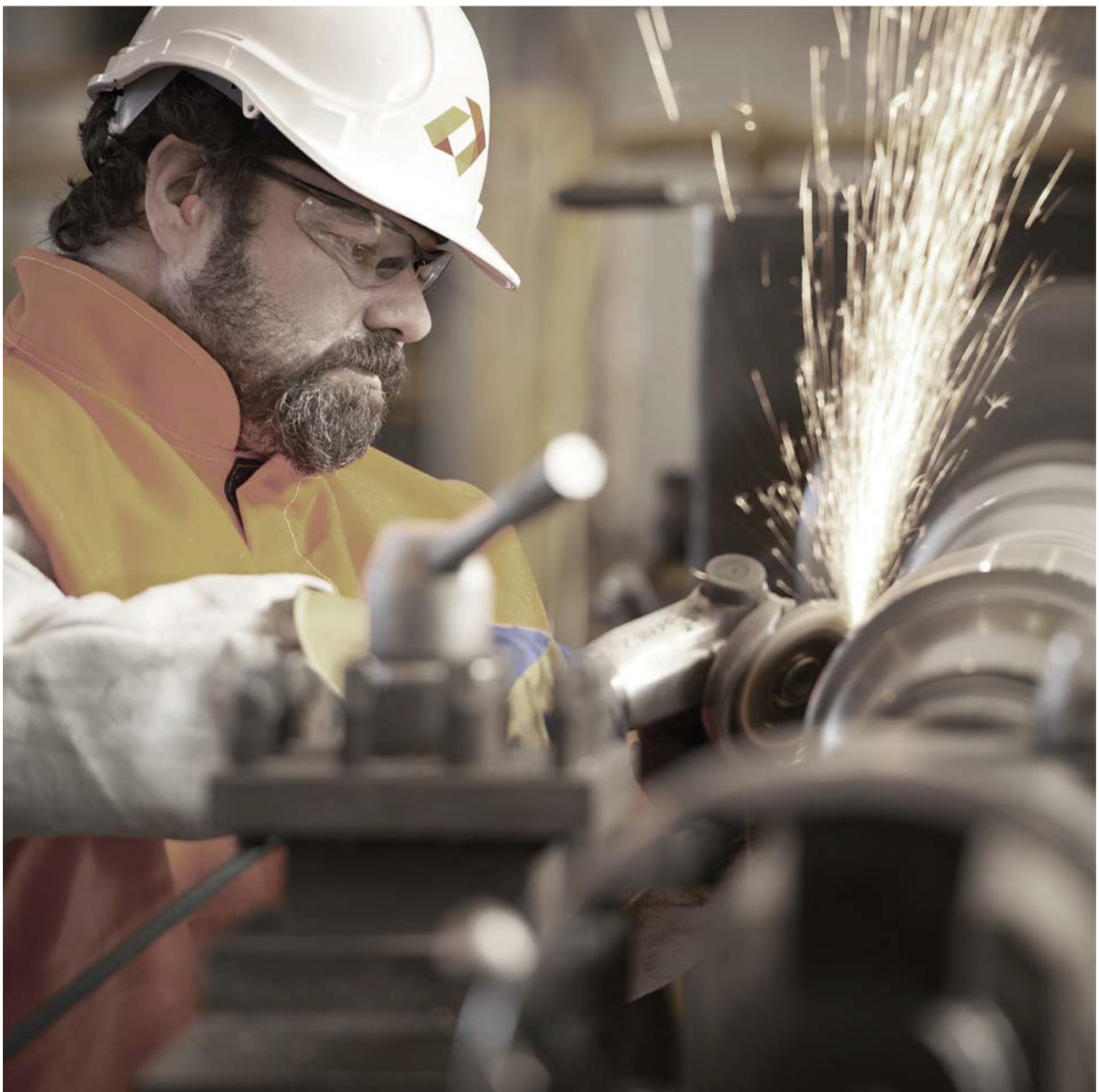


# Quarterly Maintenance Cost Report

July – September 2019

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# Quarterly Maintenance Cost Report

## 1.0 Report Contents

This report is provided to the QCA in accordance with Aurizon Network's 2017 Access Undertaking (**UT5**); clause 10.3.2 (c).

It provides transparency around Aurizon Network's maintenance performance by comparing scope delivered and costs incurred for the quarter, July to September 2019 (**Reporting Period**), to the QCA's final approval of UT5 issued in February 2019 (**UT5 Final Decision**). The forecast scope and costs within the UT5 Final Decision were published as annual totals. To provide a meaningful comparison for the Reporting Period, the FY2019 totals provided in the UT5 Final Decision have been apportioned to the Reporting Period based on Aurizon Network's annual budget, which is phased quarterly.

This information is provided for the four coal systems in the Central Queensland Coal Network (**CQCN**); Blackwater, Goonyella, Moura, and Newlands.

It should be noted that while the UT5 Final Decision contains individual Reference Tariffs and Allowable Revenues for the Goonyella to Abbot Point Expansion (**GAPE System**), the GAPE System is not a geographically distinct coal system. Rather, it is akin to an expansion tariff required to facilitate the pricing arrangements attributable to GAPE Train Services. The scope of the GAPE project included significant infrastructure upgrades in the Newlands system, which are utilised by all GAPE and Newlands Train Services. Similarly, all GAPE Train Services utilise existing Newlands system infrastructure. As a result, Newlands and GAPE are treated as a single system for this report.

Some of the data in this report will also be included in Aurizon Network's Quarterly Performance Report, which will be published at the following link:

<http://www.aurizon.com.au/what-we-deliver/network/network-downloads>.

## 2.0 Network Performance Metrics

### 2.1 Safety

Safety is Aurizon Network's core value. Aurizon Network aspires to be world class in safety through its journey to ZEROHARM, which has delivered tangible benefits in terms of safety performance and safety culture. ZEROHARM comprises:

The logo for ZEROHARM, with 'ZERO' in a larger, bold, orange font and 'HARM' in a smaller, regular, orange font.

- ZERO incidents;
- ZERO injuries;
- ZERO work-related illnesses; and
- ZERO environmental incidents.

#### Injury Reporting Metrics

Aurizon Network's strong safety performance directly benefits the coal supply chain by:

- > reducing the number of unplanned system interruptions; and
- > allowing Aurizon Network to maximise productive time within maintenance track possessions.

This ultimately promotes greater network reliability through a more effective and productive asset maintenance regime.

Aurizon's primary injury reporting metrics include the:

- > Total Recordable Injury Frequency Rate (**TRIFR**), which measures the number of incidents per million person-hours worked; and
- > Lost Time Injury Frequency Rate (**LTIFR**), which measures the number of lost time injuries occurring in a workplace per million hours worked.

To continue the journey to becoming world leading in safety, Aurizon Network revised its injury definitions from 1 July 2017. The key changes include:

- > the inclusion of contractors in all injury metrics;
- > widening the scope of total recordable injuries to include all restricted work injuries; and
- > expanding the definition of 'Lost Time Injuries' such that it captures any lost day of work following the injury<sup>1</sup>.

**Figure 1** illustrates the TRIFR for Aurizon staff since June 2011, as compared with the LTIFR. Since that time, there has been a noticeable improvement in safety performance in terms of TRIFR.

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<sup>1</sup> The previous definition of 'Lost Time Injuries' only captured instances where the injury impacted the next rostered shift.

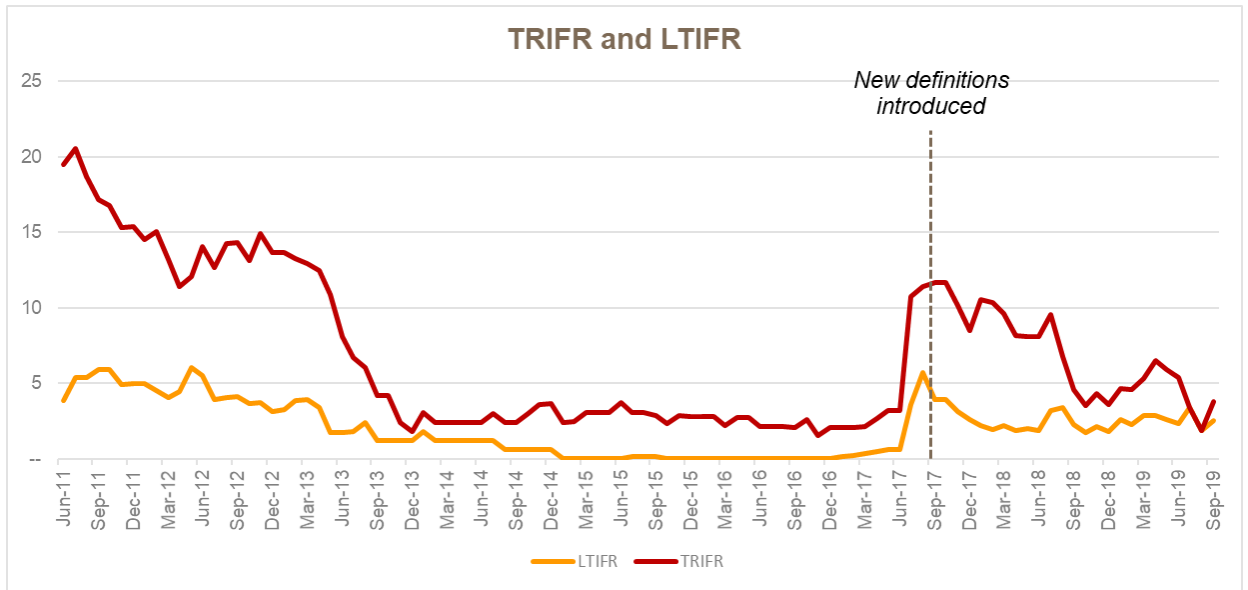


Figure 1 – TRIFR and LTIFR

### Major Reportable Safety Incidents

Aurizon Network confirms that there were two major reportable safety incidents reported to the Safety Regulator during the Reporting Period.

