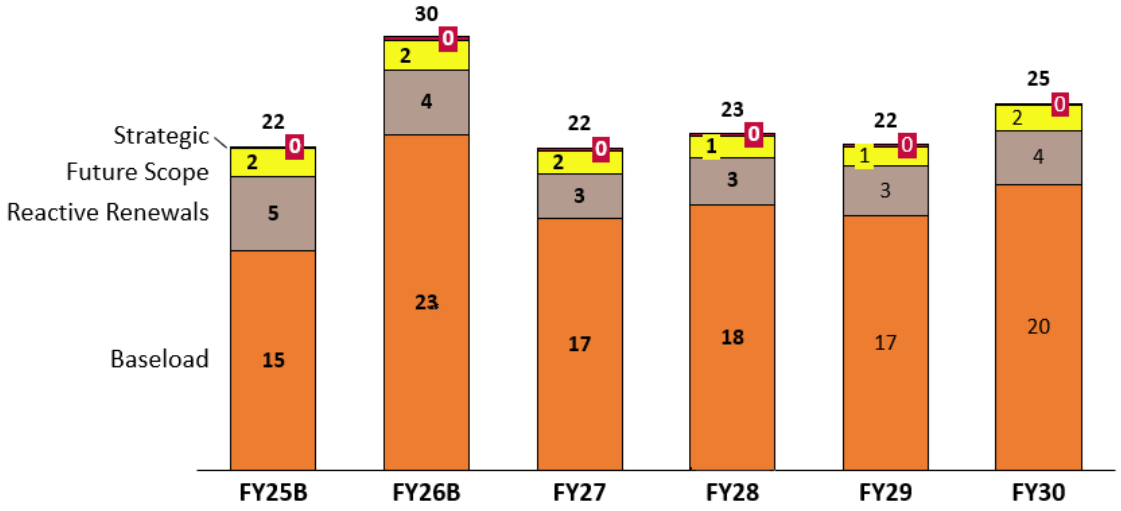


Note: 4-year forecast is indicative only and does account for access, resource considerations, detailed design and associated costings.

Figure 87 FY26 Plus Four-Year Renewals Cost by Renewal Category - Moura System (Nominal $m)

Variances across the FY26 to FY30 are predominantly attributable to:

- The Civil Renewal program sees a forecast increase in Rail Renewals in FY30 consistent with the Corridor Strategy that has less frequent intervention and a longer time between renewals for those assets such as rail that wear. The Ballast Cleaning program currently assumes ballast cleaning machine will be used in Moura each year at a return rate of 25%. Level crossing renewals reduce to 2 in FY27 (Callemondah and Fry) and then stabilise at 1 year on year. Culvert Renewals reduce from 4 in FY26 to 3 year on year. Bridge Rollouts stabilise at 100m year on year from FY28.
- The Control Systems future program is based on a relatively stable delivery of renewals year on year.



Note: 4-year forecast is indicative only and does account for access, resource considerations, detailed design and associated costings.

Figure 88 FY26 Plus Four-Year Renewals Cost by Scope Type - Moura System (Nominal $m)

- Baseload Reactive and Future Scope: are relatively stable over the forecast period with movements in FY30 attributable to the Rail Renewal program.

6.4 Newlands System and GAPE – Four-Year Forecasts

Table 61 FY26 Plus Four-Year Maintenance Cost Forecast - Newlands System and GAPE (Nominal $m)

Newands System Maintenance	FY26	FY27	FY28	FY29	FY30
Resurfacing	1.9	1.9	1.9	2.0	2.0
Rail Grinding	2.5	3.5	2.6	3.7	2.4
General Track Maintenance	7.1	7.3	7.4	7.6	7.8
Structures & Facilities Maintenance	1.6	1.6	1.1	1.3	1.4
Other Civil Maintenance	0.3	0.3	0.3	0.3	0.3
Signalling & Telecommunications Maintenance	3.9	4.0	4.1	4.2	4.3
Trackside Systems Maintenance	0.4	0.4	0.4	0.4	0.4
Other General Maintenance	0.5	0.5	0.6	0.6	0.6
Total Direct Maintenance Costs (excl. Ballast Undercutting Plant	**18.1**	**19.5**	**18.4**	**20.1**	**19.2**
Ballast Undercutting Plant Depreciation	0.3	0.3	0.3	0.3	0.3
Total Direct Maintenance Costs	**18.4**	**19.8**	**18.7**	**20.4**	**19.5**
Non-Coal Allocation	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Total Direct Maintenance Costs	**18.3**	**19.7**	**18.6**	**20.4**	**19.4**

Notes:

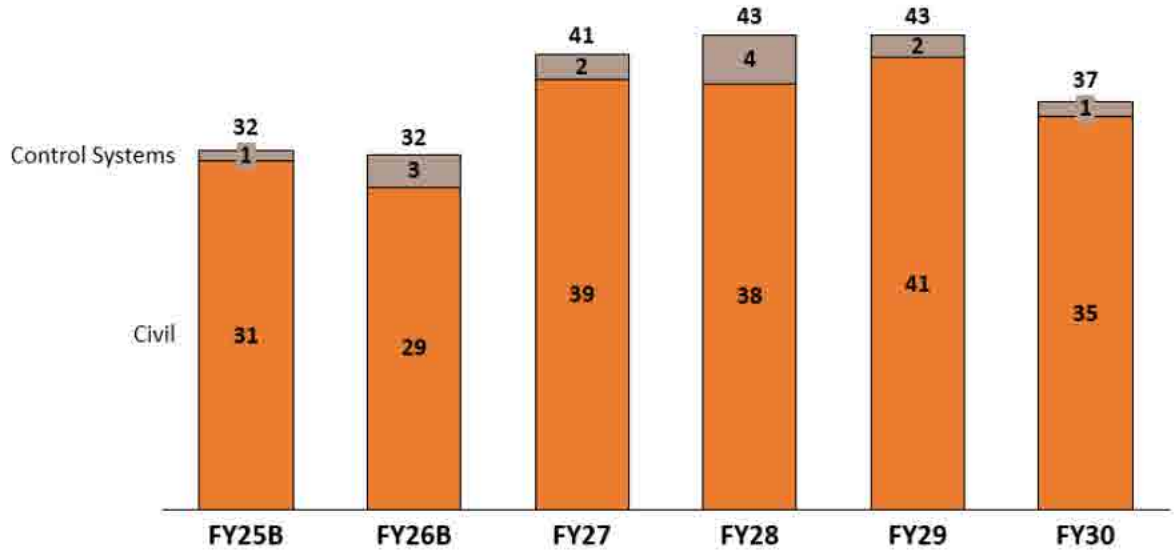
- *Rail Grinding forecast includes cost escalation and scope variation year on year driven by anticipated grinding requirements and stable management of rail asset condition. Future estimates are indicative only and may be subject to change and will be iterated in future MRSB submissions for RIG review and approval.*

Table 62 Plus Four-Year Renewals Cost Forecast - Newlands System and GAPE (nominal $m)

Renewals Item	Assets Included	FY25 MRSB	FY26	FY27	FY28	FY29	FY30
Civil Assets		31.4	29.1	38.8	38.4	40.7	35.4
Permanent Way	Rail, Track, Sleeper, Turnouts	9.2	8.1	13.8	17.4	17.2	14.3
Ballast Cleaning	Mainline and Turnout Undercutting, Bridge ballast	7.8	6.5	10.0	7.6	8.1	7.8
Structures	Culverts, Bridges	9.2	8.9	9.8	8.4	10.2	8.8
Civil Renewals	Formation, Level Crossings, Access Points	5.1	5.6	5.3	5.0	5.1	4.4
Control Systems Assets	Safe Working, Train Control and Detection, Interlocking, Telecoms,	1.0	2.8	2.2	4.3	2.1	1.4

Renewals Item	Assets Included	FY25 MRSB	FY26	FY27	FY28	FY29	FY30
	Power Resilience, Transmission						
Total		**32.3**	**31.8**	**41.0**	**42.7**	**42.8**	**36.8**

Note: 2.5% escalation has been included.



Note: 4-year forecast is indicative only and does account for access, resource considerations, detailed design and associated costings.

Figure 89 FY26 Plus Four-Year Renewals Cost by Renewal Category - Newlands System (Nominal $m)

Variances across the FY26 to FY30 are predominantly attributable to:

In FY26 to FY27:

- Increase in the Civil Program in Permanent Way and Ballast Cleaning Renewals. In FY27 Rail, Sleeper and Track Upgrades increase compared to FY26 to achieve the rail strategic total over the long term and replace poor condition sleepers or material and fastener upgrades. There is also planned an additional Bridget Rollout. The number of bridges that get completed each year depend on the length and complexity of each bridge and will fluctuate if the bridges are shorter or longer.

In FY27 to FY30:

- The Civil Renewal program sees a reduction in the Rail, Sleeper and Track Upgrades in FY30. Bridge Rollout scope peaks in FY27 at 450m and reduces in FY30 to a 100m renewal. Ballast Mainline Undercutting is on a 2-year pattern (with slightly less scope every second year) and assumes a 25% return rate for the Ballast Cleaning Machine in the system each year.
- The Control Systems future program is based on a relatively stable delivery of renewals year on year, with the exception of FY28 which sees increased Asset Protection scope for the renewal of Hot Bearing Detectors at Briaba, Cockool and Eaglefield.

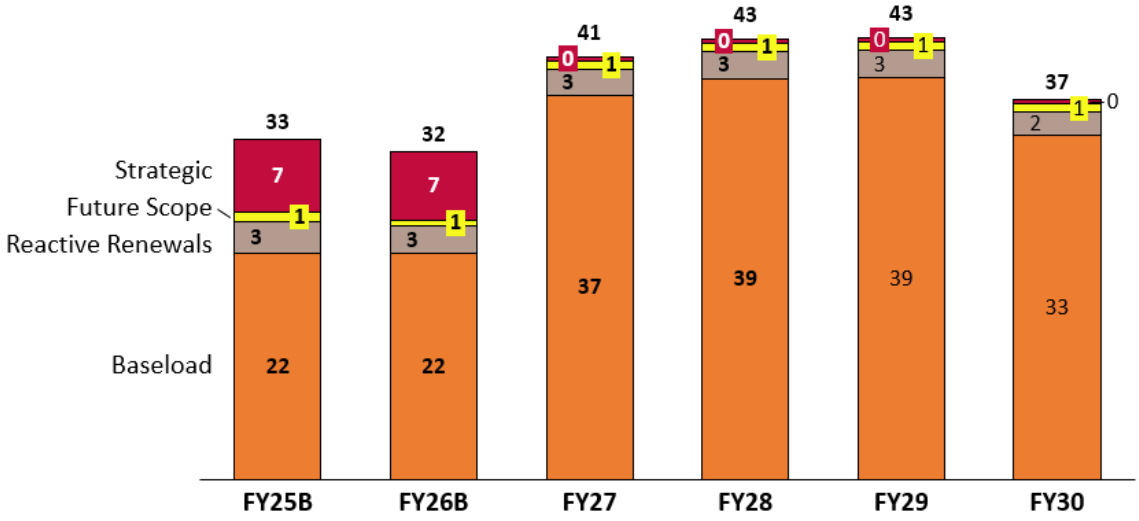


Figure 90 FY26 Plus Four-Year Renewals Cost by Scope Type - Newlands System (Nominal $m)

- Baseload Reactive and Future Scope: are relatively stable over the forecast period with movements in FY27-FY29 attributable to the Rail Renewal program.

- Strategic Scope includes the finalisation in FY26 of the strategic renewal of 10 short span bridges which commenced in FY22.

7 Stakeholder Engagement FY26 Draft Access Regime

As part of the development of the FY26 MRSB, customers provided feedback on the draft access regime in both Phase 1 and Phase 2 of the process. This process is outlined in Section 10.5 Engagement and Reporting. Key feedback provided during the planning process from customers is detailed in the Table 63.

Table 63 Customer Feedback Draft Access Regime

	Customer Feedback Received	Access Planning Customer Feedback and Response
1	118hr GY Closure in May flagged as very high impact.	June 2024: This was flagged as under review in the Phase 1 consultation. **Outcome:** May closure reduced to 60hrs with driving scope reviewed and moved from this high impact closure in FY27.
1	Trend of closure hours increasing and long duration closures going up customers seeking clarity around whether this trend will continue.	Aurizon Network provided the 4 year trend for closures. Move toward 4 year view of scope will assist in forward plan for closures. **Outcome:** Given scope trend is expected to continue but access impact will be managed.
2	Request to review the impact on access of ramp up and ramp down of Integrated Closures.	Reviewed as part of Phase 2 workshop, update provided to customers in Post Phase 2 update. **Outcome:** Incorporated staggered start up and shutdown of closures to minimise impact to stakeholders.
3	Request for inclusion of work hours in closures.	**Outcome:** The build up of labour hours in closures is not determined at this stage in the planning process. Each closure duration is determined by the driving path scope activities which require the minimum duration to complete. These driving path activities predominately operate a 24 hours operation, where as other activities may be day time only. The activities scheduled for the MRSB development only comprise part of the total closure hours which doesn't include additional time required for any general maintenance and unforeseen corrective actions. During the detailed Integrated Closure planning process in the year of execution, many more maintenance activities are added to reduce the access impact outside of closure.
4	Provide a view of cost comparison for trade-offs.	**Outcome:** Cost and access trade off decisions in Phase 2 were shared in the Post Phase 2 Driving Scope and Integrated Closure Update on 2 September.
5	Armuna Culvert review of scope driver, question about whether this is a repair or renewal scope item.	**Outcome:** Asset management review of scope confirmed this is a driving scope item for the Newlands March 60hour closure, and confirmed the scope items is a renewal.
6	QR request for alignment post planning workshops	**Outcome:** Reviewed scope and have worked with QR to improve alignment for the supply chain.

7	Request for a review of single line work before and after the Blackwater May shuts – concerns about the impact of pre and post closure works on coal production.	**Outcome:** Works revised to either pre or post only where possible to minimise impact.
8	Request for a comparison of the business case for the BCM strategy of chasing the shuts so that we can evaluate whether the strategy is being followed	**Outcome:** Analysis of current BCM strategy to complete majority of high impact work in closures was presented to RIG Producer Group in September.

Additionally in February 2024, Aurizon Network developed an engagement plan for calendar year 2024 with the RIG representative group. The details of the outcomes of that engagement are included in Section 10.5.1 Rail Industry Group Producer Group Meetings.

7.1 FY26 Commitments

Aurizon Network believes the development of the annual engagement plan with the RIG representative group provided a step change in the quality of engagement between Aurizon Network and the RIG. As such, and subject to RIG approval of the FY26 Final Draft Proposal, Aurizon Network proposes to continue this process post the vote on the FY26 Final Draft Proposal in February 2026. Suggested topics for consideration as part of the Engagement Plan include:

- Finalise the internal labour efficiency and effectiveness review, working with the RIG on any identified initiatives that would result in improvements to Aurizon Network and Customers.
- Work with RIG to scope and engage an external provider to conduct a review of material contract expenditure to identify those tasks which are both out-sourced and occur every year (e.g. rail stress management, excavator undercutting, culvert inspections and repairs) and the opportunity to in-source activities.
- Provide updates of progress against plan for the long-term strategies presented to the RIG (e.g. interlocking, fibre optics, OHLE upgrades and ATIS).
- Aurizon Network to provide an update on ATIS implementation and how it is changing planning processes together with available insights on asset condition.
- Using multi-year GPR data, Aurizon Network to show how the condition of ballast has changed and how that has impacted future years scope, with a focus on the core Blackwater and Goonyella mainlines.

Part B

Asset Management

AURIZON

8 Maintenance and Renewal Activities

Aurizon Network applies a coordinated approach to managing the CQCN rail infrastructure by applying maintenance and renewal strategies that are designed to complement each other through each stage of the asset's life cycle.

The average age of the assets in the CQCN is approximately 30 years, with most assets having been constructed during the 1980s and the 1990s. The average is reduced by deviations, duplications and spurs/balloon loops built during the 2000s and 2010s, and the asset renewals undertaken each year, noting that the annual renewals program represents a small percentage of the total network.

Maintenance of rail infrastructure refers to the inspection, testing, identification of faults and subsequent adjustment or repair of the asset.

Renewal of rail infrastructure refers to the replacement of an asset that is life-expired, obsolete or part of a strategic renewal program.

There are a wide variety of assets that make up the Rail Infrastructure. These assets wear and degrade at differing rates due to a variety of factors, which may include:

- location
- climate
- construction material
- use or movement (e.g., tonnage railed over a rail section)
- movements of mechanical parts; and
- obsolescence – either because operating systems are no longer supported, spare part availability or advances in alternate technologies.

To manage variability, Aurizon Network applies several approaches to inspect, test and measure deterioration and respond to asset condition in a manner that seeks to minimise disruption to train services.

Ultimately, the underlying scope of asset activity (both maintenance and renewals) outlined in each annual MRSB is a function of well-defined standards and processes, that have been designed to ensure Aurizon Network can comply with its safety, legislative and regulatory obligations, while seeking to deliver Committed Capacity in each Coal System. Aurizon Network is continuously reviewing and improving our internal engineering capability, standards, and processes to deliver increased throughput in a safe and reliable way.

8.1 Guiding Principles and Application

There is a direct linkage between the applied asset management strategy and the annual MRSB draft proposal.

- Asset management strategies inform asset policy and standards.
- Standards inform renewal and maintenance triggers resulting in the required scope.
- Required scope is then fit to access, resources, and plant.
- Materials, labour and contract costs then derive the cost forecast.
- This in turn develops the proposed MRSB scope and costs for approval by the Rail Industry Group.

The guiding principles informing asset management strategies are outlined in the Table 64.

Table 64 Guiding Principles and their Application in the Development of Aurizon Network's Asset Management Strategies

Guiding Principle	Description	Application of Guiding Principles (Considerations)
Minimise the impact of asset activity	Asset activity is undertaken to support the safe and reliable provision of rail services for users of the CQCN. Aurizon Network seeks to manage the time required on track to deliver the required asset activity while seeking to ensure that Committed Capacity or Deliverable Network Capacity can be achieved.	Aurizon Network seeks to minimise the impact to the supply chain of Track Possessions by: • Appropriately scheduling major, high impact asset renewal activity in a series of planned, integrated closures. • Managing the impact of unplanned defects or rail infrastructure failures, both in duration and intervals, through application of engineering standards based on condition and criticality of the asset to the relevant supply chain. • Using critical path scope to plan closures and maximise the number maintenance and renewal activities planned for delivery during those closures, while also balancing essential plant and resources. • Where scheduling planned maintenance activities outside of closures, asset activity is delivered between revenue services where possible. • Coordinating and aligning other supply chain maintenance activities (e.g., Mine, Port, other Rail Networks etc.) to minimise overall supply chain impact and maximise throughput.
Achieve below rail asset reliability and performance	Aurizon Network's asset management strategy prioritises a preventive maintenance regime with fit for purpose renewal of Rail Infrastructure. Aurizon Network's approach seeks to maintain performance and reliability consistent with prior years averages by identifying, planning and rectifying faults to minimise the impact of planned and unplanned failures.	Aurizon Network has varying levels of risk tolerance which take into consideration the condition, location and criticality of assets in each system. Aurizon Network considers this when setting asset management strategies for different asset types within each Coal System. It may be appropriate for the asset condition of different corridors to vary to reflect the level of service, reliability and flexibility required by customers. At all times, Aurizon Network's approach seeks to mitigate the risk of rail incidents (such as derailment, dewirement or collision) that could result in serious injury, fatality or cause significant throughput disruption and recovery costs.
Managing to long-term demand	Aurizon Network's asset management strategy is based on the future demands on the rail infrastructure using information known at the time. Renewals and maintenance plans consider this long-term demand to determine the appropriate asset activity to ensure the asset is fit for purpose for the economic life of the corridor.	The CQCN has multiple subsets of asset categories and products with varying engineering lives to support more than 50 coal mines and other bulk and general freight commodities. Asset strategies are considered at a corridor level to best align asset capability and performance with the expected demand. However, future demand uncertainties exist at a corridor level, particularly for assets with 20+ year engineering lives.

Guiding Principle	Description	Application of Guiding Principles (Considerations)
Meet legislative requirements	Aurizon Network's asset management strategy is developed within the context of the parameters set out by relevant legislative requirements including the Rail Safety National Law (Queensland) Act 2017 (RSNL), the Transport Infrastructure Act 1994 (Qld), the Work Health and Safety Act 2011 (Qld), and the Electrical Safety Act 2002 (Qld) and Security of Critical Infrastructure Act 2018.	Legislative and regulatory obligations underpin Aurizon Network's commitment to provide safe and reliable services to customers. These obligations are articulated in the Asset Standards that form part of the Aurizon Network Safety Management System (SMS). Application of these ensure the safety of track workers (both internal and external), rail operations and public interfaces.
Cost effective	Aurizon Network endeavours to ensure that the level of expenditure incurred to deliver the asset activity is reasonable.	Maintenance and renewal activities are delivered in a way that seeks to maintain reliability and Deliverable Network or Committed Capacity of the CQCN. Aurizon Network completes a market-based approach when needing to outsource labour, services or materials. Awarding of any contracts will include assessments of past performance, cost, quality and safety.

8.2 Legislative and Regulatory Obligations

In addition to complying with the provisions of UT5, Aurizon Network's asset management approach is underpinned by relevant sections under the Rail Safety National Law (Queensland) Act 2017 (RSNL), the Transport Infrastructure Act 1994 (Qld), the Work Health and Safety Act 2011 (Qld), and the Electrical Safety Act 2002 (Qld) and Security of Critical Infrastructure Act 2018.

To undertake Rail Infrastructure Manager (RIM) tasks in the CQCN, Aurizon Network must be accredited by the Office of the National Rail Safety Regulator (ONRSR) and may only undertake such tasks in accordance with a Safety Management System (SMS) that has been approved by ONRSR.

Under the RSNL, Aurizon Network must ensure, so far as is reasonably practicable, rail safety is not affected by the carrying out of its prescribed railway operations.

A breach of Aurizon Network's statutory rail safety duty as a 'Rail Transport Operator' may lead to ONRSR determining to suspend, revoke or impose conditions upon Aurizon Network's accreditation. Given that Aurizon Network may only conduct its railway operations in accordance with the terms of its accreditation, any such measures by ONRSR could bring Aurizon Network's railway network to a temporary or permanent standstill or lead to regulator-imposed operational constraints or restrictions.

Any contractor performing rail safety work on behalf of Aurizon Network must also comply with the SMS, failure to do so can constitute an offence for both Aurizon Network and the relevant contractor.

The Security of Critical Infrastructure Act 2018 was last amended in April 2022 and identifies transport infrastructure (rail) as critical infrastructure if it transitions two regional centres within a state.

8.2.1 Safety Management System (SMS)

Aurizon Network has safety duties under the RSNL, and its SMS provides, in part, the mechanism for Aurizon Network to meet its specific obligations. The detail for the safe design, construction, testing, commissioning, and operation of the railway is contained in Aurizon Network's SMS which, amongst other things, includes:

- systems and procedures for eliminating, or reducing, the risks to safety caused by railway operations;

- a documented set of engineering standards for monitoring, maintaining, and repairing rail infrastructure.

Aurizon Network's SMS is subject to periodic assurance audits by ONRSR and annual review by the Electricity Regulator (as a prescribed Electricity Entity). In addition, Aurizon Network operates a targeted self-assurance program to assess the quality of delivered works against the SMS.

Consequently, each annual MRSB includes a level of asset activity that is consistent with its safety obligations and complies with the SMS that is statutorily applicable to Aurizon Network.

8.2.2 Asset Standards (Asset Maintenance and Renewal Policy)

Aurizon Network's Asset Maintenance and Renewals Policy (AMRP) provides an overview of the requirements in the SMS in a single document and outlines the maintenance and renewal processes that are relevant to each class of asset.

The AMRP includes Aurizon Network's policies on how each asset will be managed through its useful life. Furthermore, the AMRP provides the rationale for the intervention frequency levels necessary for each activity. It should be noted that these intervention frequency levels may vary between individual Coal Systems to account for, amongst other things, the level of service (e.g., reliability) and flexibility that is required by customers.

Defined intervention frequency levels can include:

- usage-based - Example: track resurfacing is required every 50 million gross tonnes
- time-based - Example: turnouts requiring weekly visual inspections and a detailed annual inspection
- age-based - Example: 22.5 tonne axle load concrete sleepers being replaced every 40 years
- fix on failure.

All preventive maintenance activities and resulting asset operating parameters are developed in accordance with the engineering standards and technical specifications necessary to ensure Aurizon Network's compliance with its legislative and regulatory obligations.

The next section outlines the asset strategies by class, with further information on the asset maintenance and renewal options available in the appendices:

Appendix 1: Renewal Scope Detail Report

Appendix 2: Alternative considerations for Maintenance

Appendix 3: Options for Renewal approach

Appendix 4: Description of practices used to carry out asset activity

Appendix 5: Glossary

9 Strategies by Asset Class

Assets for Renewal and Maintenance are presented in the MRSB in the classes and products as per the following Table.

Table 65 Asset Classes

Class	Renewal Products	Maintenance Products
Permanent Way	Rail, Sleepers, Turnouts, Track Upgrade	Resurfacing, Rail Grinding, General Track Maintenance. Track Inspection, Ultrasonic Testing, Friction Management
Ballast	Mainline Ballast Cleaning/Renewal, Turnouts Ballast Renewal, Bridge Ballast Renewal	Maintenance Ballast, Ballast Minor Undercutting
Structures	Bridges, Culverts	Structures Preventive, Structures Corrective
Civil Asset Renewals	Formation, Level Crossings, Access Roads, Fencing, Access Points, Corridor Drainage. Cuttings and Embankments, Stow & Crew Change Infrastructure	General Track Maintenance, Other Civil Maintenance
Control Systems Assets	Safe Working (Asset Protection, Interlockings, Train Detection, Train Detection, Minor), Power Resilience, Telecommunications Assets, Transmission Data & Renewal, UTC/DTC Systems Upgrades, Other Control Systems Renewals.	Signalling Corrective, Signalling Preventive, Telecoms Corrective, Telecoms Preventive
Electrical Assets	Overhead Line Equipment (OHLE), Feeder Stations, Autotransformers, SCADA system	OHLE Corrective, OHLE Preventive, Traction Corrective, Traction Preventive

This section describes the Asset Management Strategies applied to each of these products. This is a summary of information contained in the Network Asset Maintenance and Renewal Policy (AMRP).

The AMRP is reviewed on an annual basis to incorporate changes in strategic approach, enhancements in process or changes in asset policy.

Further detail on the preferred Maintenance and Renewal activities per class and product and the alternative options that are assessed at the point of renewal are contained in the appendices to Part B.

9.1 Permanent Way

Permanent Way assets in a railway refer to the infrastructure that makes up the tracks, including rail, sleepers, turnouts, and friction management equipment. These assets are also the connection point between rollingstock and the below rail assets.

If efficient to do so, rail and sleeper products may be combined for renewal concurrently. Combined works are referred to as 'Track Upgrade' within the MRSB.

Effective maintenance and renewal of the Permanent Way assets provide the following benefits to the Coal supply chain.

- **Asset Reliability** – Reduces network delays associated with unplanned asset activity. Asset components such as rail, sleepers and turnouts have a low likelihood of failure in a new state and require minimal unplanned maintenance once renewed.
- **Throughput** – Renewing in a planned manner within an identified closure pattern avoids unplanned outages and associated throughput losses. Managing defects via temporary speed restrictions reduces the risk of a more severe operational impact resulting from an unplanned outage ahead of planned maintenance.
- **Safety**- Reduces derailment risk.

9.2 Rail

Given rail is a crucial component in the railway, it is manufactured to exacting standards suited to the operating environment, ensuring durability and safety.

Rail is managed through its asset life by undertaking patrol inspections, geometry inspections, ultrasonic inspections, rail reprofiling via rail grinding, alignment correction via resurfacing, lubrication on its curves and management of temperature-driven steel expansion and contraction through effective rail stress management.

Typical Description	• Mix of rail types across the CQCN ranging from 47kg to 60kg • Current standard is 60kg through head-hardened rail • 110m continuous welded lengths joined by aluminothermic welds in field or Insulated Rail Joints (IRJ)
Maintenance	**Rail Inspection** – Track inspections, ultrasonic testing, track geometry recording, and visual inspections are utilised to identify rail wear and rail faults. The severity of the fault drives the timing of correction. **Friction Management** – Lubrication of track on straights and curves and maintenance. That is, filling of any lubrication systems or devices, and testing and maintenance of remote monitored lubricators and software licences. **Rail Break Repair** – The immediate action after a rail break. Depending on the location and severity of the break this will typically be a temporary correction (plug rail insertion, break plating) to allow operations to resume ahead of a planned further repair or renewal. This includes weld and IRJ breaks. **Rail Joint Corrective Maintenance** – Maintenance of a rail joint including flash-butt welding or thermite welding of mechanical joints, grinding to remove metal flow from an IRJ, bolt and fish plate maintenance of mechanical joints, and lifting and lining joints (manual/mechanised spot tamping). **Rail Stress Management** – Ensuring rail is at the correct stress-free temperature to accommodate both rail expansion associated with summer heat and rail contraction associated with cooler winter periods. Uncontrolled rail expansion results in track misalignments or buckles in summer and rail breaks in winter. **Rail Grinding** – Removes micro cracks and small surface defects from the rail surface and restores the rail profile to minimise wheel/rail contact stresses and assist rollingstock steerability. Planned maintenance activities include rail grinding, track resurfacing and inspections to measure track profile and geometry compliance.

Asset Renewal	Rail reaches the end of its life by either: • **Rail Fatigue** – The failure mechanism from an increase in rail defects which are caused through millions of wheel cycles over the rail (analogous to continuous bending of a paperclip). Rail fatigue generally only manifests itself in straight track or very large radius curves where the rail has been in service for significant periods of time. • **Rail Wear** – Progressive loss of steel in the rail head caused by the very high lateral forces under train operations and preventive grinding. The rail wears to the point where it is not sufficiently strong enough to sustain the heavy axle loads; rail wear generally only manifests itself in curved track. The sharper (i.e. tighter) the curve, the higher the wear rate. • **Rail Corrosion** – Corrosion on the rail results in thinning or reduction of the rail section and instability of the rail. This introduces a potential risk of displacement and large stresses that could lead to rail failure. Corrosion is difficult to manage, especially in highly corrosive environments such as loadouts where the rail contacts coal which traps moisture. These locations are difficult to visually inspect and assess therefore require proactive replacement to reduce failure.
Typical Scope Requirements	There is over 5,400km of rail across the CQCN. The volume and weight of rail traffic is measured in Million Gross Tonnes (MGT) and is the key driver of rail wear and fatigue. About 60% of rail km have less than 30MGT/year, 35% corresponds to 30-70 MGT/year and 5% above 70MGT/year. Aurizon Network has introduced new rail profiles, improved identification of rollingstock wheel defects, improved alignment between rollingstock speed and track cant, transitioned to procuring through head-hardened rail, and changed its weld and rail stress policies, resulting in improved rail performance and a reduction in rail defects. With these improvements in rail management practices and the actual tonnages being less than the predicted tonnages used in the assessment, the scope of required rail renewal has been adjusted accordingly. Corrosion has been identified as a third driver of rail renewal. There is an increase in rail renewals driven by fatigue and corrosion which was previously managed through Reactive Renewals. Data science methods are being leveraged to enable site-specific forecasts for planning of baseload renewals program. The current rail strategy based on the asset condition and usage requires a typical replacement of 117km per annum across the CQCN, either through Rail Renewals or Track Upgrades. Variation year on year and between systems is ultimately a function that considers reliability, safety, access, cost and resourcing. In the last 5 years, this has resulted in a rerail program on average of 910 rails or 100km per annum. Aurizon Network continues to assess the requirements going forward and forecasts this to increase over the next few years back to the strategy of 117km per annum. A renewal rate of 100km per annum equates to around 1.9% of the total rail assets renewed each year or a renewal period of 53 years. At this level, rail renewal scope is forecast to remain constant into FY29.

