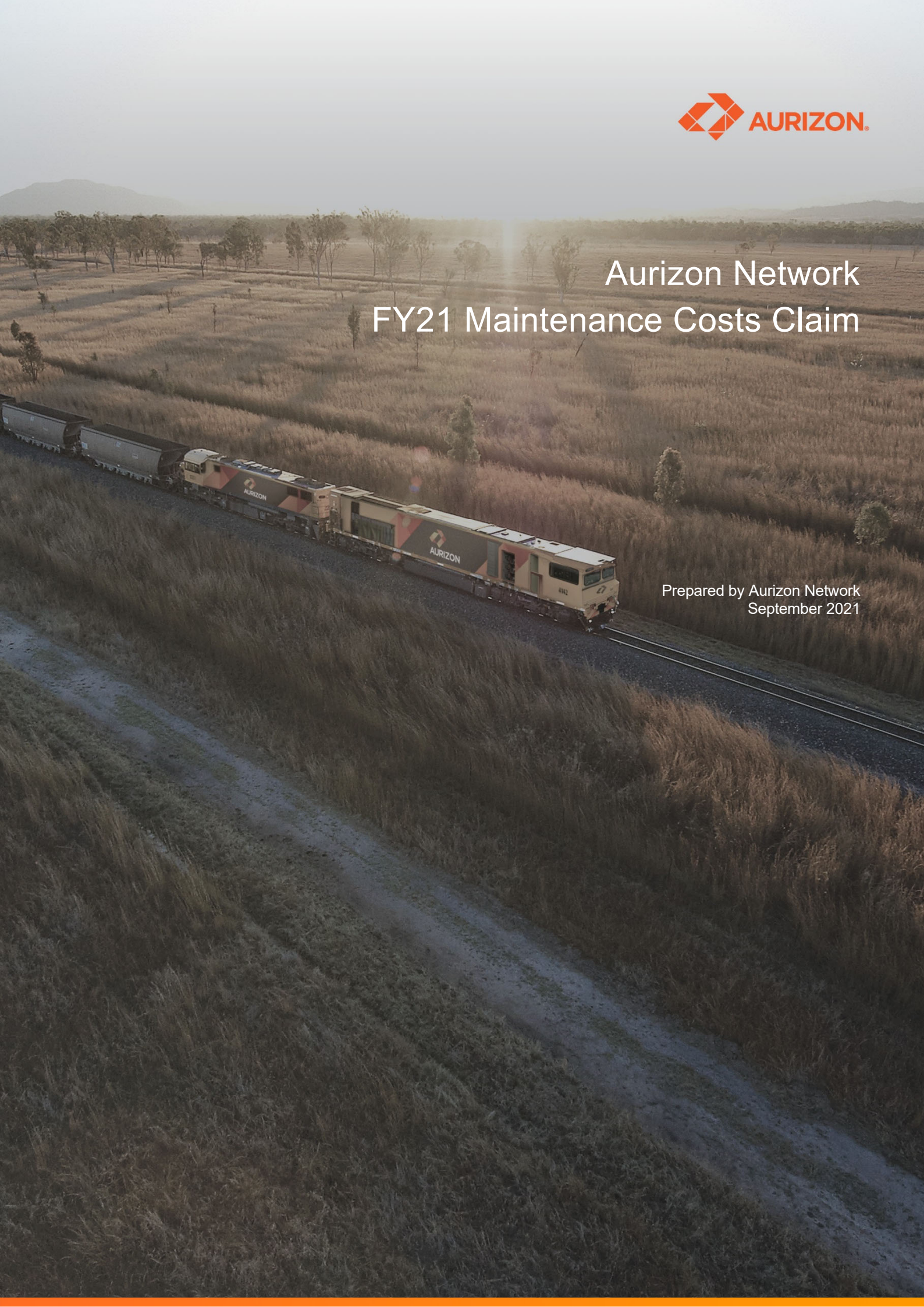


Aurizon Network
FY21 Maintenance Costs Claim

Prepared by Aurizon Network
September 2021

Table of Contents

1. Executive Summary

Aurizon Network Pty Ltd (**Aurizon Network**) is the accredited Rail Infrastructure Manager (**RIM**) of the Central Queensland Coal Network (**CQCN**), the largest open-access coal rail network in Australia and one of the country's most complex rail freight networks. The CQCN is comprised of over 2,670 kilometres of heavy haul railway track, linking more than forty mines to five coal export terminals across four major Coal Systems and the Goonyella to Abbot Point Expansion (**GAPE**).

On 19 December 2019, the Queensland Competition Authority (**QCA**) approved Aurizon Network's Draft Amending Access Undertaking in relation to the 2017 Access Undertaking (**UT5**). UT5 provides for greater customer involvement in the development and assessment of Aurizon Network's Maintenance and Renewal Strategies and Budgets (**MRSB**) for each year and for each Coal System.

Unless otherwise defined, capitalised terms in this submission have the meaning given in UT5.

Aurizon Network's inaugural draft MRSB for the Financial Year ending 30 June 2021 (**FY21**) was provided to the Rail Industry Group (**RIG**) on 29 November 2019. Following a period of consultation in which took into consideration feedback from the RIG, Aurizon Network provided its final draft MRSB to the Chair of the RIG on 21 January 2020.

On 14 February 2020, the Chair of the RIG advised Aurizon Network and the QCA that the FY21 Maintenance Strategies and Budgets (**MSB**) for each Coal System had been approved by the relevant Special Majority of End Users.

During FY21, Aurizon Network has implemented the Approved Maintenance Strategy and Budget for each Coal System.

Aurizon Network has implemented the approved FY21 MSB for each Coal System and has delivered the CQCN maintenance program in a manner that has had regard to the UT5 Maintenance Objectives (**Maintenance Objectives**) in terms of:

- Seeking to ensure that Committed Capacity is delivered;
- Appropriately balancing cost, reliability, and performance of the Rail Infrastructure; and
- Coordinating outages with other Supply Chain Participants wherever reasonably possible with a view to maximising throughput.

In doing so, Aurizon Network notes that some minor cost and scope variances do exist in comparison to the approved MSB for each Coal System. In setting the approved MSB, Aurizon Network is required to forecast maintenance scope and cost up to 18 months in advance of execution. In light of this, a degree of variation is expected due to the dynamic nature of linear heavy haul Rail Infrastructure in which asset condition and criticality can change as a result of normal railway operations, environmental factors and relative degradation rates. Aurizon Network is proactively looking for opportunities to improve our data systems and processes to increase forecasting accuracy, and has engaged with Customers to improve their understanding of the key drivers of maintenance activity and cost.

Maintenance Costs Claim for FY21

Aurizon Network submits for QCA approval, its actual Direct Maintenance Costs incurred (**Maintenance Costs Claim**) for FY21. This Maintenance Costs Claim is consistent with the summary of FY21 maintenance costs that Aurizon Network presented to Customers (including a comparison of cost and scope delivered against the approved MRSB) both as part of the Customer Quarterly Forum on 6 August 2021, and as part of the quarterly report for FY21 Q4. Please note that some minor variances in comparison to the presentation to Customers on 6 August may exist solely attributable to rounding.

Aurizon Network incurred Direct Maintenance Costs for the CQCN of $145.9m (or $142.0m excluding ballast undercutting plant depreciation).

Total direct maintenance costs incurred in each Coal System is outlined in Table 1.

Table 1 FY21 Maintenance Costs Incurred by Coal System

FY2021	Approved MSB ($m)	Maintenance Costs Incurred ($m)	Variance
Blackwater	62.3	64.0	1.7
Goonyella	60.0	58.3	(1.7)
Moura	12.5	11.3	(1.2)
Newlands / GAPE	14.0	12.2	(1.8)
Total CQCN	**148.8**	**145.9**	**(2.9)**

Aurizon Network notes that as part of its consideration of the Maintenance Costs Claim, the QCA will limit its consideration towards departures from the Approved MSB for a Coal System in the context of a materiality threshold of +/-$2 million for each maintenance item for each Coal System. In correspondence received from the Chair of the RIG on 30 December 2020, the definition of 'item' under clause 7A.11.5(f)(ii)(B)(2) was identified as a 'critical issue' for the RIG. While UT5 does not provide a definition of an "item", Aurizon Network confirmed its agreement that:

- For Blackwater and Goonyella, the product areas of Resurfacing, Rail Grinding, General Track Maintenance, 'Signalling and Telecoms' and Electrical should be considered as items. The remaining product areas should be considered a single item (Structures and Facilities, Trackside Systems, Other Civil Maintenance, Other General Maintenance); and
- For Moura and Newlands/GAPE, the maintenance budget in its entirety, should be considered an 'item'.

Aurizon Network's Maintenance Costs Claim for each Coal System is consistent with the Approved MSB.

The variances between the Approved MSB and Maintenance Costs Incurred for the key maintenance items are outlined in the respective sections for each Coal System below.

Form of submission

This submission is structured as follows:

- **Section 2** provides an overview of the Regulatory Process relevant to the QCA's assessment of Aurizon Network's Maintenance Costs Claim;
- **Section 3** provides an overview of how Aurizon Network has sought to promote the Maintenance Objectives;
- Aurizon Network's Maintenance Costs Claim for each Coal System, including actual maintenance costs incurred and the scope of work undertaken are presented in:
  - **Section 4** for the Blackwater System;
  - **Section 5** for the Goonyella System;
  - **Section 6** for the Moura System; and
  - **Section 7** for the Newlands System and GAPE,
- **Section 8** provides an overview of the procurement strategy and methodology used by Aurizon Network with respect to the Maintenance Work.

2. Regulatory Process

Clause 7A.11.3 of UT5 provides a process through which Aurizon Network can seek pre-approval of its MSB for a Coal System for a Year. Upon approval of the MSB for each Coal System (either by a Special Majority of End Users via the RIG process or by the QCA), Aurizon Network will:

- give effect to the MSB for each Coal System by setting a forecast Maintenance Indicator for the forthcoming financial year as part of the Annual review of Reference Tariffs process (Clause 4 of Schedule F to UT5); and
- implement the approved MSB for each Coal System during the year.