Safety incidents reported to the Safety Regulator	Blackwater	Goonyella	Moura	Newlands	GAPE
July - September 2019	2	--	--	--	--

Table 1 - Number of major reportable safety incidents reported to the Safety Regulator in the quarter

## 2.2 Network Reliability

### Coal Carrying Train Services

**Table 2** provides a measure of the throughput achieved by each coal system, for each month within the Reporting Period. It presents the aggregate Gross Tonne Kilometres (**GTK**), Net Tonnes, Net Tonne Kilometres (**NTK**) and Electric Gross Tonne Kilometres (**eGTK**) for Coal Carrying Train Services.

Coal Carrying Train Services	Blackwater	GAPE	Goonyella	Moura	Newlands
<b>July 2019</b>					
GTK'000	3,157,328	736,758	3,301,381	279,047	271,278
Net Tonnes	5,356,604	1,580,722	10,396,822	1,032,014	1,339,744
NTK'000	1,966,360	456,755	2,078,561	171,701	168,100
eGTK'000	2,398,059	--	3,111,488	--	--
<b>August 2019</b>					
GTK'000	3,113,581	826,325	3,198,966	282,321	266,634
Net Tonnes	5,310,327	1,737,055	9,892,228	1,070,295	1,330,532
NTK'000	1,937,751	512,651	2,008,985	175,437	165,077
eGTK'000	2,396,659	--	2,973,594	--	--
<b>September 2019</b>					
GTK'000	2,726,918	793,405	3,314,338	256,750	215,701
Net Tonnes	4,694,724	1,659,410	10,181,674	981,942	1,059,778
NTK'000	1,696,834	491,084	2,084,368	158,698	132,599
eGTK'000	2,084,965	--	3,121,090	--	--

**Table 2 - Coal Carrying Train Service Performance**

## Dewirements

The number of dewirements recorded for each quarter since Q1 FY2010, are shown in **Table 3** below.

There were no dewirements during the Reporting Period.

Number of Dewirements	Blackwater	Goonyella
Jul-Sept 2010	--	2
Oct-Dec 2010	--	--
Jan-Mar 2011	--	2
Apr-Jun 2011	--	--
Jul-Sep 2011	--	1
Oct-Dec 2011	1	--
Jan-Mar 2012	1	1
Apr-Jun 2012	1	1
Jul-Sep 2012	1	--
Oct-Dec 2012	--	--
Jan-Mar 2013	--	--
Apr-Jun 2013	--	1
Jul-Sep 2013	1	--
Oct-Dec 2013	1	--
Jan-Mar 2014	--	--
Apr-Jun 2014	--	1
Jul-Sep 2014	--	2
Oct-Dec 2014	--	--
Jan-Mar 2015	--	--
Apr-Jun 2015	--	--
Jul-Sep 2015	--	--
Oct-Dec 2015	--	--
Jan-Mar 2016	--	--
Apr-Jun 2016	1	--
Jul-Sep 2016	--	--
Oct-Dec 2016	--	1
Jan-Mar 2017	--	1
Apr-Jun 2017	--	--
Jul-Sep 2017	--	--
Oct-Dec 2017	1	1
Jan-Mar 2018	2	1
Apr-Jun 2018	--	--
Jul-Sep 2018	1	--
Oct-Dec 2018	--	--
Jan-Mar 2019	--	--
Apr-Jun 2019	--	--
Jul-Sep 2019	--	--

**Table 3 - Number of Dewirements**

## Derailments

A Derailment occurs where one (or more) rolling stock wheel(s) leave the rail or track during railway operations. The number of derailments recorded for each quarter since Q1 FY2010 is outlined in **Table 4** below. There were four (4) derailments during the Reporting Period; all in the Blackwater System.

Number of Derailments	Blackwater	Goonyella	Moura	Newlands
Oct-Dec 2010	1	5	3	1
Jan-Mar 2011	7	7	6	1
Apr-Jun 2011	3	8	1	2
Jul-Sep 2011	3	7	3	3
Oct-Dec 2011	5	2	1	--
Jan-Mar 2012	9	5	4	1
Apr-Jun 2012	5	7	3	4
Jul-Sep 2012	6	6	3	--
Oct-Dec 2012	4	6	3	1
Jan-Mar 2013	3	6	2	--
Apr-Jun 2013	3	1	1	--
Jul-Sep 2013	5	4	3	--
Oct-Dec 2013	4	2	--	--
Jan-Mar 2014	6	3	4	1
Apr-Jun 2014	2	3	--	1
Jul-Sep 2014	2	8	2	--
Oct-Dec 2014	5	3	--	1
Jan-Mar 2015	2	4	--	--
Apr-Jun 2015	2	--	--	--
Jul-Sep 2015	--	1	--	--
Oct-Dec 2015	2	3	--	--
Jan-Mar 2016	8	2	--	--
Apr-Jun 2016	1	3	1	--
Jul-Sep 2016	--	1	--	2
Oct-Dec 2016	--	2	1	--
Jan-Mar 2017	2	1	1	--
Apr-Jun 2017	--	--	--	--
Jul-Sep 2017	3	1	1	1
Oct-Dec 2017	2	2	1	--
Jan-Mar 2018	3	--	--	1
Apr-Jun 2018	1	6	--	--
Jul-Sep 2018	1	--	--	--
Oct-Dec 2018	2	1	1	--
Jan-Mar 2019	--	2	--	--
Apr-Jun 2019	2	--	--	--
Jul-Sep 2019	4	--	--	--

**Table 4 - Number of Derailments**



### Derailments with a cost of recovery exceeding \$100,000

During the Reporting Period, there was one derailment in which the cost to Aurizon Network of recovery exceeded \$100,000.

Furthermore, during the Reporting Period, Aurizon Network incurred costs in relation to derailments that occurred in prior reporting periods. For transparency, these are also outlined in the table below.

Derailment Incident	Date	Location	Cost (\$)
D1019244	24/01/2018	Duringa	2,051,979
	19/04/2019	Callemondah	125,359
	10/03/2019	Dalrymple Bay	1,403,234
D1177754	06/10/2018	Dakenba	267,333
DR08779	3/09/2019	Tikardi	395,075

Table 5 - Derailments with a cost of recovery exceeding \$100,000

### Temporary Speed Restrictions

Imposed Temporary Speed Restrictions (TSR) indicate the level of controlled defects on the Network and Removed TSR indicate maintenance undertaken by Aurizon Network to remove operational constraints. TSR are put in place to ensure levels of operational safety are maintained during, for example, track maintenance work.

Figure 2 below shows the number of TSR imposed on and removed from the network within each quarterly reporting period since FY2010.

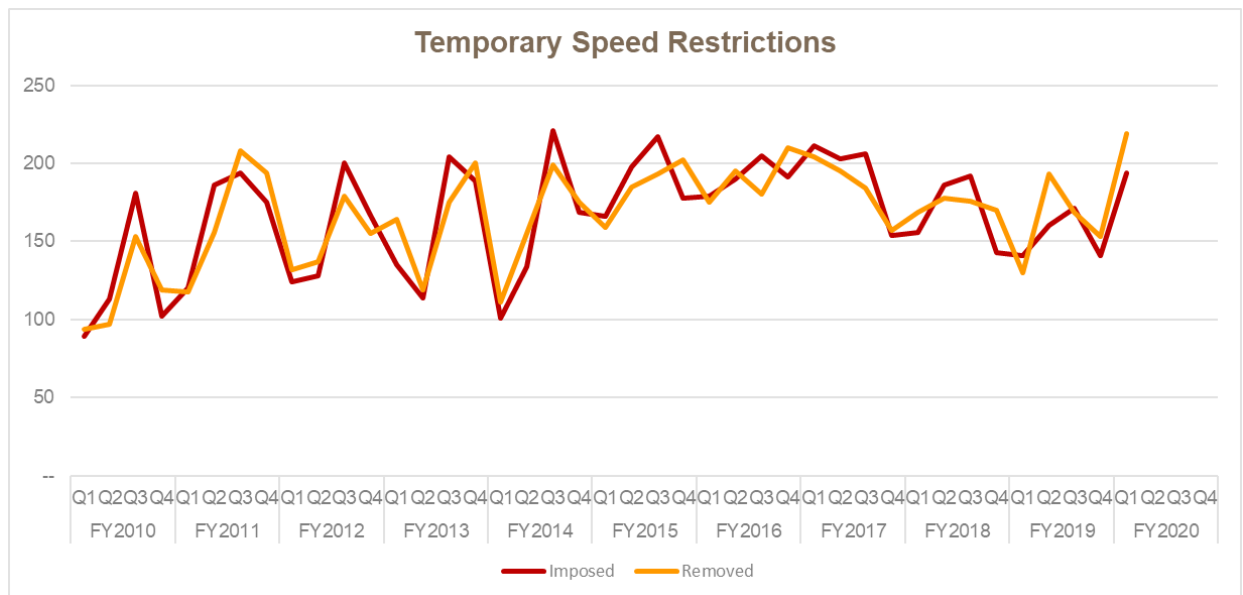


Figure 2 - Temporary Speed Restrictions Imposed and Removed

## Below Rail Cancellations

Figure 3 below illustrates the percentage of train services cancelled due to a Below Rail cause.