Supply Chain Risks being Managed	The effective management of rail prevents issues such as worn rail and broken rails leading to delays and cancellations to rollingstock while repairs are affected, or the more severe event such as derailments which are a major incident that stops the supply chain until rollingstock is recovered and rail infrastructure replaced or restored. The predominate failure of a rail break is a square or angular sudden rupture, transverse separation of the head, web and foot of the rail, which results in a discontinuity of the track structure. It includes broken rail, failed or broken welds, broken fishplates in mechanical / glued insulated joints or where at least all bolts are missing or broken on one side of a mechanical / glued insulated joint. These types of failures usually occur at a weak point in the rail during very cold weather and are often caused by concentrated loadings (overstressing) from rollingstock or other track maintenance operations. Rail is managed to minimise the risk of rail breaks resulting in cancellations and delays to the supply chain.

9.3 Sleepers

Sleepers perform the function of holding the rails to correct gauge and distributing the loads imposed on the rails to the ballast and critically, providing lateral stability to track. Other than some sidings, low traffic spurs and mine loops, all sleepers in the CQCN are concrete and of varying size and capacity.

Typical Description	• 28 tonne axle limit full depth reinforced concrete sleepers • 685mm sleeper spacing • Pandrol e-clip sleeper fastenings • Galvanised e-clips in coastal and high corrosion locations
Maintenance	**Sleeper Cluster Management** – The repair of sleepers with defects in a row or cluster which may require spot insertion of sleepers, reboring, regauging, replating, respacing and/or spot replacement of pads, insulators and fasteners to rectify the defects and remove the cluster from the track. **Sleeper Inspection** – Sleepers are visually inspected, and defects are reported. The condition of all fasteners including clips, shoulders, pads and insulators and any damage are also reported during inspections. In addition to the visual condition inspection, timber sleepers are also tested at required intervals to check for defects that render the sleeper ineffective. **Spot Tamping** – Involves localised top and line restoration using manual or mechanised assisted processes to realign the sleepers within the track alignment. **Track Geometry Recording** – Measuring the track geometry parameters for sleeper defects. For example, gauge issues may be the result of missing fasteners or defective pads and insulators.
Asset Renewal	Sleeper renewal is the standalone replacement of sleepers in a section of track. The life of a sleeper is affected by many factors, including the design loading, quality and type of the sleeper, density of the traffic, curvature (i.e., the amount of curves in the track), maintenance conditions and the effect of derailments or other damage. Sleepers require replacement where a group or cluster is classed as defective. Sleepers are renewed via the Sleeper Laying Machine, Track Laying Machine or inserted using other on and off-track machines depending on the quantity being replaced and their location. Sleepers have a design life of 40 – 50 years for concrete (depending on type), 40 years for steel and 12 years for timber.

Typical Scope Requirements	There are over 4 million sleepers in the CQCN. The sleepers renewed each year are selected due to age and condition and the ability of the sleeper section to perform required functions. The FY26 – FY29 renewal program will see the replacement of concrete fist sleepers inserted in the 1980s in Blackwater, Moura and Goonyella, with concrete Pandrol e-clip sleepers and steel sleepers with concrete Pandrol e-clip sleepers on the Gordonstone Mine Spur. Sleeper renewal is a baseload scope item, as defined in **Error! Reference source not found.**, with the level of renewals expected to fluctuate over the coming periods dependant on the location of aged sleepers being renewed.
Supply Chain Risks being Managed	Sleepers distribute the load of trains evenly to the ballast and formation. Worn or decayed sleepers can compromise this function, leading to uneven load distribution and resulting in rail wear and increased loading on ballast and formation. The effective management of sleepers will ensure sleeper condition does not deteriorate to a level where it becomes poor and leads to misalignment and deformation of tracks. This can lead to derailments or other incidents, causing cancellations and/or delays to the supply chain. Regular inspection, maintenance and replacement of sleepers ensures the track remains in optimal condition, minimising the risk of track failures.

9.4 Turnouts

A turnout (also known as Switches or Points & Crossings) joins two tracks and enables a train to move from one track to the other or exit the mainline to a spur, siding or loop. Depending on the direction, a turnout is classified as right hand or left hand. When turnouts are provided at both ends of a connection between two tracks, the arrangement is known as a crossover.

A complete turnout consists of switch assembly, crossing assembly, all closure rails, insulated rail joints, base plates, any special plates and pads, blocks, guard rail assemblies, fasteners, rodding, and bearer set (sleepers).

Typical Description	Due to the arrangement of track, size of rail and required turnout speed, there are many variations of turnouts across the CQCN. These assets are designed to suit the requirements of each site and whilst endeavours are underway to rationalise turnout configurations, there are few typical arrangements. Turnouts are graded by three parameters: • **Rail size** – The weight of the rail within the turnout (e.g., 60 kg, with 41 kg being smallest and 60 kg largest); • **Crossing rate** – The angle of divergence that defines the speed through the turnout (e.g., 1 in 12, with 1 in 7 being smallest and 1 in 25 being largest); and • **Crossing type** – The specific design of a crossing, with fabricated being the lowest standard, rail bound manganese next and Swing Nose Crossing the highest.

Maintenance	• **Turnout Maintenance** – Minor maintenance on turnouts including minor repairs of components, rail and jewellery, maintenance welding, chair lubrication, manual spot tie replacement (< 10 sleepers), manual top and line, manual (hand) grinding and any signalling and traction support to undertake the maintenance activities. • **Turnout Inspections** – Scheduled and unscheduled inspections of turnouts to determine condition and any defects in the turnout. • **Turnout Resurfacing** – Mechanised resurfacing carried out on turnouts involving mechanical lifting, lining and tamping of the turnout with a Tamper Liner, followed by ballast profiling using a Ballast Regulator and includes the associated activities such as signalling support. • **Turnout Grinding** – High production mechanised process of establishment and maintenance of rail head profile on turnouts. This includes the removal and reinstatement of trackside equipment. • **Non-Destructive Testing** – Manual ultrasonic testing of rail and other non-destructive testing methods for turnout components. • **Maintenance Ballast** – The distribution of ballast for restoration of ballast profile for turnouts. This includes ballast ploughing or regulator ballast profiling after distribution of ballast (but without tamping).
Asset Renewal	Renewals for turnouts are either full turnout replacement or turnout component repair. Full turnout renewal involves the replacement of a complete turnout, including bearers, ballast, formation, steel components and all signalling and electrical equipment. Turnout component renewal involves the renewal of the major components such as switches, stock rails, lead rails, crossings (vees) and bearers due to fatigue and/or wear and/or rollingstock damage (e.g. derailment). Turnouts are complex assets that require a coordinated design between civil, signalling and electrical designers. The rail, bearer (sleepers) components, subgrade and tie-in to the existing track are civil assets. The turnout motors, detection and tie-in to the safeworking interlocking systems and signalling infrastructure are control systems assets. Any changes to the turnout geometry will have an effect on the overhead wires which are electrical assets. Due to the site-specific variability, turnout design and turnout renewals are managed as multiple project deliverables with design completed in one (or more) MRSB period and renewal in a future MRSB period. The tonnage lives of the turnouts are dependent on the type. Rail wear is usually the determining factor in swing nose crossings, while mechanical damage to the vee and components affects life in rail bound manganese turnouts. Fabricated turnouts are used only in existing track in low tonnage lines (20 TAL) and yard track. On average, the life of a swing nose crossing turnout is 1000MGT, while rail bound manganese turnouts have an average life of 320MGT and fabricated turnouts have an average life of 100MGT. The average life of turnouts in the CQCN is approximately 25 years excluding replacement of major components which have an average life of 10 years for Switch Assemblies and 20 years for Crossing Assemblies. At sites subject to high traffic demands, average lives for switch and crossing assemblies can be as low as 12-18 months.
Typical Scope Requirements	Turnout renewal is baseload scope as some renewals are typically required each year. The specific scope is dependent on the configuration of the turnout, traffic task and performance of the turnout. Strategic renewals are required in locations such as Callemondah Yard where there are several turnouts requiring renewal and requires integration with interlocking upgrades. Combinations of turnouts in yards and crossovers are designed as a group to improve the efficiency and outcome of the design process. Where possible these turnout groups are constructed at the same time to reduce construction costs and reset the track asset back to an integrated and well performing state.

Supply Chain Risks being Managed	The effective management of turnouts involves regular inspections, maintenance and the use of modern technology to ensure their reliable function to divert rollingstock from one track to another. Failures or misaligned turnouts may cause derailments, especially at higher speeds, extensively damaging rollingstock and rail infrastructure, resulting in severe supply chain disruptions. Preventive maintenance and timely repair and replacement of turnout components will reduce the likelihood of incidents, ensuring safe and on time performance of the supply chain.

9.5 Ballast

Ballast is the material placed under, between and around the sleepers and its function is to:

- provide a firm and even bearing for the sleepers and to distribute the loads imposed by traffic as evenly as possible to the formation
- permit drainage of the track
- resist lateral movement of the track
- resist longitudinal movement of the track; and
- provide a medium for packing the track to vertical and horizontal alignment.

During its life, the condition of ballast degrades, primarily by:

- ballast particle attrition; and
- filling of ballast voids with fouling material, such as coal fines and subgrade material. Where track has ballast of poorer condition, this will result in the development of mudholes and a loss of track geometry manifesting in an irregular running surface and interface with rollingstock.

When the effects of fouled ballast become evident, it typically results in poor track geometry which leads to speed restrictions. This in turn leads to increased maintenance, including tamping to restore top and line and more extensive track closures to undertake remedial work. Both speed restrictions and extra maintenance requirements reduce the capacity of the system, increasing train operating and track maintenance costs. The condition of the ballast for the CQCN is determined through testing via Ground Penetrating Radar (GPR). GPR is a globally-recognised and non-invasive method of objectively quantifying the ballast condition. As GPR testing is a cyclic activity and a management tool to monitor the condition of ballast, it is considered an operational activity and will be undertaken at a frequency as determined for each type of location.

Ballast cleaning and renewal is delivered by the Ballast Cleaning Machine or via excavator undercutting, for mainline and turnout undercutting or via removal and replacement of ballast as part of Bridge Ballast renewal.

The Ballast Cleaning Machine (BCM) or RM902 is a high production mainline ballast undercutting machine. The RM902 is most efficient at delivering crib and shoulder undercuts simultaneously over longer sections and entered production in May 2021.

Excavator Undercutting is undertaken using wet hire contractors and is appropriate for smaller sections and/or areas that are not suitable for the RM902 either due to location or ballast condition.

The management of fouled ballast on Network's concrete bridges involves the removal of rail and sleepers prior to ballast replacement, it is therefore more intrusive, a slower activity and also requires rigorous, engineered safety protocols to manage the risks of working at height. Fouled ballast is removed (and similarly, clean ballast reinstated) using front end loaders These work methods increase the unit rate of bridge ballast renewals. The need to remove the track is due to the inability to:

- spoil ballast to the side with excavator cutter bars due to bridge kerbing; and
- the actual width of the RM902 cutter bar is too wide and does not fit within the bridge kerbing.

Due to the intrusive nature of the work, a review of sleeper and rail condition is undertaken early in the condition assessment to potentially integrate the renewal of these components when required. Assessments will also be undertaken on the condition of the formation and relieving slabs on the approach, ability for the kerbing to contain ballast and demand for walkways with operational needs. Depending on the outcome of the assessments, scope can vary considerably between each bridge site.

Railway monuments are located within the rail corridor as a fixed points or on electrical masts to indicate the correct level or position of the track. Measurements are taken from these to confirm the correct position of the track to ensure that the ballast cleaning activity and associated resurfacing correctly locates the track to design alignment.

Effective maintenance and renewal of the ballast provides the following benefits to the supply chain:

- **Asset Reliability** – Reduce network delays due to asset failure associated with track geometry defects and mudholes linked to poor ballast condition due to ballast fouling.
- **Throughput** – Maintaining and renewing in a planned manner within identified closure pattern avoids unplanned outages and associated throughput losses. Proactive ballast condition management mitigates TSR's caused by poor ballast condition and related geometry.
- **Safety**- Improve the wet weather resilience of track (reduced unplanned defects which need to be responded to in a reactive manner). Reduces train derailment risk by managing asset condition.

Typical Description	Ballast is sourced from a number of quarries across the CQCN. Location is a critical consideration to reduce transit distance and delivery costs. Ballast is required to meet Aurizon Network's specifications and standards. This engineering standard details: • **Size and Grading**: Railway ballast typically consists of crushed stone with a range of particle sizes, **from** small fragments to larger pieces. The grading, or distribution of particle sizes, is deliberately specified to provide stability and drainage. • **Angularity**: The ballast material should have angular or rough-edged particles. This angularity helps interlock the particles, providing stability and preventing excessive lateral and longitudinal movement of the track. • **Durability:** Ballast must be durable and resistant to wear and degradation, as it is subjected to heavy loads and continuous stress from passing trains under varying climatic conditions.

Maintenance	• **Mainline Track Resurfacing** – Mechanised resurfacing by a tamper restores the geometry of the track by lifting (vertical) and lining (lateral) the track to the appropriate level and alignment and consolidating and stabilising the ballast underneath the sleepers. It is followed by ballast profiling by a Ballast Regulator. • **Turnout Track Resurfacing** – Mechanised resurfacing carried out on turnouts involving mechanical lifting, lining and tamping of the turnout with a Tamper Liner, followed by ballast profiling by a Ballast Regulator and includes the associated activities such as removing turnout equipment or manually topping up with ballast to ensure all areas of the turnout are adequately packed with ballast. • **Track Inspection** – Ballast is visually inspected and defects (e.g. mudholes) are reported, with speed restrictions imposed to manage track geometry degradation and hold ballast condition until maintenance or renewals are able to be undertaken. • **Track Geometry Recording** – Involves measuring the track geometry (top and line) via mechanical systems such as ATIS, or manual means such as measurements taken by track inspectors. Track geometry measurements are required to understand the health of the track and ballast asset and are often shown as Track Condition Index. • **Maintenance Ballast** – The purchase and distribution of ballast for restoration of ballast profile on mainline track and turnouts. • **Ballast Undercutting** – Minor – This planned corrective maintenance activity involves the excavation of the fouled ballast and mud holes from beneath and adjacent to the sleepers. Fresh ballast is added and tamped to restore the track to the correct height and ballast depth for a length of track up to 40 sleeper bays (as a guide). This is for full width or shoulder ballast. • **Ballast Undercutting** – Turnout Minor – This planned corrective maintenance activity involves the excavation of the fouled ballast and mud holes from beneath and adjacent to a turnout by minor mechanised equipment such as an excavator (with attachments) or by other means for less than 10 sleeper bays (as a guide). Fresh ballast is added and tamped to restore the turnout to the correct height and ballast depth. • **Top and Line Spot Resurfacing** – Localised management of geometry defects within track using manual or mechanically assisted processes, such as excavators with tamper attachments or manual hand tamping equipment and sleeper jacks. • **Turnout Maintenance** – Turnout spot resurfacing is included in this maintenance activity and is used to improve ballast and geometry profile through a turnout. • **Level Crossing Maintenance** – Includes the resurfacing at the crossing interface to maintain ballast condition and improve the top and line through the level crossing. This includes removal of the road surface pre-resurfacing activities and thereafter reinstatement of the road surface as well as any requisite traffic management activities.

Asset Renewal	
	GPR is a globally recognised and non-invasive method of objectively quantifying the ballast condition. It is leveraged to understand current ballast condition and by comparison to prior GPR runs, enables an understanding of fouling rates. GPR is one of a few key metrics utilised to direct ballast renewal efforts. Condition, and ultimately scope is determined based on the number and frequency of ballast related maintenance activities (a lag indicator of deteriorating track geometry), track geometry history, and GPR which is then reviewed and validated by Operational teams. The most fouled locations or those showing the greatest degradation are matched where possible to the production of the undercutting fleet and track access constraints. Aurizon Network utilises a ballast condition analyser model to assist in identifying future years renewal requirements based on ballast fouling and geometry condition. Once locations of significant fouling have been identified, pre-digs are performed prior to execution. Pre-digs confirm the makeup of the material that is fouling the ballast (e.g., clay, coal) and the moisture content of the fouled ballast; this field testing informs site specific expected return rates and ballast volume requirements which are used in the planning process. The primary method to renew ballast is via ballast undercutting. This involves removing fouled material from ballast in track and turnouts, replacing with screened or new ballast and restoring track alignment and geometry. The intent of this activity is to re-establish a drainage path away from the sleepers and track infrastructure. Ballast Renewal products are: • **Mainline Ballast Cleaning** (also referred to as Ballast Undercutting Mainline) – Utilises the BCM or excavator undercutting units. The ballast is removed from under the track structure via an undercutting bar for ballast beneath the sleepers and a shoulder cutter for ballast adjacent to the sleepers. The ballast is either screened and replaced by the BCM or removed from track in its entirety and replaced with new clean ballast via ballast trains. Utilisation of the excavator undercutter will see all fouled ballast removed and replaced with new ballast. The depth of the undercut and replacement ballast amount is site dependant, driven by the amount of fouling present and the moisture content of the ballast being undercut. • **Turnout Ballast Cleaning** (also referred to as Turnout Undercutting) – Using excavator undercutting units, the ballast under the turnout is removed and replaced with clean ballast. The BCM cannot cut through turnouts given the additional width and complexity of turnouts. • **Bridge Ballast Replacement** (also referred to as Bridge Rollout) – Given the access constraints on bridge structures, undercutting by the BCM or Excavator Undercutting units is not possible. Bridge ballast replacements see the entire track structure removed (rail and sleepers), the fouled ballast removed via loader, bridge deck cleaned and inspected, new ballast placed and the track structure re-instated. This results in a full ballast replacement for the selected bridge. • **Monumenting** – Detailed survey, design and installation of new track data plaques. This enables future track maintenance activities to align to the design alignments. Ballast renewal can also be completed as part of Track Upgrade scope where more than one element of the permanent way assets is renewed together, for example rail and sleepers.

Typical Scope Requirements	Aurizon Network has historically cleaned 125km and 40 turnouts per year based on actual activities aligned to an averaged intervention threshold of 38% Percentage Void Contamination (PVC). Aurizon Network determines the ballast renewal scope via the Ballast Condition Analyser. The achievement of this scope is heavily dependent on weather conditions, access available, and the extent of fouling encountered at each work location. As a result of developments over recent years, Aurizon Network identifies and prioritises scope based on both asset condition, criticality and factors affecting execution. These developments include: the introduction of the Ballast Condition Analyser, which looks at current and historic GPR data and planned and historical maintenance activities (resurfacing, mudhole repair etc) to determine the future year scope locations; the improved understanding of site-specific conditions including depth of ballast (volumetric conditions), the existence of clay and other material through pre-digs (screenability and return rate); and the efficiency of the RM902 over longer sections of track. Aurizon Network continues to progress further targeted improvements to address the root cause of coal fouling and improve the effective and transparent use of data in the scoping processes.
Supply Chain Risks being Managed	Effective management of ballast mitigates the risks such as track instability, derailments, water damage, excessive wear which result in delays and cancellations causing service disruptions in the supply chain. Regular inspections, cleaning, renewal and proper drainage management help to ensure the long-term stability of the ballast layer, ultimately reducing the risk of incidents and supporting the smooth operation of rollingstock.

9.6 Structures

Structures assets include the renewal and maintenance of:

- **Bridges** – over waterways and Aurizon owned road over rail, rail over road bridge and pedestrian bridges
- **Culverts** – of varying sizes and construction; and
- **Other ancillary structures** – retaining walls, load slabs, inspection structures.

Effective maintenance and renewal of Structures provide the following benefits to the coal supply chain:

- **Asset Reliability**— Reduce network delays associated with unplanned asset activity. Structures have a low likelihood of failure in a new state and require minimal maintenance once renewed.
- **Throughput**— Renewing in a planned manner within identified closure pattern avoiding unplanned outages and associated throughput losses. Renewing prior to culvert or pipe misalignment resulting in renewals completed under loaded traffic rather than requiring a dedicated track possession.
- **Safety**— Reduce derailment risk with trains by managing asset condition to be fit for purpose.

Typical Description	The choice and arrangement of culverts or bridge structures is dependent on the purpose of the structure and the hydrology required at the site. Structures can provide access for either permanent waterways, creeks and overflows or for flood mitigation and storm runoff. Culverts in the CQCN are either: • Reinforced concrete box culverts of varying sizes • Reinforced concrete pipe culverts of varying sizes • Concrete or masonry arch culverts • Cast in situ pipe culverts • Corrugated metal pipes. Bridges in the CQCN are: • Concrete substructure (piers) and bridge (decks) • Steel substructure and bridge • Concrete substructure and steel bridge.
Maintenance	• **Structures Inspection** – All inspections of structures, collecting and recording of the condition of structures and prioritising defects for repair. This includes Civil Engineering Structures Standards inspections such as patrol, general and detail inspections – scheduled and unscheduled. • **Bridge Repairs** – Corrective maintenance on concrete, steel or steel and concrete composite or timber bridges which result in the repair or replacement of minor components or defects. • **Drainage Maintenance** – Corrective maintenance of drainage culverts and pipe defects including concrete repair works, painting protection, lining protection systems, scour repairs, embankment protection repairs or temporary supports. • **Ancillary Structures Maintenance** – Corrective maintenance of ancillary structures such as retaining walls, slabs and loadouts, electrification barriers and inspection pits. • **Culvert Cleaning** – Corrective and preventive cleaning of culverts including inlets, outlets and, through the culverts.

Asset Renewal	The renewal decision for structures is primarily based on condition. Other factors considered are location, size and long-term demand on the track section. • **Remove and Replace Culvert** – Removal of track structure and ballast and full replacement of the culvert with a same size replacement, larger capacity to increase water flow capacity, or a smaller size that will still provide the required flood immunity. • **Remove and Replace Bridge and Bridge Components** – From replacement of small components such as bridge bearing pads, more significant components such as girders or strengthening of girders to upgrade the loading capacity, or removal and replacement of an entire bridge super- and sub-structure. • **Lining Pipes** – Corrugated Metal Pipes (CMPs) were historically installed on many parts of the network and have a considerably lower design life. The thin-walled section CMPs are very susceptible to severe corrosion. Several lining options have been considered for these assets to prevent the removal of the track above. Currently cured in place pipe (CIPP) and reinforced concrete lining are the main options for renewal of these assets without removing the existing asset. Aurizon Network continues to investigate alternative structural options for these lining techniques. CIPP lining and concrete lining is also being applied to deteriorated existing reinforced concrete pipes on the network. • **Concrete Lined Box Culverts** – There are many box culverts on the CQCN network where concrete lining is a structural solution for a deteriorated box culvert, subject to suitable height and width. Hydrology studies demonstrate a reduction of the waterway will still meet flood immunity and afflux requirements. The reinforced concrete lining provides for the full structural capacity of the track loading and has the benefit of generally not requiring any track closure. • **Delete Structure** – During hydrology assessments for assets to be renewed, if it is determined that the asset is not required to meet flood immunity and it is reasonable to divert any water to neighbouring structure then the asset will be considered for deletion. The deletion of an asset will also involve grout filling of the culvert and the earthworks on the inlet and outlet sides to provide reasonable drainage to any nearby structures.
Typical Scope Requirements	Across the CQCN there are 354 bridges and 3,911 culverts. These structures can be categorised by their age and design load ratings. The installation dates of these structures range across the network, with some assets greater than 100 years old. The average age of Blackwater structures is 46 years, Goonyella is 45 years, Moura is 49 years, Newlands is 32 years and GAPE is 12 years. These assets are predominantly concrete structures and have design lives of up to 50-100 years. Several of these structures are operating above their design load capacity. Each Coal System currently operates at 26.5tal, whilst a significant number of culverts and bridges within the CQCN have load ratings from 15tal to 22tal. This overloading of structures is managed with regular inspections, and specific maintenance practices such as propping of culverts and speed restrictions, however the overloading increases the rate at which defects propagate and ultimately reduces the design life of the structure. As with all structural assets, the condition of the asset is the primary driver for renewal. Aurizon Network's condition monitoring regime informs the development of both the maintenance and renewal planning of the structural assets operating at and beyond their original design function. Structures renewals are considered as Baseload scope renewals. Three out of the four systems have an average age within 5 years of their original 50-year design life and therefore renewals are expected to continue at similar or increased rate in future financial years.

Supply Chain Risks being Managed	The effective management of structures plays a key role in supporting rail infrastructure and its proper management helps minimise risks from structural failures. Structural failures may result in delays due to temporary speed restrictions, or operational disruption to manage the failure which can severely impact the supply chain. Regular Inspections, preventive and predictive maintenance and renewals and upgrades will ensure that the structures remain reliable and safe, supporting the flow of rollingstock and minimising risks to the supply chain.

9.7 Civil Assets

Civil assets are those assets that support the Permanent Way assets and include:

- Formation
- Level Crossings
- Longitudinal Drainage
- Access Roads and Access Points
- Corridor Fencing
- Slope Stability (Earthworks - Cuttings and Embankments).

Effective maintenance and renewal of the civil assets provide the following benefits to the coal supply chain:

- **Asset Reliability** – Reduce network delays associated with asset failure by strategically renewing assets to the current engineering standards.
- **Throughput** – Renewing in a planned manner within identified closure pattern avoiding unplanned outages and associated throughput losses.
- **Safety** – Reduce derailment risk of trains by managing asset condition.

Typical Description	Formation is the track substructure in which ballast and the track superstructure is laid upon. The formation depth and material in which its constructed across CQCN varies, depending on when that particular asset was constructed or last renewed. There are large portions of CQCN that have pavement that is more than 50 years old and is the original pavement that was constructed for lesser axle loads than currently seen in CQCN. When renewing formation, Aurizon Network has a standard formation depth of 600mm, extending deeper where required to bridge unsuitable subgrade material. The formation is made up of capping material, which is a blended unbound granular material intended to help seal the surface under the ballast, reduce water ingress, and prolong the life of the formation. Geotextiles and geogrids are incorporated to the formation structure to improve the tensile strength of the formation. A level crossing or an 'at grade' crossing is an intersection where a railway line crosses a road or a pedestrian path at the same level. The CQCN rail network has several types of level crossings including Public, Private/Occupation, Pedestrian, Hi-Rail Access Points and Maintenance. These level crossings have either passive or active control and can have a sealed or unsealed surface depending on use and risk. Longitudinal Drains consist of cess and catch drains along the corridor that drain water from the track or getting to the track and integrate with the cross drains such as Culverts and Bridges to flow the water away from the corridor. Poor drainage accelerates the deterioration of formation and ballast defects, increasing the severity of defects, shortening the response time and resulting in increased impacts to operations. Access roads traverse along the rail corridor and link access points (entrances and exits) to the public road network. Like formation, access road construction across CQCN varies depending on when the asset was constructed or last renewed, with gravel unsealed surface being the most common. Fencing is installed along the rail corridor to provide security. Fencing ranges from high security fences to no fences depending on risk. A risk-based approach and consultation with adjoining landholders is completed to determine the type and standard of fencing required. The majority of the fencing in the CQCN is barbed wire stock fencing. As the railway traverses the natural ground topography the ruling grade (steepness of track) is managed via cuttings and embankments that allows the railway to pass at an acceptable level and gradient. In some areas, the baters (walls) of these embankments and cutting require specialised strengthening to improve slope stability.
Maintenance	• **Inspections** – Scheduled and unscheduled inspections are annually undertaken to assess and record the condition of the asset and identify defects for testing, monitoring or rectification. • **Earthworks** – Non-formation earthworks and drainage clearing and cleaning to open waterways, spot repairs of access roads, access points, stow locations, walkways and maintaining cuttings and embankments. • **Fencing** – Repairs of existing fencing including associated signage, gate repairs, spot fence repairs and wire tensioning. • **Fire and Vegetation Management** – Control by chemical, mechanical and burning off operations to manage interference with the running of trains, electrical overhead and sighting distances along the corridor. This maintenance activity is moving to be a preventive maintenance task away from corrective to allow for effective contractor engagement with define scope and cost. Also allows for planned location selection. • **Level Crossing Maintenance** – Road surface repair, signage, repair and cleaning of the flangeways, resurfacing of the track at the road rail interface, cleaning/regrading of cess drains, vegetation controls for sighting distance. • **Corridor Drainage** - Improving the drainage along the corridor to improve the performance and reliability of the CQCN. This involves relocating spoil from drains, reshaping, reprofiling and widening of the longitudinal drainage.

Asset Renewal	• **Formation Renewal Planned** – Construction/renewal or strengthening of the formation over longer track sections that have presented reliability issues and attracted increased amount of corrective maintenance as either formation repairs or track geometry faults. Preventive formation renewal activity targets locations with poor formation material performance to prevent future failures. • **Formation Renewal Reactive** – An allocation made for each system to rectify smaller sections of formation that have an accelerated condition degradation or are not receptive to holding works such as track resurfacing (e.g., lift and pack and tamping) to address track geometry issues. • **Level Crossing Renewals Planned** – The scope of these works varies at a site level and are driven by a risk-based approach for renewal. Level crossing renewals may include upgrading of the safety systems from passive control (stop signs and give way signs) to active control (flashing lights, boom gates etc). The scope can also include road surface upgrades or widening, formation reconstruction, upgrades to the track structure through the level crossing, installation of rubber flangeways to the rail, upgrades to warning signage and lighting. • **Level Crossing Renewal Reactive** – Allocation per system for minor safety enhancements such as signage, road surface management, resurfacing, ballast undercutting, repair of rail, rectification of wide gauge etc. • **Corridor Fencing Renewal** - Renewal of fencing to replace life expired fencing and gates, upgrading the standard of the existing fences and/or gates or the establishment of new fences and/or gates in the corridor. Usually identified through detailed inspections and analysis of maintenance & incident history (i.e. trespass or livestock in corridor). • **Access Road Renewal** – Renewal or upgrade the standard of the existing access roads. Usually targeted short /isolated locations to improve access reliability, impassible locations (i.e. causeways at culverts) or the establishment of access roads in the corridor to address legacy access/boundary issues. • **Access Points Renewal** – An allocation is made for each coal systems for planned access point sites. These access points are heavily used access points for crew change, routine maintenance access, and for access during renewal/recovery works. These access points are not fully compliant with DTMR standards with respect to safe access and exist thus requiring constructing turning (or slip) lanes, drainage structures and signage installation. During the design phase, these access points are surveyed and if identified with inadequate sighting distance, proposal for relocation is sought. • **Slope Stability Renewal** – Construction/renewal works associated with addressing or prevention of slope instability – including landslips within embankments, landslips within soil cuttings and rockfall / landslips within rock cuttings. Works including but not limited to mitigating the risk of rockfall and landslips through slope stabilisation, geomesh and soil nails, introducing wayside system monitoring at hazard locations, ground monitoring sensor installation to provide early warnings of landslip or providing increased resilience in severe weather events.
Typical Scope Requirements	Civil Assets are a combination of Baseload Renewals and allocations for Reactive Renewals. Formation deterioration is impacted by multiple factors and especially by unfavourable wet weather conditions which effect the formation integrity and associated reliability. This requires significant corrective maintenance of small sections of track due to geometry degradation likely resulting in multiple Temporary Speed Restrictions (TSRs). A strategic approach is to create an optimum balance between corrective/reactive works and preventive works. Planned renewals for formation across key problem locations across CQCN increases the reliability and performance of the asset whilst reducing the corrective action requirements to maintain the asset. Future Corridor Security (fencing) programs will also move toward a higher proportion of planned scope identification.

Supply Chain Risks being Managed	The effective management of formation, earthworks (cuttings and embankments, level crossings, vegetation, fencing and other corridor assets which form the foundation of the Rail Infrastructure is critical to their overall safety, reliability and performance of the rail operations. The failure of these assets directly influences the stability of the track and overhead and the reliability of the supply chain. Well managed Civil Assets, provides a stable foundation for the track, preventing track deformation, settlement and failure, ensuring that the trains operate at full speed without safety concerns, minimising delays and cancellations and ensure the corridor is accessible and secure.

9.8 Control Systems

Control systems assets are the physical and digital assets that provide, train control, telecommunications, and wayside monitoring systems. These assets provide the capacity multiplier for the track assets, that is they allow for the safe movement of more train services over the track structure.

Control Systems include the renewal and maintenance of:

- Train Control Systems
- Telecommunications
- Wayside Systems.

Effective maintenance and renewal of the control systems assets provide the following benefits to the coal supply chain:

- **Asset Reliability**— Given these assets do not wear but rather age to a point where they are no longer supported, renewal ahead of failure is required to retain the assets' reliability.
- **Throughput** - Renewal and system improvements to best move trains through the system in an efficient and safe way.
- **Safety** - Ensuring the critical signalling and train control systems are robust and effective in the separation of trains. Providing clear communications functionality across the CQCN systems.