Following the end of each financial year, Aurizon Network will submit its Maintenance Costs Claim to the QCA for approval in accordance with Clause 7A.11.5.

2.1 QCA's assessment of the Maintenance Costs Claim

The QCA will determine the extent to which Aurizon Network's Maintenance Costs Claim is consistent with the Approved MSB for each Coal System, having regard to a materiality threshold of +/- $2 million[1] for maintenance items.

Approval process where there is no material difference

Where it is consistent in all respects between the Maintenance Costs Claim and the Approved MSB:

- End Users are deemed to support the relevant elements of the Maintenance Costs Claim; and
- the QCA will approve the Maintenance Costs Claim,

as specified in Clause 7A.11.5(f)(i) to 7A.11.5(f)(ii)(A) respectively.

Approval process where a material difference exists

Where there is a difference in a material respect, the QCA will consider any item:

- which is at least $2 million more than the corresponding item in the Approved MSB for a Coal System;
- which is at least $2 million less than the corresponding item in the Approved MSB for a Coal System; or
- in the Approved MSB which has a value of at least $2 million and which Aurizon Network has failed to undertake.

In such circumstances, members of the RIG may make submissions to the QCA in relation to the extent in which the maintenance costs are inconsistent with a Coal Systems Approved MSB and the QCA will determine whether those costs and activities are prudent and efficient.

In doing so, the QCA may have regard to the Maintenance Objectives outlined in Clause 7A.11.1(a)(iii)(A)-(C). The Maintenance Objectives require that when undertaking Maintenance Work, Aurizon Network must have regard to the following:

- seeking to ensure that Committed Capacity is delivered; and
- appropriately balancing cost, reliability and performance (each in the long and short term) each in respect of the Rail Infrastructure; and
- coordinating outages with other Supply Chain Participants wherever reasonably possible with a view to maximising throughput.

The QCA must approve Aurizon Network's prudent and efficient costs.

---

[1] Aurizon Network, 2017 Access Undertaking, Clauses 7A.11.5(f)(ii)(B)(2) to (4)

2.2 The Maintenance Cost Claim is consistent with the Approved MSB

Aurizon Network's FY21 Maintenance Cost claim for each Coal System is consistent with the Approved Maintenance Strategy and Budget. Furthermore, the are no items within Aurizon Network's Maintenance Costs Claim for any Coal System, with a variance in excess of $2m when compared to the corresponding item in that system's Approved Maintenance Strategy and Budget.

There is no difference in a material respect between the Maintenance Costs Claim and the Approved MSB in any Coal System. Consequently, Aurizon Network considers that the QCA should approve the Maintenance Costs Claim.

3. Consistency with the Maintenance Objectives

Operational performance outcomes are determined by a range of inter-related factors. An effective and efficient maintenance regime is a key enabler for operational performance. In delivering maintenance and asset renewal activity in each Coal System, Aurizon Network has had regard to the Maintenance Objectives outlined in Clause 7A.11.1. Specifically, Aurizon Network has:

- sought to ensure that Committed Capacity is delivered;
- appropriately balanced cost, reliability, and performance of the Rail Infrastructure; and
- wherever reasonably possible, coordinated outages with other Supply Chain Participants with a view to maximising throughput.

Table 2 provides examples to illustrate how Aurizon Network is seeking to promote the Maintenance Objectives in each Coal System. Please note that some of the examples outlined below are relevant to multiple Coal Systems.

Table 2 Examples of Aurizon Network's actions to promote the Maintenance Objectives

System	Example
Blackwater	• The planning of consolidated road patrols for the Gregory and Nogoa branch lines into a single day each week. The previous approach saw these patrols completed over two (2) days as part of the respective inspection cycles for the Goonyella and Blackwater systems; • Introducing planned dwells into the rail grinding program to allow for the passage of both coal and non-coal (preserved train path obligations) traffic. This improves Aurizon Network's ability to deliver Committed Capacity and helps to promote operational discipline by refining the planning and scheduling requirement for this activity; and • Planned access windows on the Bauhinia branch line to remove speed restrictions, conduct periodic inspections and complete corrective and preventative maintenance. This approach helps to promote discipline and predictability into the maintenance program, and seeks to minimise impacts to other Supply Chain Participants.
Goonyella	• Aurizon Network has sought to improve its business processes to promote greater alignment of outages with other Supply Chain Participants. By providing relevant Aurizon Network teams with better visibility of mine/port and major maintenance outages, Aurizon Network has seen an increase in the number of maintenance bids being submitted in the 'shadow' of existing planned outages. This in turn, allows these maintenance activities to be scheduled and completed with no additional impact on useable capacity. • Aurizon Network opportunistically completed a number of activities while the Goonyella System was impacted by the dewirement at Mindi. Works included rectification of a rail defects, welding, works to address areas impacted by temporary speed restrictions and track geometry recording.
Moura	• Given the customer demand profile in the Moura System, maintenance block days are established to provide consistent and recurring opportunities to deliver the required asset activity from week to week and in a cost-effective manner. This approach allows corrective and preventative activities to be scheduled in a disciplined manner. It also provides certainty to other Supply Chain Participants through greater visibility of the periods where useable capacity may be constrained. • It should be noted that maintenance days can be adjusted from time to time to ensure coordination and alignment with the requirements of other Supply Chain Participants.

Newlands / GAPE	• Aurizon Network refined elements of its maintenance strategy across the week; specifically, by changing the timing of road patrol days (to Tues/Fri) and maintenance 'block' days (to Wed/Thurs).
	  ○ By minimising maintenance works on Monday, Aurizon Network has sought to protect the current week's train plan from any potential disruption due to returning train delays from the week prior;
	  ○ Aurizon Network will seek to schedule North Coast Line (**NCL**) works between Kaili and Durroburra on a Monday only due to the reduced NCL traffic on this day. The change improves resource availability to assist with the timely delivery of NCL works which can impact both coal and non-coal traffic.
	  ○ As noted above, maintenance block days help to promote greater discipline in the scheduling and execution of asset activities. Having two (2) consecutive maintenance block

System	Example
	days in conjunction with the shadow opportunities created by the road patrol either side, improves opportunities for efficient maintenance planning. This has created benefits for the resurfacing program in particular to minimise the impacts associated with resurfacing plant mobilisation.

To support the QCA's prudency and efficiency assessment of maintenance costs, Aurizon Network has provided a summary of key operational performance data. The intent providing this information is to illustrate how Aurizon Network's maintenance performance is helping to realise the Maintenance Objectives.

Aurizon Network has sought to maintain operational performance levels in FY21 and has observed a slight improvement in overall infrastructure health and reliability, as illustrated by improvements in metrics including below rail cancellations, temporary speed restrictions and the Overall Track Condition Index (**OTCI**). A comparison of these metrics generally shows an improvement across all Coal Systems between FY20 and FY21.

3.1 Below Rail Cancellations

Below rail cancellation trends provide an indication of how the network's performance impacts train operations. They can also be an early indicator of whether the maintenance and renewals investment is set at the right level. Below rail cancellations during FY21 improved in all systems relative to FY20.

Table 3 Below Rail Cancellation % - FY21 vs FY20

System	FY21	FY20	Variance
Blackwater	**1.1%**	2.7%	▼
Goonyella	**2.1%**	2.6%	▼
Moura	**1.3%**	2.0%	▼
Newlands / GAPE	**0.7%**	2.1%	▼
CQCN Overall	**1.5%**	**2.5%**	▼

The graphs below illustrate below rail cancellations, expressed as a proportion of agreed services, for the last 12 months. Below rail cancellations consistently represent a low proportion of overall cancellations.