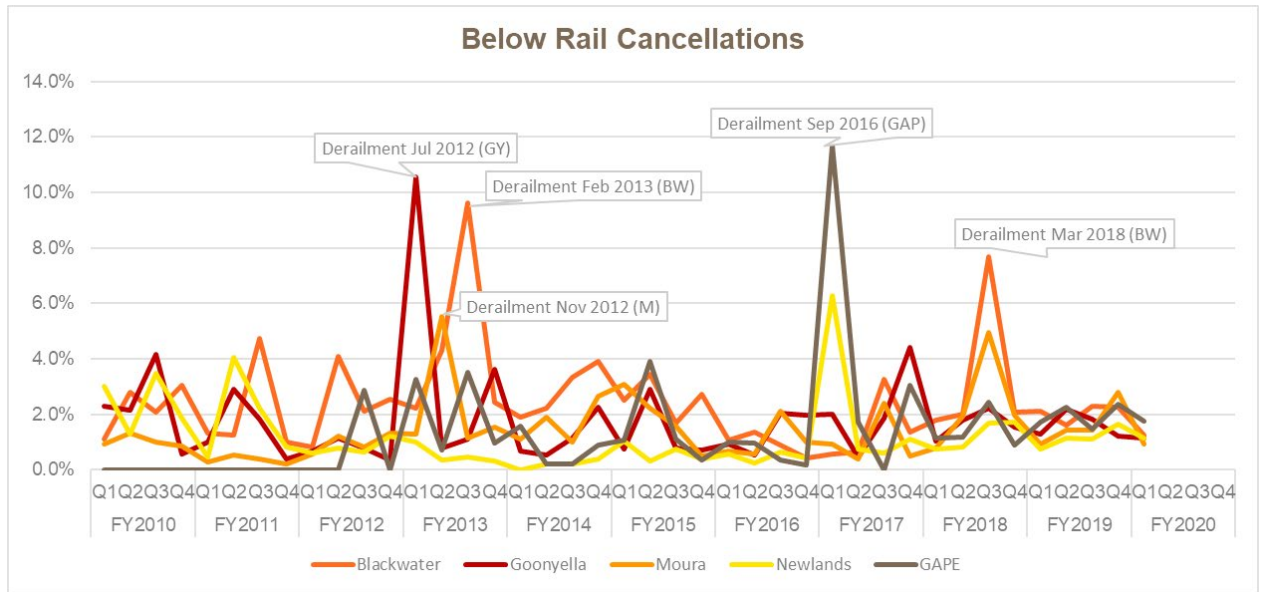


Figure 3 - Percentage of Cancellations due to a Below Rail Cause

## Overall Track Condition Index

The Overall Track Condition Index (OTCI) is a measure of quality of the network for each Coal System. It provides a general indicator of track geometry variation over time. The index is calculated from data captured by track recording vehicles and is used by Aurizon Network 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.

Please note that the OTCI values presented below reflect an average over a defined length. It cannot reflect all the variations in track quality which may exist within a coal system. Consequently, it should be interpreted as an indicator of abnormality.

Table 6 provides the OTCI for the Reporting Period.

Overall Track Condition Index	Blackwater	Goonyella	Moura	Newlands
Jul-Sep 2019	29.96	28.07	32.54	25.61

Table 6 - Overall Track Condition Index

## Below Rail Transit Time

Below Rail Transit Time (**BRTT**) is an indicator of operational performance of each Coal System. The BRTT includes the following:

- > Section Running Times;
- > Delays from scheduled train path in the daily train plan that can be directly attributed to Aurizon Network but excludes cancellations, delays resulting from compliance with a passenger priority obligation and delays resulting from a force majeure event;
- > Time taken in crossing other trains; and
- > Delays due to operational constraints:
  - directly caused by the activities of Aurizon Network in maintaining the CQCN; or
  - due to a fault or deficiency in the CQCN provided such delays are not contributed to by a railway operator or force majeure events.

**Table 7** below outlines this performance measure for each individual coal system during the Reporting Period.

Below Rail Transit Time %	Blackwater	Goonyella	Moura	Newlands	GAPE
Jul-Sept 2019	100%	107%	116%	120%	117%

**Table 7 - Below Rail Transit Time Percentage**

The BRTT for all coal systems was within the respective requirement during the Reporting Period. This outcome is indicative of a well performing, fit for purpose network.

## 3.0 Maintenance Performance

### 3.1 General Maintenance

#### Track Defects

Aurizon Network's Network Asset Management System (**NAMS**) uses notifications to request works where a track defect has been identified. The following data in **Table 8** represents the number of Notifications which have been raised for rectification during the Reporting Period.

Rectification Period	Number of Notifications
Under 30 days	2,034
30-90 days	1,274
90 days and over	921
<b>Total</b>	<b>4,229</b>

**Table 8 – Number of Notifications**

#### Work Orders vs Maintenance Completed

The number of Work Orders Created is compared with the number of Maintenance Tasks Completed, for the Reporting Period, in **Table 9** below.

Work Order type	Number of Work Orders Created	Number of Maintenance Tasks Completed
Immediate	1,529	1,493
Corrective	2,669	2,559
Preventive	9,198	8,618
<b>Total</b>	<b>13,396</b>	<b>12,670</b>

**Table 9 - Work Orders vs Maintenance Completed**

Depending on the severity of the defect, work orders created during the Reporting Period may be scheduled for execution over varying time horizons, for example, immediate, 1 week, 3 months or 12 months etc. Consequently, the number of maintenance tasks completed for the quarter will not necessarily match the number of work orders created.

Similarly, please note that the data relating to the:

- > number of work orders created; and
- > maintenance tasks completed,

includes planned maintenance tasks (e.g. inspections). These tasks are periodic in nature, and do not have a corresponding Notification; hence there were more Work Orders created than Notifications raised.

## 4.0 Network Maintenance Costs

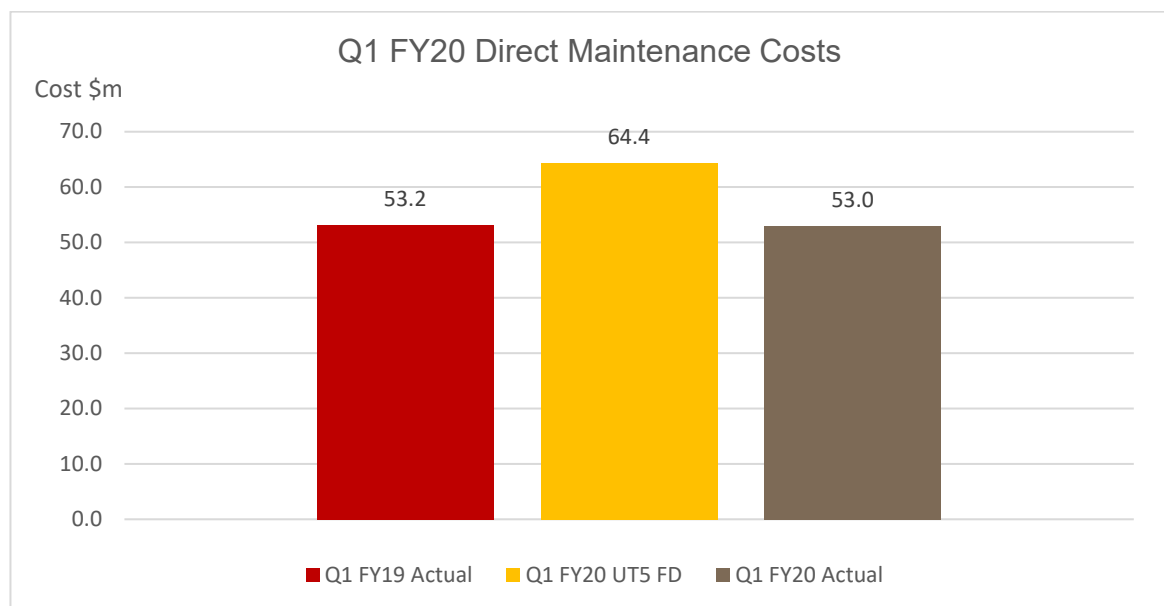
This section outlines Aurizon Network's actual maintenance performance for the Reporting Period in terms of costs incurred for CQCN maintenance activities and scope delivered for mechanised maintenance activities.

The QCA's Final Decision on UT5 was published on 6 December 2018 and consequently, this report compares Aurizon Network's actual maintenance cost and scope to the forecasts outlined in the UT5 Final Decision. It should also be noted that the UT5 Final Decision does not present costs on a quarterly basis. To facilitate a comparison for the Reporting Period, the annual costs outlined in the UT5 Final Decision have been apportioned in line with Aurizon Network's maintenance budget phasing for FY2020.