Typical Description	• **Train Control Systems: Signalling** system, level crossing active protection, interlockings and point motors. • **Telecommunications**: the data network required to connect assets to train control, includes the optic fibre network, **digital** radio, and microwave radio systems. • **Wayside Systems:** assets in the rail corridor that provide a level of monitoring and alarming to protect track and overhead assets.

Maintenance	An assessment has been performed on all asset types to determine the consequence of asset failure, and the viability of preventing failure. If asset failure would have significant safety, environmental, or operational impact, and the occurrence of failure can be mitigated by preventive intervention, then the assets will undergo further analysis to determine specific maintenance activities and intervals. Assets identified as having minimal consequence because of failure and/or no viable measures to minimise failure, are classified as fix on fail. Control Systems maintenance can broadly be grouped in 3 areas. • **Telecommunications maintenance** - Telecom Network Maintenance – Maintenance of the major bearer systems and infrastructure providing bandwidth for train control, voice and communication services including Train Control Radio and Maintenance Services Radio. - Cable Route Maintenance - Maintenance and repair of all cableways, markers, troughing and cables including fibre testing and repairs. • **Signalling maintenance** - Signalling Field Maintenance – Maintenance of all field equipment associated with signalling control. This activity primarily involves inspections of equipment and correcting identified out of tolerance items. - Signalling Control Systems – Maintenance of control centre-based equipment relating to the signalling control of trains including the central computer systems: Universal Train Control (UTC) and Direct Traffic Control (DTC) - Level Crossing Protection – Maintenance of equipment such as pedestrian gates, boom gates, flashing lights and associated circuitry. It involves the inspection of equipment and where necessary spot replacement of early failure or damaged components. - Westect Automatic Train Protection (Westect ATP) Maintenance – Maintenance of Westect ATP Transponders, Westect ATP Radio and other specialised equipment through performance servicing and where necessary spot replacement of early failure or damaged components. • **Asset Protection and other maintenance** - Wayside Maintenance – Maintenance of Dragging Equipment Detectors, Hot Bearing Detectors / Hot Wheel Detectors, Train Acoustic Detection, Coal Dust Monitoring Sites and other specialised equipment through performance servicing and where necessary spot replacement of early failure or damaged components. - Weighbridge Maintenance - Inspections of weighbridge equipment, performance servicing and where necessary spot replacement of early failure or damaged components. - Power Systems Control - Maintenance of field and master station control centre-based equipment including the Power Supervisory Control System (SCADA) such as Remote Terminal Units (RTU). - Remote Monitor System (RMS) – Maintenance of field and master station control centre-based equipment, which includes Field RTUs. Monitors Black Mountain Headways, Level Crossings and corridor weather stations.

Asset Renewal

- Control Systems assets are predominantly technology assets and electrical in nature. These assets are characterised by having a higher level of failure on install as latent defects are identified followed by a stable period where the rate of failure is relatively low and constant. As components wear out and reach the end of their service life, the rate of failure rapidly increases. Additionally, obsolescence of vendor supply support and componentry parts (e.g., operating systems no longer being supported, a reduction in spare part availability or advances in alternate technologies.) can trigger the end of life and the need to modernise the asset.
- The inherent nature of these assets is such that the exact point of failure is unknown. To promote reliability of operations, a level of redundancy can be typically built into these systems. Renewals are targeted where the rate of failure increases to a point where unacceptable throughput losses may occur.
- The design lives of Control System assets are typically:
- Asset Protection – 10 to 15 years
- Posts, Gantries, Relay interlockings – 35 years
- Track circuits, Axle counters, Processor Based Interlockings – 25 years
- Points machines, Telemetry units – 20 years
- LED signal modules – 15 years.

- **Telecommunications Renewals**

The Telecommunications Operational Network consists of layers of infrastructure with the base component being optical fibre cable and the digital microwave radio system. Upon this sits the Synchronous Digital Hierarchy and Operational Data Communications Network over which operational systems such as TETRA, Power Supervisory System and signalling telemetry operate.

A condition-based approach is generally applied to all the discrete equipment and is reflective of the age of the asset. Other factors that can affect condition of the asset include supportability, spares availability, and cyber-security vulnerabilities.

Renewal programs will also consider changes in systems that use the telecommunications network. For example, a move from analogue telemetry to networked connectivity introduces different requirements for the telecommunications network.

- **Signalling Renewals**

The Signalling Operational Network consists of layers of infrastructure and systems with the base components being signal heads and mounting structures, housing, interlockings, points, level crossings and UTC and DTC systems.

A condition-based approach is generally applied to all the discrete equipment and is reflective of the age of the asset and the safety impact of failure and level of built-in redundancy. Other factors that can affect condition of the asset include supportability, spares availability, and cyber-security vulnerabilities.

- **Asset Protection Renewals**

Asset Protection consists of a wide array of infrastructure and systems that measure, monitor, and protect Network and Rollingstock assets as well as support safe-working systems. Some key components being environmental monitors, weighing systems, rollingstock monitors, train detection, flood switches and train protection systems. A condition-based approach is generally applied to all the discrete equipment and is reflective of the age of the asset. Other factors that can affect condition of the asset include supportability, spares availability, and cyber-security vulnerabilities.

Typical Scope Requirements	Control Systems assets renewals are typically a combination of Baseload Renewals and allocations for Reactive Renewals. Some Control System assets renewals, such as interlockings and optic cables are considered Strategic renewals as these renewal plans require significant optioneering and result in multi-year investment plans. The trigger for the renewal of Control Systems assets is predominantly driven by the age of the asset along its life cycle. These assets do not necessarily wear with tonnage, and often don't show degradation until the point of failure. Obsolescence of data systems or components is also a key trigger for asset renewal.
Supply Chain Risks being Managed	The effective management of Control Systems' assets involves inspection, servicing, monitoring, and renewal and/or upgrades to better technology when assets degrade, or equipment/components become obsolete. It also includes providing a robust system with back-ups that are managed to prevent unexpected failures that could lead to incidents which result in cancellations and delays. Effective management of Control System assets enhances the safety and efficiency of the railway operations and therefore providing a reliable supply chain.

9.9 Electrical Assets

The Electrical Safety Act in Queensland requires that as a Prescribed Entity, Aurizon Network must ensure that the asset is operated in a way that is electrically safe. This includes managing the high voltage electrical assets through effective maintenance and renewals activities.

- Electrical Assets include the renewal and maintenance of:
- Overhead Line Equipment
- Power Systems
- Traction Substations.

Effective maintenance and renewal of the Electrical assets provide the following benefits to the coal supply chain:

- **Asset Reliability** - These are typically long-run assets which will eventually fail due to age-related defects and/or environmental factors. Renewal decisions are typically made based on failure risk or safety.
- **Throughput** - Traction power systems have built-in redundancy and typically allow normal throughput to continue in the event of an outage of one major piece of plant. By contrast, a single dewirement on the overhead line system will impact both electric and diesel services. Because of this vulnerability, renewals and maintenance of the overhead line system follows a "Detect and Protect" strategy: Detect and rectify emerging failure conditions and Protect the asset from external factors (typically fauna and flora ingress) which cause electrical trips that have the potential to damage the asset.
- **Safety** - Many of the High Voltage traction assets have inherent safety functions (e.g., protection and earthing systems). As a Prescribed Electricity Entity, Aurizon Network has clearly defined obligations to maintain an electrically safe system. This includes a mandatory annual Safety Management System audit by a qualified external auditor who has been accredited by the Electrical Safety Regulator.

Typical Description	The Overhead Line Equipment comprises conductors (wires), insulators and mast structures, headspans and termination portals. Power System comprises substations (including transformers, switchgear, and secondary systems), trackside autotransformers, and motorised isolators.

Maintenance	Inspection and maintenance are regularly performed on the electrical substation and overhead line assets to manage the risk of failure. • **Preventive Overhead Maintenance** - inspections of overhead equipment, performance servicing and where necessary spot replacement of early failure or damaged components. This includes inspections of critical equipment such as section insulators, neutral sections, isolators, balance weights (position and condition) and other specialised equipment, and inspection for vegetation clearing around overhead. • **Corrective Overhead Maintenance** - is undertaken for all field equipment associated with overhead infrastructure to correct an identified fault and restore network availability. • **Preventive Traction Power System Maintenance** - involves the maintenance inspection, operation, and performance servicing of all substation equipment. This includes transformers, switchgear, secondary systems, buildings and substation compounds and ancillary equipment such as fault locators. • **Corrective Traction Power System Maintenance** - is undertaken for all power systems equipment to correct any identified faults and restore network availability. Maintenance for this product covers the inspection, operation, and performance servicing of all the power system equipment and substation equipment. This includes transformers, switchgear, secondary systems, buildings and substation compounds and ancillary equipment such as fault locators.
Asset Renewal	Primary Electrical system equipment are typically long-run assets with renewal intervals guided by the nominal asset service life and asset condition. The service life of Overhead Line can be reduced by environmental factors such as proximity to the coast. Examples of typical nominal service life for primary systems is: • Contact wire: 70 - 80 years • Section insulators & Neutral Sections: 10 - 20 years • Power Transformers and Autotransformers: 25 – 40 years • Switchgear – 40 years Secondary system assets typically have a shorter nominal service life than primary assets. Their renewal intervals are governed by this service life and other factors such as obsolescence of hardware. The replacement of legacy electro-mechanical protection relays with modern digital protection relays is an example of this. Examples of typical nominal service life for secondary systems is: • Protection relays: 15 years • DC supply systems: 15 years • Fault locators: 10 years.
Typical Scope Requirements	Electrical assets renewals are typically a combination of Baseload Renewals and allocations for Reactive Renewals. Some Electrical assets renewals, such as traction substations and auto-transformers, are considered Strategic renewals as these renewal plans require significant optioneering and result in multi-year investment plans. Some Traction Power Systems asset renewal is primarily driven by the age of the assets against their lifecycle. The renewal of other Traction assets including the Overhead Line is driven by a combination of age, environmental factors, and tonnage.

Supply Chain Risks being Managed	The effective management of Electrical Assets involves inspections, services and predictive maintenance and renewals to ensure failures are identified and rectified before they occur. This is due to electrical incidents, even though only a few in number, having a major impact on operations with significant delays and cancellations when an incident occurs. Electrical Assets are highly regulated and requires compliance and reporting of incidents to Electrical Safety Office (ESO). Effective management of the Electrical Assets not only minimises disruptions to rail operations but also avoids non-compliance with regulatory standards and resulting action imposed by the ESO.

9.10 Assets with Interdependencies

The CQCN is run as a railway to maximise the throughput of trains. As such, we understand individual assets and their interdependency on each other to form the railway. There is a need to consider infrastructure interdependencies for adaptation in the event of future challenges (e.g. weather, climate change) as well as for preventive management strategies and other future decision makings. Interdependent assets as well as a series of assets to form the railway which is ultimately part of a system which facilitates the supply chain. We take a micro view at the asset level and take a macro view to look at the system and the broader supply chain.

9.10.1 Turnouts

The turnout entails a complex geometry and multi-disciplinary engineering science, which makes it one of the most critical railway infrastructures. The civil aspect of a turnout, which is the physical infrastructure, interacts closely with the other discipline components of the turnout. Within a turnout, there are operating mechanisms known as Points Equipment to move switches and crossings that are managed by Control Systems. The civil components e.g. ballast, sleepers, rails and formation, must be properly aligned and stable to support the mechanical components of the turnout and ensure that the turnout mechanisms operate smoothly under various loads and conditions. This dependence on good alignment, results in corrective and preventive civil track geometry activities to assist with the performance of the Points Equipment of the turnout.

9.10.2 Section Insulators/Track

Section Insulators are installed in the overhead contact line to electrically isolate different sections of the power supply system. When a train passes through the section insulator, its pantograph temporarily disconnects from the power line but continues to operate smoothly by drawing power from the next section. Section Insulators and the Track beneath form a system of assets, in which there needs to be reliable geometry alignment to be effective. When misalignment of the track beneath the Section Insulators occurs (e.g. at Crossovers), it leads to unfavourable passage of the pantograph, causing damage to pantograph carbon strips which then require unplanned repair and often the need to place restrictions on track sections to electric services, resulting in delays and cancellations. Creating a reliable Track/ Section Insulator System of Assets will minimise the likelihood of pantograph carbon strip damage incidents and resulting delays and cancellations.

9.10.3 Track Geometry and Overhead Line Equipment (OHLE)

The interdependencies between track geometry and overhead lines are critical for ensuring the smooth, safe and efficient operations of electrified trains in the CQCN.

The vertical height of the track influences the height of the overhead contact wire. Variations in track elevations such as gradients or undulations, must be matched by corresponding adjustment in height of the overhead to maintain consistent distance between the pantograph and the wires. If the wire is too high, the pantograph will lose contact and if the wire is too low, the pantograph will exert excessive force, causing wear and damage of the wires and pantograph. The horizontal track alignment especially on curves, affects the lateral position of the pantograph relative to the overhead wire. To ensure consistent contact, the

overhead wire is staggered across the pantograph's width. The degree of stagger is designed to match the track's curvature, preventing the pantograph from deviating too far from the centre of the wire. If the overhead wire is not properly positioned on a curve, there is a risk of the pantograph losing contact or causing excessive lateral forces on the wire. Cant or superelevation of the curved track affects the relative position of the pantograph to the overhead wire. As the track lifts, the OHLE must be positioned to account for the change in angle, ensuring the wire remains positioned above the pantograph. Incorrect positioning can lead to uneven wear on both the pantograph and wire.

Track geometry irregularities such as mudholes, humps or lateral shifts such as buckles, can lead to variations in the pantograph – OHLE interaction. The track geometry relative to the OHLE equipment requires frequent measurement to ensure that the correct management activities are implemented to provide stability to the pantograph's position. As a result, the ATIS project and the Condition Monitoring team manage this interdependency between the Track Geometry and the Overhead Line Equipment.

9.10.4 Level Crossings

Level crossings are the intersection between the railway tracks and a road or pedestrian path at the same level, involving multiple engineering and operational disciplines to ensure safety, functionality and reliability.

The Civil Asset of a Level Crossing is the track; track geometry, drainage, the alignment of the track and the road or pedestrian path and the smooth surface, barriers, curbs and walkways of the crossing path to guide and protect users.

Control System Assets of a Level Crossing are the Active Protection which consists of flashing lights, boom gates, and barriers which activate when a train approaches and a train detection system that detects an approaching train and triggers the Active Protection. These are integrated with the overall signalling network and interlocked with the operating system to prevent a train entering the crossing until it is safe. Control System Assets also include systems used to monitor and control level crossings remotely. This includes the integration of CCTV camera, remote diagnostics and real time communications systems with the Network Control Centre.

The Electrical Asset is the overhead line equipment across the crossing for the passage of electric trains on the track infrastructure The height of this wire and type of traffic allowed to transverse this crossing maybe controlled by the height of the overhead. Warning height signs are located prior to a level crossing to ensure that a road user's vehicle is the correct height to go under the OHLE.

The successful operation of a level crossing requires the close coordination between these disciplines. During the Design, Implementation, Operational, Maintenance and Emergency Response phases, a multidisciplinary approach ensures that level crossings operate safely and efficiently to minimise risks to both rail and road users.

9.10.5 Culverts and Track

Culverts are critical structures serving to manage water flow beneath the tracks by allowing streams, drainage channels or runoff to pass through without effecting the stability of the rail infrastructure. Culverts are designed to support the loads imposed without deformation or failure. The track structure (rail, sleepers and ballast) relies on the underlying culvert to provide uniform support.

Regular inspections and maintenance of culverts are essential to ensure they continue to function properly. Blockages, structural damage and wear can lead to failures that affect the track above. The track above a culvert requires regular monitoring to detect signs of settlement or instability caused by issues with the culvert. If a culvert failure is detected, repair of the culvert and restoration of the track structure and geometry is required.

The interdependencies between culverts and track in the CQCN is complex and require consideration and planned coordination during design, construction, and maintenance.

9.10.6 Longitudinal Drainage and Other Rail Infrastructure

Longitudinal Drainage plays a crucial role in managing water runoff along the track and affects various assets and components of the Railway Infrastructure.

Proper longitudinal drainage helps maintain the stability of the track structure by preventing water accumulation in the ballast and subgrade. Excess water can weaken the track bed, leading to settlement or slips or track misalignment.

Well drained ballast remains effective at providing support and distributing the loads. If water is allowed to accumulate, the ballast will become saturated, losing load bearing capacity and leading to track deformation.

Established longitudinal drainage will control ground water levels and surface water runoff, preventing the formation from becoming overly saturated. Saturated formation can lead to reduced shear strength and increase the risk of track deformation. Effective drainage also removes excessive water flow across and down the track structure, reducing erosion of cuttings and embankments and undercutting of the track structure.

Longitudinal Drainage must be integrated with culverts and cross drainage structures. If longitudinal drainage is ineffective, it can lead to blockage in culverts and result in flooding and erosion at crossing points. When water is managed with good longitudinal drainage, then there are fewer issues with track settling, ballast cleaning and other related maintenance tasks.

Water accumulation along the track due to poor longitudinal drainage can lead to track geometry top and line issues and ingress into signalling and telecommunication equipment causing failures, both of which require repairs.

Effective Longitudinal Drainage design and maintenance assists in the performance of the track structure but also enhance the reliability of the rail operations by mitigating the risk of water accumulations in leading to failures and subsequent repairs.

10 Works End to End Application

In the identification, prioritisation, planning and execution of works, Aurizon Network applies a Works End to End (E2E) process. The E2E provides a structure for the works to be managed within a timeframe that leads to MRSB delivery. The E2E process is similarly used for capacity growth projects, third party works such as connections or system augmentations and wayleave work.

The E2E is separated into 5 elements as described in the figure below. This section provides detail on each of the elements and how they interface.

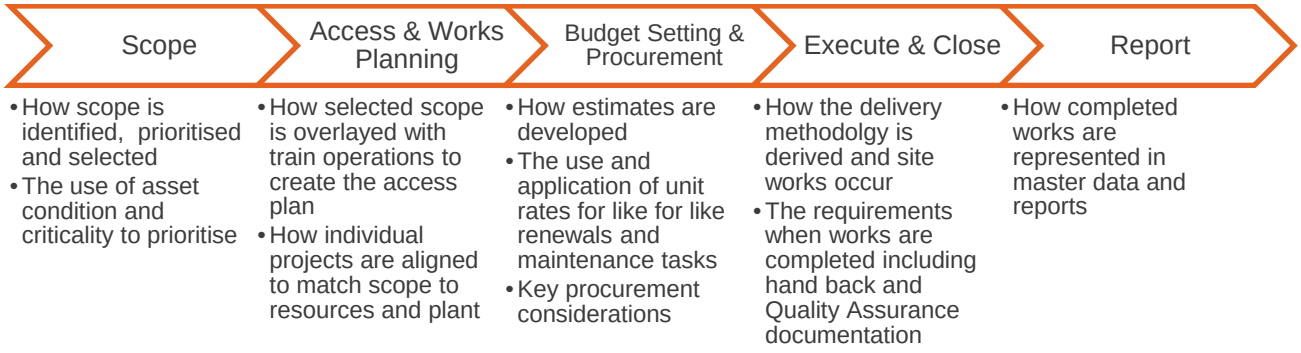


Figure 91 Works End to End Process

10.1 Scope

Aurizon Network's asset management lifecycle strategy is focused on:

- inspecting and maintaining assets to prolong the useful life; and
- monitoring assets to identify the commencement of condition deterioration (signified by increases in planned corrective and reactive maintenance), at which point, renewal is planned as the asset approaches end of service life.

Effective asset management requires an understanding of the life cycle model, failure mechanism and design life of the asset. Aurizon Network's assets can broadly be categorised into two asset life cycle models:

- Type 1 - Assets that gradually wear through use, e.g., rail, sleepers, contact wire and turnouts
- Type 2 - Assets which operate until a point where there is a marked increase in asset failures, e.g., electrical interlockings.

Aurizon Network monitors the asset condition through preventive maintenance inspections and analysis of historical failure trends, to determine the requirements for planned corrective scope and the timing of renewal intervention to ensure the supply chain objectives are met.

This section outlines the activities undertaken to:

identify asset renewal scope

- identify maintenance scope; and
- improve scope identification.

10.1.1 Asset Renewal Scope Identification

The scope of renewal activity in each Coal System is identified and prioritised through a process which considers supply chain requirements, asset condition, strategic principles, relevant standards, design

processes, resource and access planning, detailed execution planning and delivery optimisation, the key steps are outlined in the figure below.

Figure 92 Asset Renewal Scope Identification Process

Asset Condition

The identification process commences three years prior to the execution of the relevant MRSB, using the relevant combinations of data available based on inspections and maintenance and renewal history. For example, in this financial year (FY26) preliminary scope for FY28 will be identified, prioritised and confirmed for refinement.

Profile Smoothing

In the development of the strategies for each asset class, Aurizon Network has identified the extent to which the renewal profile, based on the age of the asset, will result in significant peaks in renewal activity over limited timeframes, that is a 'bow wave' of renewals. Where large scale renewal is forecast to be required in a limited number of years, Aurizon Network applies a strategic smoothing of these renewals to better manage the risk of failure as the asset approaches end of life and the significant access and resources that would be required. Examples of smoothed asset products include rail and autotransformers.

Scope Categorisation

To assist in comparing levels of scope year on year, identified scope is categorised in accordance with the relevant asset strategy for that asset product. Four scope categories have been defined in the table below.

Table 66 Definition of Scope Categories

Scope Category	Description	Examples		RIG Consideration
Baseload	Renewal scope that is typically repeatable year-on-year and consistent with scope endorsed in previous financial years.	Rerail Track Renewal Structures	Ballast Cleaning UTC upgrades Power Systems	This is scope that is generally repeated year on year following standard processes for scope identification.
Future Scope	Scope relating to preparation works for renewal activities that will be completed in future years. This includes design works and procurement of long lead items.	Turnout Design Structures Design Power Systems Design	Interlocking Design Level crossing design	This is design effort required to get to issued for construction design for works that will be completed in a future year.

Scope Category	Description	Examples		RIG Consideration
Strategic Scope	Project scope that is not Baseload Scope and relating to renewal of a particular asset class due to age, condition or a change in safety requirements. The "strategic" description refers to the decisions made with regards to timing of scope delivery (single year or multi-year program) or the methodology of delivery.	Short Span Bridge renewal Autotransformer Renewals Traction Substation Renewal		Aurizon Network will consult with the RIG for Strategic Scope Programs of material value.
Reactive Renewals	An allocation made to renew assets that experience accelerated condition degradation against the expected condition change. Also utilised to rectify assets that fail in operation. The scope of reactive renewals is typically unknown or undefined at the time of MRSB development.	Formation Reactive Works Turnout Reactive Works	Level Crossing Reactive Works Fencing and Access Roads	The railway is a dynamic environment where asset condition degradation can change. An allocation for addressing assets that have accelerated degradation is used to create a realistic estimate of costs.

Combined Risk Assessment (CRA)

To determine the priority of each asset renewal, the Combined Risk Assessment (CRA) framework is utilised.

The CRA is a methodology for assessing condition-based risk, used for Civil, Electrical and Control System renewal scope, and specifies the parameters, values, and conditions to be used.

The reporting framework for CRA comprises three components:

- The **Condition** Index, in a continuous scale between 1 and 5, which is an evaluation of the Probability of Failure (**PoF**). This is described as the likelihood of condition-based failure per annum for individual assets.
- The **Criticality** Index, in a continuous scale between 0.5 and 5, which is an evaluation of the Consequence of Failure (**CoF**). This is described as the consequence associated with condition-based failures for individual assets (i.e., the duration of interrupted operations caused by a failure, assuming no risk controls or maintenance interventions).
- The CRA Index, in a continuous scale of 0.5 – 25, represents the overall risk of condition-based failure. The risk of condition-based failure associated with an individual asset is the product of PoF and the CoF.

CRA Index

- The CRA Index is calculated as the product of the future condition index and the criticality index.
- CRA Index= Future Condition Score X Criticality Index.
- CRA Index scores are plotted on a 5x5 matrix and can range from 1 to 25.

CRA Index provides guidance for prioritising asset renewals scope, however the CRA Index score cannot account for all relevant factors. As a result, the CRA Index can be adjusted by using a CRA Modifier. The CRA Modifier is always present and by default has the value of 1. If a CRA Modifier other than 1 is applied, the basis for doing so must be documented and approved by the discipline Asset Management Leader, including the reason for adjusting the CRA Modifier, the scope of its application and the timeframe/review period.

New assets and strategic renewals will be set with a CRA score of 100 so that they are easily distinguished from scope that does not include a modifier.

The Reactive Renewals allocations is assigned a CRA score of 25.

10.1.2 Maintenance Scope Identification

Aurizon Network's approach to maintenance uses qualitative and quantitative data to minimise unplanned response or intervention, and therefore, mitigate impacts on Committed Capacity. The key steps are outlined in the figure below.

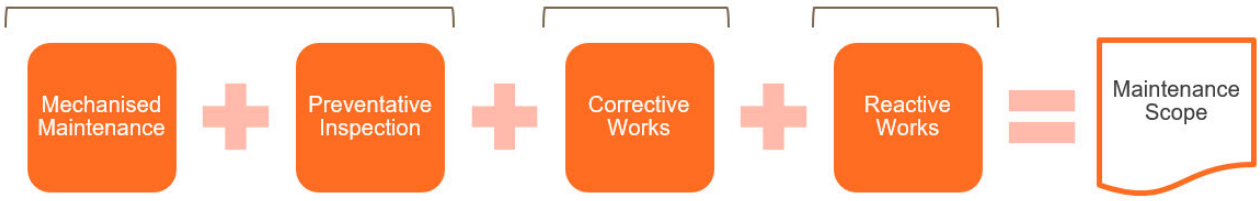


Figure 93 Maintenance Scope Identification Process

Preventive maintenance is conducted at the intervention levels specified in Maintenance Product Tables within Aurizon Network's AMRP, which are based on intervals of time, condition and usage (Appendix 3 provides further information on the triggers for intervention for maintenance activity). Due to their predictive nature, Aurizon Network seeks, wherever possible, to align the delivery of preventive maintenance activities with adjacent supply chain outages.

Preventive maintenance generally has a less intrusive impact on the supply chain, due to its planned and coordinated nature. Planned maintenance activities are packaged to maximise the amount of scope completed during planned closures in each location, which in turn can create access, delivery and cost efficiencies.

Not all activities can be planned. The forces exerted through the passage of rollingstock, and Queensland's weather will, on occasion, create the need for unplanned interventions, which include reactive maintenance or planned corrective maintenance. Depending on rectification timeframes, reactive and planned corrective maintenance may be able to be scheduled in between train services to minimise impact to train operations.

Aurizon Network prioritises reactive and planned corrective maintenance activities based on impact to immediate operations, taking into consideration tonnage, traffic purpose and longer-term capacity impact, which informs the rectification timeframe options as outlined in figure below.

Figure 94 Timeframes Associated with Corrective Maintenance Activities

Table 67 outlines Aurizon Network's maintenance approach across each asset type

Table 67 Maintenance Approach

Maintenance Approach	Description	Applied to Assets	Maintenance Activity
Condition or Tonnage Based Intervention	Maintenance programmed to occur once a usage threshold is met. Maintenance can be programmed ahead of time due to forecast traffic movements.	Rail, turnouts and ballast.	Rail grinding – of both track and turnouts to return the rail profile to design and remove any minor faults Resurfacing – of both track and turnouts to maintain track to the design geometry and ensure track alignment
Planned Inspection and Service (Preventive Maintenance)	Periodic inspection of assets to understand condition and identify items that may cause a future fault. Period of inspection is known and can be planned.	Rail, sleepers, turnouts, ballast, formation, culverts and bridges.	Track geometry recording – ATIS, to measure geometric characteristics of track alignment. Ultrasonic rail testing – non-destructive testing to identify internal rail defects. On track inspection – road rail vehicle inspection of the rail corridor. Structures inspection – inspection of critical elements of the structures to categorise defect type and quantify severity – ultimately providing an overall condition rating. Ground Penetrating Radar – specialised non-destructive testing employed to help understand and quantify ballast fouling severity. This data complements other contributory datasets (e.g., track geometry) to develop and determine ballast cleaning scope more accurately.
		Signals, interlockings, level crossing protection, optic fibre, standby power system, SCADA system, radio system.	Control Systems Inspection - planned periodic inspection and minor servicing. Includes function testing, signal alignment testing, battery testing, cleaning and security check.
		Power systems and overhead line equipment.	Electrical Inspection - planned periodic inspections and minor servicing. Includes condition testing, oil sampling and isolator testing.

Maintenance Approach	Description	Applied to Assets	Maintenance Activity
Planned Corrective Maintenance [15]	Planned rectification of faults found from inspections or remote monitoring. Time to rectify is dependent on the severity of the fault or risk to operations.	Rail, sleepers, turnouts, ballast, formation, culverts and bridges	Rail joint maintenance – rail welding, rail plating and lifting and lining rail joints, squat removal. Maintenance Ballast – small section ballast repair / replacement, removal of mud holes. Sleeper cluster management – spot insertion of sleepers to repair damaged sleepers, sleeper testing, fastening repairs and sleeper respacing. Rail stress adjustment – rail stress testing and adjustment to manage compression and expansion of the rail. Top and line resurfacing – hand track tamping and small machinery tamping. Structures repairs – minor concreting works, kerb repair, walkway repair, bridge drain cleaning. General earthworks maintenance – embankments and cutting repair, drain cleaning and access road maintenance. Drainage Improvements – large-scale reinstatement program to manage water accumulation adjacent to track
		Signals, interlockings, level crossing protection, optic fibre, standby power system, SCADA system, radio system.	Control Systems - maintenance and component repair.
		Power systems, overhead line equipment.	Electrical - general maintenance and component repair.

[15] Most of the 'Planned Corrective Maintenance' effort is found in the general track maintenance and corrective signalling maintenance items. The nature of the works typically involves responding to faults identified by track inspection, specific asset inspection and rollingstock operators. Activity can be planned according to the severity and the time for fault remedy of the identified fault.

Maintenance Approach	Description	Applied to Assets	Maintenance Activity
Reactive Maintenance	Immediate remedy of faults that have disrupted operation of the rail network.	Rail, sleepers, turnouts, ballast, formation, culverts and bridges.	Rail repairs – immediate repair of broken rails, failed welds or internal defects. Mud hole removal – saturated fouled ballast sections dug out and repaired to maintain track alignment.

10.1.3 Maintenance and Renewal Scope Improvements

The below table identifies the progress of existing and new improvements and changes made to scope identification since the FY25 MRSB.

Table 68 Maintenance and Renewal Scope Improvements

Category	Key Variation	Benefit Lever	Expected Benefits
ATIS/ Data Driven Preventive Resurfacing Planning	In FY25, ATIS project has been rolled into BAU as Condition Monitoring. Preventive Resurfacing Planning is an initiative that is being developed in FY25 and will be a consideration of the FY26 maintenance scope development.	Performance/ Reliability	• Planned/preventive maintenance and renewal activities. • Fewer unplanned failures and possessions leading to a reduction in cancellations, delay minutes and geometry-related TSRs.
Event Threshold Reporting	Event Threshold Reporting will be further refined in FY25 and FY26 and used in future Asset Performance Dashboard reporting.	Performance/ Reliability	• Better informed asset policy and recovery approaches due to deeper root cause analysis. • Reduction in incidents and associated impacts. • Identification of focal areas for management attention.
Structures condition-based inspections	FY25 will see the change to condition-based frequency inspections being embedded and benefits measured in FY26.	Reliability	• Ensure resources are focusing inspection time on those assets that are deteriorating.
Turnout Manual Grinding and Repair Cycles	In FY25, a preventive program of manual grind and repair on a cycle will be embedded across all turnouts with additional sites being repaired to extend life. FY26 program will be embedded as a BAU task.	Reliability	• Manage rolling contact fatigue in line with the rest of the turnout. • Extend the life of the turnout.
Planned Turnout Manual Grind after new component is installed	In FY25, the approach will change to include manual grinding of every steel component replacement on a turnout. This will increase the unit cost of the component replacement. In FY26 this improvement will be embedded in the turnout renewal program of works.	Performance/ Reliability	• Manual grinding will remove the outer surface and correct the profile, reducing surface cracking and improve the lifecycle of the steel components.