Figure 1 - Blackwater System – Cancellations as a proportion of Agreed Services

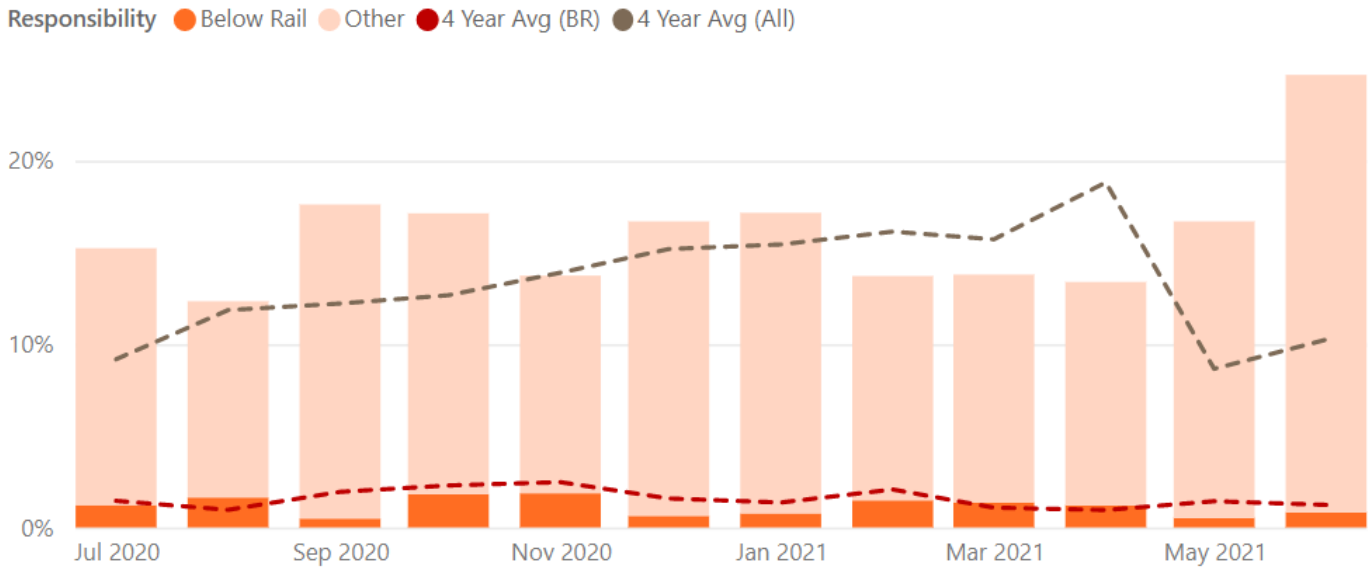
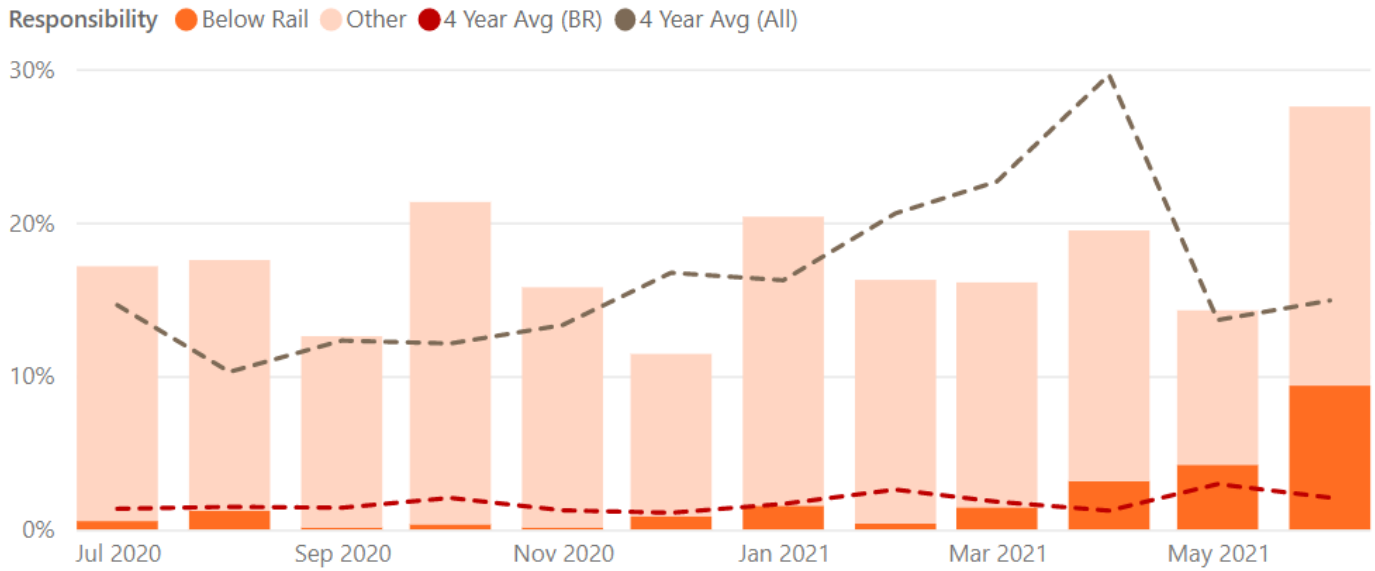


Figure 2 - Goonyella System – Cancellations as a proportion of Agreed Services



A major dewirement at Mindi on 31 May 2021 was the key contributor to the increase in Goonyella System below rail cancellations in May and June 2021. The dewirement was caused by the failure of a catenary support wire from a span boom and, as a result, Aurizon Network has introduced several measures to prevent recurrence.

Figure 3 - Moura System – Cancellations as a proportion of Agreed Services

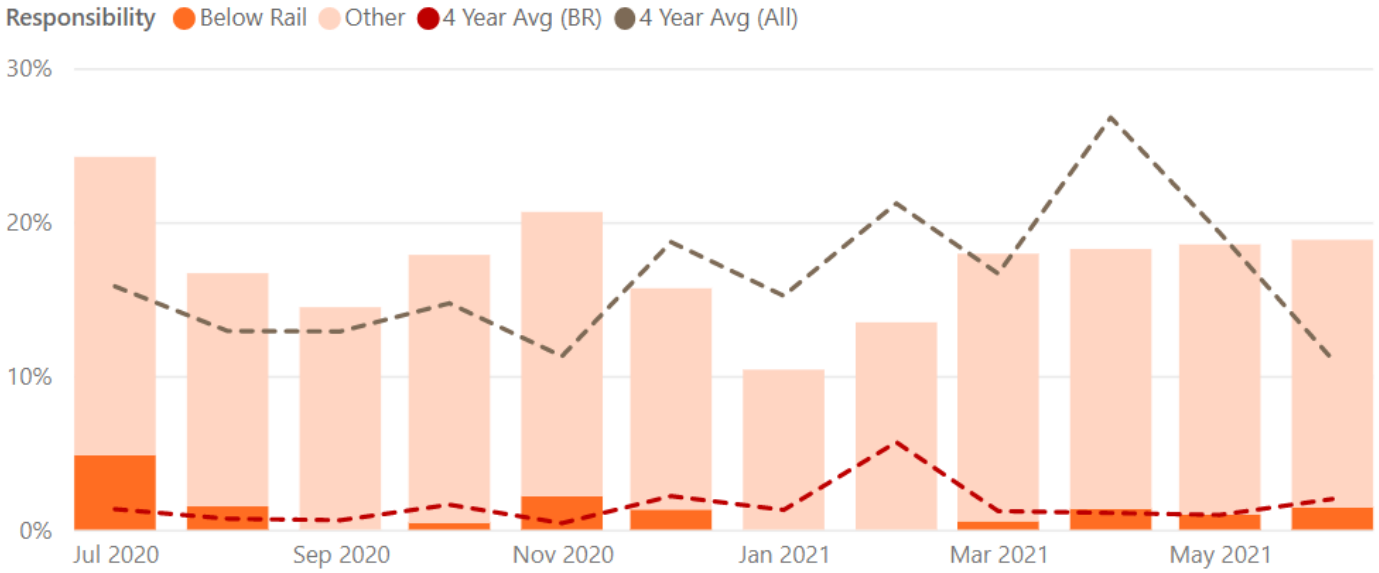
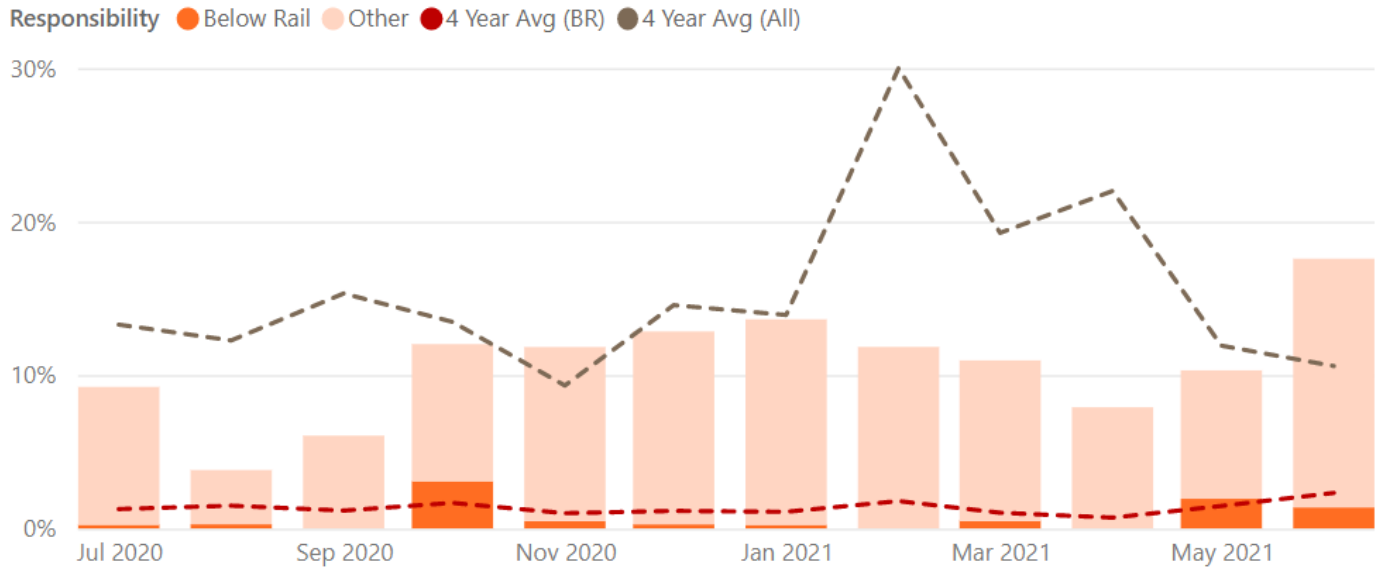


Figure 4 – Newlands System and GAPE – Cancellations as a proportion of Agreed Services



3.2 Temporary Speed Restrictions

A Temporary Speed Restriction (**TSR**) is an operational control used to ensure continuity of safe operations where the rail infrastructure is impacted by a fault, defect, incident or where the risk of a defect / fault is exacerbated due to environmental factors (for example, temperature related rail stress). A TSR allows train services to keep running, albeit at a reduced speed, until such time as the fault or defect can be rectified in a planned manner, or where the risk reduces.

Given the impact that speed restrictions have on train cycle times, network congestion and useable capacity in a Coal System, one of Aurizon Network's asset management strategies is to focus on the removal of speed restrictions applied in critical locations and/or those which have a high impact. In practice, this means that Aurizon Network would prioritise the rectification of the underlying fault, defect or incident which in turn, allows the TSR to be lifted. This maintenance practice should see a reduction in delays due to reliability and track defects and provide increased operational recovery options through improvements in train cycle times.

Throughout FY21, Aurizon Network has sought to actively manage the impact of TSR's. The implementation of Aurizon Network's Advanced Planning and Scheduling (**APS**) tool saw functionality introduced to dynamically apply speed restrictions to train schedules. As a result, the impact of speed restrictions in FY21 has been captured with greater accuracy.

Aurizon Network's performance is illustrated below through a comparison of TSR delay minutes year on year. To normalise the results across individual Coal Systems, TSR Delay Minutes are expressed in "minutes per 100 train kilometres" within Table 4.