### 4.1 Overall Maintenance Costs

#### Total Direct Maintenance Cost - CQCN

The total direct maintenance costs incurred during the Reporting Period is shown in **Figure 4** below. For comparative purposes, actual costs for the Reporting Period are compared to both the QCA's UT5 Final Decision and the costs incurred during the same quarter in the previous financial year.



**Figure 4 - Total Network Direct Maintenance Cost**

Aurizon Network's direct maintenance expenditure for the Reporting Period was \$53m; an amount of \$11.4m or 18% lower than the apportioned UT5 Final Decision and 17% lower than Q1 FY2019.

In comparison to the apportioned UT5 Final Decision, Aurizon Network's main underspend was impacted by Mechanised Ballast Undercutting, Resurfacing, Track, Signalling and Structures maintenance activities, offset by overspends in General and Rail Grinding.

Mechanised Ballast Undercutting variances in scope by quarter is driven by differences as set for regulatory purposes and when the work is planned for execution. It was also expected that the new undercutter would have been commissioned by 1 July 2019, however this has been delayed due to technical reasons and extended trials, with the existing RM900 still in operation and scope 8km behind the UT5 Final Decision for the Reporting Period. A change in track access reducing scope completed in Q1 FY2020 is the main driver of varying scope completed by Mechanised Ballast Undercutting by system compared to the apportioned

UT5 Final Decision. The \$0.9m underspend in Resurfacing is due to scope in Goonyella unable to be fully met due to plant availability, offset by a new trial of plant and track utilisation in the Blackwater system which resulted in increased scope in Blackwater.

An underspend in Structures maintenance was attributable to drier weather conditions than experienced last year, with fewer culvert cleaning and structures inspections conducted. A different closure regime also contributed to lower spend year on year, and the scope is expected to increase during the remainder of the year.

The \$1.6m underspend in Track maintenance was a timing difference in activity patterns driven by a change in the system closures for FY2020 in Newlands (compared to the apportionment of the UT5 Final Decision). There has also been a reduction in cost through a focus this quarter on reducing contractor hours in favour of internal labour.

The higher spend in the General category relates to the introduction of the second phase of the Network Asset Management System (NAMS). With costs of the “on-call” maintenance teams being captured separately in the General category. Previously, these costs were held at the activity level – particularly in signalling where the majority of the \$1.5m underspend compared to the UT5 Final Decision is reflected. The introduction of a new resource management and planning tool in Network Asset Management has identified certain team tasks directly associated with maintenance reliability and support, fault investigation and repair, with these costs for internal labour being re-categorised to the General category.

### Direct Maintenance Cost by Activity

Figure 5 below identifies the total direct maintenance costs incurred during the Reporting Period by activity, in comparison to the apportioned UT5 Final Decision and the same quarter in the previous year.

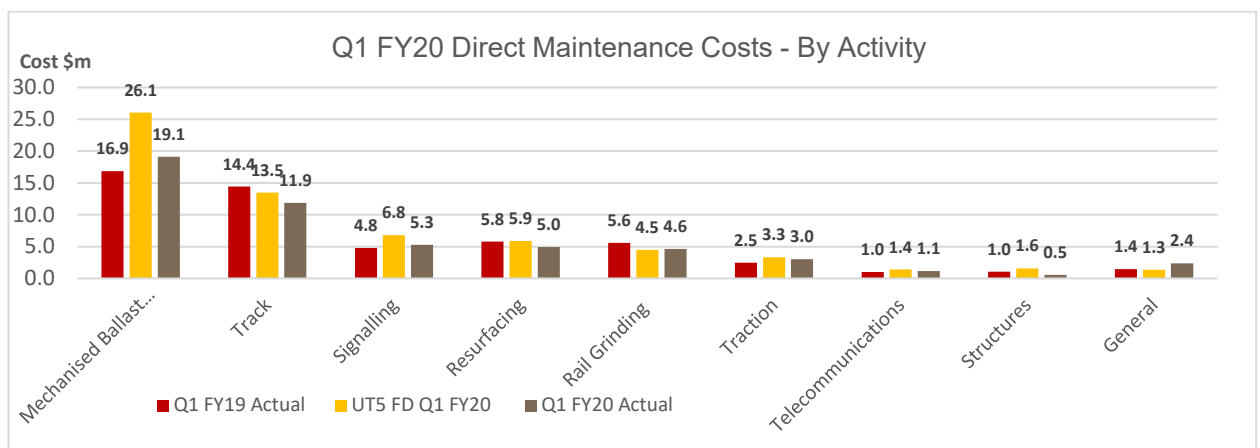
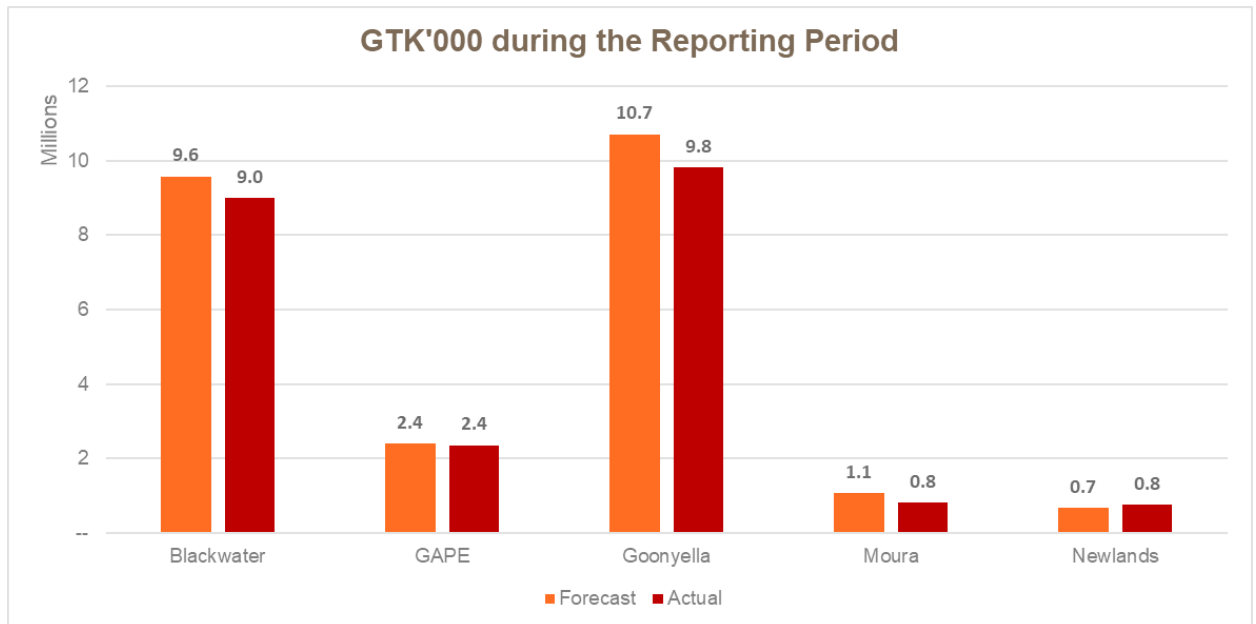


Figure 5 – Direct Maintenance Cost by Activity

A comparison of the actual Gross Tonne Kilometres (GTK) railed during the Reporting Period, relative to the forecast GTK from UT5 Final Decision is outlined in **Figure 6** below.



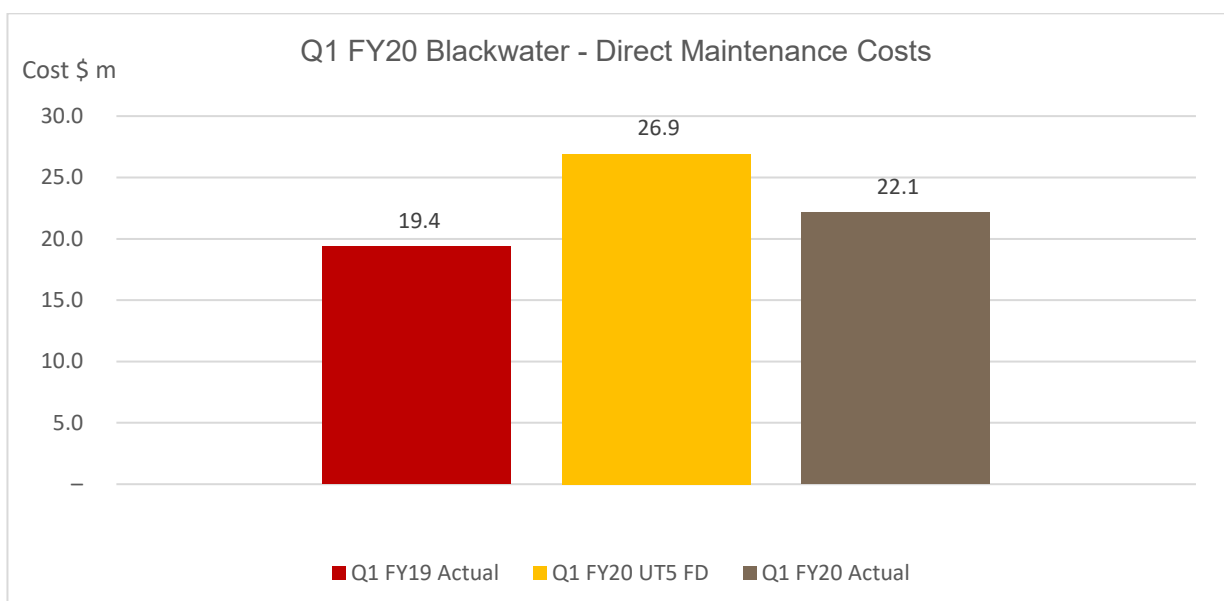
**Figure 6 - Forecast GTK vs Actual GTK**

#### Direct Maintenance Cost by System

The direct maintenance cost incurred for the Reporting Period compared against the apportioned UT5 Final Decision and the same quarter in the previous year is shown below for Blackwater (**Figures 7 and 8**), Goonyella (**Figure 9 and 10**), Moura (**Figure 11 and 12**) and Newlands (**Figure 13 and 14**). These costs are broken down per activity for the separate systems.