Category	Key Variation	Benefit Lever	Expected Benefits
IoT Devices	In FY25, spares will be purchased to be available to replace devices not working. In FY26, spares will include rainfall measurement capabilities and implemented across the CQCN as devices in the field fail.	Safety/ Reliability	• Heat Restrictions imposed across the CQCN has declined over the years since the introduction of the IoT Temperature devices in the field.
Network OT Cyber Security	The architecture design for the Cyber Security Transformation Program was initiated in FY22/23, and the IT/OT interface layer is due for completion in FY25 and then transition will occur in FY25 and FY26. In September 2024, a dedicated Cyber Resource commenced in Network to assist with all Cyber compliance matters.	Safety/ Reliability	• Improve vulnerability management by designing and testing cyber incident preparedness. • Understand and minimise the risk of malicious cyber-attacks designed to disrupt or halt train services. • Support active monitoring of activity between the various IT and OT zones which alert and email when a vulnerability is identified.
Early Fault Detection	Installed a pilot/trial of the "Early Fault Detection" (EFD) system. The results of the trial indicate that the EFD system is not effective in detecting critical OHLE defects in CQCN electrified network.	Safety/ Reliability	No further investment in deployment of the EFD system should be planned in the absence of compelling new evidence.
Rail Stress Visualisation	By FY26, the Rail Stress Data in Webmap should be used to enable data driven decisions.	Reliability/ Performance	• Improved planning techniques, more knowledge of the effectiveness of the plan and required maintenance works.
Drainage Improvements	Targeted corridor drainage improvements by developing a program of works to improve and reinstate longitudinal drainage along the CQCN. This improvement will commence in FY25 and continue into FY26 and beyond.	Reliability/ Performance	• Reduce unplanned formation failures and resultant operational impacts (TSRs, Cancellations, Delay Mins) • Reduce permanent way incident Cancellations and Delay Minutes. • Reduce the rate of deterioration of formation, enabling a wider opportunity for intervention and reducing associated operational impacts.

Category	Key Variation	Benefit Lever	Expected Benefits
Section Insulator Trial	Determine the most appropriate, fit-for-purpose, Section Insulators to be utilised as standard asset solutions in the CQCN. FY25 Goal: Determine suitability of trial Section Insulator. FY26 Goal: Establish a broader suite of standard Section Insulators enabling selection of an appropriate solution when these assets are replaced.	Reliability/ Performance	• Increase reliability of Section Insulators across the CQCN. • Reduce damage to Above Rail Operator Locomotive Pantographs due to Section Insulator assets.
Track/Section Insulator System of Assets	Resolution of the geometry issues at the identified 5 problematic Section Insulator locations in the Goonyella System. Implement a process to detect system geometry issues earlier for proactive, planned rectification prior to damage occurring. Review system design and components to ensure they are fit for purpose for application in the CQCN operating context. The outcome of the FY25 work will be implemented into FY26.	Reliability/ Performance	• Higher reliability of the track/section insulator system of assets (e.g. at crossovers). • Reduction in damage to Above Rail Operator Locomotive Pantographs.
Porcelain Insulator Analysis	Undertake statistical sampling and testing of porcelain insulators in the CQCN to understand the remaining service life, document the condition assessment and develop an appropriate strategy to effectively manage this asset. The work will commence in FY25 with the development of the strategy for Porcelain Insulators completed by the end of FY26. Implementation will take place in FY27.	Reliability/ Performance	• Ability to proactively manage Porcelain Insulators to minimise future failure events and resultant impacts.
Vegetation Management – Black Mountain	Trimming/cutting activities, to minimise the likelihood of vegetation impacts in the Black Mountain area in the short-term. FY25 and FY26 develop a long-term strategy to effectively manage the vegetation in the Black Mountain area of the Goonyella System for implementation in FY27.	Safety Reliability/ Performance	• This initiative is expected to improve reliability of the overhead traction network in the Black Mountain area (36km to 54km) of the Goonyella System.

Category	Key Variation	Benefit Lever	Expected Benefits
Pantograph Monitoring (PanCam) Implementation	Identify an appropriate location for a new PanCam in the Goonyella System and accelerate the installation to begin data capture in FY25. Trial the system for 3 months to verify accurate data capture.	Reliability/ Performance	• Improve detection time of damage pantographs and overhead system components. • Improve overhead defect removal timeframe. • Reduce damage to pantograph instances.
Track Circuit Improvements	Potential opportunities exist for replacing screw in fuse holders. Target # of failures. Focus on Balook to Bolingbroke area initially. Improve IRJ performance by: • Implementing a preventative regime for the inspection / cleaning of IRJ's. • Removing redundant IRJ's • Implement IOT block track cascaded circuit visibility.	Reliability/ Performance	• Reduce frequency of track circuit faults. • Provide a solution to assist in the determination of intermittently faulty relays in cascaded block tracks.
Alternative Points Lubrication Trial	Trial alternative solutions to reducing friction related points faults by using Interflon points lubricant. This work is commencing in FY25 and will continue into FY26.	Reliability/ Performance	• Improve maintenance cycles. Reduce number of point faults related to lubricant issues.
TSR Improvements	Improving process for setting and managing TSRs to achieve an overall increase in permitted speed through restricted section without compromising operational safety. This work is to commence in FY25 and continue into FY26.	Performance	• Reduction in impact to scheduled cycle times and TAT.
Power Supply Resilience	Improvements to the management of batteries, generators and other components of the low voltage power supply. These opportunities /improvements will be assessed and scoped in FY25 for implementation in FY26.	Reliability/ Performance	• Reduce the number and impact of power outages in upcoming wet season. (Reduction in Cancellations and Delays) • Improve reliability of low voltage power supplies in Signalling Equipment Rooms.

10.2 Access & Works Planning

Once the scope has been identified and prioritised for Maintenance and Renewals, access and works planning is undertaken. In this phase of the E2E process, asset activities are subject to a progressively detailed review to align all the required scope and develop high level possession, resourcing and work execution plans. The process considers the requirements of customers and other Supply Chain Participants.

The process is iterative and may result in scope shifting between closures in the year or between financial years, driven primarily by the assessment of likelihood of change or delivery risk based on information known at the time.

This section outlines the key elements of access and works planning as depicted in Figure 95 below and includes improvements captured in the development of the FY26 MRSB.

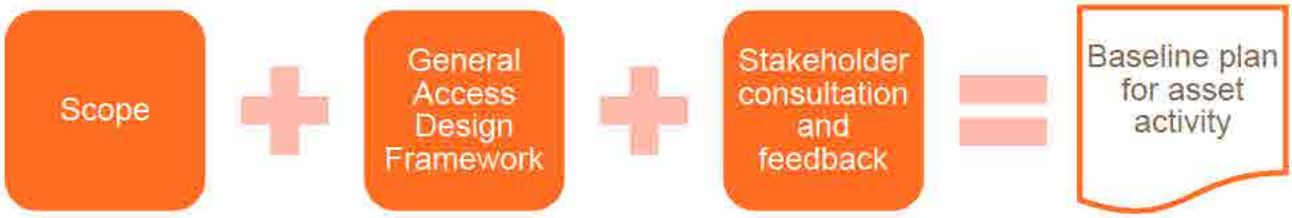


Figure 95 Overview of Access Planning Process

10.2.1 Access Design Framework

The Access Design Framework outlines key considerations when seeking to minimise the impact of asset activity on Committed Capacity (as per the Guiding Principles outlined in Section 8.1). This involves engaging and consulting with stakeholders to deliver an access plan that aligns maintenance and renewal activities as closely as possible with customer and supply chain stakeholder plans.

Possession planning is typically undertaken based on the scope identified and the resulting level of customer impact. Aurizon Network assesses each element of scope and attempts to deliver it in such a way as to minimise the overall impact to all customers.

Key assumptions of the design framework are outlined in Table 69 below.

Table 69 Assumptions of the Access Design Framework

Description	Realised benefits
Avoid June and December	Customers require these months to be kept free from major maintenance activities to allow for maximum railings for end of financial year and end of calendar year targets.
Strategic closure sequencing	Allowing adequate timing between corridor integrated closures, offsetting with other closures and alignment with the Queensland Rail network (NCL) closures provides for railing opportunities and gives people and plant time to move between corridors.
Alignment of major supply chain interfacing infrastructure outages (Port unloading closures, Train Loadout closures) with high impact Network activity and/or locations	Active engagement with customers and unloading facilities on their interfacing infrastructure maintenance outage plans to look for opportunities to coordinate Network maintenance activities, reducing customer impacts and maximising throughput for the supply chain.
Export terminals with overlapping major unloading/dump station	Early engagement with ports allows Aurizon Network to facilitate collaborative sessions to understand their requirements, align closures and identify opportunities to minimise supply chain disruption where possible.
Separation of major works across weeks/months	Separating works over the period allows the supply chain opportunity to recover in a stable way across the year, assists in delivery of monthly contractual obligations and the management of internal and external resources.

High impact Ballast Undercutting planned inside Integrated Closures where possible	Given the access required to deliver ballast undercutting, access planning targets high impact locations to be executed in integrated closures, with residual scope targeted for delivery in alignment with major supply chain outages where possible.
Planning and levelling of work to best manage scope delivery risk	Consideration is given to the periods of known low resource availability, rosters and periods of high weather risk to the delivery of the program.
Consideration of critical support staff	With detailed consideration of critical support required including protection officers and electrical staff, works have been planned to ensure they are executable, having the resources required to deliver.
Resurfacing Plant Shutdown adjustments	Adjustments are made to resurfacing plant shutdowns to maximise plant availability inside Integrated Closures
Maintaining availability for cross-system producers	During Integrated Closures where there are cross-system customers, access planning looks to maintain an opportunity for railings and where possible, minimal disruption in the opposing corridor

10.2.2 Works Planning Considerations

During the development of the Access Plan, high level factors impacting the planning of work that drive the duration of access are considered, including preparation, mobilisation, works duration, demobilisation and delivery risk.

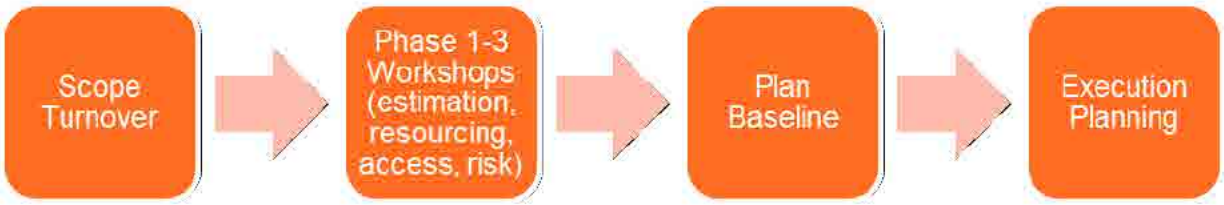


Figure 96 Overview of Works Planning

In developing the plan, Aurizon Network reviews each major renewal activity and the asset works program as a whole. The matters considered are listed in Table 70 below. Further detail on execution of works and possession types is included in Section 10.4.1.

Table 70 Works Planning Considerations

Matter for consideration	Description
Can work be packaged together (integrated)?	For example, ballast cleaning, rerail and overhead work all occurring within the same vicinity would be undertaken as one block of work utilising the same possession, track protection and electrical isolation.
Can the work be undertaken during an integrated possession?	Generally, work activities are planned during integrated possessions to the limit of available resources (people, machines and equipment and/or available contractors) and reducing the impact to customers by minimising the footprints where possible.
Can the work be undertaken on a single line allowing trains to run on the adjacent track?	If the worksite is on duplicated track, a single line closure can be taken which would allow trains services to continue to operate on the adjacent track.

Matter for consideration	Description
Does the work need to be undertaken during daylight or under specific weather conditions?	For example, welding is influenced by track temperatures so is planned to occur early morning or early evening, particularly in the warmer months. Other activities are also limited to daylight hours for either safety or visibility reasons (for example, the use of the Track Laying Machine).
Does the activity require specialised skills not within the Aurizon Network workforce?	External contractors may be engaged to supplement the Aurizon Network workforce where there are capacity constraints, equipment constraints or specific skills required. For example, the bridge bearing replacement program will be delivered by specialist bridge contractors that have the specific skills and equipment required to undertake the tasks.
Does the activity require long lead-time items?	Some inventory has greater than 6-month lead time for delivery. Activities that have inventory risk, start prior to the MRSB being approved. This increases the risk of having stranded inventory if projects are not approved or are delayed into future years.
Are we maintaining a consistent roster pattern?	Operational teams have communicated the need for a consistent roster pattern. During the planning phase, the closure regime and single line activities were planned into a consistent roster pattern.
Are seasonal conditions considered?	Larger closures are generally planned in the dryer / cooler months.
Is the work activity fixed, flexible or can be undertaken between trains in the day of operations?	All work activities are categorised into one of three categories with appropriate planning horizons applied. • Fixed: work activities that require large teams, involve major plant and equipment or require pre-delivered materials. This work is deemed fixed and is planned up to 12 months in advance. • Flexible: work activities that are flexible and could occur on different days of the week (with some notice). These activities are moved to minimise impact to train services. • Between trains or 'plan through': work activities that are short in duration (e.g., inspections), don't involve breaking the track and could occur between trains in the day of operations.

10.2.3 Customer Consultation and Feedback

Aurizon Network's decision making during the access planning process is informed by feedback received from customers through planned and/or informal engagements.

The publication of the "CQCN – Asset Activities" Power BI report provides transparency around the detail of the relevant years renewal plan and subsequently informs the Capability Train Plan. The CQCN – Asset Activities Power BI report is the output from the Access strategy and planning processes.

To facilitate customer engagement as the plan is being developed, Aurizon Network has developed a three-phase access planning process (outlined in Table 71). This represents the evolution and maturity of the access plan leading to the submission of the Draft Proposal each year.

Table 71 Key Elements of Access Planning Process

Maturity of planning lifecycle	Maturity of Plan	Action to Progress Plan
Aurizon Network shares 1st draft of possible closure requirements for consultation		

Maturity of planning lifecycle		Maturity of Plan	Action to Progress Plan
Phase 1	Project Location (First draft CQCN Integrated Closure Plan)	Output of the Scope Priority Model shows the type and location of work required. This is used to determine an indication of required time on track and the level of impact to customers.	Early engagement with QR and the Ports to work through any misalignment issues on integrated closures across the supply chain. Discussions with producers on demand projections over the year to determine high demand/low demand months. **Output**: Draft CQCN Integrated Closure Plan highlighting critical path scope and locations.
Customers provide feedback as part of consultation process on proposed CQCN Integrated Closure Plan.			
Phase 2	Project Scope (Second draft CQCN Integrated Closure Plan)	Includes customer feedback from Phase 1 and what we need to consider as part of Phase 2. A high-level project scope design informed by engineers and site walkouts, provides a clearer picture of the scope requirement and site-specific issues.	Incorporate customer feedback in development of plan and provide updates on relevant considerations or changes. **Output**: Draft CQCN Integrated Closure Plan highlighting changes from Phase 1 and Integrated Branch line Closures and Draft Power BI CQCN Asset Activities Report.
Customers provide feedback as part of consultation process on Customer specific issues.			
Phase 3	Project Delivery (Maintenance Strategy and Budget, Renewals Strategy and Budget and CQCN Asset Activities Report)	A detailed design, delivery method and procurement methodology for some asset activities with maturity continuing to increase closer to execution. The customers have provided feedback on the access plan, to inform the Draft Proposal.	**Output**: Draft Proposal and related Power BI CQCN Asset Activities Report (representing the CAAC)

10.2.4 Likelihood of Changes

Aurizon Network notes that the development of the MRSB is an iterative process. Rail infrastructure in each coal system is exposed to extreme forces from rolling stock, climatic extremes, and localised geological and hydrological conditions. It is expected that asset conditions will change over time, necessitating amendments to scope, cost, and access.

The timeline from scope identification through site walkouts, detailed estimating, work and access planning, MRSB submission and approval, and the start of the MRSB year can be up to 11 months. Additionally, the approved scope item may not be scheduled for completion until late in the MRSB year, during which asset conditions continue to change.

During the MRSB delivery year, there is also the opportunity for changes affecting total project cost, project scope, required access to complete works, or a combination of these factors. While some common factors can impact cost, scope, and time, the likelihood of change may vary for each category depending on the controls in place.

The estimated costs consider the relative degree of scope maturity and estimating process maturity, which collectively define estimate accuracy. Historically, a single point value has been communicated as the base estimate value. However, it is important to convey the uncertainty associated with that single point value to describe the true probabilistic nature of the estimate and the causes of the uncertainty.

The dollar values against scopes in the Draft Proposal are values before full consideration and quantification of uncertainty and risk through scope maturity and delivery. This base estimate is the lowest point on a probability distribution curve representing the range of potential cost outcomes. Aurizon has not assigned a contingency amount against the MRSB scope costs. Instead, it seeks to understand known risks to the program's delivery and has a variation management process (detailed in the next section) to react to unknown risks affecting cost, scope, or access.

Unknown risks cannot reasonably be anticipated and are rarely provided for in a budget. They are not included in a contingency and are managed reactively if they materialise, though they are rare. Known risks, however, are understood and expected to some extent. They are quantified and communicated, but no contingency (also referred to as a risk provision) is assigned. As part of final planning and delivery, risks are actively mitigated to minimize change impacts. We estimate the known knowns, calculate the known unknowns via a Quantitative Risk Analysis, and react to the unknown unknowns (variations) if they materialise.

Causes of Change – MRSB Development

Through the MRSB development process, there are three key milestones to identify the likelihood of change for each scope item.

Table 72 Milestones in MRSB Development and Likelihood of Change Consideration

Milestone	Description	Change Influence
Scope Turn Over (March 30)	Scope identified by Asset Management team and provided to Works Planning and Access Planning to develop the draft integrated possession plan.	• Extent to which detailed designs have been completed and the impact design work may have on the delivery method. • Assumptions in developing design (i.e. draft design requirements change as design matures to Issue for Construction).
Site Walk Outs (March to May)	Inspections of renewal sites to confirm scope and application of design to construction.	• Site conditions may present issues / opportunities against proposed design. • Site access and adjoining land issues can create non-considered scope requirements (i.e. temporary access requirements or additional land requirements). • Pre-digs and hydrology assessments for ballast and formation scope may identify latent ground conditions or water flow considerations not considered or different to assumed as part of the design phase. • Identification of site opportunities to improve asset layout, access and drainage leading to additional scope addition to the asset that was originally identified for renewal due to condition.
Phase Workshops (May to August)	As per Table 71 Evolution of the access plan and assignment of resources to scope.	• Availability of resources and/or plant of scopes and clashes given the peak load within integrated possessions. • Finalisation of detailed estimates against forecast estimates or historic costs.

Causes of Change – MRSB Delivery

Most of the change occurs in the year of delivery but the reasons for change are known, as they have typically been seen within the delivery of the renewal and maintenance works in prior years. As a result, Aurizon Network has controls in its processes to be adaptable to change.

The following table details these typical risks and the existing controls.

Table 73 MRSB – Typical Risks and Controls

Change Risk	Example / Notes	Controls
Weather impacting planned closures	• A planned integrated closure lost or weather effecting some scopes planned in a closure	• Front loaded delivery for civil renewals to take advantage of dryer conditions • Multiple Integrated Possession presenting opportunity to recover lost works
Plant Breakdown	• Mechanised plant breakdown required to complete works	• Prequalification of contractor plant includes required maintenance history and maintenance plans • Mechanised plant has planned maintenance and overhaul cycles and maintenance days .
Increased Reactive scope	• Above the allocations made for fix on fail scopes in systems	• Determination of capital spend for both planned and reactive scope by product within system and deferral of planned site to accommodate reactive scope. • Scope added to program and subject to post period review in the Capital submission for QCA review and approval
Latent site conditions	• Ground conditions or site hydrology different to design. • Wet ground effecting access or heavy vehicle movements	• Asset and Delivery team complete a site walkout to understand site conditions. • Pre digs and hydrology reviews completed as part of design process. • Site access plans developed including traffic management plan and route planning for heavy machinery movements. • Site access upgraded to facilitate increased construction traffic and provide weather proofing
Cost variation to MRSB Estimate	• Assumptions made in estimate prove to be different. • Estimate provided ahead of tender process for delivery	• Separation of design and procurement and delivery across years to allow tenders to be completed to inform estimate. • Learning from similar activities in prior years assigned to future year work. • Monthly program forecasting and reporting during delivery and variance reported via Quarterly RIG reporting

Change Risk	Example / Notes	Controls
Loss or change of approved track access	• Access lost due to planning irregularity. • Access changed to accommodate other critical works	• Phase works planning to determine required closure pattern for renewal works and planned maintenance activity. • Near term works planning processes to accommodate reactive maintenance along with planned renewals • Re planning of planned renewals into future closure opportunities if access or resource are required to complete other critical work.
Ability to complete planned scope	• Planned scope not delivered due to time allocated not suitable, plant break down, weather impacts.	• Actual scope completed recorded against planned scope in SAP. • Missed or incomplete scope portions re planned in SAP for completion in the current year or a future year based on Asset Manager assessment of criticality of incomplete scope.
New scope presenting into program	• Unplanned degradation of an asset requires its renewal Scope has no assigned budget	• Options to accommodate additional scope are: o Include and incur costs above budget to be assessed as part of annual capital claim process. o Substitute an existing planned renewal for the new scope and defer the planned scope to a future year. o Accommodate the new scope in the existing program if there have been savings against the planned program completed YTD
Design change or error	• Design assumptions not deliverable at site. • Design did not consider adjacent infrastructure or site requirements	• Standard designs are used if applicable to reduce complexity of design. • If be spoke design is required, then design is developed in stages and iterated in conjunction with the Construction team. • Designer attend site walk outs to understand site specific considerations. • Design Managers assigned to complex designs incorporating several asset disciplines to drive design integration and development
Significant weather event effecting system	• Cyclone or flood event effecting planned program	• Undertaking contains Variation Event provisions. • Works brought forward in the shadow of event, if possible, to complete works and hand back future access to offset the access impact of the event.
Re-allocation of resources	• Change in the resources assigned to scope. • Mix of internal and contractor delivery • Support resources not	• Phase workshop planning and midterm planning processes plan both access and assignment of resources to required works • Resource planning includes assignment of support activities (electrical resources to complete isolation, Protection and Site Safety staff) • Seek to use internal labour to minimise use of contractor staff.

Change Risk	Example / Notes	Controls
	assigned to works	
Site access or constraint impacts	• Baseload works using unit rate estimating being completed in complex site • Limited access, work space (in cuttings or at height)	• Scope site walkouts to adjust delivery plan or access requirement if site work location is constrained and adjust delivery methodology is required. • Engage specialised contractors and or equipment if required. For example embankment strengthening, tree lopping, not core activity so engage suitable contractors.

Variation Management

Change has a variety of impacts, these being:

- Change within a system not effecting MRSB commitments - Site based changes within program within system, changes to program schedule but that can be accommodated with in the delivery year.
- Change resulting in a departure from the System MRSB commitments- Scope increase / decrease, cost to complete above approved budget, additional access required to complete.
- Change that requires customer engagement.

Program change is managed through a structured Change Management process and approved under a tiered review system.

Table 74 outlines the agreed engagement for escalation to the RIG Representative Group in relation to variation.

Table 74 Variation Escalation as Agreed with RIG Representative Group

Variations	Proposed Engagement	Role of RIG Producer Group
Cost • Renewals – System wide cumulative variance of >15% is forecast, Aurizon Network will provide an overview at the next available Producer Meeting on rationale. Final costs subject to QCA review as part of capital claim approval process. • Maintenance – Forecast to exceed materiality thresholders per the Undertaking.	• RIG Quarterly Forum and RIG Producer Group	• Inform (Qtly Forum) • RIG Producer Group Feedback and Support
Scope • New individual renewal sites, excluding those that are expected risk events (i.e. due to deteriorated asset condition or design maturity).	• RIG Producer Group	• Feedback and Support
Access • Additional or extended integrated closures greater than 12 hours.	• RIG Producer Group and/or Customer Specific Consultation	• Feedback and Support

Variations	Proposed Engagement	Role of RIG Producer Group
	by Customer Account Managers (CAMs)	
Other Year Scope • **Roll forward scope** – completed under approved year's budget. • **Deferred scope** – incomplete scope identified for execution in future years.	• Quarterly report summary and commentary • RIG Producer Group	• Inform • Feedback and Support (if it triggers access materiality thresholds)
Other Variations • Changes that do not trigger the materiality thresholds (Internal change governance). • Time critical or responding to an incident or safety issue. • Significant program variations resulting in a shortfall or forecast scope delivery.	• Quarterly report summary and commentary	• Inform
Positive program changes where efficiencies are gained.	• Quarterly report summary and commentary	• Inform

Risk Controls to Maintain Train Service Operability

Aurizon Network may implement operational controls as a means of managing the risk of asset failure in each Coal System. Aurizon Network applies these temporary measures as a means of allowing continued Train Service operability in the period between the fault being identified through to Asset Activity to rectify the fault. The five types of controls are outlined in Table 75.

Table 75 Operational Risk Controls Which May Allow Continued Train Operations

Control	Description
Inspection Frequency	Aurizon Network completes additional targeted maintenance inspections to monitor the rate of degradation of the defect. The intent of this approach is to ensure that the defect does not result in asset failure ahead of the planned date of intervention.
Engineering Inspections	Aurizon Network utilises internal engineering capability to perform inspections, modelling and testing to understand the root cause and rectifications for complex defects.
Temporary Speed Restriction (**TSR**)	Track defects that are identified via inspections will be assessed as requiring either immediate rectification or the assets can be managed via a TSR until their rectification can be scheduled within a planned outage. Train speed is lowered during the period from fault identification to planned corrective action. This in turn, will reduce the risk of derailment or incident and the impact of dynamic forces caused by the passage of rollingstock. TSR's are also applied to manage risk of incident resulting from the environmental effects of heat or wet weather.
Alternative Authority	A manual process used to authorise train movement where a Control Systems asset has failed, and a normal movement authority (signal) cannot be provided. While this process cannot maintain the throughput of a fully functioning system due to additional procedures

Control	Description
	necessary to ensure safety, it does mitigate the impact of a failure. This is the signalling equivalent of a TSR.
Temporary Authorised Non-Conformance (**TANC**)	A TANC is applied if an asset is operating outside its minimum operational requirements or function (often contemplated within a Standard). An engineering and safety risk assessment is undertaken to determine the appropriate controls required to safely manage these assets until the point that they can be rectified. Track speed may also be reduced, and the typical risk treatment is increased inspection to monitor asset performance. A TANC is only raised in exceptional circumstances for defects that cannot be actioned within the required timeframe. The TANC form is completed by the inspecting officer detailing the defect and control measures to mitigate the defect until repairs can be undertaken. The actions required for closure of the TANC are also detailed. The maintenance superintendent then ratifies the TANC to provide assurance that the details are correct and that the resources are available to implement the required controls for mitigation of the defect until rectified. Once completed, the qualified engineer will review the proposal and ensure that the controls are robust and do not import unnecessary risk to the operation. The TANC is then able to be approved by the asset manager. Not all TANC's will require a TSR to be imposed. An assessment will be made based on the nature and location of the defect. Where a TANC does require a TSR, the impact is incorporated within Aurizon Network's TSR reporting. The number and status of TANC's are monitored internally by Aurizon Network.
Temporary Track Closure	If a fault has been identified on a section of track, it may be isolated by temporarily removing that section from service, and operating train services on alternate tracks around the fault. This is achieved by putting a coded block in the train control system to remove the ability to route a train into the affected area.

10.2.5 Access Planning and Works Planning Improvements

Table 76 identifies the improvements and changes made to the Access & Work Planning element since the FY25 MRSB.

Table 76 Access Planning and Works Planning Improvements

Category	Key Variation to FY25	Benefit Lever	Expected Benefits
Works Planning for Electrical	Increased scope (Civil and Power Systems) integrated into OHLE windows	Performance, Reliability	Decrease in closure hours required outside Integrated Closures.
Inclusion of Growth and Transition	Improved assessment and inclusion of Growth and Transition scope in the planning process.	Planning	More accurate capacity and resource allocations during the planning process.
RM902 Planning and Scheduling Tool	Improved accuracy of RM902 planning and scheduling tool utilising pre-dig return rate data.	Planning	Improved accuracy of planning assumptions reducing rework and closure extensions in the year of execution. Improved accuracy of estimates in relation to ballast cost, ballast transportation costs, and spoil removal.

Category	Key Variation to FY25	Benefit Lever	Expected Benefits
Port Integration	The Goonyella ports and Callemondah have a high number of Renewal and Maintenance activities planned in FY26. FY26 has seen a more detailed planning process, considering as much known scope as possible (both maintenance and renewals). Heavy SME and internal stakeholder involvement.	Performance, Planning, Cost	Maximised integration, minimised risk (safety and scope loss), and ensured work outside of closures is minimised.
Resource Planning	Improved Resource Assessment and Resource Leveling utilising a custom Power BI report.	Performance	Improved utilisation of internal staff and reduced utilisation of external resources. Improved deliverability of scope and identification of key resource constraints.

10.3 Budget Setting and Procurement

This section presents an overview of Aurizon Network's costing methodology for maintenance and renewal activities. It outlines the framework for setting the proposed budgets for each Coal System that are outlined in Part A of this FY26 Final Draft Proposal.

Aurizon Network confirms that the methodology for allocating costs between operating expenses and maintenance / renewal activities is consistent with the QCA-approved approach under UT5. Furthermore, Aurizon Network's below rail regulatory financial statements are subject to an annual review by an external auditor appointed by the QCA. The scope of this review includes any such cost allocations.

10.3.1 Budget Development of Maintenance Activities

Overview

Aurizon Network's approach to setting the draft maintenance budget varies according to the nature of the asset activity categories that are required to be presented under UT5. While some activities, such as mechanised activities and preventive maintenance activities, are predictable and have a clearly defined scope, other activities are corrective (e.g. fix-on-fail) in nature which results in Aurizon Network utilising historical expenditure levels to inform annual budget forecasts.

Aurizon Network ensures clear separation between the costs attributable to asset activities in each Coal System. Any costs associated with asset renewals, asset activities on Third Party Private Infrastructure, asset activities on Non-Coal Infrastructure and Review Events (such as extreme weather events where losses exceed $1 million) are separately captured, which enables Aurizon Network to exclude such costs in their entirety when forecasting the maintenance budgets for each Coal System.

Different methodologies are applied to determine the costs relevant to the various maintenance items. The appropriate method varies according to the individual maintenance activity. Due to the more routine nature of the major mechanised maintenance activities, these activities are budgeted at a more granular level than non-mechanised activities. Preventive maintenance activities are informed by the asset maintenance plan.

Aurizon Network is continuing to pursue opportunities to enhance its systems, data and processes to provide greater transparency of cost drivers and improve budgeting and forecasting process for future years.

The primary drivers of Aurizon Network's maintenance costs are discussed below. Additional information was provided in the FY26 Draft Maintenance Budget Presentation provided in October 2024.

Labour and Indirect Costs

Labour and indirect costs account for approximately half of Aurizon Network's maintenance costs.

Aurizon Network's maintenance and asset renewal program is executed primarily by Aurizon's Network Operations and Network Asset Management divisions in conjunction with externally procured resources.

An overview of Aurizon Network's operating structure together with the primary activities performed by each of the teams are summarised in Figure 97.