Table 4 TSR Delay Minutes per 100 Train Km - FY21 vs FY20

	FY21	FY20	Variance
Blackwater	6.5	7.3	▼
Goonyella	6.0	4.0	▲
Moura	10.9	18.4	▼
Newlands / GAPE	2.1	2.1	--
CQCN Overall	**5.81**	**5.83**	▼

Aurizon Network saw an improvement (reduction) in TSR delay minutes in the Blackwater and Moura Coal Systems. Performance in the Newlands System remained in-line with last year. TSR delay minute performance in the Goonyella System was adversely impacted by factors including the dewirement at Mindi on 31 May 2021 and derailments at Dalrymple Bay Coal Terminal.

3.3 Overall Track Condition Index

The OTCI provides an indicator of overall track quality for each coal system by measuring track geometry variation over time. The index is calculated from data captured by track recording vehicles and is used to monitor trends in track condition. An OTCI that is trending downwards is indicative of improving track quality. Conversely, an OTCI that is trending upwards may indicate that the track condition is either deteriorating or is being managed in a way that is 'fit for purpose' as determined by the Rail Infrastructure Manager.

Table 5 Average OTCI - FY21 vs FY20

	FY21	FY20	Variance
Blackwater	**23.9**	28.7	▼
Goonyella	**22.3**	25.5	▼
Moura	**26.5**	32.6	▼
Newlands / GAPE	**20.0**	22.5	▼

OTCI across all Coal Systems improved throughout the course of FY21. This performance can be attributable to the combined impact of Aurizon Network's asset maintenance and renewal programs, a mild winter and a relatively dry summer.

The root cause of most track geometry faults can be attributable to the moisture saturation of formation or ballast, which impacts the stability of track under train loads. The reduced rainfall over the summer months contributed to a reduction in track geometry anomalies.

While included for completeness, please note that FY21 results are not directly comparable to FY20. During FY20, Aurizon Network's service provider transitioned to a new track recording machine and refined its OTCI calculation method. This resulted in a step change in the OTCI results for Blackwater, Goonyella and Newlands / GAPE in May-20, and in June-20 for the Moura Coal System.

3.4 Initial Capacity Assessment Report

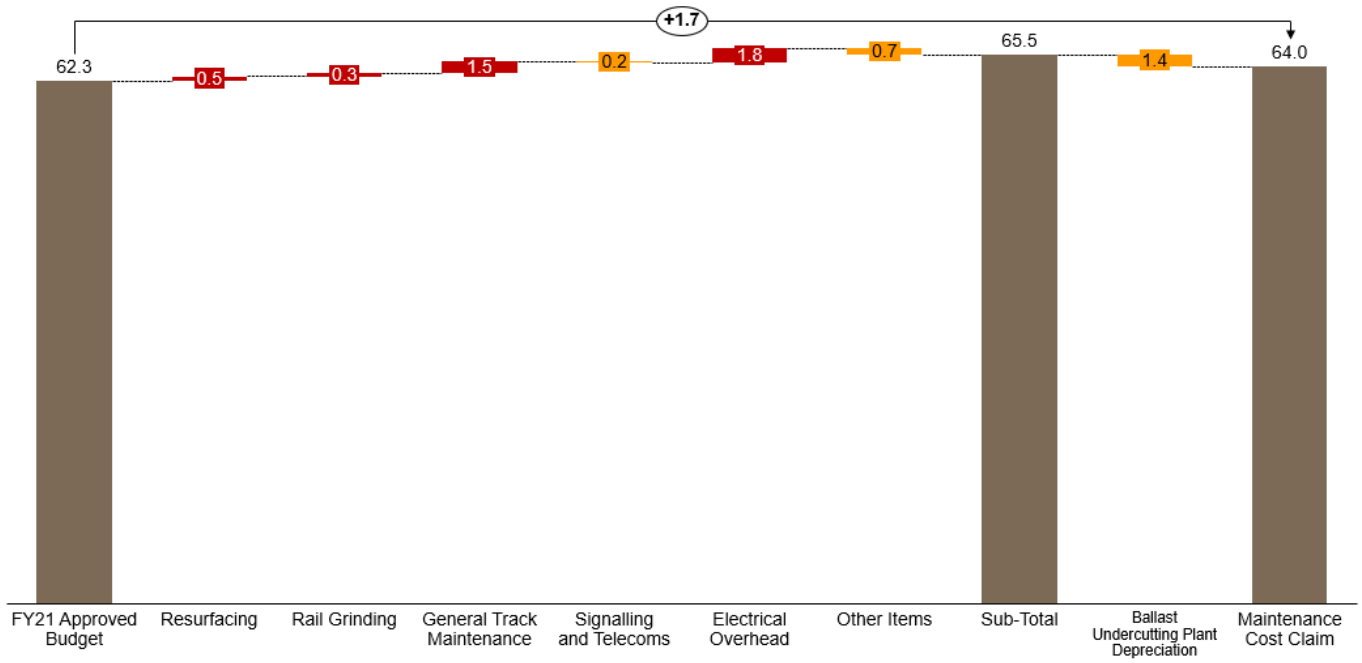
Please note that at the time of drafting, the Independent Expert (**IE**) has not published its Initial Capacity Assessment Report (**ICAR**), which will, among other things, assess Deliverable Network Capacity and whether an Existing Capacity Deficit exists in a Coal System. The resulting consultation between Aurizon Network, End Users, Customers, Access Holders and Train Operators may determine that the most effective and efficient way of addressing an Existing Capacity Deficit is for Aurizon Network to make changes to the operating and maintenance practices for Rail Infrastructure in a relevant Coal System. Any agreed rectification outcomes with CQCN stakeholders on the findings of the ICAR may result in future maintenance cost and scope delivery impacts, with a consequential impact on the system health and reliability trends in the future years.

4. Blackwater System

4.1 Actual Maintenance Costs Incurred

This section outlines the actual Direct Maintenance Costs that Aurizon Network incurred during FY21 in delivering Maintenance Work in the Blackwater System. Aurizon Network submits for QCA approval, a Maintenance Cost Claim of $64.0m, which in aggregate is $1.7m higher than the approved maintenance budget for this Coal System. This variance was driven by additional Electrical Overhead and General Track Maintenance costs, which were partially offset by lower ballast undercutting depreciation and the net impact of other maintenance items.

Figure 5 Blackwater System Maintenance Costs Incurred ($m)



Aurizon Network has assessed its actual maintenance costs incurred against the Approved MSB, taking into consideration the materiality thresholds specified in UT5, 7A.11.5(f)(ii)(B).

Legend:	
Consistent	Variation from Approved MSB is within +/- $2m materiality threshold.
Departed	Variation from Approved MSB is exceeds +/- $2m materiality threshold.

The following table outlines whether Aurizon Network has remained consistent with or has departed from the approved MSB. For the purpose of its assessment of the Maintenance Costs Claim (as per clause 7A.11.5), the QCA should have regard to the defined categories of maintenance, represented by the shaded rows in Table 6 below.

Table 6 Blackwater System Maintenance Costs – Comparison to Approved Budget ($m)

Maintenance Item ($m)	Maintenance Costs Incurred	RIG Approved Budget	Cost Variance	Consistent or Departed
Resurfacing	**9.1**	**8.6**	**0.5**	
- Mainline	7.3	7.2		
- Turnout	1.8	1.4		
Rail Grinding	**7.5**	**7.2**	**0.3**	

Maintenance Item ($m)	Maintenance Costs Incurred	RIG Approved Budget	Cost Variance	Consistent or Departed
- Mainline	[redacted]	[redacted]		
- Turnout	[redacted]	[redacted]		
General Track Maintenance	**21.9**	**20.4**	**1.5**	
- General Track	20.3	18.1		
- Track Recording	1.1	1.1		
- Ultrasonic Testing Car	0.6	1.2		
Signalling and Telecommunications	**9.8**	**10.0**	**(0.2)**	
- Signalling Corrective	2.6	2.0		
- Signalling Preventative	4.9	5.0		
- Telecoms Corrective	0.5	0.2		
- Telecoms Preventative	1.8	2.8		
Electrical Overhead	**5.9**	**4.1**	**1.8**	
- OHLE Corrective	1.6	1.2		
- OHLE Preventative	2.9	1.9		
- Traction Substation Corrective	0.5	0.1		
- Traction Substation Preventative	0.9	0.8		
Structures and Facilities	**2.5**	**1.9**	**0.6**	
Trackside Systems	**1.0**	**0.7**	**0.3**	
Other Civil Maintenance	**2.4**	**2.6**	**(0.2)**	
Other General Maintenance	**2.3**	**3.7**	**(1.4)**	
- Asset Management & Inventory	1.2	2.0		
- On Call	1.0	1.7		
Sub-Total	**62.3**	**59.2**	**3.1**	
Ballast Undercutting Plant Depreciation	1.7	3.1	(1.4)	
Total	**64.0**	**62.3**	**1.7**	

4.2 Scope of Maintenance Work Undertaken

This section outlines the scope of Maintenance Work undertaken in the Blackwater Coal System during FY21.

Table 7 Blackwater System Scope Delivered

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Resurfacing				
- Mainline	910	896	14	2%
- Turnout	186	173	13	8%
Rail Grinding				
- Mainline	[redacted]	[redacted]	[redacted]	[redacted]
- Turnout	[redacted]	[redacted]	[redacted]	[redacted]

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
General Track Maintenance				
- Track Recording	2,537	2,790	(253)	(9%)
- Ultrasonic Testing Car	6,307	8,443	(2,136)	(25%)

4.3 Commentary on annual performance for Maintenance Items

Aurizon Network has delivered Maintenance Work in the Blackwater System in a manner that is consistent with its legislative and regulatory obligations. By giving effect to the asset management plans and strategies[2] that underpinned the approved MSB, Aurizon Network has ensured compliance with these obligations.