#### Blackwater

The direct maintenance costs incurred during the Reporting Period for the Blackwater system was \$22.1m which was 18% lower than the apportioned UT5 Final Decision for the same period and 14% lower than the first quarter in the prior year.

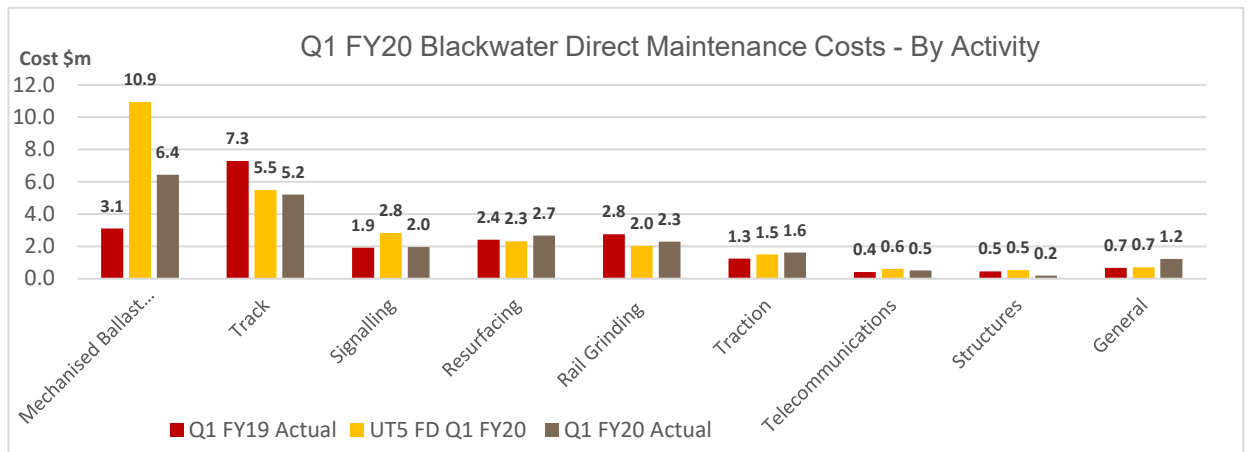


**Figure 7 – Blackwater Direct Maintenance Cost**

The main underspends in comparison to the apportioned UT5 Final Decision were in Mechanised Ballast Undercutting, Structures maintenance, Track and Signalling maintenance activities. These are offset by overspends in Resurfacing, Rail Grinding and General categories. A change in track access between systems is the main driver behind lower scope completed in Blackwater compared to the UT5 Final Decision for the Reporting Period.

Lower spend in Structures maintenance activities included lower structures inspections, culvert cleaning and drainage maintenance. Savings were also attributable to Signalling maintenance activities relating to preventative and corrective field maintenance and control systems as well as the treatment of standby cost of the on-call maintenance. This is being captured as General maintenance as compared to the allocation of the Final Decision which was allocated to Signalling.

There were drier weather conditions compared to the same time period last year which led to lower spend in some Track maintenance activities including Minor Ballast Undercutting, Sleeper Management, Rail Repair and Level Crossing Maintenance. This was offset by higher spends in Maintenance Ballast due to preparation for the wet season which will be offset by lower spend later in the financial year. Turnout Maintenance was also high due to differences in timing of scope.

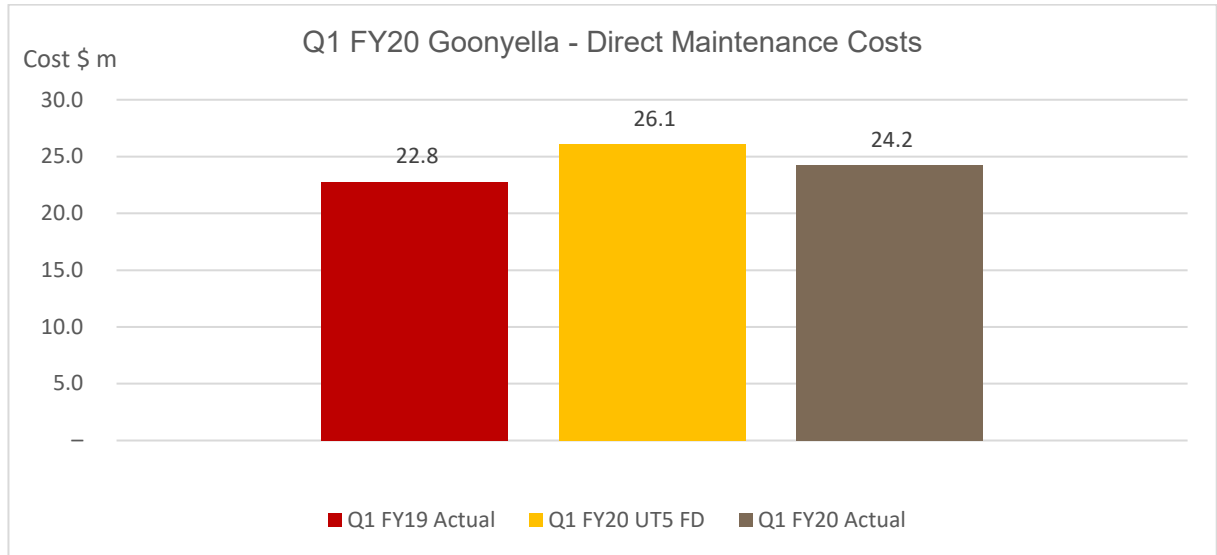


**Figure 8 - Blackwater Direct Maintenance Cost by Activity**



## Goonyella

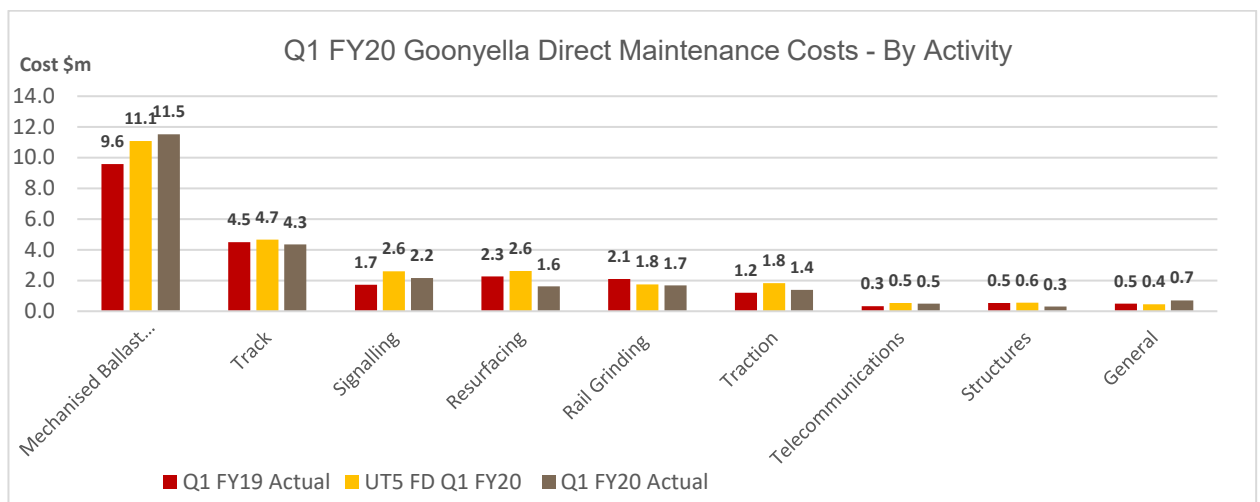
The direct maintenance costs incurred during the Reporting Period for the Goonyella system was \$24.2m, which was \$1.9m, or 7% lower than the UT5 Final Decision apportionment. This represents a \$1.4m, or 6%, increase from the comparative period in FY2019.



**Figure 9 - Goonyella Direct Maintenance Cost**

Goonyella's maintenance cost by activity is shown in **Figure 10**. The underspends against the UT5 Final Decision are attributable to Resurfacing maintenance, Structures maintenance, Overhead maintenance and Signalling maintenance activities. For Track maintenance there was underspend in Rail Flaw Detection – On Track Vehicle.