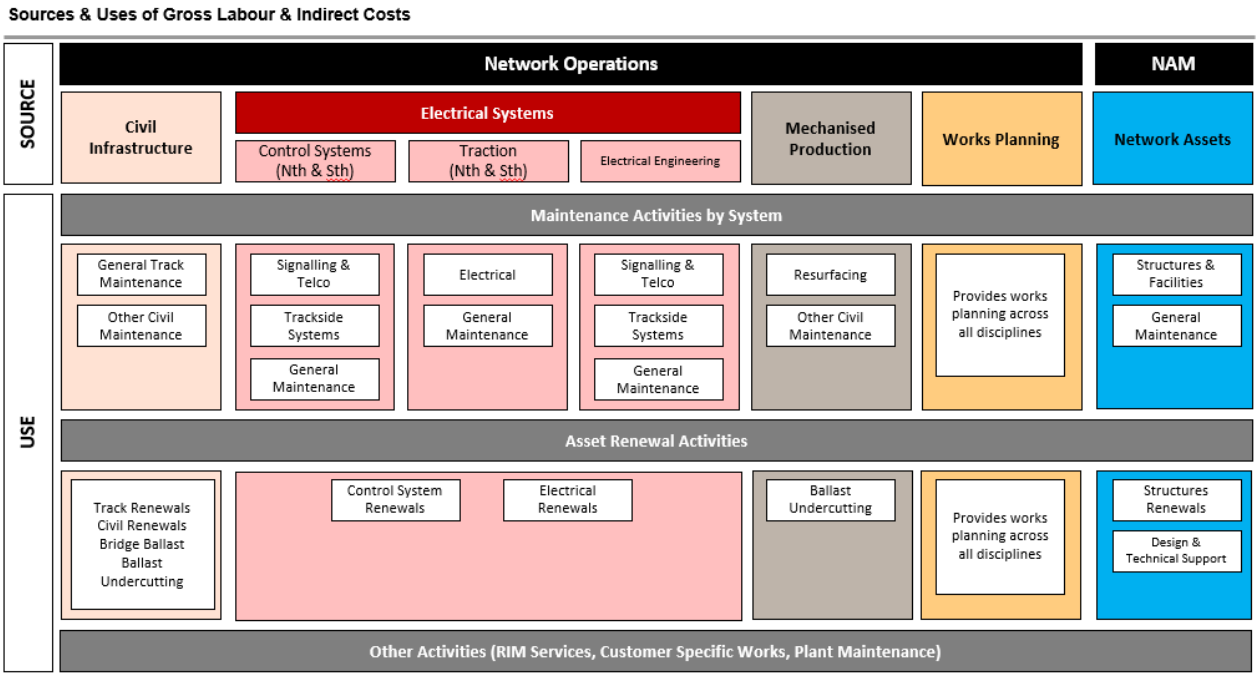


Figure 97 Aurizon Network Operating Structure

Aurizon Network's internal maintenance labour costs are relatively fixed over the short term. Indirect costs refer to minor consumables, materials and depreciation incurred to facilitate staff in the delivery of maintenance and renewal activities within the depots (e.g. travel and accommodation, PPE, other minor depot costs). These costs represent ~15% of total labour and indirect costs and are escalated in line with forecast CPI.

The key drivers of Aurizon Network's labour costs together with an overview of the FY26 budget approach are summarised in Table 77.

Table 77 Labour Cost Drivers

Labour Cost Drivers	Description	Budget Approach
Workforce Size	The number of FTE's employed across Aurizon Network's operating disciplines (Civil Infrastructure, Electrical Systems, Mechanised Production, Works Planning, Network Asset Management, Structures)	Draft budget broadly aligned, with minor increases across Civil and Electrical Disciplines to support delivery of forecast levels of corrective maintenance activities and to continue to support the ageing risk profile of critical roles. During FY25, delivery of preventative Telecommunications maintenance activities was internalised, resulting in an additional 6 FTE recruited within the Electrical Disciplines. This is offset by a reduction in external vendor spend. FTE levels assume a stable level of attrition, with improved retention levels observed in FY24, which showed a ~2% improvement from levels experienced throughout FY22-FY23 period. This assumption does vary by location and discipline and include consideration of aging profile and retention trends. To address future attrition and skills shortage risks, FTE levels include provision for Apprentice programs for key Mechanised Production and Electrical trades. Additionally, a level of contract labour hire has been maintained to support electrical trade apprentices in Control Systems North and the delivery of planned MRSB activities, predominately impacting the Goonyella system (~8 FTE).
Gross Labour Costs	Aurizon Network has continued a number of attraction and retention initiatives for critical roles to mitigate future attrition, ageing workforce and skills shortage risks.	Western Depot Location Payment is to continue through FY26 and is paid to all eligible staff who work in the Blackwater and Moranbah depots. Aurizon is committed to addressing the challenges faced in these locations including: • availability of suitable accommodation and infrastructure; • competitive remuneration and working conditions being offered by the energy, mining and resource sections; and • peoples preference to live in coastal and/or metropolitan areas with a greater variety of amenities. Retaining resources in these regional areas is critical to providing timely response to incidents to minimise the impact of delays and cancellations to the network. The continuation of this allowance will be reviewed in September 2025.
Gross Labour and Indirect Cost Escalation	Increase in Labour and Oncosts to account for Enterprise Agreement rate increases. Aurizon Network	For the Staff Enterprise Agreement, labour has been escalated at 3.3% including the SGC Superannuation Levy). For the Infrastructure Enterprise agreement, labour has been escalated at 4.5% (Aurizon EA 4.00% plus legislated SGC Superannuation Levy: 0.5%). The labour cost base for Electrical trade staff includes additional costs associated with contract labour hire in the Control Systems North team, impacting the Goonyella and Newlands systems. Indirect costs escalated at 3.2% in line with RBA June 2026 CPI forecast at end of August 2024.

Labour Cost Drivers	Description	Budget Approach
Activity Mix (Maintenance, Capital / Other)	Proportion of time (and therefore cost) allocated to RIG maintenance, non-contract maintenance, asset renewal and other activity. Activity mix varies by team and sub-function.	Activity mix by team is forecast to be broadly consistent with the FY25 Forecast. Activity mix is influenced by the forecast levels of activities (maintenance/asset renewals/other) with variation mostly driven by changes in corrective maintenance or asset renewal requirements.
Coal System Mix	Proportion of maintenance hours allocated to each Coal System (Blackwater, Goonyella, Moura, Newlands)	Depots (or cost centre) costs generally flow to one or potentially two systems depending on location. The budget assumes that maintenance allocations by depot / team to each of the coal systems are broadly consistent with the mix seen in prior years.
RIG Category Mix	There are 9 RIG maintenance categories. (General Track, Other Civil Maintenance, Structures and Facilities Maintenance, Signalling and Telecommunications, Trackside Systems, Electrical, Track Resurfacing, Rail Grinding).	Activity by RIG category within each system is assumed to be broadly consistent with activity levels observed in prior years. Where there is a change in activity requirements, Aurizon Network will adjust forecast activity levels including between maintenance categories within a single Coal System or between Coal Systems, as required.

Non-Labour Costs

Non-labour costs comprise externally procured contractor resources, materials and plant usage, consumables and rail grinding. A summary of the key non-labour cost categories as well as an overview of the FY26 budget approach are summarised in Table 78.

Table 78 Non-Labour Cost Drivers

Non-Labour Costs	Description	Budget Approach
Externally Procured Resources	Costs associated with external contractors, hire charges and trade services. Aurizon Network supplements its own labour and plant resources with externally procured contractors where specialist skills / equipment is required, or where a large volume of activity is delivered concurrently. Most of the contractor activity is used to support activity in the General Track, Other Civil and Structures and Facilities RIG maintenance categories.	Budgeted cost of known contracts including escalation rates (e.g. ultrasonic rail testing contract, rail grinding). Other contractor costs estimated having regard to historic spend and escalated at 3.4% in line with RBA June 2026 WPI forecast at end of August 2024.

Non-Labour Costs	Description	Budget Approach
Materials and Plant Usage	The cost of materials (ballast, rail, sleepers etc) used in project operations either charged directly or consumed from inventories stores and pass-through costs for Aurizon Network owned major plant. All costs associated with major plant (e.g., operational and plant maintenance) are charged to jobs via a unit rate. The unit rate is used to allocate work between systems. Under and overs in the year of execution are apportioned on a ratio of work completed.	Machine charges are based on a detailed build-up of plant costs. An increase in resurfacing costs in FY26 is driven by cyclical plant maintenance activities. Other materials costs estimated having regard to historic spend and escalated at 3.2% in line with RBA June 2026 CPI forecast at end of August 2024.
Consumables	The cost of computer hardware and software, technology costs, safety equipment, consultant fees, minor tools and plant, travel and accommodation, external freight and waste disposal.	Budgeted cost of known contracts (e.g. Freight Services contract). Other contractor costs estimated having regard to historic spend and escalated at 3.2% with RBA June 2026 CPI forecast at end of August 2024.

Non-Mechanised Activities

The budget for delivering non-mechanised maintenance activities has been developed with reference to the actual maintenance costs incurred during FY22, FY23 and FY24.

Preventative Maintenance Activities

Budget forecasts for controllable or preventive maintenance expenditure categories have been set having regard to asset maintenance plans for each activity and the allocated resource costs associated to complete.

Corrective Maintenance Activities

Corrective maintenance activities tend to vary year-on-year and are reactive in nature, predominantly due to inclement weather and degradation of asset condition. Consequently, Aurizon Network has estimated the costs for corrective maintenance activities with reference to historical corrective activities completed in FY22, FY23, FY24.

Forecast levels of corrective maintenance activity within the General Track category for the Moura system have been adjusted to reflect costs and activity levels experiences across FY23 and FY24 only, This has been impacted by the asset condition following higher levels of throughput than experienced in the FY22 financial year.

Additionally, given the increase in rail maintenance activity levels and defects, the associated costs relating to this activity in FY26 have been based on costs and activity levels experienced in FY25 (July – December).

Any additional corrective maintenance activity requirements identified during the planning process are assessed in accordance with Section 10.1.2 Maintenance Scope Identification and have been adjusted for in FY26. Additionally, actual work completed in FY26 will also be assessed in accordance with Section 10.1.2 Maintenance Scope Identification.

Mechanised Activities

The costing methodology for the Aurizon Network's mechanised maintenance activities is summarised in Table 79.

Table 79 Summary of Costing Methodology for Mechanised Maintenance Activities

Maintenance Activity	Costing Methodology
Rail Grinding	Budget for the forecast scope of works required in each Coal System reflect the contractual arrangements with the external Service Provider.
Resurfacing	Forecast costs for the total resurfacing program with an allocation of cost between maintenance and capital activities.

Rail Grinding

The Rail Grinding costs include the costs paid to an external third party for provision of rail grinding services (currently Loram) as well as an allowance for the cost associated with the removal and re-installation of signalling and rail lubrication equipment from track before and after the rail grinding activity (predominantly labour and consumables). The budgeted cost of the rail grinding program in each Coal System is a function of the forecast mainline, turnout and level crossing grinding scope expected to be required in each Coal System. Pricing is in accordance with the Rail Grinding Services Agreement.

As planning is based on when track sections will reach throughput threshold triggers, grinding activity may vary from year to year particularly in lower volume areas of the Network. Rail Grinding scope variation year on year is driven by anticipated grinding requirements and stable management of rail asset condition.

Resurfacing

Aurizon Network uses a fleet of four high production tampers and regulators and two Unimat tampers and regulators (collectively, the Resurfacing Plant) to deliver the resurfacing program of work required in each Coal System.

The Resurfacing Plant are not dedicated to any individual Coal System although individual plant items will predominantly work in one system to deliver maintenance activities and renewal activities outside of Integrated Closures.

Each consist (comprised of an MMA and MMB machine) may be used to either:

- perform maintenance scope (i.e., mainline and turnout resurfacing and civil support); or
- support asset renewal activities, where resurfacing is required after all track disturbing works to consolidate ballast and restore top and line, therefore forming part of the track renewal program.

This means that for day-to-day activities travel time is reduced but flexibility is retained to support delivery of major scope during Integrated Closures. Additionally, when planning travel to Integrated Closures, resurfacing work for any priority defects identified on route is also undertaken.

The flexibility afforded by this approach not only helps to reduce the supply chain impact of resurfacing activities but also helps to promote operational efficiency, by:

- minimising the number of Train Paths consumed by Resurfacing Plant; and
- maximising production time per labour shift.

It should be noted that the resurfacing cost base is materially fixed year-on-year and is informed by the planned maintenance activity plans.

Resurfacing budget forecasts

To set a budget for the FY26 resurfacing work program, Aurizon Network has:

- estimated a forecast budget for operational labour and plant costs having regard to actual costs incurred in FY22, FY23 and FY24 and forecast / budget costs in FY25; and
- apportioned the labour and plant cost forecast budget between maintenance (mainline resurfacing, turnout resurfacing and civil support by Coal System) and renewals activities based on the defined and agreed activities planned for FY26.

The cost of resurfacing support for renewal works are incorporated within the track renewal program and are allocated to Coal Systems based on the location of planned scope for completion. Also, the resurfacing consist that primarily supports the ballast cleaning operation is included within the ballast cleaning program costs.

10.3.2 Budget Development for Renewal Activities

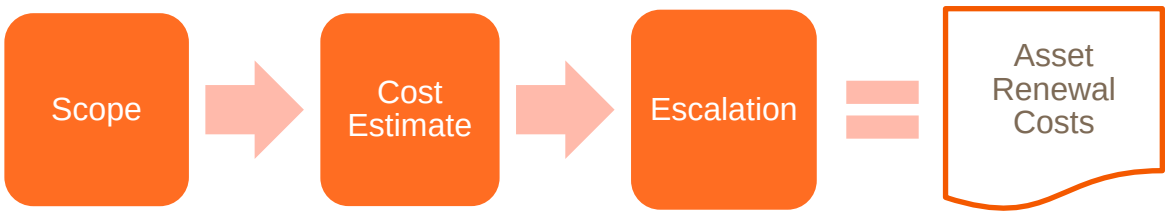


Figure 98 Renewal Budget Development Process

Aurizon Network's budgeting approach for high-volume renewal activities, such as Track, Rail and Sleepers, has typically relied on standardised rates. In order to provide more accurate estimates from a cost, access and resource perspective, Aurizon Network has adjusted this budget approach to be informed on historical costs incorporating provisions and estimates for any relevant site-specific variables. The average cost per scope item will be reflective of these variables.

Budgets for other renewal activities rely on a combination of standard rates, generally informed by historical performance and adjusted to reflect common site-specific variables.

Costing methodology for renewal activities

High Volume Asset Renewal Activity

Renewal activities such as track, rail and sleeper renewals are ongoing, annual programs of work that will generally see Aurizon Network undertaking a large volume of the same activity year-on-year.

These activities typically follow a standardised work methodology which includes:

- standard designs (that are adapted where necessary to account for site specific conditions); and
- a repeatable construction methodology at each work site.

Drivers of average cost variability in this asset category include, but are not limited to the following:

- scope quantity per site
- construction methodology – using plant such as the Track Laying Machine allows for a greater amount of scope to be completed within a shorter timeframe, however, will incur plant costs
- geographical factors – accessibility, space to store materials and manoeuvre plant and proximity to other track infrastructure (level crossings, culverts, turnouts, signalling equipment.
- ability to share resources such as signalling and electrical isolation support

- weather impacts; and
- available closure hours.

Aurizon Network developed cost estimates based on the historical level of activity required for each cost element. Adjustments have been made for known items that cause variability as described above, therefore there will be cost variability between individual worksite and may influence the average cost per activity. Meteorological factors/conditions on the day of execution, and days leading up to execution can further influence actual costs incurred.

Other Renewal Activity

Other renewal activities include Civil Assets (such as formation, structures and turnout renewals), Control Systems Assets and Electrical Assets. These activities generally have lower volumes of scope and require either a detailed, site-specific design, or the assembly of standard design elements appropriate for a specific site.

The budget for these asset renewal items is informed by the scope of work required to be delivered, guided by historical costs, site specific requirements and scheduling constraints. In addition to this, actual costs will also be a function of operational, geographical and meteorological factors and conditions.

Reactive Renewal Activity

Wet weather is the single biggest driver of reactive renewal work.

Aurizon Network will, from time to time, experience asset failure in some renewal categories such as formation, ballast undercutting and turnouts. The failure or imminent failure of these assets will be identified as part of routine asset inspections and will result in a reactive replacement of the asset.

Given the difficulties associated with accurately forecasting the occurrence of asset failure, Aurizon Network has made provision for ‘reactive’ works within the forecast budget for formation, ballast cleaning, turnout, level crossing, electrical overhead corridor asset renewals. These amounts are broadly based on historical average spend on reactive activities in each individual Coal System.

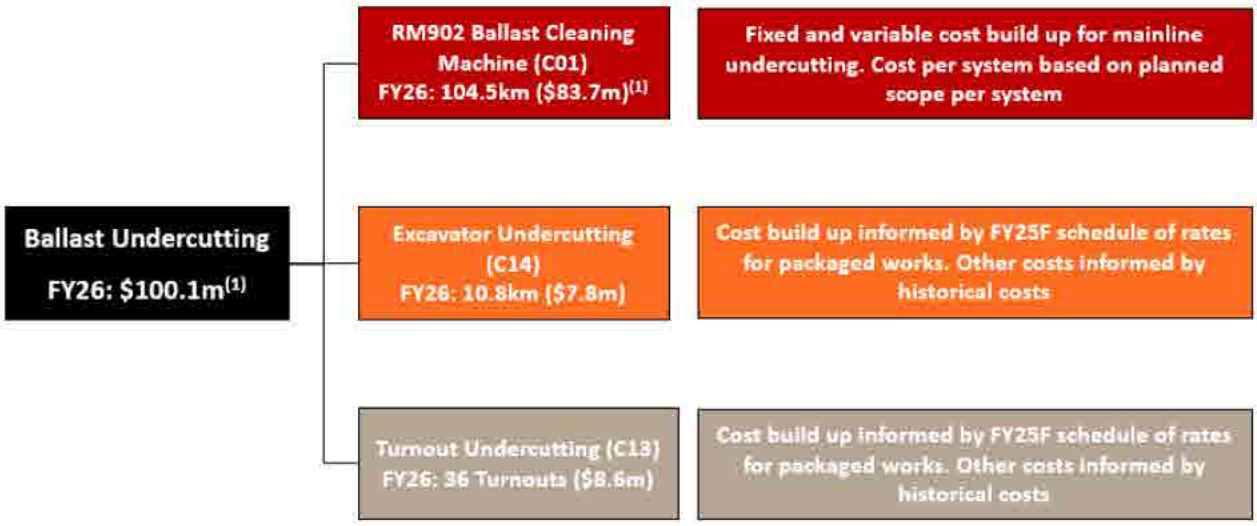
Mainline Ballast Cleaning

Mainline ballast cleaning is made up of three specific items being the Ballast Cleaning Machine (BCM), excavator undercutting and turnout undercutting.

Mainline ballast cleaning costs have been built up by BCM with total forecast costs allocated to systems based on forecast scope that is planned for completion each financial year. Key assumptions underpinning the cost build up are summarised below.

Budgeted costs for excavator undercutting and turnout undercutting have been informed by a combination of the contractor schedule of rates, where packaged works have been executed and historical costs for other support activities as required. It will also consider site specific operational requirements, including safeworking support, where required.

A summary of the approach to developing the FY26 budget is outlined in Figure 99.



Note: RM902 Ballast Cleaning Machine (C01) and Ballast Undercutting figures exclude Ballast Undercutting Plant Depreciation & GPR.

Figure 99 Approach to Forecasting the Budget for Ballast

Mainline Ballast Cleaning Cost Build Up

Mainline ballast cleaning costs have been built up by BCM. Total forecast cost (excluding Ballast Undercutting plant depreciation) associated with the operation of the BCM have been allocated to each Coal System based on forecast scope that is planned for completion each financial year. Ballast undercutting plant depreciation has been allocated to systems based on the number of days that the BCM is planned for operation in each system.

Costs associated with the ballast cleaning operation are largely fixed costs, the majority of which are still incurred irrespective of scope that may be achieved and is subject to highly variable operating conditions.

Additional detail in relation to the make-up of costs has also been provided to the RIG Expert Advisor. Key assumptions underpinning the cost build up are summarised in Table 80.

Table 80 Mainline Ballast Cleaning Cost Assumptions

Assumptions	BCM Only
Scope	FY26: 104.45km
Machine Operation	BCM RM902
Freight	10 dedicated train crew and 5 locomotives Costs reflective of current contracting arrangements.
FTE	The new BCM entered production in May 2021. The increase in workstations and increased componentry requires additional labour to maintain. At present there is also a requirement for the existing employees to be ticketed and trained in the BCM which is being filled by labour hire. Mechanised Production is reviewing the optimal structure for future operational and plant maintenance staff requirements.
Plant Depreciation	Ballast Undercutting plant depreciation has been allocated to systems based on the number of days that the BCM is planned for operation in each system.
Resurfacing Support	Utilise existing dedicated tamper and regulator.

Assumptions	BCM Only
Ballast	Cost estimates based on estimated ballast return rates utilising pre-dig (an excavated sample of track) screenability assessment and historical trends, returning track to the standard ballast profile, and the forecast average price per tonne. A change in conditions (wet or dry), material composition, variation in ballast depth and a change in material price may result in variability in ballast costs.
Production Rate	The production rate of the machine is the assumed rate of the cutting speed of the RM902 consist whilst in operation and can vary depending on site characteristics. FY26 average rate is 159 linear metres per hour. The machine production rate is different to the closure hour rate which can vary from 25m to 86m per closure hour. These rates vary greatly based what work is included in the closure (e.g., rail stress management may occur in the closure reducing closure production rate) and on site specific characteristics. Site specific characteristics that create complexity include location for ballast stockpiles and spoil, whether there are multiple cut ins and cut outs and proximity to infrastructure such as level crossing, auto transformer sites, and the site access and additional land access requirements.
Ballast Return Rate	The ballast return rate is an assumed amount of ballast returned to track through the screening process. This return rate is based on a historical undercutting at these locations and a pre-dig assessment. The average across all FY26 sites is 13% crib and 27% shoulder. Where a 0% return rate has been nominated, this has been deemed unscreenable with all ballast to be replaced.
Ballast Volume	The planned ballast being returned to track is at the standard track volume of 2.8m^3 per linear metre, which equates to approximately 300mm depth below bottom of sleeper. This depth may vary between sites. The higher the volume required to be replaced, the lower the machine production rate.
Spoil Removal	Spoil removed has been estimated at a ratio of 1.1tn per 1.0tn of ballast replaced.

A summary of the estimated costs of mainline ballast cleaning for FY26 is set out in Table 81.

Table 81 Mainline Ballast Cleaning – BCM Cost Summary

BCM (C01) ($m)	BCM FY26 Draft Budget
Expenses by Type	
Labour	19.918.5
Ballast Cleaning Machine (RM902)	32.7
Contracted Services	25.1
Support Plant	3.4
Other	9.9
Total (including ballast undercutting plant depreciation)	**89.7**
Ballast Undercutting Plant Depreciation	(6.0)
Total (excluding ballast undercutting plant depreciation)	**8.783.7**

Labour – includes labour relating to plant operation, plant engineers, site safety, track protection and pre and post signalling system works, reliability and planning staff in the Network Operations team.

Ballast Cleaning Machine – includes plant maintenance labour, machine components, train crew, fuel and depreciation. Noted that maintenance cycle varies each year due to componentry that needs to be changed out.

Contracted Services – includes external work groups conducting pre and post earthworks, rail stressing, stress testing, spoil removal, delivery of ballast to site, as well as freight costs for ballast trains.

Support Plant – includes resurfacing plant and ballast wagons.

Other – includes ballast and other minor consumable costs.

Ballast Undercutting Plant Depreciation – the cost of ballast undercutting plant depreciation is recouped via the maintenance cost allowance but is shown in the cost build up for completeness.

Mainline ballast cleaning costs by Coal System are outlined in Table 82.

Table 82 Mainline Ballast Cleaning Costs by System

BCM (C01) ($m)	BCM FY26 Draft Budget
Ballast Cleaning Costs	
Blackwater	38.7
Goonyella	34.7
Moura	4.5
Newlands	5.8
Total	**83.7**
Ballast Undercutting Plant Depreciation	
Blackwater	3.1
Goonyella	2.3
Moura	0.3
Newlands	0.3
Total Ballast Undercutting Plant Depreciation	**6.0**
Total Ballast Cleaning	
Blackwater	41.8
Goonyella	37.1
Moura	4.7
Newlands	6.1

BCM (C01) ($m)	BCM FY26 Draft Budget
Total	**89.7**

Note: Figures may not add due to rounding.

Table 83 Mainline Excavator Ballast Cleaning Cost Assumptions

Assumptions	Mainline Excavator (C14)
Scope	FY26: 10.87 km
Machine Operation	Excavator Undercutters (contractors)
FTE	Excavator work will be completed by contractors with Aurizon staff providing support services.
Resurfacing Support	Utilise existing tampers and regulators
Ballast	Cost of ballast and delivery of ballast isn't included in contractor packaging. Full ballast replacement occurs when undercut by excavators.

Table 84 Mainline Excavator Ballast Cleaning – Cost Summary

Excavator (C14) ($m)	Excavator FY26 Draft Budget
Expenses by Type	
Contracted Services – Excavator Undercutting	0.8
Contracted Services – Ballast & Ballast Delivery/Removal	2.0
Contracted Services – Rail Stress Management	0.2
Mechanised Production Labour	0.4
Support Labour	0.1
Sub-Total	***3.5***
Reactive Works	4.3
Total	**7.8**

Contracted Services – includes external work groups conducting excavator undercutting and rail stress management tendered through packaged works and costs for ballast materials and the associated costs relating to ballast delivery and spoil removal.

Support Labour/Plant and Other – includes site safety, track protection and pre and post signalling system works, reliability and planning staff in the Network Operations team and accommodation and travel.

Mechanised Production Labour – includes resurfacing plant and labour costs and Mechanised Production labour providing planning and execution support.

Reactive – allocation for scope assumed to require rectification in the year of execution.

Table 85 Turnout Excavator Ballast Cleaning Cost Assumptions

Assumptions	Turnout Excavator (C13)
Scope	FY26: 36 Turnouts (including undercutting of areas prior to, and after the turnouts to make a complete turnout undercut. In FY25, the adjacent area undercut would have been a C14 cost).
Machine Operation	Excavator Undercutters (contractors)
FTE	Excavator work will be completed by contractors with Aurizon staff providing support services
Resurfacing Support	Utilise existing tampers and regulators (turnout specific tampers)
Ballast	Cost of ballast and delivery of ballast isn't included in contractor packaging. Full ballast replacement occurs when undercut by excavators.

Table 86 Turnout Excavator Ballast Cleaning - Cost Summary

Excavator (C13) ($m)	Excavator FY26 Draft Budget
Expenses by Type	
Contracted Services – Excavator Undercutting	2.1
Contracted Services – Rail Stress Management	0.3
Mechanised Production Labour	0.8
Support Labour	0.5
Ballast & Ballast Delivery/Removal	2.2
Sub-Total	**5.9**
Reactive Works	2.7
Total	**8.6**

Contracted Services – includes external work groups conducting excavator undercutting and rail stress management tendered through packaged works and costs for ballast materials and the associated costs relating to ballast delivery and spoil removal.

Support Labour/Plant and Other – includes site safety, track protection and pre and post signalling system works, reliability and planning staff in the Network Operations team and accommodation and travel.

Mechanised Production Labour – includes resurfacing plant and labour costs and Mechanised Production labour providing planning and execution support.

Table 87 Escalation Methodology

Escalation	Description	Budget Approach
Internal Direct Labour costs	In line with maintenance budget assumptions, increase in labour and oncosts to account for Enterprise Agreement rate increases.	For the Staff Enterprise Agreement, labour has been escalated at 3.3% and incorporates the legislated SGC Superannuation levy. For the Infrastructure Enterprise Agreement, labour has been escalated at 4.5% (4.00% plus legislated SGC Superannuation Levy: 0.5%). Indirect costs escalated at 3.2% in line with RBA June 2026 CPI forecast at end of August 2024.
Subcontractors	Costs associated with subcontractors engaged to deliver renewal activities.	The forecast rate of escalation has been estimated using a 5-year Compounded Annual Growth Rate (CAGR) based on both CPI (all groups Brisbane; 6401.0 Consumer Price Index, Australia) and 2462 Mining and construction machinery manufacturing (6427.0 Producer Price Indexes, Australia).
Materials	The cost of materials (ballast, rail, sleepers, electrical components) used in renewal programs either charged directly or consumed from inventories stores.	The forecast rate of escalation has been estimated using 5-year Compounded Annual Growth Rate (CAGR) based on a combination of the following indices; 203 Cement, lime, plaster and concrete product manufacturing; 22 Fabricated metal product manufacturing; Domestic materials and Electrical Equipment (6427.0 Producer Price Indexes, Australia)
Other Costs	Other costs including an allocation of associated Asset Management, Project Management, Design Management, Contract Management and Construction Management costs.	Costs escalated at 3.2% in line with RBA June 2026 CPI forecast at end of August 2024.

10.3.3 Procurement and Inventory

Contractor resources

Aurizon Network seeks to apply the most efficient resources to deliver the scope derived by the maintenance and renewal strategies. It maximises the use of its internal Aurizon Network delivery teams and augments internal resource requirements with suitably qualified contractor staff and plant.

If the scope requires a specific skill set or plant not held within Aurizon Network, or if resources are deployed on alternative more critical work activities, pre-qualified contractors are engaged to perform work either under supervision or if approved, as principal contractors for short periods of time. Aurizon Network has established a series of engineering and technical service contractor panels (managed through Aurizon's enterprise-wide procurement function) where competitive rates are pre-agreed with vendors. These include asset specific service panels, skilled labour hire, plant hire and plant transportation services.

Contractors are either engaged through these panel arrangements or one-off engagements for specific work packages. For one-off engagements, Requests for Proposal (RFP) are released through Aurizon's sourcing tool Zycus. RFPs are evaluated against set criteria including cost, capability, safety, construction methodology/program and contract departures. An evaluation panel determines a preferred vendor and following negotiation, contracts are awarded.

Depending on the activity, work is packaged to attract multiple vendors and competitive pricing. Packaging could include multiple sites over a specified duration or greater scope within the one site. Aurizon Network implemented multi-year work packages for excavator undercutting, rail stress management and earthworks support for FY25 – FY26.

All internal and external contract workers are required to be accredited Rail Industry Workers and hold the appropriate qualifications for the activity they are undertaking. Aurizon Network has an internal assurance program for external contractors to ensure they have the required business and safety processes and policies that align with Aurizon Network's requirements.

In developing the FY26 program, the availability of contractor resources has been considered. Given the competition for locally based resources from other programs and sectors, for larger packages of works planned for integrated possessions early consultation is undertaken with key contractors, where possible.

Materials Procurement

Aurizon Network utilises the Aurizon enterprise centralised procurement function for all source to award activities required for the maintenance and renewal of the Rail Infrastructure.

Enterprise procurement has a performance-focused governance framework that ensures a market-based price for the required goods and services that are procured to support Aurizon Network, at the specified quality and ensuring delivery when and where required. The major materials utilised by Aurizon Network are rail, ballast, sleepers and fuel.

Rail

Aurizon Network mainly purchases premium deep head hardened 60 kg rail. The hardness of the rail has a direct impact on its usable life, while the weight of the rail is associated with the axle load of the train consists being run on the network. Rail is delivered to the Port of Brisbane, welded into 110m lengths at the Aurizon Rail Weld Facility in Brisbane and then transported via dedicated rail delivery rollingstock to trackside locations as per renewal scope.

Rail is currently sourced from two international rail suppliers. Aurizon Network's rail contracts with both suppliers were awarded through a competitive tender process and are both evergreen contracts. Aurizon Network employs a dual supply strategy, to promote continuity of supply and price competitiveness throughout the contract life and optimal technical collaboration from both suppliers.

Ballast

Aurizon Network sources ballast and other rock and soil materials to defined Aurizon Network standards from various quarries across Central Queensland. Location is a critical consideration to reduce transit time and delivery cost.

The Aurizon Ballast Panel consists of 16 suppliers and 35 quarries throughout the CQCN. Suppliers were selected based on:

Geographic proximity to the network to support improved network coverage, and preference for multiple quarries/supply points to assist with disaster recovery plans and supply continuity;

Compliance to the ballast quality and testing standards as set out in Aurizon Network's specifications;

Competitive pricing against existing average rates of all suppliers and specifically regional competitors; and

Understanding and compliance with chain of responsibility and general safety standards.

The range of suppliers ensures adequate and reliable supply to meet Aurizon Network's demand for ballast. Each system has a rail siding and a contracted supplier providing loading, unloading and stockpile management services.

Aurizon Network ensures cost competitiveness of ballast through the multi-supplier arrangement and consolidated internal supply planning arrangements. An emerging issue for ballast supply is the consolidation of ownership in 2022 and 2023 by one supplier who now owns 9 of the ballast supply quarries

relied upon by Aurizon Network.

Sleepers

In FY21, Aurizon conducted a sourcing event focussed on finding the best quality and best value supply of quality pre-stressed narrow gauge concrete sleepers. The outcome of this open tender was a Standing Offer Arrangement with one supplier producing and storing Aurizon Network specified sleepers in Central Queensland.

Fuel

Fuel expenditure within the Aurizon Group is significant. Aurizon's existing contractual arrangement for fuel was awarded to one supplier following a competitive tender process ensuring alignment to current market pricing.