There are no categories of maintenance within Aurizon Network's Maintenance Costs Claim for the Blackwater System, with a difference in a material respect when compared to the corresponding item in the approved MSB. Consequently, Aurizon Network considers that the QCA should approve the Maintenance Costs Claim.

Aurizon Network has provided some commentary on specific maintenance categories below.

4.3.1 Resurfacing

Aurizon Network delivered the resurfacing scope of works as outlined in the approved MSB. Scope completed for:

- Mainline resurfacing was higher than the approved MSB with 910km completed. This represents an additional 14 km (+2%); and
- Turnout resurfacing was higher than the approved MSB. 186 turnouts were completed, representing an additional 13 turnouts (+8%).

The additional scope was completed in order to rectify defects in locations that were impacted by speed restrictions. These additional works saw resurfacing costs exceed the approved budget by $0.5m (+6%) in aggregate.

4.3.2 Rail Grinding

Aurizon Network delivered the rail grinding scope of works as outlined in the approved MSB, marginally exceeding scope targets for:

- [redacted] km of mainline rail grinding was completed; an additional [redacted] km ([redacted]%); and
- rail grinding was completed on [redacted] turnouts; an additional [redacted] turnouts ([redacted]%).

The rail grinding scope outlined in the approved MSB was based on assumptions and estimates set in advance of the submission to the RIG in November 2019. The rail grinding scope that was ultimately delivered in the Blackwater System took into consideration actual tonnages railed and the condition of the rail infrastructure.

These additional works saw rail grinding costs exceed the approved budget by $0.3m (+4%) in aggregate.

4.3.3 General Track Maintenance

Aurizon Network incurred costs in excess of the approved MSB for General Track Maintenance; representing an over-spend of $1.5m (+7%) in aggregate. Costs for this item have, however, remained within the $2m materiality threshold specified in UT5. This over-spend can be attributable to the following:

[2] The asset management plans and strategies are derived from Aurizon Network's Asset Maintenance and Renewal Policy, which in turn is the manifestation of Aurizon Network's practical application of the Safety Management System.

- **Assumptions underpinning the FY21 MSB** - Approximately two thirds of general track maintenance works relate to corrective (or fix on fail) activities. The variation seen in the general track maintenance program, is typically driven by the nature of the corrective works that manifest during the year. The budget for a number of maintenance categories within the MSB (including general track maintenance) was also developed having regard to assumptions made at a point in time, including the extrapolation of a forecast for FY20 maintenance costs and escalations. During FY20, costs actualised differently to those assumptions, both between Coal Systems and between maintenance categories, and, as a consequence, the approved MSB forecast understated the level of expenditure reasonably required in the Blackwater System in FY21.

- **Gracemere roster trial** – as advised in the quarterly reporting to customers during FY21, Aurizon Network trialled a 7-day a week maintenance roster in the Gracemere depot. The objective of this initiative was to improve the operational performance of the system by creating a more even distribution of maintenance activities across the week and reducing congestion. The trial was deemed successful, enabling a better distribution of train services, and the approach is now a permanent arrangement at the Gracemere depot. The change resulted in additional costs of approximately $0.3m in FY21.

- **Ultrasonic Testing** – Aurizon Network undertook a review of the Ultrasonic Testing Program to ensure that its approach was fit for purpose and aligned to the requirements mandated in its civil engineering track standards (**CETS**). Using improved data, which allowed tonnage on unloaded track sections to be captured more accurately, this review indicated that the unloaded tracks in some areas were being tested at the same frequency as loaded tracks, and therefore, prior to the required frequency of 10 million gross tonnes. A revised program was developed for FY21 (and FY22) in consultation with the service provider to ensure alignment to CETS. This resulted in the reduction of ultrasonic testing cost and scope compared to the approved MSB.

- **Costing Transparency** – Aurizon Network's ongoing efforts to increase costing transparency saw an improvement in costing categorisation for civil track activities within the General Track Maintenance item. For clarity, this has also resulted in the associated reduction in time and costs booked to the 'Other General Maintenance - Asset Management & Inventory' compared to the approved MSB.

4.3.4 Signalling and Telecoms

Aurizon Network incurred $9.8m in signalling and telecoms maintenance costs; representing an under-spend of $0.2m (-2%) in aggregate when compared to the approved MSB. While immaterial, variances do exist between the maintenance sub-categories, particularly in relation to telecoms preventative maintenance.

Such variances can be attributed to the fact that the budget for a number of maintenance categories (including signalling and telecoms) were developed having regard to assumptions on FY20 forecast costs made at a point in time. It should be noted that:

- the FY20 maintenance cost forecasts included a savings target that was allocated to individual maintenance items in proportion to the UT5 final decision allowances. This approach ultimately impacted the assumed FY21 budget required for this activity as it was not based on a bottom-up assessment of potential savings for this particular item; and
- during FY20, costs actualised differently to the assumptions which underpinned the FY21 MRSB forecast at a RIG category level.

While the above factors have resulted in misalignment between some of the sub-categories, the overall spend for signalling and telecoms maintenance remains materially in-line with the approved MSB.

4.3.5 Electrical Overhead

Aurizon Network incurred $5.9m in electrical overhead maintenance costs; representing an over-spend of $1.8m (43%) in aggregate when compared to the approved MSB. While this does not exceed the materiality threshold outlined in clause 7A.11.5(f)(ii)(B)(2), variances do exist between the maintenance sub-categories; particularly in relation to overhead line equipment preventative maintenance.

Such variances can be attributed to the fact that the budget for a number of maintenance categories (including electrical overhead) were developed having regard to assumptions including the extrapolation of a forecast for FY20 maintenance costs and escalations which was made at a point in time. It should be noted that:

- the FY20 maintenance cost forecasts included a savings target that was allocated to individual maintenance items in proportion to the UT5 final decision allowances. This approach ultimately impacted the assumed FY21 budget required for this activity as it was not based on a bottom-up assessment of potential savings for this particular item; and
- during FY20, costs and escalations actualised differently to the assumptions which underpinned the FY21 MRSB at a RIG category level and, as a consequence, the approved MSB forecast understated the level of expenditure reasonably required in the Blackwater System in FY21.

While the above factors have resulted in misalignment between some of the sub-categories, the overall spend for electrical overhead maintenance remains materially in-line with the approved MSB.

4.3.6 Structures and Facilities

Aurizon Network incurred $2.5m in structures and facilities maintenance, representing an over-spend of $0.6m (29%) when compared to the approved MSB. The over-spend was attributable to grout filling works completed on culverts during Q3 and Q4, and costs associated with the application of a paint protection package to selected Corrugated Metal Pipe (**CMP**) culverts, predominantly on the Bauhinia branch line; an activity which helps to ensure that the CMP culverts achieve their design life.

4.3.7 Other General Maintenance

Aurizon Network incurred $2.3m in Other General Maintenance, representing a variance of $1.4m when compared to the approved MSB. Savings were realised through a combination of reductions in on-call, planning and administrative overheads and as noted above, improved costing transparency in relation to civil track activities within the General Track Maintenance item.

4.3.8 Ballast Undercutting Plant Depreciation

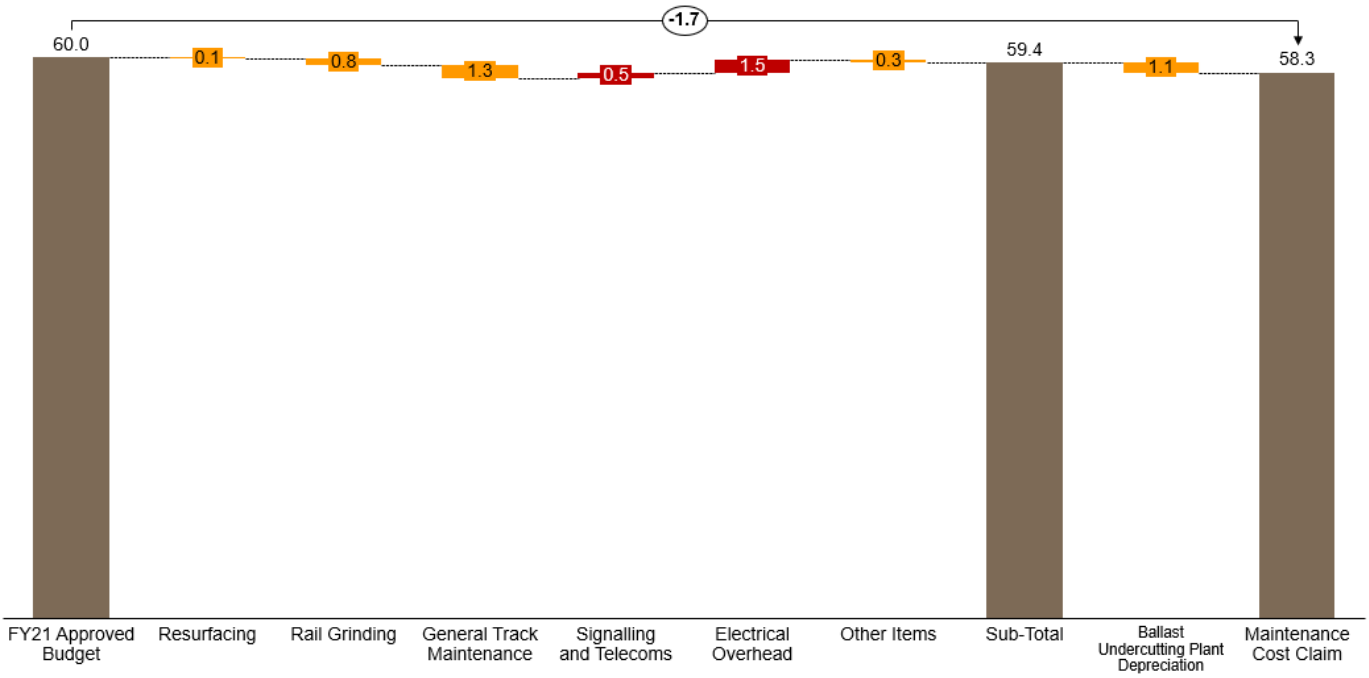
Ballast undercutting plant depreciation realised for the year was $1.7m, representing a reduction of $1.4m compared to the approved MSB. The variance was attributable to the delay in commissioning Aurizon Network's ballast undercutting machine (RM902), which was assumed to be in production for the full FY21.