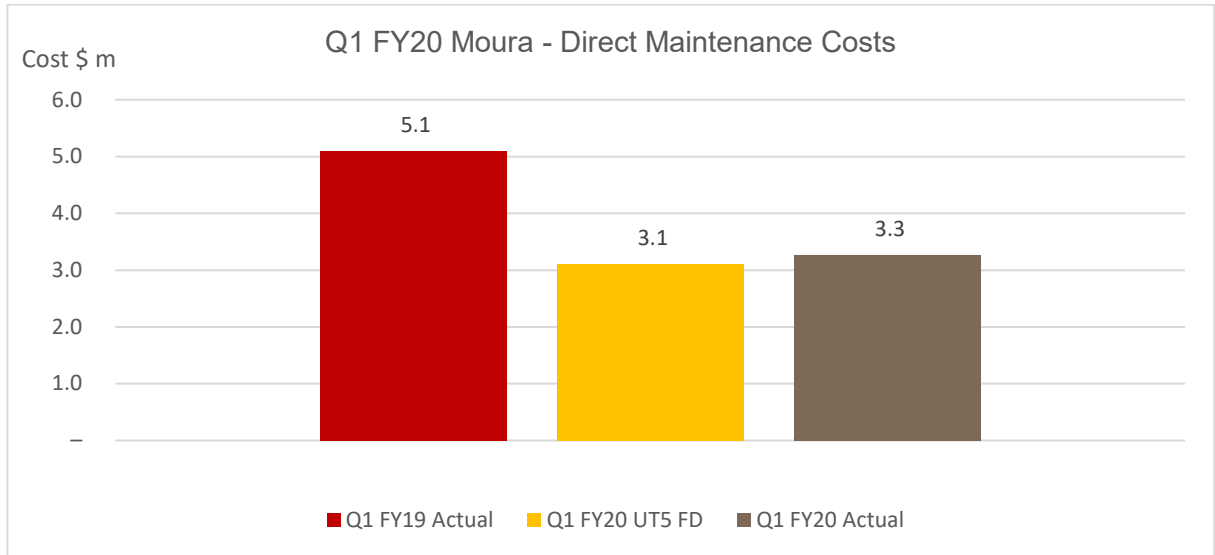
The Resurfacing underspend during the reporting period was caused by resurfacing plant availability with plant assisting on renewal works in the Reporting Period. Structures maintenance savings were achieved with reduced culvert cleaning and drainage maintenance while savings in Signalling maintenance were achieved in preventative and corrective field maintenance. Savings in Overhead maintenance were achieved in corrective maintenance and partially offset by an overspend in Overhead preventative maintenance. Additional scope was also completed in Goonyella for Mechanised Ballast Undercutting compared to the UT5 Final Decision, mainly due to increased access.



**Figure 10 – Goonyella Direct Maintenance Cost by Activity**

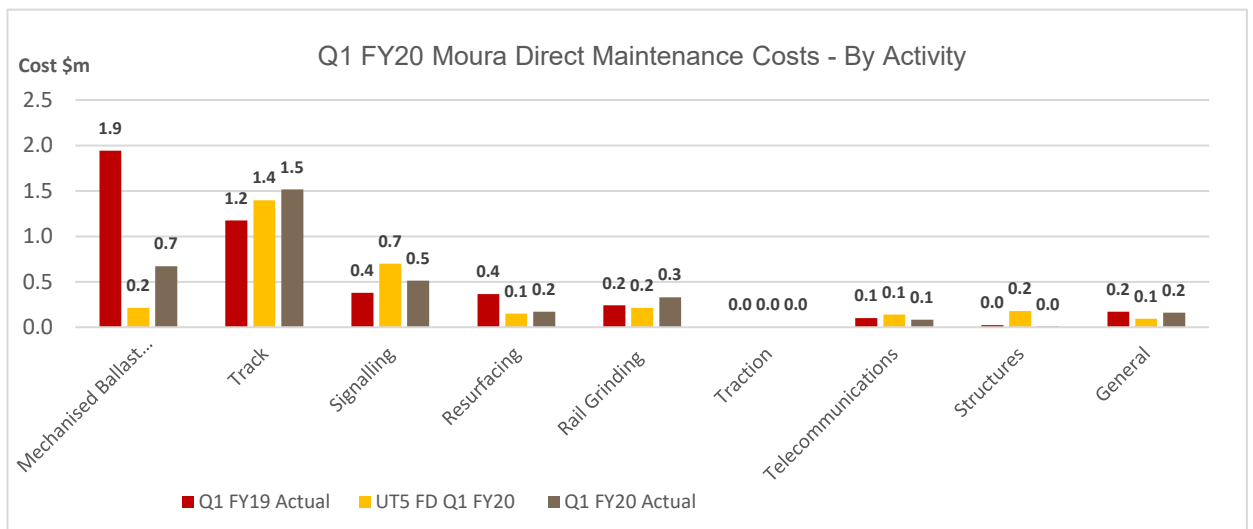
## Moura

The direct maintenance costs incurred during the Reporting Period for the Moura system was \$3.3m, which was \$0.2 higher than the UT5 Final Decision and \$1.8m lower than the comparative period from the previous year.



**Figure 11 - Moura Direct Maintenance Cost**

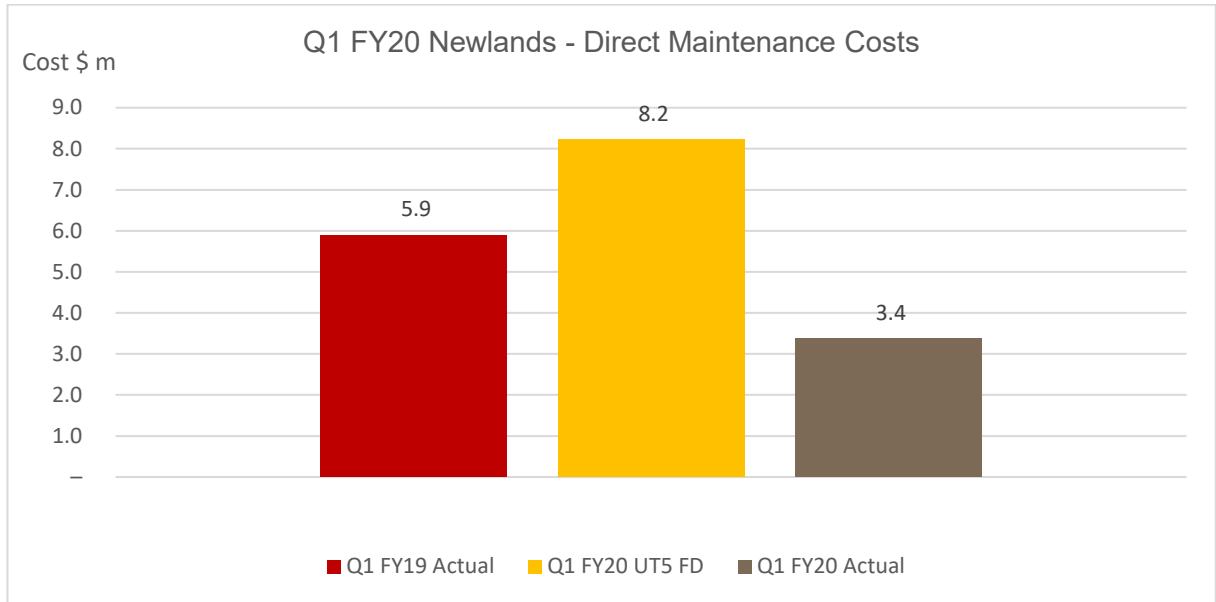
The primary contributor to the underspend against the UT5 Final Decision was Mechanised Ballast Undercutting, mainly due to the timing of activities compared to the apportionment of the UT5 Final Decision. This was partly offset by overspends in Track Maintenance, the significance variance being for Fencing activities undertaken to mitigate safety risk of landowner cattle straying onto track. Due to dry weather conditions, cattle are grazing in areas different to where previous maintenance and asset renewals were undertaken.



**Figure 12 - Moura Direct Maintenance Cost by Activity**

## Newlands

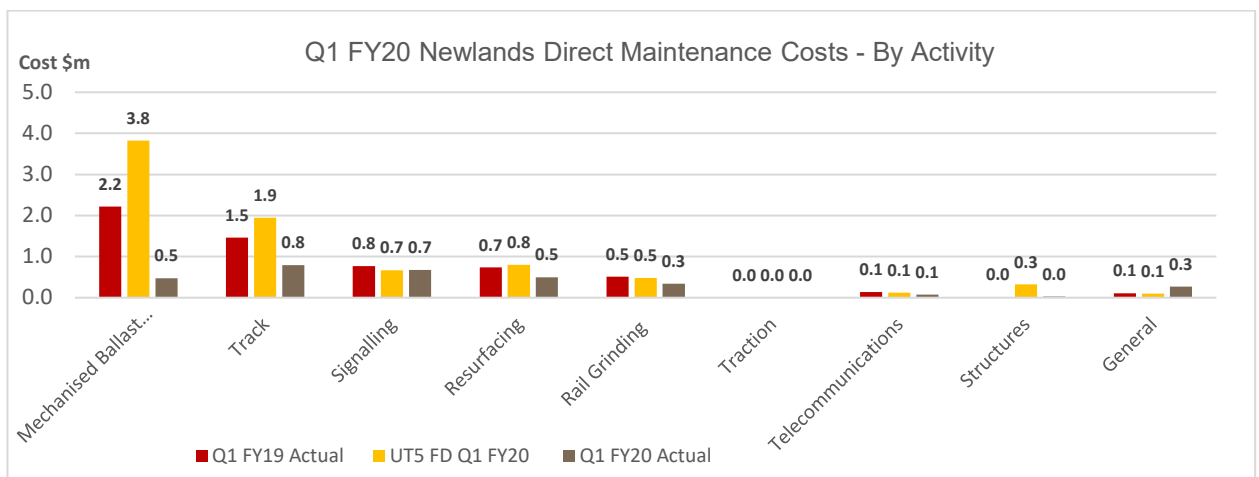
The direct maintenance costs incurred during the Reporting Period for the Newlands system was \$3.4m, which was \$4.8m lower than the UT5 Final Decision apportionment and \$2.3m lower than the comparative period from the previous year.