Aurizon Network's maintenance and renewal activities comprise a relatively low proportion of the Aurizon Group's total fuel consumption, with the majority being consumed by the above rail business. Aurizon Network's maintenance and renewal program benefits from the ability to leverage the larger purchasing power of the Aurizon Group.

Inventory

For asset renewal activities, inventory strategies are focused on limiting the number of variations of each

asset type being installed, e.g. rationalising turnout types and sizes in a system to reduce the supporting component types required in inventory. Asset Managers set and monitor emergency spares and component renewal inventory levels to ensure that a minimum amount of inventory is held with an ability to respond to emergencies and maintain continuity of service operations.

Control Systems inventory levels are managed to achieve system availability requirements and the renewals deployment schedule as well as maintaining critical spares for assets near obsolescence such as Relay Based Interlockings.

Specialist replacement inventory is typically held at depot sites to support emergency response and expediting the return of the Rail Infrastructure to service following an incident. Three centralised stores at Gracemere, Rockhampton and Paget are maintained for high volume consumables, and replacement stock for depot stores.

For maintenance activities, the quantity of maintenance replacement inventory is typically set by procurement lead time requirements and usage frequency. Additional inventory is held for equipment items that are becoming obsolete in the marketplace, to defer renewal based on obsolescence. Recovered obsolete components are retained in inventory to extend renewal intervals of components that are obsolete and beyond their economic life.

10.4 Works Execution and Close

This section outlines Aurizon Network's considerations to delivering and executing the asset activity required in each Coal System along with the supporting procurement.

10.4.1 Track Possession Types

Asset activity is executed using a variety of track possession approaches outlined in the table below which seek to minimise customer impacts and maximise safe access for people and plant.

Table 88 Summary of Track Possession Types

Type	Definition	Key Objectives	Example
Integrated Closures	When asset activity is required in high impact locations, requiring significant track time or results in significant capacity impacts. Track is typically non-operational to revenue services.	To combine asset activities into an integrated closure to enable maximum works to be completed as efficiently as possible. Where possible, this is in line with other supply chain outages (i.e., port closures).	Culvert Replacement, and Ballast Cleaning
Single line closures	When asset activity can be completed on one track in a duplicated section whilst the other track is kept operational to allow for continuous train services.	To allow execution of scope that can't be completed in Integrated Closures while allowing some services to continue, minimising network impact.	Rail Replacement
Shadow possessions	When asset activity can be completed in sections by taking advantage of areas of the network that are unviable for coal trains due to other renewal or maintenance activity occurring and doesn't consume any additional capacity.	To maximise scope being completed without consuming additional capacity.	Rail Stress Management
In-between train services	When smaller asset activity tasks can be undertaken in a safe and controlled manner on track whilst no trains are present or by utilising capacity not required for coal services (in low demand weeks).	To minimise the impact to capacity by working between trains. However, cost could increase due to inefficiencies (waiting access).	Points Maintenance
As a scheduled rail service (moving maintenance or resources)	There are track vehicles or track machines requiring access to perform inspections or maintenance such as, but not limited to, recording cars, high rail inspections, grinding and movement of rail plant.	To complete scope / inspections as efficiently as possible without impacting rail traffic.	Mainline Track Resurfacing
Plan throughs (nil access required)	When asset activity or general maintenance is completed outside the operational areas of the railway having no impact to train services.	To complete scope with no impact to capacity.	Fault Inspection

10.4.2 Asset Activity Undertaken During Integrated Closures

In planning for the execution of works in integrated closures, particularly for critical path work packages, consideration is given to the scope planned to be delivered and whether a portion may be able to be undertaken prior to the closure. Strategies used to manage the work include consideration of:

- whether activities can be split across multiple closures
- scheduling work activity whilst the system is in ramp up or ramp down, e.g. as consists are being stowed in preparation for the closure
- ensuring that the work site has adequate access, or if prework may be completed to improve access (and safety) prior to the start of the closure
- consideration given to asset condition as related to safety and operational performance and the associated interruptions to supply chains

- locations of laydown areas or equipment pads

  lead times to source and transport material
- activities which can be performed in parallel
- interface management requirements and assignment of resources for these, including isolations, protection; and
- access to key plant and labour resources e.g. resurfacing plant.

10.4.3 Critical Path Activities

Each year, the closure pattern is driven by required renewals scope. For every integrated closure there is typically one or more significant renewal activities (i.e. the critical path activities) that will determine the length of the closure. Critical scope or critical path activities are identified and distributed across the year during the access planning process.

Other scope in the impacted locations is subsequently identified and planned for delivery within the same possession to ensure that Aurizon Network can maximise the scope of work to be delivered during the time the rail infrastructure is closed.

Internal resources, contractor availability and other support facilities (e.g. accommodation) are considered to allow for on average 100-150 independent activities per closure. Some spare capacity is maintained to allow for any corrective maintenance to occur within the possession. These activities are often not known until 84 to 28 days prior to the planned closure.

Other work may be added provided it can be completed safely, does not impact the resources or equipment that are required for the driving activity, and that it will not cause a delay in handing back the track at the expected end of the closure.

10.4.4 Asset Activity Undertaken Outside of Integrated Closures

Not all asset activities can occur within integrated closures due to the limited duration of these possessions, resourcing availability and the nature of delivering these activities.

Mechanised Maintenance and Renewal

Table 89 outlines some of the principles Aurizon Network applies to minimise supply chain impacts when planning activities that take place outside of closures.

Table 89 Mitigating the Capacity Impact of Works That Takes Place Outside o Integrated Closures

Task	Planning Principle
Ballast Cleaning	Ballast cleaning scope is delivered predominantly inside integrated closures. Where necessary, single closures are required to deliver identified scope. Supply chain impacts are minimised by planning the highest-impact locations for completion within closures. Where possible, the BCM follows and utilises all systems closures to minimise its requirement for access outside of closures.
Rail Grinding	Rail grinding is a planned activity with frequency rates defined within track standards. The frequency is dependent on the track alignment, i.e. more grinding is required on curves than on straights. Planning is based on when track sections will reach throughput triggers. As a result of throughput triggers, grinding activity may vary from year to year to ensure stable management of rail condition.
Track Resurfacing	Track resurfacing is a planned task triggered by geometry condition deterioration to rectify identified defects after inspections.

	Track resurfacing is also undertaken as part of renewal activities where the track has been disturbed. This activity is planned between coal trains to minimise impact.
Road Runs	On-track inspections as part of the planned inspection strategy mandated by the SMS. Road Runs are a cyclic activity conducted each 96 or 192 hours dependant on location. Road runs are activities planned as part of the MRSB process.
Asset Inspections	Asset inspections include track geometry measurements, overhead alignment (Blackwater and Goonyella), fault identification and ultrasonic rail testing This work can vary in terms of capacity impact, typically it will be packaged and aligned to integrated closures, single line possessions, or where possible, in between revenue services.

Non-mechanised Asset Activity

Where possible, Aurizon Network plans non-mechanised asset activities to take place in the shadow of other work to minimise potential adverse impacts on train operations or system capacity. This allows multiple activities to occur simultaneously without consuming additional capacity.

An asset activity may also be planned and delivered after the Intermediate Train Plan has been laid down (which allows flexible activities to be planned in the spaces between trains) or in-between trains on the day of operations. This is achieved through direct consultation with Train Control. Where asset activities can be conducted efficiently and safely between trains, Aurizon Network's operational teams will opportunistically utilise this time to minimise the impact of required asset activity on supply chain operations.

Asset activities that can be planned in this manner are outlined in Table 90.

Table 90 Activities that can be Completed Within the Shadow of Other Asset Activity or In-Between Trains

Activity
Inspections and walkouts
Preventive maintenance and repair of signalling, overhead and civil components (e.g., rail lubricators)
Top and line spot resurfacing
Glued Insulated Joints (GIJ) management
Fencing
Fire and vegetation management
Access Points/Access Roads
Drainage
Monument and signage maintenance
Power systems

10.4.5 Key Plant and Equipment Utilised in Work Execution

Aurizon Network uses a combination of owned and operated and external sourced plant and equipment. The decision to in-source is based on level of specialisation and availability in the market, baseload scope to support utilisation, dependency of scope delivery on availability of plant and equipment and ability to respond to incidents. A large proportion of plant and equipment from external suppliers is procured under wet-hire contracts and the rail grinding contract. The major owned and operated equipment relate to resurfacing, ballast cleaning and other minor plant and equipment including that required for vegetation control.

Resurfacing

Aurizon Network's resurfacing plant was progressively put into operation between 2013 to 2016 and replaced its aging fleet of tampers and regulators. The newer high production resurfacing plant are more efficient and can deliver the required scope of work with less track time.

Aurizon Network also has a resurfacing consist (MMA 505 Tamper and MMB 505 Regulator) that primarily supports the ballast cleaning operation.

The Resurfacing Plant are not dedicated to any individual Coal System, which provides flexibility for each resurfacing consist (comprised of an MMA and MMB machine) to be planned in a way that provides operational efficiency.

Ballast Cleaning

Ballast cleaning is made up of two specific items being the Ballast Cleaning Machine and, Excavator undercutting.

Ballast Cleaning Machine (BCM) is undertaken by the RM902. RM902 is most efficient at delivering undercut and shoulder cuts simultaneously over longer sections. The RM902 entered production in May 2021.

Excavator Undercutting is undertaken using contractors (work packages). Excavator undercutting is appropriate for smaller sections, turnouts and/ or areas difficult to access either due to location or condition.

Factors impacting delivery of ballast cleaning scope by the above plant and equipment are:

- **Wet weather**
- **Ballast fouling and return rates**. This relates to the moisture content and the presence of clay mixed with ballast contaminants. Heavily fouled ballast is unable to pass through the machine screens, hence is deemed unscreenable and requires all ballast to be replaced (total excavation). This factor has a significant influence on machine production rate with total excavation slowing production. The cost and scope that Aurizon Network can achieve during production is highly sensitive to changes in asset condition relative to plan. Aurizon Network has sought to mitigate this risk by implementing an additional pre-dig performed approx. 18 months from execution, which is used to inform the planning assumptions for MRSB;
- **Increased ballast depth** results in a higher volume of ballast material required to be processed, reducing the production rate;
- **Machine breakdowns**.

10.4.6 Works Completion and Reporting

From the outset of scope identification, information is captured, built, and stored to enable the planning process, execution, reporting and close out. System statuses in SAP allow users to indicate the readiness for scope to pass from one step in the process to the next. As work progresses, the scope, plan and actuals are captured in SAP consistently and enables the monthly, quarterly, and yearly financial reporting of actuals against planned scope and budget to the RIG. Work moves from a notification to a work order in SAP. Purchase orders are attached to work orders when work is procured externally.

As scope is identified through to execution, the status of the work is updated, and artefacts are retained in SAP to support decisions. This information is used to report on the status of the work and ultimately informs reporting and trend analysis for performance improvement. When work is identified as commissioned (or Technically Complete) it is included as part of the Capital Claim process.

During the year, closure and completion reports are undertaken which provide information for the Quarterly RIG Report and CAPEX Claim for that financial year. Post closure or completion reviews are also undertaken to improve processes going forward for maintenance and renewal activities.

10.4.7 Works Execution and Close Improvements

Table 91identifies the improvements and changes made to the Works Execution and Close Processes element since the FY25 MRSB.

Table 91 Improvements to Works Execution and Close Processes since FY25 MRSB

Category	Key Variation to FY25	Performance Lever	Expected Benefits
Vendor review	Further refinement of packaging of labour, materials and services. Strategic location vendors to minimise mobilisation & demobilisation costs.	Cost out	Reduction in cost $1m - $2m
Integrated work regime	Implementing cyclical access windows based on work demand, reliability risks, defect profiles etc to enable work to be integrated, packaged & aligned.	Access	Reduction in access hours to be quantified
Vegetation Management Strategy	Trialling alternative vegetation management methods.	Cost out	Reduction in costs (unable to estimate until trials are completed)
Internalise the telecommunications maintenance	Internalise the telecommunications maintenance previously contracted to an external vendor.	Cost out	Reduction in External Contractor cost $0.7m - $1.1m
Western Depot Retention	Extend Western Depot allowances and Western Depot accommodation strategy.	Reliability	Sustained ability to respond to faults and events which builds supply chain resilience in remote locations (~$1.5m)
Labour efficiency review	Implement findings following review.	Improvement to labour utilisation	Benefits to be determined post review

10.5 Engagement and Reporting

Aurizon Network has, in conjunction with stakeholders, developed a pattern of engagement to support the development of the annual MRSB and to provide greater transparency around the delivery of the MRSB for the current year. This engagement is in addition to Aurizon Network's obligations under UT5 and includes:

The development of an engagement plan in February each year, subject to the approval status of the MRSB escalation to the RIG representative group or affected stakeholders on variations to the approved MRSB; and

The publication of a Quarterly Report providing relevant information for each Coal System.

Aurizon Network reconfirmed their nominated success criteria for the engagement with the RIG in FY26 is:

- approval of the FY26 MRSB
- FY25 investments accepted into RAB through CAPEX Claim using RIG and Project Reporting
- RIG requests for information and clarification assist Aurizon in decision making; and

- the engagement builds and maintains confidence in Aurizon Network's management and governance of maintenance and renewal activities.

Figure 100 below is the agreed engagement with the RIG representative group, for the development of the FY26 MRSB, quarterly reporting and progress of both the FY24 and FY25 MRSB.

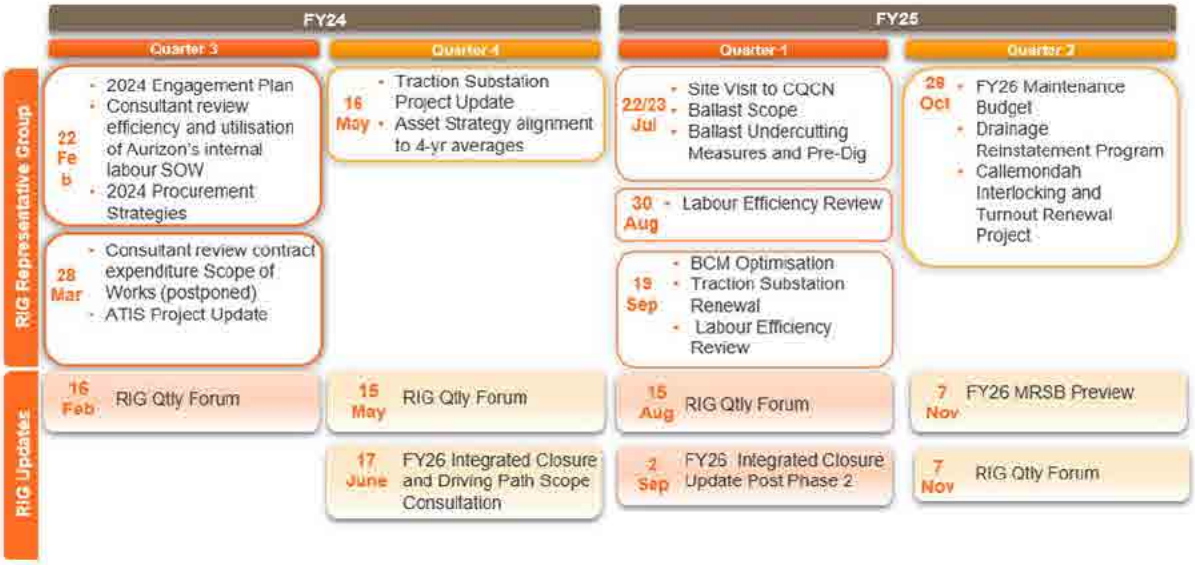


Figure 100 Stakeholder Engagement Commitment Milestones

10.5.1 Rail Industry Group Producer Group Meetings

In February 2024, the Chair of the RIG advised Aurizon Network that the FY25 Final Draft Proposal (FY25 MRSB) had been approved by the voting members of the RIG. The approved FY25 MRSB included commitments to engage with the RIG during the development of the FY26 Final Draft Proposal, including the development of an annual engagement plan. The plan included engagement on the topics included in the table below. Aurizon Network has been progressing these engagement topics with the RIG producer group, with updates on engagement provided in each Quarterly Report.

Table 92 RIG Engagement Topics of Focus Areas for 2024

	Topic Area	Actions and Outcomes
1	Review of the efficiency and utilisation of Aurizon's internal labour Work with RIG to develop efficiency initiatives that can be reported against and used to inform the FY26 MRSB	In February and March Aurizon Network and RIG Producer Group jointly agreed a Statement of Work to engage an external contractor for the review of the efficiency and utilisation of Network's internal labour. An RFP process didn't provide a suitable contactor. In August and September, Aurizon Network presented labour data, metrics and cost drivers materially addressing three of the five stages of the labour efficiency and effectiveness review originally to be conducted by an external consultant. In response to a request by the RIG Producer Group, Aurizon Network has proposed a scope of works for an external consultant that looks at the benchmark data for the Electrical team and undertakes a qualitative investigation with subject matter experts. A second RFP process based on the reviewed scope of works is planned for November to commence the review before the end of 2024.

	Topic Area	Actions and Outcomes
2	Work with RIG to scope and engage an external provider to conduct a review of maintenance and renewal contract expenditure to identify those tasks which are both out-sourced and occur every year (e.g. rail stress management, excavator undercutting, culvert inspections and repairs).	In March the RIG Producer Group agreed to prioritise the Labour efficiency and utilisation review before focussing on a review of contract expenditure. As the labour and efficiency and utilisation review is still to commence with a contractor this item has not progressed in 2024 and will be included in the 2025 Engagement Plan.
3	Provide updates of progress against plan for the long-term strategies presented to the RIG (e.g. Interlocking, fibre optics, OHLE upgrades, ATIS etc.). Timing of updates to be discussed at February RIG Producer Group Meeting	Aurizon Network provided updates for progressing Strategic Programs of work including: ATIS In July, the RIG representative group supported the recommended option for the ATIS OTV - Light engine runs with ATIS-equipped locos provided by Aurizon Operations under a Service Level Agreement. Costs are now reflected in the FY25 Forecast, within the General Track Maintenance category. ATIS has now moved to Business as Usual implementation. Traction Substation Renewal Program In May Aurizon Network provided an update to RIG on program progress through prefeasibility phase assessing scoping options. Aurizon Network also sort feedback on the process and timeline for consultation toward QCA approval process for Significant Electrical Investment. In September, the RIG Representative Group received a further Prefeasibility Phase update on the planned risk assessment to be completed in the Prefeasibility Phase and potential Reference Tariff impacts for the investment (based on early phase estimates), pricing sensitivities to be included in the pre-feasibility report. Aurizon Network will consider whether amendments are required to the Access Undertaking to incorporate the Significant Investment Approval Process within other RIG voting processes. Callemondah Interlocking and Turnout Renewal Program In October Aurizon Network provided an update on the program for Callemondah and Interlocking Renewal Program through modernising signalling infrastructure to support Turnout Renewals. Strategy to use existing closure footprint through multi-year delivery to manage cost and access requirements of this long program of works in a complex location.
4	Provide confidence in selection of Ballast Scope so that when scope is presented as part of the MRSB each year, the RIG understands the condition and criticality of the scope item to support their decision to approve the Renewal budget or otherwise	In February and March, Blackwater and Goonyella stakeholders were engaged regarding BCM closure extensions. Revised execution assumptions and completion of pre-digs indicated approved MRSB hours for five RM902 sites were insufficient to deliver approved MRSB scope. An analysis was completed on a site-by-site basis to determine best approach. Options considered were: • Defer scope length to maintain access hours; or

	Topic Area	Actions and Outcomes
		• Increase access to maintain scope. In September, Aurizon Network provided an update on FY26 scope selection and access impact. Aurizon Network will give consideration to including Ballast tonnes/ km in the FY26 MRSB, noting the presentation included the historical ballast material to replace fouled material and did not include the amount of ballast cleaned. Also noting linear km does not take into consideration volume of material. Aurizon Network provided an update on the benefits of the Ballast Optimisation Initiative, noting that the initiative results in less access time than what would have been required in the previous "half year per system" strategy.
5	Continue to progress actions identified within RIG Producer Group 2023 engagement (topics added to engagement timeline for 2024)	Data and Reporting Updates In January, Aurizon Network provided an overview of how delays are captured and reported, including. information on classifications for Planning Delays and Cancellations. The session also focussed on the actions Network is taking to reduce unallocated delays targeting systems, processes and people improvements. Actions from the session are to investigate separating unscheduled delays from scheduled delays in reporting and provide an update to the RIG Producer Group on Network initiatives to reduce unallocated delays. Procurement In February, the following sourcing events were identified for RIG engagement: Rail Grinding, FY25 Civil Asset renewals, Ballast and Sleeper Wagon Overhaul and multi-year procurement for Signalling Equipment Rooms / Huts, Axle Counters, Weighbridges and Design Services. Sourcing strategies for these procurement activities were discussed with RIG. Asset Performance Averages In May, the RIG Representative group received an update on trends emerging from the 4-year averages for asset performance metrics included in the RIG Quarterly Report as well as alignment to maintenance and renewal strategies. Averages point to improved reliability for Control Systems as a result of targeted renewal investment programs.

10.5.2 Quarterly Report and Forum

The RIG Quarterly Report provides a year-to-date performance snapshot against the approved plan as well as providing a summary of system reliability and efficiency of delivery. The report covers three key areas for each Coal System:

- system performance and impact to customers
- performance to the approved strategy and budget; and
- infrastructure reliability (by exception).

11 Environmental, Social and Governance (ESG) Considerations

The CQCN is a critical part of the global supply chain, with around half of all global seaborne export metallurgical coal travelling across the network.

Over the past several years, Aurizon Network's response to numerous severe weather events has demonstrated the resilience of our key assets, operations and the effectiveness of our incident preparation, management and recovery processes.

The CQCN is characterised by long-lived capital assets that are concentrated in climatic regions that could trend towards hotter and drier conditions and increasingly severe weather events over the coming decades.

Aurizon Network recognises the importance of building resilience and capability to manage the impact of climate change (including physical and transition risks), and to support sustainable business practices. Several environmental, social and governance (ESG) aspects are relevant to the CQCN and the delivery of the maintenance and renewal programs. These factors are discussed in further detail below.

11.1 Environmental

Aurizon is committed to minimising our impact and interaction with the environment, and effectively managing our environmental performance and risks.

11.1.1 Environmental Compliance

Aurizon has a Safety, Health and Environment Commitment and an established environmental management system aligned with the principles of ISO14001.

When delivering CQCN maintenance and renewal activities, Aurizon Network must ensure compliance with its environmental and planning obligations. This involves engagement and consultation with the Aurizon Environment Team, who can provide advice on the numerous statutory requirements of legislation from various jurisdictions, access agreements, contractual agreements and site-specific permits, authorities, licences and approvals which may be required.

The Environment Team must be engaged where maintenance and renewal activities involve:

- works outside of the rail corridor
- removal of soil from the corridor;
- works within 50m of a waterway or wetland
- removal of native vegetation which occurs outside of the rail corridor
- storage of hazardous chemicals (e.g. fuel) within the corridor or otherwise any temporary location; and
- removal of construction, commercial or regulated waste if it is being completed by an entity other than a licensed waste contractor.

Legislation relevant to Aurizon Network's operational footprint may change from time to time and may have an impact on the cost and scope of maintenance and renewal activities.

11.1.2 Recycling/Repurposing of Materials

Where possible, Aurizon Network seeks opportunities to reduce waste to landfill and increase recycling to extend the life of materials and to reduce waste disposal costs. Examples include:

- **Ballast / spoil management** – opportunities may exist for material to be graded into access roads.
- **Sleepers** – concrete sleepers may be repurposed for use in retaining walls or recycled and crushed into aggregate.

- **Inventory Materials** - reviewing obsolete materials (including from plant and equipment) for suitability of on-sale before alternative recycling or waste disposal methods are applied.

11.1.3 Physical Risks – Climate Change

Aurizon Network applies a range of process controls to identify and monitor locations across the CQCN that are more susceptible to climate impacts, which in turn provides opportunities to target expenditure to improve asset resilience.

As discussed in the FY2025 MRSB, direct and indirect impacts from Physical climate change, can manifest through:

- direct physical risks relating to extreme weather events; and
- changes to asset standards to promote asset resilience and targeted investment in known areas prone to weather related impacts.

To manage these risks, Aurizon Network implements a range of controls, a selection of which are included in the table below.

Table 93 CQCN Physical and Process Controls

Physical Controls	Process Controls
Temperature Sensors	Hazard Identification Register
Flood Height Monitors	NETCON process
Flood Rock	Incident Response Standards
All Weather Access Roads	Hot Weather Precaution Standard
Slip and Rock Fall Detection Systems	Hydrological Assessment

In considering the above risks and controls, it is important to have regard to the economic balance between investments in network resilience and network remediation. Investments in:

- **Network resilience** – preventative expenditure that can mitigate the impact of extreme weather events (e.g. extent of damage and/or duration of outages). Consideration must be given to longer term demand for the asset, the willingness of customers to pay for improved resilience and the likely capacity impacts, particularly when the location and extent of an event is unknown.
- **Network remediation** – reactive expenditure following a known event. While scope and expenditure would be more clearly defined and targeted to the affected area, extreme weather events may have a greater impact in terms of supply chain disruption and costs due to the reactive nature and availability of resources to complete remediation tasks.

The MRSB process provides an opportunity for Aurizon Network to outline and consult on the forecast scope and expenditure that is necessary to address not only the 'BAU' level of asset activity, but also the anticipated works that Aurizon Network considers will help to improve asset resilience to climate change.

11.1.4 Transition Risks – Climate Change

Transition risks relate to matters such as changes in policy, law, markets, technology, and prices that are necessary to achieve the transition to a low-carbon economy.

Some of the key transition risks relevant to Aurizon Network include:

- market conditions, including changes in customer demand. This can impact maintenance and renewal investment trade-offs, which are relevant to investment in long life assets where future demand may be uncertain

- government policy, including Commonwealth and state emissions reduction targets (and the implications for regulated businesses making long-lived investments in this context)
- reputational issues – where reducing or offsetting emissions is viewed as being consistent with a businesses' social licence to operate
- supply chain pressure – where other businesses put pressure on regulated businesses to reduce emissions and/or retreat as a supplier. This can result in increased cost of labour and materials as a result of suppliers' own emission reduction targets, or where premiums are required due to suppliers' preference to service low emission or non-fossil fuel-based businesses; and
- financing, insurance and investor preferences, where access to financing or insurance is tied to emissions levels or to achieving emissions reduction targets, and where investors decline to invest (or reduce investment) in particularly "dirty industries".

Attracting and retaining skilled labour continues to remain challenging for Aurizon Network due to the high demand for qualified resources across the construction, mining, energy and rail sectors. Various mitigation strategies were implemented in FY24 including engagement of contract labour support and the rollout of targeted trainee and apprenticeship programs, particularly for Electrical trades.

11.1.5 Corporate and Social License

Aurizon's 2020 Climate Change Strategy and Action Plan targeted a 30% emission intensity reduction by 2030 based on 2010 operations and a Net Zero operational GHG emission by 2050.

Aurizon Network has sought to integrate Renewable Energy into the energy procurement mix through its Energy Supply Agreement (ESA) with Clean Co Queensland. Over the course of the ESA, 25% of Aurizon Network's electricity and associated large-scale generation certificates will be sourced from three renewable energy projects (solar and wind) as they come online. Aurizon Network procure and manage energy supply for the electric traction network on behalf of customers.

11.1.6 Insurance

Recent experience from the insurance market has seen a tightening over recent years. Entities looking to place insurance are competing on a global scale for market capacity with insurers looking for embedded risk management and risk prevention strategies. Insurers have varying approaches to managing climate change or ESG risks, and it is expected that insurers will continue to be wary of infrastructure that is exposed to significant natural events.

Aurizon has opted to not commercially insure the majority of the CQCN. As a result, there is no external commercial insurance coverage for damage to the rail network (i.e. track, sleepers, ballast) or loss in revenue from factors such as extreme weather events.

Aurizon Network self-insures for certain events over $1 million. Aurizon Network's self insurance risk cover primarily relates to those that commercial insurance markets typically do not have the appetite to underwrite, including:

- weather and natural catastrophe events
- dewirement; and
- third-party repairs.

In the event of weather damage (storms, floods and extreme heat) large weather losses are eligible for pass through consideration where the total loss from each event exceeds the $1 million pass through threshold.

11.1.7 Finance

Access to and the term of Senior Debt in Australia for climate change exposed business' has reduced over recent years, with investors and financial institutions placing tighter financial conditions on their lending and investment activities.

A reduction in available debt and equity financing, may ultimately result in an increase in the cost of capital, and/or an impact on credit ratings and counterparty risk, which has implications for pricing and risk allocation between Aurizon Network's Customers.

11.1.8 Technology and Innovation

Aurizon Network actively works with customers and supply chain partners to bring innovation and technical insights into initiatives like coal dust management, and rail and air temperature monitoring.

For example, Aurizon Network, in partnership with Kallipr, won the 2024 Australasian Rail Industry (ARI) Innovation Award for implementing an advanced rail and air temperature monitoring system in the CQCN (Captis Recharge).

High rail temperatures can lead to rail buckles and can potentially result in derailments. The Captis Recharge system provides real-time temperature data from rail tracks, allowing for earlier detection of unsafe rail temperatures with a greater level of precision. The Captis Recharge devices are solar powered.

Noting the potential for hotter and drier temperatures over time, the devices help to reduce heat-related operational disruption through the more targeted application of speed restrictions to heat affected parts of the rail network rather than applying blanket speed restrictions across the entire system.

11.2 Social

Aurizon Network is committed to the safety, health and well-being of our people, as well as the safe and environmentally sustainable operation of our business in a way that minimises our impact on Indigenous and non-Indigenous cultural heritage.

11.2.1 First Nations Peoples

As noted in its Reconciliation Action Plan, Aurizon works in partnership with and seeks to undertake meaningful action to grow opportunities for First Nations peoples, businesses and communities.

The CQCN operates on or near First Nations peoples' traditional lands, which brings both opportunity and responsibility. Aurizon Network has developed the 'Indigenous Cultural Heritage Management' guideline, which sets out a commitment to minimise our impact on Indigenous and non-Indigenous cultural heritage through a framework founded on knowledge, understanding and respect.

The guideline establishes a framework outlining key activities that are required to be undertaken to achieve compliance with relevant legislation and cultural heritage best practice. It also provides for a system of accountability within Aurizon.

When planning maintenance and renewal activities throughout the CQCN, Aurizon Network has a duty of care to ensure that the activity does not harm Aboriginal cultural heritage. This involves exercising due diligence prior to undertaking works, to assess:

- **Location** - Will activities occur in an already disturbed or undisturbed environment; or are activities located in proximity to potentially significant landscape features.
- **Known Aboriginal cultural heritage** - Whether the proposed works area is within or close proximity (100m) to previously documented Aboriginal cultural heritage sites, places or features.
- **Nature of the work** - Whether the activity requires disturbance of the ground surface / removal of native remnant vegetation / trees.

Aurizon Network maintains its own Webmap risk assessment tool to assist in assessing and determining the risk category of proposed works within and adjacent to the CQCN. The tool also includes details of previously assessed areas.

11.2.2 Workforce Representation

Aurizon continues to strive towards creating an inclusive environment, and actively monitors its performance against key sustainability targets and objectives, including:

- gender representation on the Board
- representation of women in senior executive roles
- representation of women in the workforce; and
- representation of Aboriginal and Torres Strait Islander men and women in the workforce.

As illustrated below, Aurizon's overall female representation in the workforce increased during FY24 to 23%, an increase from 21% the prior year. Throughout FY25, Aurizon will continue to strive for gender balance at all levels through a variety of initiatives including the development of the second Gender Balance Action Plan, gender pay gap actions as well as the attraction and retention of female talent, particularly into entry-level and leadership positions.

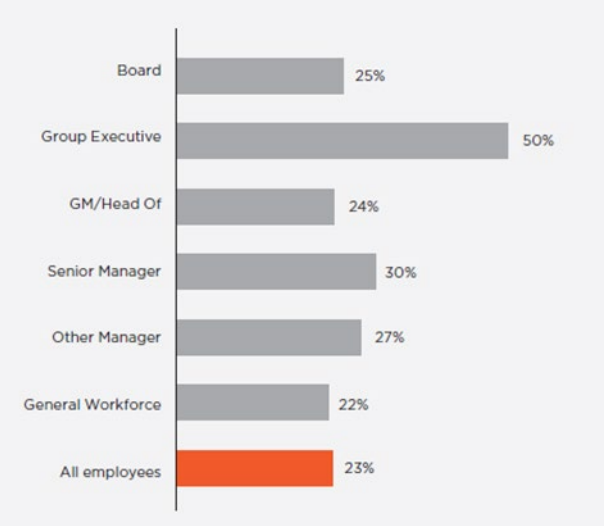


Figure 101 Female Workforce Representation

At Aurizon we are committed to developing effective employment and development opportunities for First Nations peoples and creating sustainable opportunities for Aboriginal and Torres Strait Islander businesses in the communities where we operate. In FY24:

- 7% of Aurizon's workforce identified as being of Aboriginal and/or Torres Strait Islander heritage; and
- Aurizon's procurement spend with Aboriginal and Torres Strait Islander businesses was in the order of $24.2m; with c.$19.8m of that spend from Aurizon Network.