5. Goonyella System

5.1 Actual Maintenance Costs Incurred

This section outlines the actual Direct Maintenance Costs that Aurizon Network incurred during FY21 in delivering Maintenance Work in the Goonyella System. Aurizon Network submits for QCA approval, a Maintenance Cost Claim of $58.3m, which in aggregate is $1.7m lower than the approved maintenance budget for this Coal System. This variance was driven by cost reductions relating to Rail Grinding and General Track Maintenance activities, and lower ballast undercutting depreciation. These reductions were partially offset by additional Electrical Overhead and Signalling and Telecommunications costs.

Figure 6 Goonyella System Maintenance Costs Incurred ($m)



Aurizon Network has assessed its actual maintenance costs incurred against the Approved MSB, taking into consideration the materiality thresholds specified in UT5, 7A.11.5(f)(ii)(B).

Legend:	
Consistent	Variation from Approved MSB is within +/- $2m materiality threshold.
Departed	Variation from Approved MSB is exceeds +/- $2m materiality threshold.

The following table outlines whether Aurizon Network has remained consistent with or has departed from the approved MSB. For the purpose of its assessment of the Maintenance Costs Claim (as per clause 7A.11.5), the QCA should have regard to the defined categories of maintenance, represented by the shaded rows in Table 8 below.

Table 8 Goonyella System Maintenance Costs – Comparison to Approved Budget ($m)

Maintenance Item ($m)	Maintenance Costs Incurred	RIG Approved Budget	Cost Variance	Consistent or Departed
Resurfacing	**9.0**	**9.1**	**(0.1)**	
- Mainline	7.1	7.4		
- Turnout	1.9	1.7		

Maintenance Item ($m)	Maintenance Costs Incurred	RIG Approved Budget	Cost Variance	Consistent or Departed
Rail Grinding	**7.2**	**8.0**	**(0.8)**	
- Mainline	[redacted]	[redacted]		
- Turnout	[redacted]	[redacted]		
General Track Maintenance	**16.8**	**18.1**	**(1.3)**	
- General Track	15.5	16.7		
- Track Recording	0.7	0.8		
- Ultrasonic Testing Car	0.5	0.7		
Signalling and Telecommunications	**9.3**	**8.8**	**0.5**	
- Signalling Corrective	2.7	2.4		
- Signalling Preventative	4.1	3.6		
- Telecoms Corrective	0.3	0.2		
- Telecoms Preventative	2.2	2.5		
Electrical Overhead	**6.5**	**5.0**	**1.5**	
- OHLE Corrective	3.4	1.2		
- OHLE Preventative	1.4	2.4		
- Traction Substation Corrective	0.5	0.3		
- Traction Substation Preventative	1.3	1.2		
Structures and Facilities	**1.9**	**2.0**	**(0.1)**	
Trackside Systems	**1.2**	**0.9**	**0.3**	
Other Civil Maintenance	**2.4**	**2.7**	**(0.3)**	
Other General Maintenance	**2.1**	**2.3**	**(0.2)**	
- Asset Management & Inventory	1.3	1.9		
- On Call	0.8	0.5		
Sub-Total	**56.3**	**56.9**	**(0.6)**	
Ballast Undercutting Plant Depreciation	2.0	3.1	(1.1)	
Total	**58.3**	**60.0**	**(1.7)**	

5.2 Scope of Maintenance Work Undertaken

This section outlines the scope of Maintenance Work undertaken in the Goonyella Coal System during FY21.

Table 9 Goonyella System Scope Delivered

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Resurfacing				
- Mainline	956	956	--	0%
- Turnout	190	189	1	1%
Rail Grinding				
- Mainline	[redacted]	[redacted]	[redacted]	[redacted]

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
- Turnout	[redacted]	[redacted]	[redacted]	[redacted]
General Track Maintenance				
- Track Recording	1,816	1,940	(124)	(6%)
- Ultrasonic Testing Car	6,094	7,219	(1,125)	(16%)

5.3 Commentary on annual performance for Maintenance Items

Aurizon Network has delivered Maintenance Work in the Goonyella System in a manner that is consistent with its legislative and regulatory obligations. By giving effect to the asset management plans and strategies[3] that underpinned the approved MSB, Aurizon Network has ensured compliance with these obligations.

There are no categories of maintenance within Aurizon Network's Maintenance Costs Claim for the Goonyella System, with a difference in a material respect when compared to the corresponding item in the approved MSB. Consequently, Aurizon Network considers that the QCA should approve the Maintenance Costs Claim.

Aurizon Network has provided some commentary on specific maintenance categories below.

5.3.1 Resurfacing

Aurizon Network delivered the resurfacing scope of works as outlined in the approved MSB. Scope completed for:

- Delivered mainline resurfacing is in line with the approved MSB, with 956 km completed; and
- Turnout resurfacing was higher than the approved MSB, with Aurizon Network resurfacing one (1) additional turnout (+1%).

Resurfacing scope was delivered for $9.0m, which was slightly under the approved budget by $0.1m (-1%) in aggregate.

5.3.2 Rail Grinding

Aurizon Network delivered the mainline rail grinding scope of works as outlined in the approved MSB, scope for:

- Mainline rail grinding was [redacted] km ([redacted]%) higher than the approved MSB, with [redacted] km of mainline rail grinding delivered; and
- Turnout rail grinding was lower than the approved MSB. Aurizon Network completed rail grinding on [redacted] turnouts; [redacted] turnouts ([redacted]%) fewer turnouts than forecast.

The rail grinding scope outlined in the approved MSB was based on assumptions and estimates set in advance of the submission to the RIG in November 2019. The rail grinding scope that was ultimately delivered in the Goonyella System took into consideration actual tonnages railed and the condition of the rail infrastructure.

In FY21, Aurizon Network incurred costs of $7.2m completing rail grinding in the Goonyella System; representing a reduction of $0.8m (-10%) compared to the approved MSB.

[3] The asset management plans and strategies are derived from Aurizon Network's Asset Maintenance and Renewal Policy, which in turn is the manifestation of Aurizon Network's practical application of the Safety Management System.

5.3.3 General Track Maintenance

Aurizon Network incurred $16.8m for General Track Maintenance; representing an under-spend of $1.3m (-7%) in aggregate against the approved MSB. This under-spend can be attributable to the following:

- **Assumptions underpinning the FY21 MSB** - the budget for a number of maintenance categories within the MSB (including general track maintenance) was developed having regard to assumptions made at a point in time, including the extrapolation of a forecast for FY20 maintenance costs and escalations. During FY20, costs actualised differently to those assumptions, both between Coal Systems and between maintenance categories, and as a consequence, the approved MSB forecast overstated the level of expenditure required in the Goonyella System in FY21
- While the above factors have resulted in misalignment between some of the sub-categories, the overall spend for electrical overhead maintenance remains materially in-line with the approved MSB.

5.3.4 Ballast Undercutting Plant Depreciation

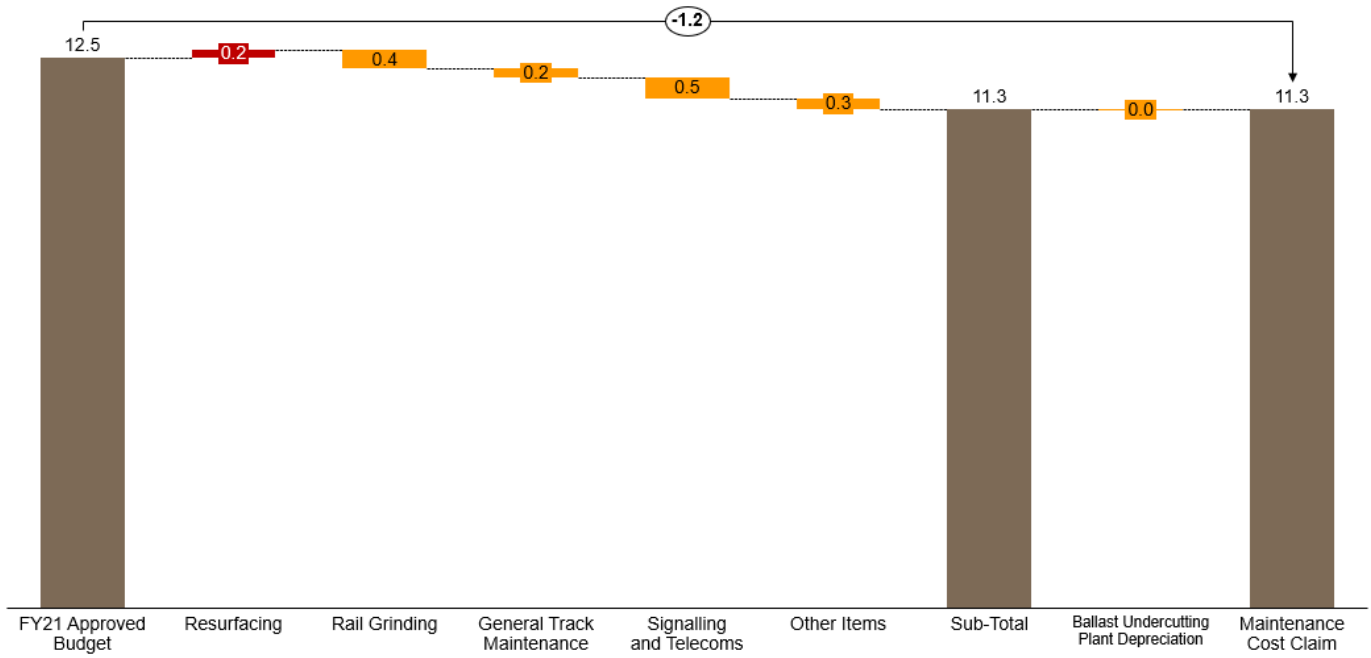
Ballast undercutting plant depreciation of realised for the year was $2.0m, representing a reduction of $1.1m compared to the approved MSB. The variance was attributable to the delay in commissioning Aurizon Network's ballast undercutting machine (RM902), which was assumed to be in production for the full FY21.