**Figure 13 - Newlands Direct Maintenance Cost**

The primary contributor to the underspend against the UT5 Final Decision was Mechanised Ballast Undercutting and Track maintenance activities.

The Newlands closure has now been scheduled for October 2019, compared to plan of August 2019, and is the main reason for the underspend in Mechanised Ballast Undercutting. Underspend in Track Maintenance is due to a change in the system closures in FY2020 compared to the apportionment of UT5 Final Decision. There are two closures for Newlands in FY2020 (scheduled for October 2019 and June 2020).



**Figure 14 - Newlands Direct Maintenance Cost by Activity**

## 4.2 Mechanised Maintenance

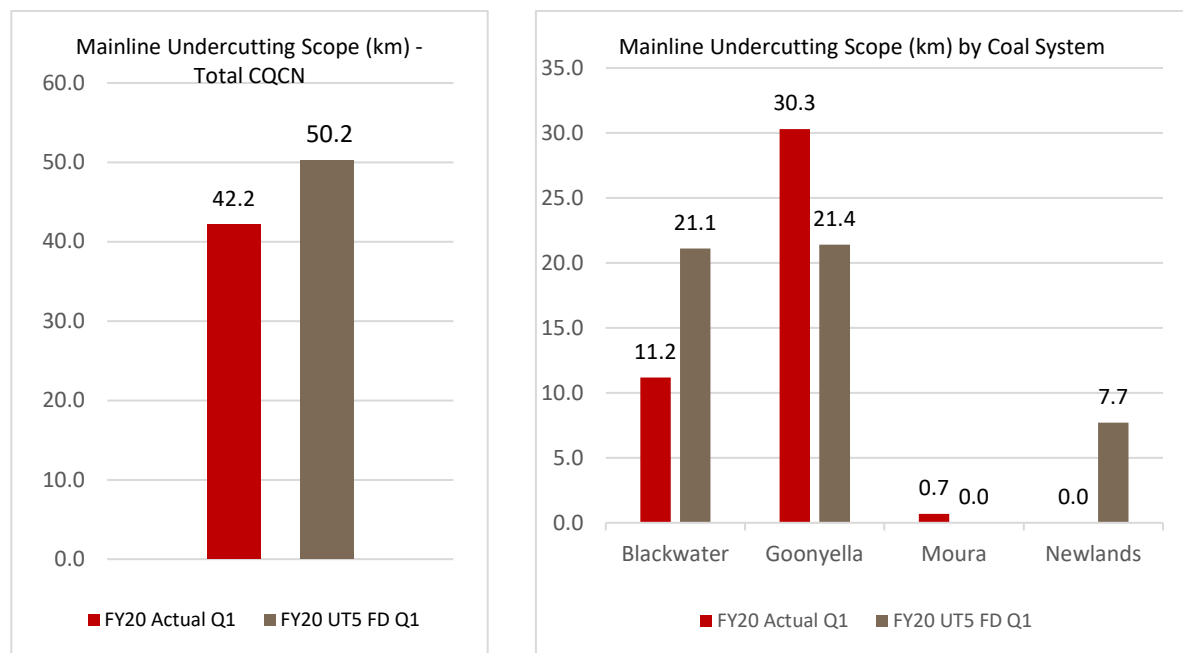
Mechanised maintenance works utilise mechanical machinery and comprise the following categories: Ballast Undercutting, Rail Grinding, and Resurfacing. Mechanised maintenance scope performance for the Reporting Period is outlined in more detail below. Please note that the UT5 Final Decision scope for each coal system is typically set in advance of the regulatory period. The distribution of actual scope between systems is based on a detailed assessment by Aurizon Network's engineers and planners, who prioritise scope based on asset condition and criticality. As a consequence, variances may exist due to timing differences between when the scope is set for regulatory purposes and when it is planned for execution.

It should also be noted that there is a delay with the commissioning of the new undercutter which was planned to enter production on 01 July 2019. Therefore, planned ballast undercutting costs reflects the new undercutter. The existing RM900 is still in operation until the commissioning of the new undercutter is completed.

### Ballast Undercutting

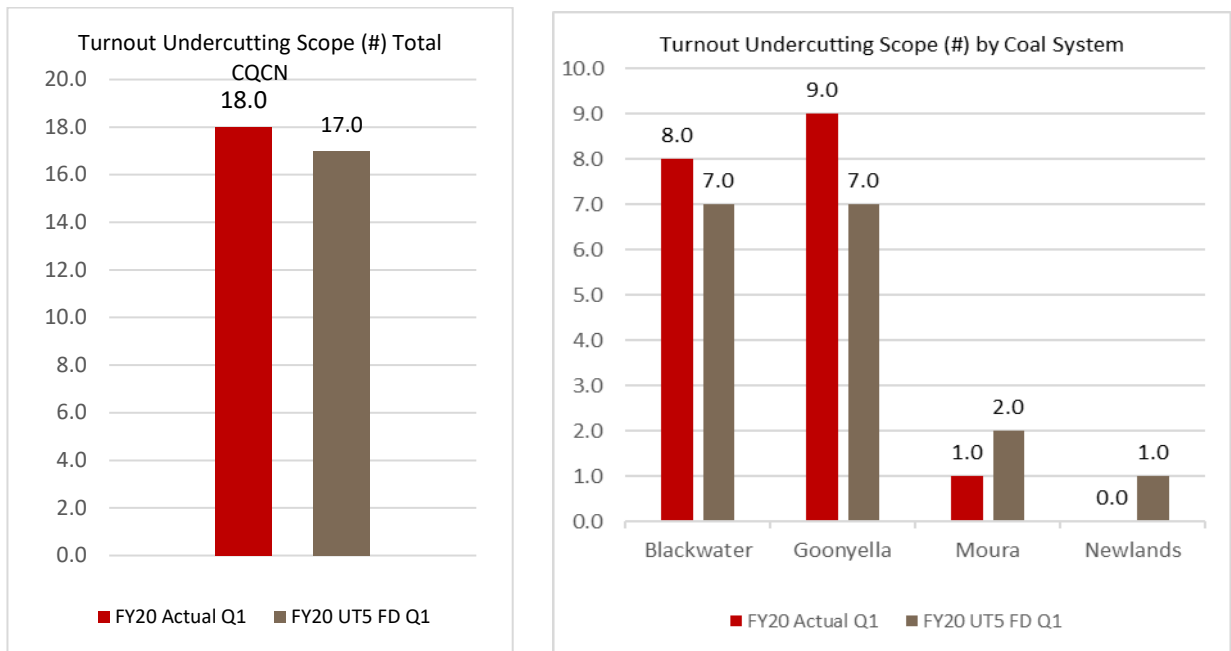
Ballast Undercutting by system for the Reporting Period is shown below in **Figure 15** and **Figure 16**, in terms of both linear kilometres and number of turnouts.

During the Reporting Period, change in track access between systems from plan has caused actual scope to differ. Mainline undercutting is 8km behind plan and 1 turnout ahead of plan. The Newlands closure is now scheduled for October 2019 compared to plan of August 2019. The ballast undercutting team have delivered 30% of the FY2020 mainline undercutting scope year to date.



**Figure 15 – Mainline Ballast Undercutting scope by System**

The Turnout Ballast Undercutting compared with plan is shown in **Figure 16**



**Figure 16 - Ballast Undercutting (Turnouts) by System**

**Figure 16** above presents Turnout Undercutting scope achieved in comparison to the plan for the Reporting Period. The ballast undercutting team completed a total of 18 turnouts during the Reporting Period, which is on track with plan. Increased turnouts in the Goonyella system was enabled by increased track access.