11.2.3 Modern Slavery

Aurizon understands the importance of addressing and managing modern slavery risk with our suppliers. Aurizon's Supplier Code of Conduct outlines our expectations of existing and future suppliers based on five key principles, namely: Safety, Business Integrity, Labour and Human Rights, Communities and Environment.

Aurizon recognises we may be exposed to modern slavery risk in our supply chain and has standards and processes to minimise and address such risks. This includes a Modern Slavery & Human Rights Due Diligence Framework, which details the critical process steps for identifying and managing potential modern slavery risks. This framework applies to all instances in Aurizon where due diligence must be undertaken in line with our responsibilities as a Reporting Entity under the Modern Slavery Act 2018 (Cth).

11.3 Governance

Aurizon's Governance, Risk and Assurance Framework defines enterprise-wide expectations of governance, risk and assurance processes and activities, including responsibilities across key stakeholder groups.

The Board and, in turn, Aurizon management give effect to the frameworks and policies designed to identify and manage risks. This includes consideration of inherent risks as well as contemporary or emerging risks, such as conduct risk, digital disruption and cyber risks, and climate and sustainability risks.

11.3.1 Investments

Aurizon Network adheres to the Aurizon Enterprise Investment Framework and has its own internal governance requirements (involving the Network Group Executive) to promote sound investment practices. This process is undertaken prior to the commitment of any capital investments and facilitates sound investment decisions by ensuring that:

- investment proposals are rigorously assessed
- investment decisions are made on a consistent basis
- capital expenditure is optimised; and
- learnings from past investments are considered as part of Aurizon Network's commitment to continuous improvement.

Investment Approval Requests (IARs) are provided to the relevant members of the Network Leadership Team and ultimately the Aurizon Investment Committee for review and endorsement as required.

Aurizon Network's investment framework typically involves a 'Stage Gate' (Concept, Prefeasibility, Feasibility, Execution, Operation) evaluation model, however, routine sustaining capital investments which meet the Feasibility Stage objectives (which may include the MRSB program) are not required to go through the full stage gate process. For routine sustaining capital programs, a Sustaining Capital Template for each project will be submitted to the Aurizon Investment Committee for review and Endorsement.

11.3.2 Management of External Suppliers and Contractors

Aurizon Network has panel agreements in place, which cover a large number of suppliers and contractors. Panels are established through a structured procurement process and help to mitigate risk by ensuring that third parties engaged by Aurizon Network have the required qualifications, skills and competencies to deliver works in the CQCN. The panel arrangements also help to promote value for money through 'price tension' mechanisms enforced by the competitive environment within the panel design.

Suppliers and contractors are typically engaged under one of two types of arrangements:

- Pre-defined scopes of work, using fixed lump sum or Schedule of Rates (SoR) pricing; and
- Undefined scopes of work on SoR price basis.

Aurizon procurement manage contracts and supplier performance, to ensure all parties meet their respective commercial and legal obligations under the contract as efficiently and effectively as possible.

11.3.3 Supply Chain Risk

Building resilient supply chains and effective inventory management is critical to ensure optimal levels of supply to minimise costs and ensure Aurizon's operational assets are appropriately maintained to minimise interruption to service delivery. Ongoing global events continue to increase supply chain complexity and challenge reliability, including evolving international trade relations tensions, labour shortages and constraints on raw materials.

These risks are manifesting with increasing supply chain costs, lead times and delays in obtaining some goods and services. Aurizon is approaching the risk by:

- engaging directly with suppliers
- diversifying supplier bases
- refreshing inventory management approaches
- strengthening inventory levels
- monitoring emerging supply chain risks.

Appendices

Appendix 1 – Renewal Scope Detail Report

Explanatory Notes

The Renewal Scope Detail Report for each system is provided in this appendix and also as a Power BI report. All customers who have access to the Aurizon Network Customer Portal will be able to access the Renewal Scope Detail Report in PowerBI.

The Renewal Scope Detail Report includes four selectors at the side of the report to filter to relevant scope. These are:

- System
- Scope Type
- Asset Class
- Program.

For each selection made, the proportion of program by investment type will be calculated in the boxes on the right.

The report data can be extracted by hovering the cursor to the top right of the table and selection more options from the '…' Icon.

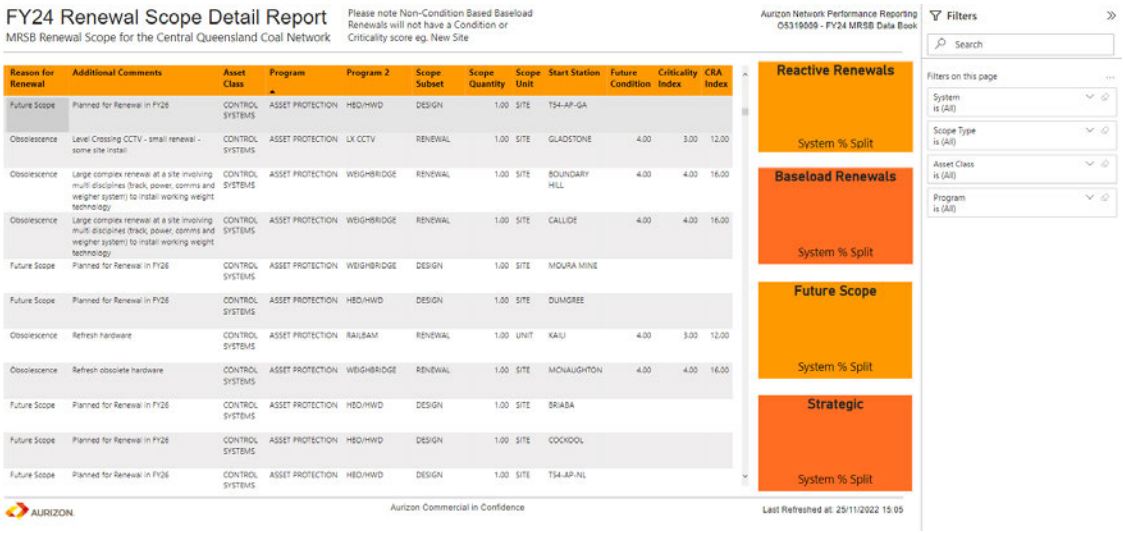


Figure 102 Screenshot of FY25 Renewal Scope Detail Report

Provided as attachments are exports of the Renewal Scope Detail Report for each system.

Appendix 2 – Alternate Considerations for Maintenance

The different approaches that Aurizon Network applies in maintaining the rail infrastructure result in the application of maintenance tasks across the system. A summary of alternate considerations used to support each approach is detailed in Table 94.

Table 94 Maintenance Consideration

Activity	Description	Alternative maintenance option
Mainline and Turnout Resurfacing	Track settlement occurs in heavy haul railway conditions, presenting as track geometry defects that can result in derailments if not maintained effectively. Track resurfacing is an essential maintenance activity in railways to maintain safe track geometry for rolling stock. Track geometry defects can be symptomatic of an underlying defect, which is creating excessive or rapid track settlement. Multiple resurfacing interventions to maintain safety is a key consideration when determining whether ballast cleaning and formation renewal work is required. Resurfacing activities are currently delivered in a way that provides operational flexibility with these activities currently scheduled after customer train orders. Planned works are delivered in the shadow of other maintenance activities and/or where customer demand permits. Resurfacing scope is both preventive and corrective based.	1. Higher maintenance production / lower cost / high short-term access impact option, provides: • Larger blocks of uninterrupted maintenance access planned before trains are pathed • Focuses on plant productivity and cost minimisation • Negatively impacts access providing less flexibility to schedule between train services • Potential to increase response time to TSR's due to a longer planning horizon • Maintenance targets more easily achieved 2. Lower maintenance production / higher cost / low short-term access impact option, provides: • Smaller blocks of maintenance access planned between trains • Focus on capacity • Able to take advantage of periods of low demand (or advantageous access due to incidents) to increase production • Harder to meet maintenance targets • Closures utilised to target TSR's Aurizon Network follows option 2 in Blackwater and Goonyella due to availability of access, resources and required performance, whereas in Moura and Newlands, Aurizon Network follows the approach of option 1 as it delivers the most appropriate and balanced outcomes for the supply chain given the resurfacing plant and possessions available in the respective corridors

Activity	Description	Alternative maintenance option
Preventive Rail Grinding	Rail grinding is a critical maintenance activity to reduce rail breaks and extend the life of rail. The rail grinding approach through the CQCN seeks to control surface-initiated rail defects under a preventive regime. Intervention thresholds are based on throughput tonnage which are translated into a time-based frequency to allow long-term planning. These frequencies are dictated by the tightness of the curve as rail defects are directly correlated to the dynamic curving forces of trains. Rail grinding is also undertaken in a reactive way to remedy identified rail defects which are initiated from high traction locomotives or other unpredictable mechanisms.	Preventive grinding strategy with a small amount of corrective allowance Corrective rail grinding strategy of allowing rail surface defects to propagate to a severe condition, before reactively programming the rail grinder to perform deep rail grinding to remove the severe defect. This approach would reduce the rail grinding scope however significantly increases the risk that surface defects grow into the rail causing rail breaks. This approach would also restrict long-term planning leading to disruption in the network for unplanned maintenance. Corrective rail grinding also reduces the rail asset life as more rail is removed during rail grinding to remove surface defects and cracks. Corrective rail grinding strategies are adopted in other rail networks that have lower throughput with plenty of maintenance windows or where the demand is seasonal. Aurizon Network currently utilises option 1 across CQCN to ensure high availability and reliability of the rail asset.

Activity	Description	Alternative maintenance option
General Track	The current inspection approach for General Track is a mix of the Track Recording Car, ATIS, Ultrasonic Test Car, High Rail Vehicle inspections, walking inspections and non-destructive hand testing as detailed in the Asset Maintenance and Renewal Policy.	Reduce Inspection Frequencies - reduce inspection frequencies and revert to additional fix on fail methodology. A move to reduce the frequency of inspections would require consultation and approval from the Rail Safety Regulator. This option is not recommended and would likely lead to an increase in unplanned delays and increased cost to rectify in an unplanned manner. Operational Intervention - to reduce the impact of high priority defects, Aurizon Network can apply temporary restrictions to manage risks e.g., Temporary Authorised Non-Conformance, Temporary Speed Restrictions, Axle Load Restrictions or rerouting of loaded and empty trains. These interventions can be localised to the defect to keep the rail line open whilst working with the above rail operators to find a least impact time to rectify the defect. Whilst this keeps the rail line open, this will potentially impact operational performance and could result in unplanned closures if the defect changes. Aurizon Network currently utilises option 2 across CQCN as it delivers the most appropriate outcomes for the supply chain. Aurizon Network will be phasing in ATIS as a replacement to the Track Recording Car.

Activity	Description	Alternative maintenance option
Control Systems	Maintenance is based on defined time-based inspections of equipment items (e.g., points, level crossings) and of equipment enclosures and power supplies. The frequency of inspection varies between equipment types and is based on failure modes and criticality. Frequency and tasks are reviewed annually for effectiveness based on observed asset condition, fault performance, and impact on rail services.	Maintain only on failure – not recommended and would likely lead to an acceleration of faults which will reduce the reliability of the systems which in turn reduces the capacity of the railway. Planned frequency - the current planned frequencies are reviewed on an annual basis to align the required inspections to the condition of the assets. Frequencies and activities are adjusted where it is believed that the in-service performance will be materially improved. Any change to the inspection frequencies requires consultation and approval from the Rail Safety Regulator Increased inspection frequency and/or accelerated replacement and refurbishment to reduce the likelihood of service affecting failures - this is not recommended outside of the annual review of planned frequencies and would increase the cost of control systems maintenance. Any change to the inspection frequencies requires consultation and approval from the Rail Safety Regulator. Aurizon Network currently utilises option 2 in line with its guiding principles of identifying and correcting defects before they become service disrupting faults

Activity	Description	Alternative maintenance option
OHLE and Power Systems	The Electrical Safety Act in Queensland requires that a Prescribed Entity, such as Aurizon Network, ensures that the asset is operated in a way that is electrically safe. This includes managing the high voltage electrical assets through effective maintenance and renewals activities. Maintenance is predominantly based on defined time-based inspections of equipment items (e.g., overhead lines, transformers, isolators, etc). The frequency of inspection varies between equipment types and is based on failure modes and criticality. Frequency and tasks are reviewed for effectiveness based on observed asset condition, fault performance, and impact on rail services. The maintenance frequency is defined in the Asset Maintenance and Renewal Policy, and forms part of the RIM accreditation.	• Maintain only on failure – not recommended: expect to see an acceleration of faults as asset condition drifts from an acceptable performance level. Move to a fix on fail approach would lead to more component failures and dewirements, potentially resulting in a notification of a dangerous electrical event to the Electrical Safety Regulator. • Planned frequency - the current planned frequencies are reviewed on an annual basis to align the required inspections to the condition of the assets. Frequencies and activities are adjusted where it is believed that the in-service performance, including safety outcomes, will be materially improved. Any change to the inspection frequencies requires consultation and approval from the Rail Safety Regulator. • Increased inspection frequency and/or accelerated replacement and refurbishment to reduce the incidence of service affecting failures: not recommended outside the annual maintenance process review and would increase the cost of power systems maintenance. Aurizon Network currently utilises option 2 in line with its guiding principles of identifying and correcting defects before they become service disrupting faults

Appendix 3 – Options for Renewal Approach

When an asset is presenting for renewal several options are worked through to determine the renewal approach. The below figure describes these options.

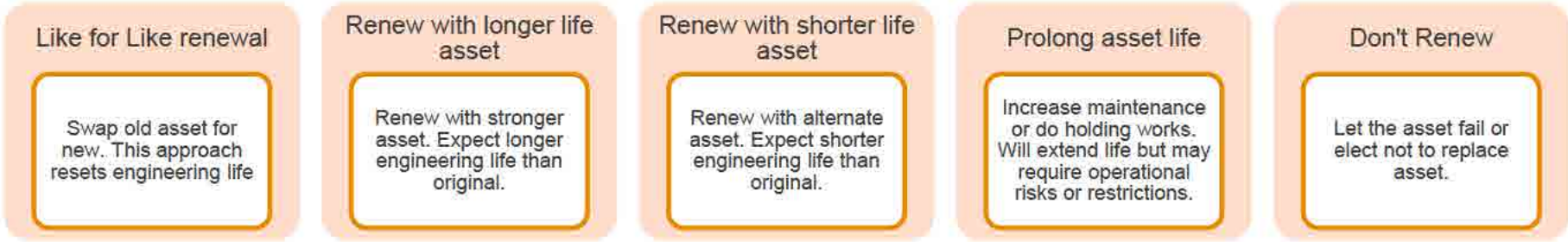


Figure 103 Asset Renewal Options

The following tables align these 5 options with each of the asset classes.

Rail Renewal is the standalone replacement of rail in a section of track due to fatigue (increased defect occurrence rate) and/or wear. The timing of renewal is dependent on the weight of the rail, its location in track (loaded / unloaded, on straights or curves), rail compassion (head-hardened, standard carbon on through-head hardened) and forecast tonnage

Table 95 Rail Renewal Options

Option	Description	When used
Renew with like-for-like asset	Like-for-like renewal looking to re-life asset	Majority of rail renewals are like-for-like replacements for mainline tangents and curves and passing Loops, Mine and Unloading Balloon Loops, Station Yards and sidings. This is undertaken when traffic task and performance are kept constant
Renew with longer life asset	On renewal install rail of higher quality or properties to achieve longer life on installed asset.	Renewing 60kg standard carbon rail with higher quality 60kg variant (i.e., head-hardened or through-head-hardened). Renewing aged 53kg rail and renewing with 60kg rail variant. This is more common in Mine and Unloading Loops, Station Yards and sidings where older rail exists (i.e., lesser quality and size). This is undertaken when traffic task is constant or increasing and performance is to be kept constant or improved.

Option	Description	When used
Renew with shorter life asset	On renewal install rail of lower quality or properties to install fit for purpose asset Matching asset life to required task	Renewing rail in low traffic mine balloons and areas or sidings with cascaded part-worn rail Renewing aged 60kg rail with a lower quality 60kg variant. (i.e., standard carbon rail) Undertaken when future traffic task and operational environment is uncertain
Increase maintenance to prolong asset life	Tangents: Increase Ultrasonic Testing frequency (closure rails). General: Additional rail grinding, temporary plating of breaks or spot resurfacing to prolong period to required renewal Replace worn or fatigued rail as a reactive renewal. Use part-worn material with lesser life where appropriate.	To carry asset to planned future renewal point or known end of life point Can only be held to a point, once head wear goes below renewal trigger risk of asset failure increases along with associated service disruption, reactive renewal is required
Choose not to renew	Not applicable unless Operational Risk measures taken, Increase Maintenance Activities and impose corridor restrictions to manage impact of traffic.	Rail repairs will increase with part-worn closure rails. Increase Ultrasonic Testing related to defect rates to monitor degradation of the rail condition.

Rail renewal can also be completed as part of Track Upgrade scope where more than one element of the permanent way assets is renewed together, for example rail and sleepers.

Table 96 Sleeper Renewal Options

Option	Description	When used
Renew with like-for-like asset	Like-for-like renewal looking to re-life asset in a row for a section of track	Sleeper renewal like-for-like replacements where new sleeper and fasteners being installed are the same as the existing. Generally, this relates to 28tal concrete sleeper with Pandrol e-clip or fast clip. Like-for-like replacement of sleepers can also include using galvanised fasteners to replace older style fist clip fasteners and higher quality pads and insulators which are the modern-day equivalent. Replacing timber with new timber sleepers is also like-for-like Renewal. This is undertaken when traffic task and performance are kept constant

Option	Description	When used
Renew with longer life asset	On renewal, install sleeper of higher quality or properties to achieve longer life on installed asset.	Renewing 22.5tal Concrete Fist Sleepers with new 28tal Concrete Pandrol e-clip sleepers. Replacing timber sleepers with new full depth or 30tal or 20tal low profile concrete sleepers. Replacement of Steel Sleepers with full depth concrete sleepers is a renewal with a longer life asset. This is undertaken when traffic task is constant or increasing and performance is to be kept constant or improved.
Renew with shorter life asset	Renewal in a section of track with new or part-worn concrete sleepers.	Renewal of timber or concrete sleepers with part-worn sleepers, or low-profile concrete sleepers that would have a reduced life. This may occur in yards, sidings or branches with reduced traffic. This undertaken when future traffic task and operational environment is uncertain
Increase maintenance to prolong asset life	To prolong the life of the sleepers, cluster management rather than the full section renewal is undertaken Cluster management can be undertaken using new or part-worn concrete full depth sleepers or low-profile concrete sleepers in an interspersed pattern. As fastener and component deteriorate, replacement will occur through maintenance to improve holding the rail to the sleepers	To carry asset to planned future renewal point or known end of life point. Cluster management of defective and damaged sleepers can only be held to a point. Once a cluster of defective sleepers go above the sleeper replacement limits in standards the risk of asset failure increases along with associated service disruption. Inspections will be increased to monitor the condition of the sleeper asset Speed restrictions may be imposed to prolong the life of the sleepers with the reduction in operational speed and loading.
Choose not to renew	Increase inspections, reactive repairs and cluster management with like-for-like spot replacement to keep within engineering standards. Repair and replace fasteners through maintenance when defective.	Defective and damage sleepers are monitored at an increased frequency Speed and load restrictions may be imposed to manage the deteriorated condition. This is triggered as a corridor is approaching economic end of life.

Sleeper renewal can also be completed as part of Track Upgrade scope where more than one element of the permanent way assets is renewed together, for example rail and sleepers.

Table 97 Turnout Renewal Options

Option	Description	When used
Renew with like-for-like asset	New Modern day equivalent full turnout renewal like-for-like or major turnout component renewal like-for-like	This is when the renewed turnout is the same angle, crossing, rail and sleepers e.g., 1 in 12, 60kg/m Rail Bound Manganese (RBM) on concrete sleeper turnout is replaced with a 1 in 12 60kg/m RBM on concrete sleeper turnout. This is also for major component replacement when replaced like with like such as Swing Nose Crossing (SNX) to SNX. This is undertaken when traffic task and performance are kept constant.
Renew with longer life asset	New full turnout renewal which is an upgrade from the existing turnout with at least one parameter of crossing rate, rail size, crossing type, or type of sleepers being a higher standard than existing and the others remaining the same	This is when a turnout renewal increases the crossing rate from 1 in 12 to 1 in 16 or a change to the crossing from RBM to SNX, 53kg/m rail to 60kg/m rail. This is undertaken to improve performance of the asset and efficiency of operation and may be required as traffic task/operational environment changes.
Renew with shorter life asset	Repair / replace components as required.	Planned major component replacement will renew parts of the asset as they deteriorate over time. The turnout is not fully renewed. This is undertaken when future traffic task and operational environment is uncertain. Formation failures may drive full upgrade and therefore shorter life replacement not possible.
Increase maintenance to prolong asset life	Increase inspections, maintenance repairs and servicing, repair / replace components as part of reactive maintenance	To carry asset to planned future renewal point or known end of life point Can only be held to a point, once component wear goes below renewal trigger, risk of asset failure increases along with associated service disruption. Reactive replacement of components is required.
Choose not to renew	Turnout condition is deteriorating however speed and operational restrictions are imposed to manage the condition.	This is used for low tonnage and low traffic lines when the turnout condition is deteriorating but has not failed its primary function. This is triggered as corridor is approaching economic end of life.

Table 98 Ballast Mainline and Turnout Renewal Options

Option	Description	When used
Renew with like-for-like asset	Ballast renewal on a face with the high production machine. Intended to include an effective combination of corrective and preventive ballast renewal, linked to asset condition and performance. Typical approach is for ballast replacement to be a combination of new and screened ballast, varying from site-to-site as appropriate. Functionality of the RM902 enables screening in comparison to excavator undercutting and bridge rollouts where only new ballast is introduced. New ballast will provide ballast characteristics of the highest integrity whilst screened ballast seeks (as far as is practical) to remove fouling material and smaller particles from track and return the larger particles. Wet weather can compromise the effectiveness of screening.	Mainline ballast undercutting machine (BCM or RM902) ballast cleaning and replacement of large scopes, typically in the range of 900m-5km. Complimented with excavator undercutting for smaller scopes and/or gaps in large scopes. This is undertaken when traffic task and performance are kept constant.
Renew with longer life asset	This option seeks too either: • Renew the full ballast profile with new ballast, that is, no screening. • Transition from ballasted track to slab-track (i.e., no ballast) where the rails are fastened to an extended length of concrete. This solution has been used at Cooling Channel Bridge within the Callemondah and Gladstone Port precinct.	This option will be used where the condition of the ballast is such that it is unable to be screened due to the inability to effectively remove fouling material and/ or the ballast is degraded to the extent it is unable to perform its required function (e.g., rounded ballast). The mainline ballast undercutting machine (RM902) can be used for the renewal of large scopes, typically in the range of 900m-5km, whilst the excavator undercutter is utilised for smaller scopes and/or gaps in large scopes where the large machine is unable to reach. Slab track is used where the adjacent physical infrastructure and/ or the operational paradigm at the location is such that ballast degradation (i.e., rate of change of condition) has a sustained and detrimental impact on performance and maintenance and renewal efforts. The transition to slab track eliminates coal fouling impacts on ballast performance and the associated operational impacts. This is undertaken when traffic task is constant or increasing and performance is to be kept constant or improved.

Option	Description	When used
Renew with shorter life asset	**Ballast renewal** is limited to screening only, performed on a face by the high production machine or the utilisation of excavator undercutting in short sections only. Intended to reduce fouling and restore ballast size distribution, but not necessarily equivalent to new ballast fouling levels (PVC) and ballast material specifications. Not viable in all locations, where the material is unscreenable (due to moisture and material characteristics such as fouling composition). **Ballast shoulder cleaning** only, performed on-a-face to aid ballast drainage. Not viable in all locations, where the material is unscreenable (due to material characteristics such as fouling composition).	This is undertaken when future traffic task and operational environment is uncertain • **Ballast renewal** is anticipated to be more viable in scenarios where coal contamination is low-moderate, but ballast particle degradation is moderate-high, producing a more screenable material (i.e., loaded, high MGT track, not near loading or unloading facilities / mines and ports). Alternatively, it is potentially viable where the ballast depth is high and only the top approximately 300mm of less coal/clay contaminated material is screened. The result would correspond with a reduced economic life • **Ballast shoulder cleaning** is anticipated to be more viable in scenarios where the shoulders are moderately to highly fouled, and the ballast shoulder cleaner is still able to process the material. Potentially more suited to locations where the source of coal contamination is from the top of wagons, falling to the shoulders, rather than carry back from ports which results in fouling more focussed toward the track centre (i.e., Loaded track or duplicated track adjacent to loaded track, in close and moderate proximity to loading facilities/mines). The result is an anticipated minor improvement in track drainage and therefore we anticipate an increased resilience to wet weather impacts.
Increase maintenance to prolong asset life	Perform increased resurfacing and reactive maintenance mudhole dig outs only (increased maintenance costs/requirements) Train speed restrictions to reduce dynamic forces. For turnouts: Increased partial dig outs, focussing on the highest fouling/poorest geometry locations (typically around the switch and the vee) For Non-electrified infrastructure: Increase the depth of ballast (up to 500mm) with additional clean ballast drops. Intended to improve load transfer to fouled ballast, decrease settlement and improve drainage compared to fouled ballast alone, decreasing the rate of resurfacing and dig outs in the short to mid term	To carry asset to planned future renewal point or known end of life point Performance of track with poor condition ballast is managed by more frequent resurfacing to restore geometry, as well as reactive mudhole dugouts where (note that resurfacing is not effective in managing geometry local to mudholes). Consider maintenance resources in western districts. Speed Restrictions may be imposed to prolong the life of the ballast with the reduction in operational speed and loading. Performance of track with poor condition ballast is managed by adding new clean ballast on top of fouled ballast, typically by ballast train and mechanised resurfacing. Likely to be effective or more suited to when fouled ballast in the depth range of up to 300mm is increased by approximately 100mm to 400mm. Beyond c.500mm ballast depth, negative impacts to track stability are believed to outweigh the benefits of increased clean ballast

Option	Description	When used
Choose not to renew	Perform a standard rate of resurfacing, with typically an increase in the rate of mudhole dig outs to manage operational impacts from not performing renewals	This is triggered as corridor is approaching economic end of life Intervention by ballast dig outs and resurfacing is typically only adopted when operational risk or impacts are above appetite. An alternative lever in addition to ballast [mudhole] dig outs may be to place 20mm aggregate in mud holes to improve ballast interlocking and reduce the rate of settlement as a lower cost / impact option, more suited to short to mid-term situations

Table 99 Bridge Ballast Renewal Options

Option	Description	When used
Renew with like-for-like asset	Full Bridge Ballast Rollout (C20) which may include upgrades or renewals to rail, sleeper or formation renewals to align remaining asset lives. Includes curb raising and bridge modifications to achieve minimum 300mm ballast requirements.	This is undertaken when traffic task and performance are kept constant Overall ballast condition is very fouled with rough track. Bridges with poor maintainability due to height, access (no handrails) and length. For non-mainline track sections, bridges to be rolled out at poor condition where visible deterioration of ballast and shorter planning horizons are acceptable. Lower dependency on condition-based renewal because of acceptance of lower reliability.
Renew with longer life asset	Not applicable. As Bridge Rollouts are a 100% replacement of ballast there is no longer life asset option	
Renew with shorter life asset	• Partial Bridge Ballast Rollout (C20) which will only include ballast replacement • Curb raising and ballast depth lift. • Partial bridge ballast renewal by vac truck. Explore: Rail mounted vac truck. Currently being imported by LORAM.	This is undertaken when future traffic task and operational environment is uncertain. • Removes fouled track and reduces material costs for the renewal activity. - Formation is not renewed unless catastrophically failing. • Raise the ballast depth across the bridge without removing fouled ballast. Only applicable to ballast with shallow depths where this has not been performed before. • Rail mounted vac truck, low production machine that can fit across the bridges. Remove sections of contaminated ballast on bridges, top up ballast as required and resurfaced. This is a technical solution to align asset life with economic life that has not been employed in the CQCN to date and is still being investigated.

Option	Description	When used
Increase maintenance to prolong asset life	Perform mudhole dig outs, resurfacing or introduce smaller aggregate to increase asset life. Increase detailed inspections of bridge ballast. Increase the depth of ballast (up to 500mm) with additional clean ballast drops. Intended to improve load transfer to fouled ballast, decrease settlement and improve drainage compared to fouled ballast alone, decreasing the rate of resurfacing and dig outs in the short to mid-term. Note that height and stagger of over heads will need to be check and adjusted as required. Explore: Rail mounted vac truck. Currently being imported by LORAM.	To carry asset to planned future renewal point or known end of life point. For long bridges with sections of severe ballast fouling only. Mudhole replacement is expected to extend the life of the remaining bridge ballast. This option differs from B due to curb raising already installed and available. Spot ballast replacement with hi-rail vac truck. Less invasive and lower safety requirements to remove mudholes on bridges.
Choose not to renew	BAU – perform mechanised resurfacing based on track geometry thresholds Increased inspections, TSRs and spot ballast renewals Add small aggregate to improve ballast integrity.	Depends on asset condition and financial life. Operational restricts and maintenance become ineffective after prolonged periods of time. Will lead to shut truck.

Table 100 Structure Renewal Options

Option	Description	When used
Renew with like-for-like asset	Replace existing structure with like-for-like based on waterway size E.g. - Replace culverts and other structures with same waterway size assets.	This is the preferred renewal option when the structure that requires renewal still meets the hydrology requirements for the site when traffic task and performance are kept constant.
Renew with longer life asset	Strengthen or replace existing structures with 300LA Load Rates structures E.g. - Remove and replace existing culverts with 300LA RCBC or Reinforced Concrete Pipe (RCP) units	This is the preferred renewal option when the structure requiring renewal was originally designed to a lesser standard than current standard and when traffic task is constant or increasing and performance is to be kept constant or improved.

Option	Description	When used
Renew with shorter life asset	All new structures are renewed with 300LA Load Rating structures Culverts and other structures: e.g., install a Corrugated Metal Pipe (CMP) which has a shorter life span online with reducing demand and defined remaining life.	For safety reasons, this option is not pursued for Bridges. This option can be considered with a variation to standard practice where corridors have lower tonnages and forecast declining demand.
Increase maintenance to prolong asset life	Complete maintenance inspections and repairs annually to maintain safe operating conditions. Propping and speed restrictions may be required to manage condition of the assets. Renewal will occur when condition has deteriorated to a point where the risk of failure is considered unreasonable.	This option may be considered fit for purpose in circumstances when future traffic task and operational environment is uncertain. This option requires regular inspections to collect condition data and will increase maintenance costs over the remaining life of the asset to ensure safe rail operations and time to maintain the structure to an acceptable standard.
Choose not to renew	The structure remaining life based on condition is within the life of the rail line above it, or remaining demand for the line.	This option can be considered if a structure is no longer required for safe operation of the rail network. This could apply for culverts that are no longer to provide corridor drainage to meet flood immunity requirements or when the line is expected to be closed prior to the remaining life of the asset. This strategy may or may not lead to additional maintenance costs depending on the condition and remaining life of the asset.