6. Moura System

6.1 Actual Maintenance Costs Incurred

This section outlines the actual Direct Maintenance Costs that Aurizon Network incurred during FY21 in delivering Maintenance Work in the Moura System. Aurizon Network submits for QCA approval, a Maintenance Cost Claim of $11.3m, which in aggregate is $1.2m lower than the approved maintenance budget for this Coal System. This variance was driven by reductions in Rail Grinding and Signalling and Telecommunications expenses and the aggregate impact of other maintenance items. These reductions were partially offset by additional Resurfacing costs.

Figure 7 Moura System Maintenance Costs Incurred ($m)



Aurizon Network has assessed its actual maintenance costs incurred against the Approved MSB, taking into consideration the materiality thresholds specified in UT5, 7A.11.5(f)(ii)(B).

Legend:	
Consistent	Variation from Approved MSB is within +/- $2m materiality threshold.
Departed	Variation from Approved MSB is exceeds +/- $2m materiality threshold.

The following table outlines whether Aurizon Network has remained consistent with or has departed from the approved MSB. For the purpose of its assessment of the Maintenance Costs Claim (as per clause 7A.11.5), the QCA should have regard to the defined categories of maintenance, represented by the shaded rows in Table 10 below.

Table 10 Moura System Maintenance Costs – Comparison to Approved Budget ($m)

Maintenance Item ($m)	Maintenance Costs Incurred	RIG Approved Budget	Cost Variance	Consistent or Departed
Resurfacing	**1.6**	**1.4**	**0.2**	
- Mainline	1.5	1.3		
- Turnout	0.2	0.1		
Rail Grinding	**0.6**	**1.0**	**(0.4)**	

Maintenance Item ($m)	Maintenance Costs Incurred	RIG Approved Budget	Cost Variance	Consistent or Departed
- Mainline	[redacted]	[redacted]		
- Turnout	[redacted]	[redacted]		
General Track Maintenance	**5.2**	**5.4**	**(0.2)**	
- General Track	5.0	5.0		
- Track Recording	0.2	0.2		
- Ultrasonic Testing Car	0.0	0.1		
Signalling and Telecommunications	**1.8**	**2.3**	**(0.5)**	
- Signalling Corrective	0.6	0.6		
- Signalling Preventative	0.9	1.1		
- Telecoms Corrective	0.0	0.1		
- Telecoms Preventative	0.3	0.6		
Electrical Overhead				
Structures and Facilities	**0.7**	**0.6**	**0.1**	
Trackside Systems	**0.3**	**0.2**	**0.0**	
Other Civil Maintenance	**0.7**	**1.0**	**(0.3)**	
Other General Maintenance	**0.5**	**0.5**	**(0.0)**	
- Asset Management & Inventory	0.2	0.5		
- On Call	0.3	--		
Sub-Total	**11.3**	**12.5**	**(1.2)**	
Ballast Undercutting Plant Depreciation	--	--	--	
Total	**11.3**	**12.5**	**(1.2)**	

6.2 Scope of Maintenance Work Undertaken

This section outlines the scope of Maintenance Work undertaken in the Moura Coal System during FY21.

Table 11 Moura System Scope Delivered

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Resurfacing				
- Mainline	179	170	9	5%
- Turnout	11	10	1	10%
Rail Grinding				
- Mainline	[redacted]	[redacted]	[redacted]	[redacted]
- Turnout	[redacted]	[redacted]	[redacted]	[redacted]
General Track Maintenance				
- Track Recording	495	525	(30)	(6%)
- Ultrasonic Testing Car	480	886	(406)	(46%)

6.3 Commentary on annual performance for Maintenance Items

Aurizon Network has delivered Maintenance Work in the Moura System in a manner that is consistent with its legislative and regulatory obligations. By giving effect to the asset management plans and strategies[4] that underpinned the approved MSB, Aurizon Network has ensured compliance with these obligations.

There are no categories of maintenance within Aurizon Network's Maintenance Costs Claim for the Moura System, with a difference in a material respect when compared to the corresponding item in the approved MSB. In addition, the variance between FY21 maintenance costs and the approved MSB for the Moura System in aggregate is within the materiality threshold outlined in clause 7A.11.5(f)(ii)(B).

Consequently, Aurizon Network considers that the QCA should approve the Maintenance Costs Claim.

Aurizon Network has provided some commentary on specific maintenance categories below.

6.3.1 Resurfacing

Aurizon Network delivered the resurfacing scope of works as outlined in the approved MSB. Scope completed for:

- Mainline resurfacing was slightly higher than the approved MSB, with 179km delivered. This represents an increase of 9km (+5%) compared to the approved MSB; and
- Turnout resurfacing was higher than the approved MSB, with Aurizon Network resurfacing 11 turnouts in total; one (1) additional turnout (+10%) compared to the approved MSB.

Resurfacing scope was delivered for $1.6m, which was slightly higher the approved budget by $0.2m (13%) in aggregate.

6.3.2 Rail Grinding

Aurizon Network did not deliver the full scope of rail grinding works as outlined in the approved MSB, however this was matched by an equivalent reduction in cost incurred due to the external grinding contract providing this flexibility. Scope for:

- Mainline rail grinding was [redacted] km ([redacted] %) lower than the approved MSB, with [redacted] km of mainline rail grinding delivered; and
- Turnout rail grinding was lower than the approved MSB. Aurizon Network completed rail grinding on [redacted] turnouts; [redacted] turnouts ([redacted] %) fewer turnouts than forecast.

The rail grinding scope outlined in the approved MSB was based on assumptions and estimates set in advance of the submission to the RIG in November 2019. The rail grinding scope that was ultimately delivered in the Moura System took into consideration the condition of the rail infrastructure and the transition to the revised rail grinding profiles and frequencies as a result of Aurizon Network's rail profile review project.

In FY21, Aurizon Network incurred costs of $0.6m completing rail grinding in the Moura System; representing a reduction of $0.4m (-42%) compared to the approved MSB.

6.3.3 General Track Maintenance

Aurizon Network incurred $5.2m for General Track Maintenance; representing an under-spend of $0.2m (-4%) in aggregate against the approved MSB. This under-spend can be predominantly attributable to the following:

- **Ultrasonic Testing** – Aurizon Network undertook a review of the Ultrasonic Testing Program to ensure that its approach was fit for purpose and aligned to the requirements mandated in its civil engineering track standards

[4] The asset management plans and strategies are derived from Aurizon Network's Asset Maintenance and Renewal Policy, which in turn is the manifestation of Aurizon Network's practical application of the Safety Management System.

(**CETS**). Using improved data, which allowed tonnage on each track to be captured more accurately, this review enabled a revised program to be developed for FY21 (and FY22) in consultation with the service provider, ensuring alignment to CETS. This resulted in the reduction of ultrasonic testing cost and scope compared to the approved MSB.

6.3.4 Signalling and Telecoms

Aurizon Network incurred $1.8m in signalling and telecoms maintenance costs; representing an under-spend of $0.5m (-20%) in aggregate when compared to the approved MSB.

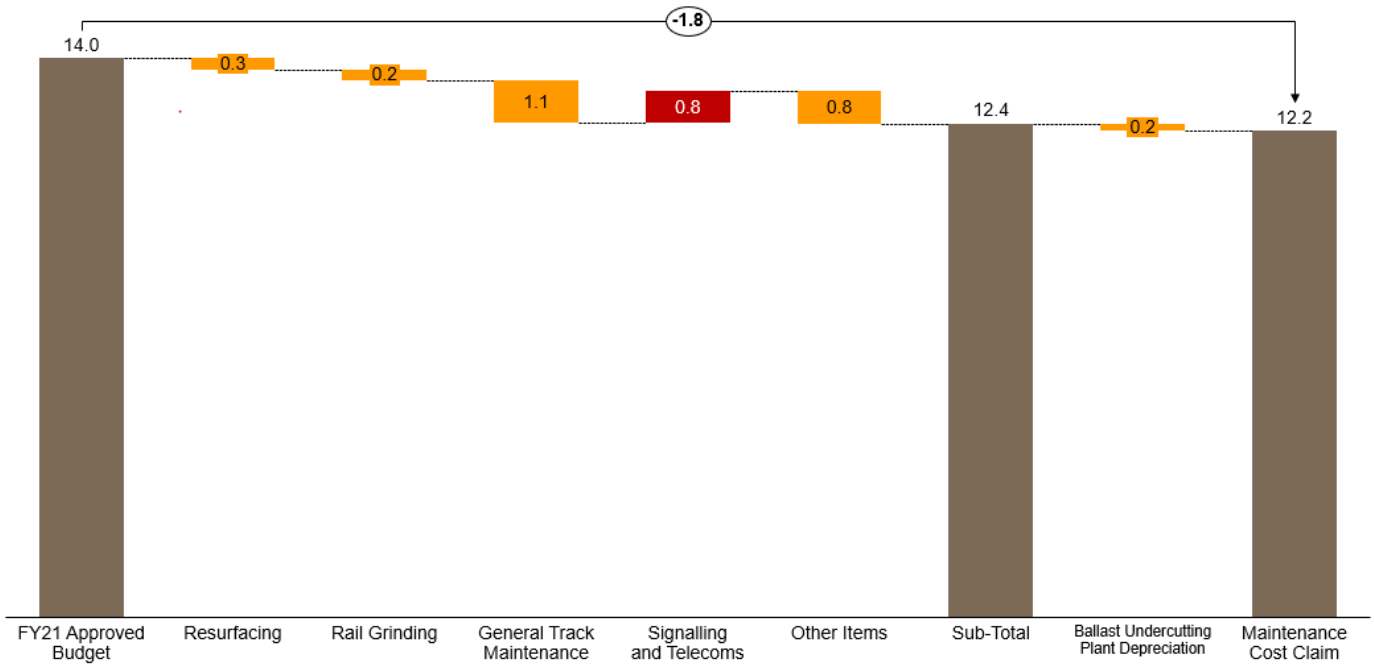
One of the initiatives driving these savings was the deployment of a remote monitoring system at all active level crossings, which allows Aurizon Network to monitor individual lamp operation, power supply availability and a range of other performance metrics 24/7 from the Network Fault Coordination Centre. As a result, and following a reliability proving period and risk assessment, Aurizon Network has been able to extend the maintenance intervals for basic functional inspections (i.e. A-type maintenance services) from 1 to 4 weeks.

7. Newlands System and GAPE

7.1 Actual Maintenance Costs Incurred

This section outlines the actual Direct Maintenance Costs that Aurizon Network incurred during FY21 in delivering Maintenance Work in the Newlands System and GAPE. Aurizon Network submits for QCA approval, a Maintenance Cost Claim of $12.2m, which in aggregate is $1.8m lower than the approved maintenance budget for this Coal System. This variance was predominantly driven by cost reductions relating to General Track Maintenance and the aggregate impact of other maintenance items. These reductions were partially offset by additional Signalling and Telecommunications costs.

Figure 8 Newlands System and GAPE Maintenance Costs Incurred ($m)



Aurizon Network has assessed its actual maintenance costs incurred against the Approved MSB, taking into consideration the materiality thresholds specified in UT5, 7A.11.5(f)(ii)(B).

Legend:	
Consistent	Variation from Approved MSB is within +/- $2m materiality threshold.
Departed	Variation from Approved MSB is exceeds +/- $2m materiality threshold.

The following table outlines whether Aurizon Network has remained consistent with or has departed from the approved MSB. For the purpose of its assessment of the Maintenance Costs Claim (as per clause 7A.11.5), the QCA should have regard to the defined categories of maintenance, represented by the shaded rows in Table 12 below.

Table 12 Newlands System and GAPE Maintenance Costs – Comparison to Approved Budget ($m)

Maintenance Item ($m)	Maintenance Costs Incurred	RIG Approved Budget	Cost Variance	Consistent or Departed
Resurfacing	**1.5**	**1.8**	**(0.3)**	
- Mainline	1.2	1.5		
- Turnout	0.3	0.3		
Rail Grinding	**1.2**	**1.4**	**(0.2)**	

Maintenance Item ($m)	Maintenance Costs Incurred	RIG Approved Budget	Cost Variance	Consistent or Departed
- Mainline	[redacted]	[redacted]		
- Turnout	[redacted]	[redacted]		
General Track Maintenance	**4.2**	**5.3**	**(1.1)**	
- General Track	4.0	5.0		
- Track Recording	0.2	0.2		
- Ultrasonic Testing Car	0.1	0.1		
Signalling and Telecommunications	**3.0**	**2.2**	**0.8**	
- Signalling Corrective	1.1	0.7		
- Signalling Preventative	1.3	1.1		
- Telecoms Corrective	0.2	0.1		
- Telecoms Preventative	0.4	0.4		
Electrical Overhead				
Structures and Facilities	**0.9**	**1.1**	**(0.2)**	
Trackside Systems	**0.3**	**0.2**	**0.1**	
Other Civil Maintenance	**0.2**	**0.5**	**(0.3)**	
Other General Maintenance	**0.8**	**1.2**	**(0.4)**	
- Asset Management & Inventory	0.8	0.5		
- On Call	--	0.7		
Sub-Total	**12.1**	**13.7**	**(1.7)**	
Ballast Undercutting Plant Depreciation	0.1	0.3	(0.2)	
Total	**12.2**	**14.0**	**(1.8)**	

7.2 Scope of Maintenance Work Undertaken

This section outlines the scope of Maintenance Work undertaken in the Newlands Coal System and GAPE during FY21.

Table 13 Newlands System and GAPE Scope Delivered

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Resurfacing				
- Mainline	190	188	2	1%
- Turnout	22	21	1	5%
Rail Grinding				
- Mainline	[redacted]	[redacted]	[redacted]	[redacted]
- Turnout	[redacted]	[redacted]	[redacted]	[redacted]
General Track Maintenance				
- Track Recording	495	645	(151)	(23%)
- Ultrasonic Testing Car	1,211	1,558	(347)	(22%)

7.3 Commentary on annual performance for Maintenance Items

Aurizon Network has delivered Maintenance Work in the Newlands System and GAPE in a manner that is consistent with its legislative and regulatory obligations. By giving effect to the asset management plans and strategies[5] that underpinned the approved MSB, Aurizon Network has ensured compliance with these obligations.

There are no categories of maintenance within Aurizon Network's Maintenance Costs Claim for the Newlands System and GAPE, with a difference in a material respect when compared to the corresponding item in the approved MSB. In addition, the variance between FY21 maintenance costs and the approved MSB for the Newlands System and GAPE in aggregate is within the materiality threshold outlined in clause 7A.11.5(f)(ii)(B).

Consequently, Aurizon Network considers that the QCA should approve the Maintenance Costs Claim.

Aurizon Network has provided some commentary on specific maintenance categories below.

7.3.1 Resurfacing

Aurizon Network delivered the resurfacing scope of works as outlined in the approved MSB. Scope completed for:

- Mainline resurfacing was higher than the approved MSB, with 190km delivered. This represents an increase of 2km (+1%) compared to the approved MSB; and
- Turnout resurfacing was higher than the approved MSB, with Aurizon Network resurfacing 22 turnouts in total; one (1) additional turnout (+5%) compared to the approved MSB.

Resurfacing scope was delivered for $1.5m, which was below the approved budget by $0.3m (-17%) in aggregate.

7.3.2 Rail Grinding

Aurizon Network did not deliver the full mainline rail grinding scope of works as outlined in the approved MSB, but saw an increase in turnout rail grinding scope. Scope for:

- Mainline rail grinding was [redacted] km ([redacted]%) lower than the approved MSB, with [redacted] km of mainline rail grinding delivered; and
- Turnout rail grinding was higher than the approved MSB, which understated the level of turnout grinding required. Aurizon Network completed rail grinding on [redacted] turnouts; [redacted] turnouts ([redacted]%) higher than forecast. This outcome reflects the combined impact of turnout grinding frequencies and increased utilisation in terms of tonnage railed through FY20 and FY21.

The rail grinding scope outlined in the approved MSB was based on assumptions and estimates set in advance of the submission to the RIG in November 2019. The rail grinding scope that was ultimately delivered in the Newlands System and GAPE took into consideration actual tonnages railed and the condition of the rail infrastructure.

In FY21, Aurizon Network incurred costs of $1.2m to complete rail grinding in the Newlands System and GAPE; representing a reduction of $0.2m (-17%) compared to the approved MSB.

7.3.3 General Track Maintenance

Aurizon Network incurred $4.2m for General Track Maintenance; representing an under-spend of $1.1m (-20%) in aggregate against the approved MSB. This under-spend can be attributable to the following:

- **Assumptions underpinning the FY21 MSB** - the budget for a number of maintenance categories within the MSB (including general track maintenance) was developed having regard to assumptions made at a point in time, including the extrapolation of a forecast for FY20 maintenance costs and escalations. During FY20, costs

[5] The asset management plans and strategies are derived from Aurizon Network's Asset Maintenance and Renewal Policy, which in turn is the manifestation of Aurizon Network's practical application of the Safety Management System.

actualised differently to those assumptions, both between Coal Systems and between maintenance categories, and as a consequence, the approved MSB forecast overstated the level of expenditure required in the Newlands System and GAPE in FY21. Reductions were predominantly seen in fire and vegetation management.

- **Ultrasonic Testing** – Aurizon Network undertook a review of the Ultrasonic Testing Program to ensure that its approach was fit for purpose and aligned to the requirements mandated in its civil engineering track standards (**CETS**). Using improved data, which allowed tonnage on unloaded track sections to be captured more accurately, this review indicated that the unloaded tracks in some areas were being tested at the same frequency as loaded tracks, and therefore, prior to the required frequency of 10 million gross tonnes. A revised program was developed for FY21 (and FY22) in consultation with the service provider to ensure alignment to CETS. This resulted in the reduction in both scope (-22%) and cost (-17%) of the ultrasonic testing program compared to the approved MSB.

7.3.4 Signalling and Telecoms

Aurizon Network incurred $3.0m in signalling and telecoms maintenance costs; representing an over-spend of $0.8m (36%) in aggregate when compared to the approved MSB. This overspend was primarily attributable to increased corrective maintenance relating to axle counter failures and electrical point and battery replacements.

8. Procurement Strategy and Methodology

In undertaking Maintenance Work for FY21, Aurizon Network has procured resources in an effective and efficient manner; an outcome that was supported through the execution of the procurement strategy and methodology outlined within the Approved MRSB for FY21. This approach saw Aurizon Network seek to maximise utilisation of its internal delivery teams and augment these internal resources with suitably qualified contractor staff and plant where additional resources were required to complete identified scope.

Aurizon Network uses a mix of both internal and external resources. When engaging external resources, Aurizon Network utilised, wherever reasonably possible, a series of engineering and technical service contractor panels, established through its Enterprise Procurement group. These include asset-specific service panels, skilled labour hire, plant hire and plant transportation services, all procured in line with Aurizon Network's procurement commitments.[6]

Where scope required a specific skill set or if plant was not held within Aurizon Network, we will seek to engage pre-qualified contractors to perform work either under direct supervision or if approved, as a principal contractor for short periods.

Aurizon Network applies an assurance program and a performance-based governance framework for external contractors to ensure they meet the required business and safety processes and policies.

[6] Aurizon's procurement commitments are outlined in Appendix 2 of 'Aurizon Network's Response to Stakeholder Submissions on the Financial Year 2022 maintenance strategy and budget: Newlands system'. Available at https://www.qca.org.au/wp-content/uploads/2021/05/aurizon-network-response-to-stakeholder-submissions.pdf