Table 101 Formation Renewal Options

Option	Description	When used
Renew with like-for-like asset	Renew formation to Aurizon specification, typically 600mm depth, with 50-year design life	This is the default option for renewal of formation and is undertaken when traffic task and performance are kept constant
Renew with longer life asset	Renew with formation with longer design life	This option only applies in scenarios when the formation to be replaced is of lesser standard than Aurizon specification (50 years)
Renew with shorter life asset	Renew with formation with shorter design life The following techniques provide a shorter design life where relevant: Application of shear keys for formation failures.	This is undertaken when future traffic task and operational environment is uncertain. A shear key (applied to resist lateral sliding failure of the formation) may only be used at a location for up to 2 years. The other techniques are not Aurizon Network standard

Option	Description	When used
	Reduction in capping layer thickness Lime slurry pressure injection Cement stabilisation	practice but are investigated for specific location conditions and expected life of the corridor.
Increase maintenance to prolong asset life	Extend formation life through preventive actions. Preventive drainage program Ballast renewal Increase the depth of ballast	To carry asset to planned future renewal point or known end of life point The extent to which formation life can be extended via a preventive drainage program is subject to a review and design, of program specific to the local conditions Ballast options will reduce stress on the formation and further reduce the track geometry deterioration to prevent differential permanent settlement in both the ballast layer and the formation beneath, which may ultimately prolong the useful life of the formation.
Choose not to renew	Manage existing formation through operational actions: Apply speed restrictions Reduce axle load allowance Heavy resurfacing, shear keys and drainage works	This is triggered as corridor is approaching economic end of life

Table 102 Level Crossing Options

Option	Description	When used
Renew with like-for-like asset	Renewal of Level Crossings with like-for-like components or properties as per current Aurizon Network standards	This is the default option for renewal of level crossings and is undertaken when traffic task and performance are kept constant
Renew with longer life asset	Two options to renew asset with longer life asset: • Option 1: Renewal of Level Crossings with higher quality components or properties as per current Aurizon Network standards to achieve longer asset life.	• Option 1 can be considered when the level crossing to be renewed was constructed to a lower standard (e.g., replace black steel sleepers/fastenings with new galvanised sleepers and fastening systems, installing flangeways to reduce grease retention on road surfaces and to facilitate rail grinding works at level crossings, increasing effective drainage around level crossings by upgrading culverts and installing megaflow and tracktex to reinforce formation material.)

Option	Description	When used
	• Option 2: Upgrade of Level Crossings from passive to active controls either to primary flashing lights or flashing lights and half boom gates	• Option 2 will apply when a level crossing has inadequate sighting distances - This mainly applies to public crossings where major road usage with long vehicles has changed over time
Renew with shorter life asset	Renewal of Level Crossings achieving shorter design life through: Partial renewal – replacement of selected components only	This option will only be considered if it does not affect the safety of the level crossing This is undertaken when future traffic task and operational environment is uncertain Partial renewal can involve replacing two or more components but not including formation When Formation failure is causing rapid deterioration of track geometry, formation renewal can extend the life of the level crossing. Rail, sleepers and other components can be reused
Increase maintenance to prolong asset life	Perform maintenance to rail, ballast and drainage to extend the life of the crossing	This option can be considered in corridors with relatively low tonnages and includes: Inspection and monitoring to ensure that asset component replacement is not required Condition based maintenance intervention – i.e., ballast replaced when fouled at approaches rather than when the ballast has failed
Choose not to renew	Decommission level crossing if appropriate. Divert traffic to alternative level crossings, lower accessibility to corridor	This option can be considered if the level crossing has very low traffic and can be safely decommissioned and traffic diverted to a nearby Level Crossing with minimal impact on the user

Table 103 Access Road Renewal Options

Option	Description	When used
Renew with like-for-like asset	Renew assets to like-for-like standard or modern-day equivalent to provide safer access to the rail corridor	When traffic demand is consistent and certain, and the renewal reduces required maintenance and/or increases accessibility to the rail corridor
Renew with longer life asset	Renew to a higher standard of asset • For access roads, renew to type 1 (i.e., positioned at formation level of the track) from type 2 (i.e., adjacent to the track at natural ground level or similar)	This option is considered when existing access roads do not meet current Aurizon Network Corridor Access Road standards

Option	Description	When used
	• For access points, upgrade road surface, signage and drainage to a higher standard • For corridor security, upgrade from stock fencing to a higher standard for a longer life asset	
Renew with shorter life asset	Renew small sections or minor components, as part of reactive renewals to the current standard	This option can be considered for access roads with reducing usage or when condition has deteriorated further than maintenance can manage, and a level of reactive renewal is required
Increase maintenance to prolong asset life	Perform maintenance, manage vegetation and improve drainage to extend life of the access road	This option can be considered when existing access road is overall fit for purpose and its more cost effective to repair than replace
Choose not to renew	Remaining asset life is in line with remaining track asset life and is fit for purpose (local landholder considerations)	When existing maintenance schedule is sufficient to maintain assets fit for purpose status

Table 104 Telecommunications Renewal Options

Option	Description	When used
Renew with like-for-like asset	Like-for-like renewal looking to replacing an asset with same performance	This is undertaken when traffic task and performance are kept constant. For telecom structures and equipment rooms, this option will be chosen if the asset condition is beyond refurbishment potential This option is typically pursued when replacing assets such as Generators, Dehydrators and Batteries This option may also be chosen if spares are exhausted, or there is a risk of major component failure
Renew with longer life asset	On renewal, install equipment signalling of higher quality or properties to achieve longer life on installed asset	This is undertaken when traffic task is constant or increasing and performance is to be kept constant or improved This is the preferred option for renewal of older fibre-optic cables in the CQCN (with design life of 30 years). These cables are subject of an annual renewal programme

Option	Description	When used
		with modern fibre-optic cables with improved capacity and longer expected life (design life of 50 years) This option can also be considered when renewing batteries, as higher capacity options are becoming available
Renew with shorter life asset	Replacing an asset with a lower specification	This option can be considered for certain types of assets in corridors with lower tonnages and forecast declining demand The option may be considered on small and secure sites, e.g., Equipment Room – use of cabinets on external skids as opposed to constructed structures, and use of portable generators
Increase maintenance to prolong asset life	Increase inspection and repair or replace components as part of reactive maintenance	To carry asset to planned future renewal point or known end of life point For Telecommunication assets, preventive maintenance typically keeps the asset operating within limits, and does not prolong life. Additional condition monitoring, however, can detect problems before they impact asset life This option may be considered for assets such as telecom structures for which repairs can prolong life
Choose not to renew	Systems decommissioning	This option will be considered for assets which are no longer required to fulfill a certain function in the corridor As improved optical fibre is deployed, the need for Time-Division Multiplexing (TDM) systems will progressively be eliminated. The asset management plan for TDM systems is therefore based on progressive elimination rather than renewal

Table 105 Signalling Renewals Options

Option	Description	When used
Renew with like-for-like asset	Involves the replacement of the asset with the same make and model or equivalent	Replacement usually occurs at the end of the design life or at failure when the equipment cannot be repaired. This is the default option for Signalling equipment renewals This is undertaken when traffic task and performance are kept constant

Option	Description	When used
Renew with longer life asset	Involves the replacement of an asset with a new make or model that has a greater design life	This option applies when the original equipment cannot be replaced like-for-like with the same design life because of new technology or obsolescence There are limited opportunities to pursue this option for Signalling assets as they are designed to specified standards This is undertaken when traffic task is constant or increasing and performance is to be kept constant or improved
Renew with shorter life asset	Involves the replacement of an asset with a new make/model that has a lesser design life	There are limited opportunities to pursue this option for Signalling assets as they are designed to specified standards
Increase maintenance to prolong asset life	Involves the increase of maintenance interventions to keep asset running past its design life	For Signalling assets, preventive maintenance typically keeps assets operating within limits, and does not prolong life. Additional condition monitoring, however, can detect problems before they impact asset life This option can be considered when there are sufficient spares available. For some Signalling assets, components from previously renewed assets are retained as spares for the remaining assets e.g., interlocking. Additionally, for Interlockings, individual relays can be replaced, rather than the renewing the whole interlocking.
Choose not to renew	Systems decommissioning	This option will be considered for assets which are no longer required to fulfill a certain function in the corridor This option could be considered if for example a level crossing is no longer required or if new technology has made the old system redundant

Table 106 Asset Protection Renewal Options

Option	Description	When used
Renew with like-for-like asset	Involves the replacement of the asset with the same make and model or equivalent	Replacement usually occurs at the end of the design life or at failure when the equipment cannot be repaired This is the default option for Asset Protection equipment renewals. This is undertaken when traffic task and performance are kept constant

Option	Description	When used
Renew with longer life asset	Involves the replacement of an asset with a new make/model that has a greater design life	This option applies when the original equipment cannot be replaced like-for-like with the same design life Obsolescence can drive the need to replace with an asset that may have a longer design life To improve operational reliability, track circuits are often replaced by axle counters, that may result in a longer life asset This is undertaken when traffic task is constant or increasing and performance is to be kept constant or improved
Renew with shorter life asset	Involves the replacement of an asset with a new make or model that has a lesser design life	There are limited opportunities to pursue this option for Asset Protection assets as they typically have a limited design life of 10-15 years
Increase maintenance to prolong asset life	Involves the increase of maintenance interventions to keep asset running past its design life	For Asset Protection, preventive maintenance typically keeps assets operating within limits, and does not prolong life. Additional condition monitoring, however, can detect problems before they impact asset life This option can be considered when there are sufficient spare available. To carry asset to planned future renewal point or known end of life point
Choose not to renew	Systems decommissioning	This option could be considered for assets which are no longer required to fulfill a certain function in the corridor, e.g., track circuits made redundant because of the introduction of axle counters

Table 107 Overhead Line Equipment Renewal Options

Option	Description	When used
Renew with like-for-like asset	Like-for-like renewal – replacing a life-expired asset with an identical unit, or a modern equivalent, which will deliver the same level of performance	This is undertaken when traffic task and performance are kept constant Some areas of the OHLE in the CQCN are life expired and like-for-like replacement of components and structural steelwork is appropriate. The Goonyella Ports OHLE which is affected by significant corrosion due to its coastal environment is an example of this. However, overall, the OHLE in the CQCN is only at half-life. There are no current plans to renew this asset across the entire CQCN as it still has another (approx.) 35 years of life left

Option	Description	When used
Renew with longer life asset	On renewal, install OHLE of higher quality or properties to achieve longer life on installed asset	Not relevant to the OHLE – see comments above in 1
Renew with shorter life asset	Renew life-expired components with second-hand components which meet the required service life for the application	This is undertaken when future traffic task and operational environment is uncertain and suitably rated second-hand components are available
Increase maintenance to prolong asset life	Increase inspection and repair or replace components as part of reactive maintenance	To carry asset to planned future renewal point or known end of life point Inspections can identify key components (normally small parts) requiring renewal Many of these components have a shorter service life than the overall asset. Note that masts have a service life of 80+yrs, conductors 70yrs, insulators 50yrs, small parts circa. 30 years
Choose not to renew	This option will be considered for assets which are no longer required to fulfill a certain function in the corridor	This option can be considered for end-of-life branch-line that is no longer required to support Electric locomotive traffic

Table 108 Power System Renewal Options

Option	Description	When used
Renew with like-for-like asset	Like-for-like renewal – replacing a life-expired asset with an identical unit, or a modern equivalent, which will deliver the same level of performance	This is the default option for Power systems renewals and is undertaken when traffic task and performance are kept constant Replacement usually occurs at the end of the design life or at failure This is used when the expected corridor life exceeds the expected asset life (e.g., an autotransformer on the Goonyella trunk)
Renew with longer life asset	Involves the replacement of an asset with a new make or model that has a greater design life	If longer life assets are available, this option can be considered for secondary system assets (DC supplies, protection relays). Rarely used with primary equipment as these assets typically have a service life of 40-50 years This is undertaken when traffic task is constant or increasing and performance is to be kept constant or improved
Renew with shorter life asset	Renew life-expired components with second-hand components which meet the required service life for the application	This is undertaken when future traffic task and operational environment is uncertain.

Option	Description	When used
		The required remaining service life for the asset is less than the service life of a new component, and suitably rated second-hand components are available
Increase maintenance to prolong asset life	Increase inspection and repair / replace components as part of reactive maintenance	This option can be considered for Transformers which may have their service life extended by a process called "oil regeneration" if the asset is in a suitable condition for this treatment
Choose not to renew	This option will be considered for assets which are no longer required to fulfill a certain function in the corridor	This option can be considered for end-of-life branch-lines where a renewed asset's life would greatly exceed the forecast corridor life.

Table 109 Traction Substation Renewal Options

Option	Description	When used
Renew with like-for-like asset	Like-for-like renewal – replacing a life-expired asset with an identical unit, or a modern equivalent, which will deliver the same level of performance	This is the default option for renewals of traction substations and is undertaken when traffic task and performance are kept constant
Renew with longer life asset	Involves the replacement of an asset with a new asset that has a greater design life	N/A
Renew with shorter life asset	Renew life-expired components with second-hand components which meet the required service life for the application	This option may be considered for traction substation componentry where a full renewal of the substation is not recommended This is undertaken when future traffic task and operational environment is uncertain
Increase maintenance to prolong asset life	Increase inspection and repair or replace components as part of reactive maintenance	This option may be considered for traction substations serving corridors with lower tonnages and forecast declining demand
Choose not to renew	This option will be considered for assets which are no longer required to fulfill a certain function in the corridor	This option can be considered for end-of-life branch-lines where a renewed asset's life would greatly exceed the forecast corridor life. The substations on the Bauhinia line (Struan Rd Feeder Station and Kinrola TSY) are examples of this

Appendix 4 – Description of Practices Used to Carry Out Asset Activity

This section provides a description of the key maintenance activities, maintenance practices and renewal activities that are used to carry out asset activity. It also provides a general overview of:

- the benefit of completing the works
- the risks mitigated; and
- the relevant trigger for intervention.

Maintenance Activities

Table 110 Summary of CQCN Maintenance Activities

Activity	Description	Benefits and risks managed	Trigger for intervention	Access Management
Resurfacing	Restores geometry of the track and turnouts by lifting and lining to the appropriate level and alignment and compacting the ballast underneath the sleepers.	Mitigates the need for temporary speed restrictions applied as a risk control prior to component renewal or full asset renewal.	Triggered by tonnage over a rail section. **Track resurfacing: 50 million gross tonnes (MGT)** **Turnout resurfacing: 80 MGT** Resurfacing to remedy geometry faults identified often required ahead of these limits.	Resurfacing tasks are typically managed between trains and planned after the ITP (Intermediate Train Plan) has been agreed. This minimises the impact to capacity and allows the work to be targeted for priority locations.
Rail Grinding	Grinding rail in track and turnouts to remove micro cracks and small surface faults from the rail, restoring a profile that spreads the contact band, and positions it for better wheel set tracking around the curves.	Reduces risk of severe defects (rail failure or breakage) and prolongs the life of the rail.	Triggered by tonnage over a rail section or curve. **Straights: 40 MGT** **Curves 1001m to 2500m radius: 40 MGT** **Curves less than 1000m radius: 20 MGT** **Turnouts: 40 MGT**	Annual programs are developed and negotiated to avoid conflicts with other regulated inspection vehicles.

Activity	Description	Benefits and risks managed	Trigger for intervention	Access Management
General Track Maintenance	Encompasses the planned corrective maintenance effort, responding to faults identified by drivers, track inspection, specific asset inspection, and Track Recording and Rail Flaw Detection inspections. Activity can be planned according to the severity and the time for fault/fault remedy of the identified fault. Fault severity ranges from: - Immediate - Track closed until repair completed; to - 'Y1' – repair required within 1 year of identification	Identification of faults through inspection – notification and prioritisation managed via SAP to minimise impact on capacity Faults managed to mitigate against infrastructure failure leading to unplanned outages Localised depots responding to infrastructure faults to reinstate operability of the network in a controlled manner	Time based inspection regimes for track geometry recording, ultrasonic testing and track inspections. Planned corrective dependent on fault severity	Tasks are planned in accordance to Network Maintenance Block rules. Predominately on nominated maintenance days or in shadow of existing renewal works.
Other Civil Maintenance	Minor activities on track, turnouts and corridor assets. Includes minor ballast cleaning, a corrective maintenance activity to replace the fouled ballast and mud holes from beneath the sleepers for a length of track up to approximately equal or less than 40 sleeper bays (as a guide).	Identification of faults not visible via person inspections allows for fault rectification in a controlled manner prior to the fault resulting in a failure. Undercutting Minor Activities Spot repair mudholes and small areas of ballast fouling which cause track defects and increase the risk of derailment and remove TSRs.	Dependant on defect severity and time to remedy	Tasks planned in accordance to Network Maintenance Block rules, predominately on nominated maintenance days or in shadow of renewal works.

Activity	Description	Benefits and risks managed	Trigger for intervention	Access Management
Structures and Facilities Maintenance	Periodic inspection of bridge and culvert structures to monitor asset condition and performance	Trend of condition allows for component or renewal works to be forward programmed given the wear rate of the assets Faults managed to mitigate against infrastructure failure leading to unplanned outages	Inspection frequency takes into consideration the structure condition, structural capacity, deterioration rates, age, rail traffic operating conditions and other environmental or local conditions.	Tasks are planned in closures or in accordance to Network Maintenance Block rules, predominately on nominated maintenance days or in shadow of renewal works.
Signalling and Telecommunication Maintenance	Inspection and maintenance that is regularly performed on the signalling asset to lessen the likelihood of it failing. Performed whist the asset is in place and working so that it does not break down unexpectedly.	Faults managed to mitigate against infrastructure failure leading to unplanned outages	Time based – planned periodic inspection and repair activities Planned rectification works on identified faults to return equipment to working condition	Tasks are planned in closures or in accordance to Network Maintenance Block rules. Predominately on nominated maintenance days or in shadow of existing renewal works.
Trackside Systems Maintenance	Inspection and maintenance that is regularly performed on the wayside equipment assets to lessen the likelihood of it failing. Performed whist the asset is in place and working so that it does not break down unexpectedly.	Faults managed to mitigate against infrastructure failure leading to unplanned outages	Time based – planned periodic inspection, servicing and repair activities Planned rectification works on identified faults to return equipment to working condition	Where these tasks have an impact to train running, these tasks are planned in closures or in accordance to Network Maintenance Block rules. Predominately on nominated maintenance days or in shadow of existing renewal works.
Electrical Overhead/ Substation Maintenance	Inspection and maintenance that is regularly performed on the electrical substation and overhead line assets to lessen the likelihood of failure. Performed whist the asset is in place and working so that it does not fail unexpectedly.	Defects managed to mitigate against infrastructure failure leading to unplanned outages	Time based – planned periodic inspection and repair activities Planned rectification works on identified defects to return equipment to working condition	Tasks planned in accordance to Network Maintenance Block rules, predominately on nominated maintenance days or in shadow of renewal works.

Activity	Description	Benefits and risks managed	Trigger for intervention	Access Management
Other General Maintenance	Asset Management and Inventory Management	Inventory is held and managed at specific location across the network so as materials required for recitation works are available	Critical spares determined by lead time to obtain parts, level of supplier support and availability of materials / component	Tasks planned in accordance to Network Maintenance Block rules, predominately on nominated maintenance days or in shadow of renewal works.

Renewal Activities

Table 111 Description of CQCN Renewal Activities

Activity	Description	Benefits and risks managed	Trigger for intervention
Ballast	Over time ballast becomes fouled through, coal dust general degradation, and sub soil contamination. Ballast fouling is managed via the following approaches dependant on the location of the fouling: BCM - excavating the fouled ballast from beneath the sleepers by a dedicated ballast cleaning consist, Ballast replacement as part of a formation repair or track upgrade – ballast is replaced as part of the formation repair activity and only where required as part of a track upgrade activity. Ballast undercutting turnouts - excavating the fouled ballast and mud holes from beneath a turnout by minor mechanised equipment such as an excavator Bridge ballast rollout – due to the width, height and environmental constraints on bridges fouled ballast on bridges is completely removed and new ballast added.	Ballast cleaning removes these contaminants from the ballast and restores the drainage and load management properties of the ballast moving water away from the formation and spreading loads across the track structure to reduce the risk of track geometry defects and formation failures.	Ground Penetrating Radar (GPR) provides a measure of ballast fouling severity comparative to prior GPR runs. This provides a non-destructive level of fouling. Scope is determined based on the number and frequency of resurfacing activities (a lag indicator of deteriorating track geometry), track geometry and GPR which is then reviewed and validated by Track Inspectors and Supervisors. The most fouled locations or those showing the greatest degradation are matched to the production of the Undercutting fleet and track access constraints. Network utilises a ballast condition analyser model to assist in identifying future years renewal requirements based on ballast and geometry condition to determine renewal intervention

Activity	Description	Benefits and risks managed	Trigger for intervention
Rail Renewal	Replacement of rail in a section of track due to rail fatigue (increased defect rates) and/or wear approaching wear limits. Rail Renewal includes rail stressing to restore continuously welded rails to a design stress state, reducing risk of rail misalignment (buckles) and rail breaks	Renewing rail in a planned way reduces rail breaks and rail faults that would otherwise lead to unplanned delays Reduces derailment risk related to rail break or rail misalignments	The timing of renewal is dependent on the weight of the rail, its location in track (loaded / unloaded, on straights or curves) and rail compassion (head hardened, standard carbon on through hardened) Network utilises a rail condition analyser model to identify future years renewal requirements based on rail wear against standard to determine the required renewal intervention The Rail Renewal Strategy includes scope focused on smoothing the anticipated bow wave of tangent rail renewals through renewing tangent rails that have fatigue related issues, such as squats and shelling. Where appropriate, rail which has been subjected to significant cyclic loading is renewed with sleepers to gain efficiencies in renewal.
Turnouts and Component Renewal	Turnouts (sometimes called Switches) allow trains to move between tracks in duplicated sections, as well to allow entry and exit from passing loops and to move from the main line into spurs and balloon loops. A turnout is a combination of civil assets being the steel rail and sleepers and Control Systems Assets being the points motors, rodding and electronics.	Component renewal extends the life of the turnout Full renewal and maintain operability of turnout providing operational flexibility	Renewal - Condition and location of assets and degradation rate Component – items within the turnout that require renewals based on asset component condition

Activity	Description	Benefits and risks managed	Trigger for intervention
Sleeper Renewal	Sleepers (or ties), along with sleeper clips, hold the rails to gauge and alignment. There is a variety of sleeper types across the CQCN with most being 28 tal concrete for 60kg/m rail. Other sleepers are older styles with different rail fastening (clips). In sidings and older track sections there are both timber and steel sleepers.	Reduction in track alignment issues relating to gauge and rail twist leading to temporary speed restrictions or unplanned delays. Reduces derailment risk cause by loss of gauge or rail twist	Sleepers are condition rated based on weight, material and condition. The sleeper renewal program is renewing aged underweight sleepers with the 28 tal concrete standard.
Structures Renewal	Structures are bridges and culverts that allow for the flow of water through the rail formation or for access under the track Bridges are located at large hydrological water flows (rivers, creeks etc) Culverts are located at low points allowing overland flows through the track infrastructure	Renewal of assets prior to failure to reduce unplanned delays or safety risks associated with structure failures Strategy to review hydrology in renewal locations to reduce number of culverts.	Structures are inspected and assigned a condition rating and allotted a location criticality. Structures are then ranked based on condition and operational criticality rating
Civil Asset Renewals	Civil assets are those assets that support the Permanent Way assets and include formation, level crossings, access roads, access points and corridor security	Formation renewals reduces formation failures, track geometry issues and requirements for track resurfacing. Renewals of level crossings, access roads and corridor security ensure continuity of safe operations.	Civil assets are inspected and assigned a condition rating and allotted a location criticality

Activity	Description	Benefits and risks managed	Trigger for intervention
Control Systems Renewals	Control Systems assets are the physical and digital assets that provide, train control, telecommunications and wayside monitoring systems. These assets provide the capacity multiplier for the track assets, that is they allow for the safe movement of more train services over the track structure. The main classes within the Control Systems grouping are: Train control Systems: signalling system, level crossing active protection, interlockings and point motors Telecommunications: the data network required to connect assets to train control, includes the optic fibre network, digital radio and microwave radio systems Wayside Systems: assets in the rail corridor that provide a level of monitoring and alarming to protect track and overhead assets	Train control renewals ensure the continuity of the train control systems and provides incremental improvement to the operability of the system Telecommunications renewals reduce telecommunication interruptions and ensure the integrity of the safe working systems and track side equipment Wayside systems renewals ensure integrity for the real time monitoring across the network to identify out of tolerance or non-controlled rollingstock interface issues	The trigger for the renewal of Control Systems assets is predominantly driven by the age of the asset along its life cycle These assets do not necessarily wear with tonnage, and often don't show degradation until the point of failure Obsolescence of data systems or components is also a key trigger for asset renewal

Activity	Description	Benefits and risks managed	Trigger for intervention
Electrical Renewals	Blackwater and Goonyella Systems are electrified, enabling the operation of electric rollingstock. The traction system comprises two main asset groups, - Overhead Line Equipment (OHLE) - infrastructure which enables distribution of traction power to trains on the network. This infrastructure includes mast and portal structures, overhead wires and sectioning equipment. - Traction Power Systems – The traction power system connects to the high voltage transmission network (Powerlink or Ergon) and coverts the transmission voltage down to 50kV for the traction system. The power systems assets include substations, switchgear, transformers, protection and control and metering equipment.	Renewals across the 2100km of OHLE mitigates the risk of OHL mechanical component failures (e.g. dewirements) to ensure the safe and reliable operation of the traction network. Renewal of traction power system assets mitigates the risk of unplanned outages of the traction power supply and safety risks associated with power systems assets to ensure safe and reliable operation of the traction system.	Both OHLE and traction power system renewals are triggered based on asset condition and criticality. The renewal of power systems equipment is predominantly driven by the age of the asset. OHLE renewals are typically driven by age, environmental factors and tonnage.

Appendix 5 – Glossary

Term	Definition
2017 Access Undertaking or UT5	Aurizon Network's 2017 Access Undertaking, as approved by the QCA on 191 December 2019, together with any subsequent changes approved by the QCA from time to time
4-year averages	The average over a 4-year period 
Access Holder	A person or organisation that holds access rights to the Central Queensland Coal Network
ACOM	Communication System
AM	Asset Maintenance
AMRP	Asset Maintenance and Renewal Policy
APS	Advanced Planning and Scheduling
AT Renewal	Autotransformer Renewal
ATIS	Automated Track Inspection System
Aurizon Network	Aurizon Network Pty Ltd, the provider of access services in accordance with the 2017 Access Undertaking
AZJ	Aurizon Holdings Limited
Ballast	Ballast is the material that is laid on the rail bed under the sleepers, providing stability and drainage to the track structure
BCM	High Production Mainline Ballast Undercutter Machine
BOQ	Bill of Quantities
BW	Blackwater
BWG	Ballast Working Group
CAGR	Compounding Annual Growth Rate
Capex	Capital Expenditure

Term	Definition
Capital Indicator	An in-principle summary of the extent to which assets in the proposed Renewals Budget would be allocated to each of the Newlands System and GAPE RABs
CER	Communication Equipment Room
CETS	Civil Engineering Track and Standards
CIPP	Cured in Place Pipe
CMP	Corrugated Metal Pipe
CMP-CIPP	Corrugated Metal Pipe to Cured in Place Pipe
Condition Based	MRSB Comment – reason for renewal is due to the condition of the asset
Corrosion	MRSB Comment – reason for renewal is due to corrosion of the asset
CPI	Consumer Price Index
CQCN	Central Queensland Coal Network
CWL	Central West Line
DBCT	Dalrymple Bay Coal Terminal
Defective Asset	MRSB Comment – Reason for renewal is the asset is defective and no longer performing function effectively
DMR Link	Digital Microwave Radio Link
DNC	Deliverable Network Capacity
DTS	Dynamic Track Stabilisers
EFD	Early Fault Detection
egtk	Electric gross tonne kilometres
Electrical Safety Act	Electrical Safety Act 2002 (Qld)
FD	Final Decision
Fouled Ballast	MRSB Comment – reason for renewal is due to fouling of the ballast
FOP	Front of Post - a FOP signal is a type of signal
FTE	Full Time Equivalents
FY	Financial year
FY22 ARRT	FY22 Annual Review of Reference Tariff submission

Term	Definition
FY24 Final Draft Proposal	Draft Maintenance and Renewals Strategies and Budgets for each Coal System for the Financial Year ending 30 June 2024
GA	Goonyella
GAPE	Goonyella to Abbot Point Expansion
GAPE Link	Greenfield track between North Goonyella Junction and Newlands Junction
GPR	Ground Penetrating Radar – A non-destructive subsurface inspection technology that is used to measure the condition of Aurizon Network's Assets, in particular ballast.
gtk	Gross tonne kilometres
HBD/HWD	Hot Bearing Detector/Hot Wheel Detector
HDPE	High-Density Polyethylene Pipe
HPCT	Hay Point Services Coal Terminal
ICAR	Initial Capacity Assessment Report as defined the 2017 Access Undertaking
IE	Independent Expert
Improve Reliability	MRSB Comment – Reason for renewal is to improve reliability of the asset
Improve Safety	MRSB Comment – Reason for renewal is to improve safety of the asset
IOT	Internet of Things
IRJ	Insulated Rail Joint
ITP	Intermediate Train Plan
LV System Earthing	Low Voltage System Earthing
LX CCTV	Level Crossing Closed Circuit Television
MA	Moura
Maintenance Indicator	An estimate of the share of the proposed Maintenance Budget which would be recovered from each of the Newlands System and GAPE under the current pricing arrangements
MCA	Multi Criteria Analysis – Engineering analysis tool
MCI	Maintenance Cost Index
MDT	Mean Down Time
MGT	Million gross tonnes

Term	Definition
MI	Motorised Isolator
MNT	Million net tonnes
MRSB	Maintenance and Renewal Strategy and Budget
Mt	Million tonnes
Mtpa	Million tonnes per annum
NAMS	Network Asset Management System
NCL	North Coast Line
Newlands System Infrastructure Enhancements	Significant upgrades and renewal of Newlands System Rail Infrastructure as part of the scope of the GAPE project
NL	Newlands
NMS	Communications Network Management System
NSAP	Network Strategic Asset Plan
nt	Net tonnes
ntk	Net tonne kilometres
Obsolescence	MRSB Comment – Reason for renewal is the asset is outdated and no longer used or supported
OHLE	Overhead Line Equipment
Opex	Operational Expenditure
OTCI	Overall Track Condition Index – a measure of quality of the geometry of the track calculated from track geometry recording vehicle outputs
PSC Site	Power Supply Cubicle
PVC	Percent Void Contamination – calculated by dividing the volume of contaminates by the volume of voids within the ballast profile. PVC is determined in a compacted state to simulate actual track conditions
QCA	Queensland Competition Authority
QCA Act	Queensland Competition Authority Act (Qld) 1997
QR	Queensland Rail Limited
QRC	Queensland Resources Council
RAB	Regulated Asset Base
Rail Fatigue	MRSB Comment – Reason for renewal due to the rail fatiguing over time

Term	Definition
Rail Wear	MRSB Comment – Reason for renewal due to the wear of rail due to friction and heavy loading.
RAILBAM	Bearing Acoustic Monitor
RBM	Rail Bound Manganese
RCBC	Reinforced Concrete Box Culvert
RCP-CIPP	Reinforced Concrete Pipe - to Cure in Place Pipe
Relay to PBI	Relay to Processor Based Interlocking
Reveloc	Processes Radio Location Information
RGTCT	RG Tanna Coal Terminal
RIG	Rail Industry Group
RIM	Rail Infrastructure Manager
RIW	Rail Infrastructure Workers
RMS CT	Remote Monitoring Systems Current Transducer
RTF	Rail Transfer Facilities
SDH to IP	Synchronous Digital Hierarchy to Internet Protocol
SI Replacement	Sunny Island Inverter Replacement (Control Systems)
Single line possessions	When asset activity can be completed on one track in a duplicated section whilst the other track is kept operational to allow for continuous train services.
Sleeper Type Change	MRSB Comment – Reason for renewal due to the change in sleeper material or technical type of sleeper.
SMS	Safety Management System
TC to Axle Counter	Track Circuit to Axle Counter
TETRA	Terrestrial Trunked Radio system
TLM	Track Laying Machine
TRSA	Transport (Rail Safety) Act 2010
TSR	Temporary Speed Restriction
Turnout	A section of railway track-work that allows trains to pass from one track on to a diverging path
UT5	Aurizon Network's 2017 Access Undertaking, as approved by the QCA on 19 December 2019 and subsequently amended from time to time.

Term	Definition
UTC	Universal Train Control
VPI Replacement	Vital Processor Interlocking (a form of PBI)
WICET	Wiggins Island Coal Export Terminal
WIRP	Wiggins Island Rail Project