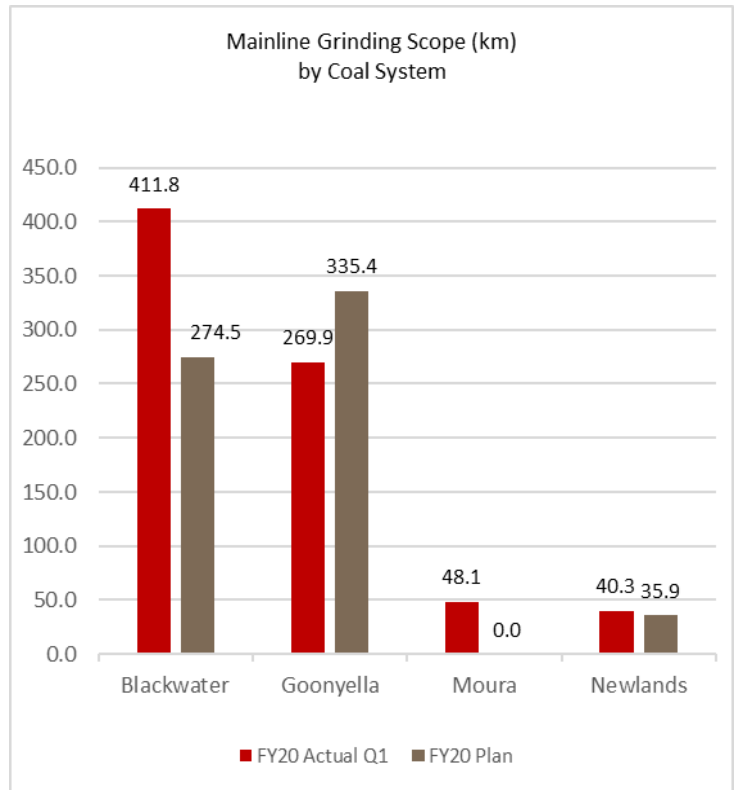
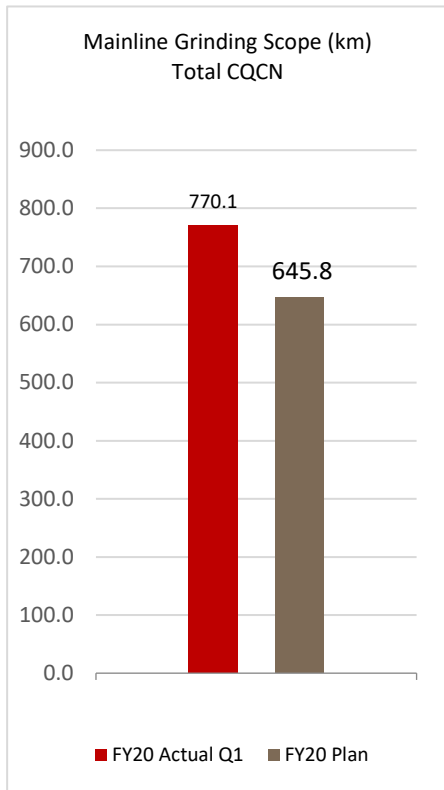
Mainline Ballast Undercutting scope variations per system:

- > Increased scope in Goonyella for the quarter was attributable to increased track access and good quality ballast
- > Scope in Blackwater for the quarter was unable to be met due to track access
- > Newlands system closure has been scheduled for October 2019
- > No scope was planned for the Moura system in the Reporting Period, but notifications of work required were received by the district and approved by Engineers to be completed

### Rail Grinding

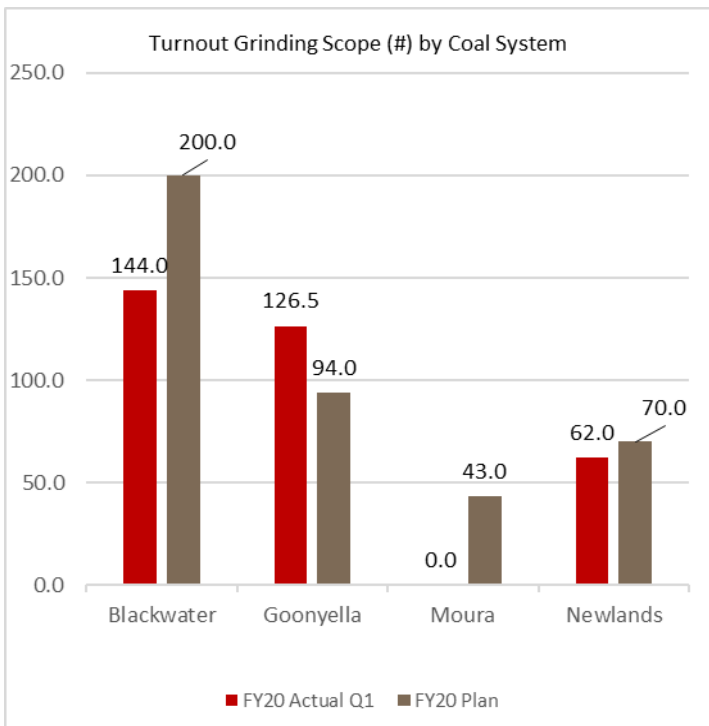
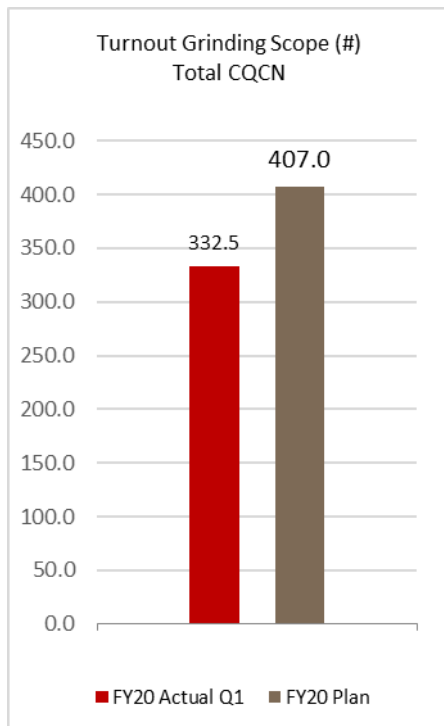
Mainline Rail Grinding by system for the Reporting Period is shown in **Figure 17** below. During the Reporting Period, 770km of Mainline Grinding scope was delivered, which was 124km ahead of plan. This is due to timing of planned access in the beginning of calendar year, compared to confirmed track access which happens much later in calendar year. Therefore, the Program changes across the months but total scope is still targeted for the full year.

At a system level, Blackwater achieved higher scope in mainline grinding than was planned for the Reporting Period due to improved track access.



**Figure 17 - Rail Grinding (Mainline) by System**

Rail Grinding (Turnouts) by system for the Reporting Period is shown in **Figure 18** below.



**Figure 78 - Rail Grinding (Turnouts) by System**

During the Reporting Period, Rail Grinding completed 332 turnouts; 74 turnouts behind plan for Q1.

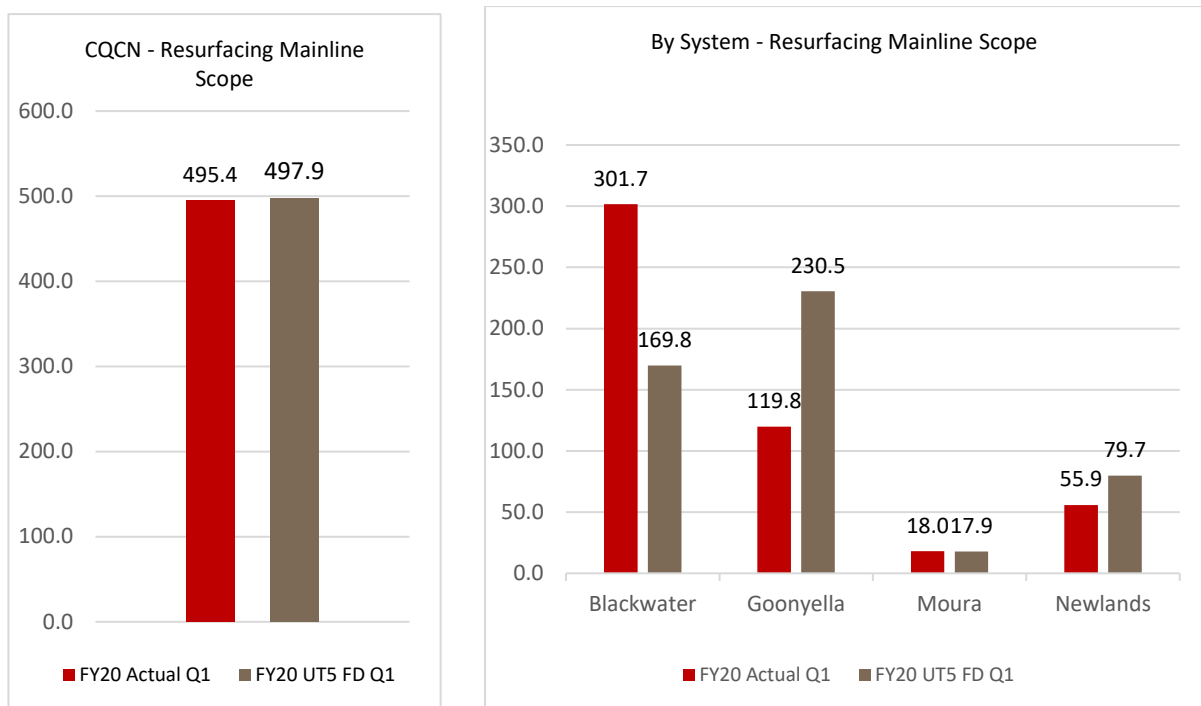
39% of the total Turnout Grinding scope for FY2020 was completed.

## Resurfacing

Resurfacing (Mainline) by system for the Reporting Period is shown below in **Figure 19**. During the reporting period, Aurizon Network delivered 495.4km of Mainline Resurfacing. This result was primarily driven by the following per system:

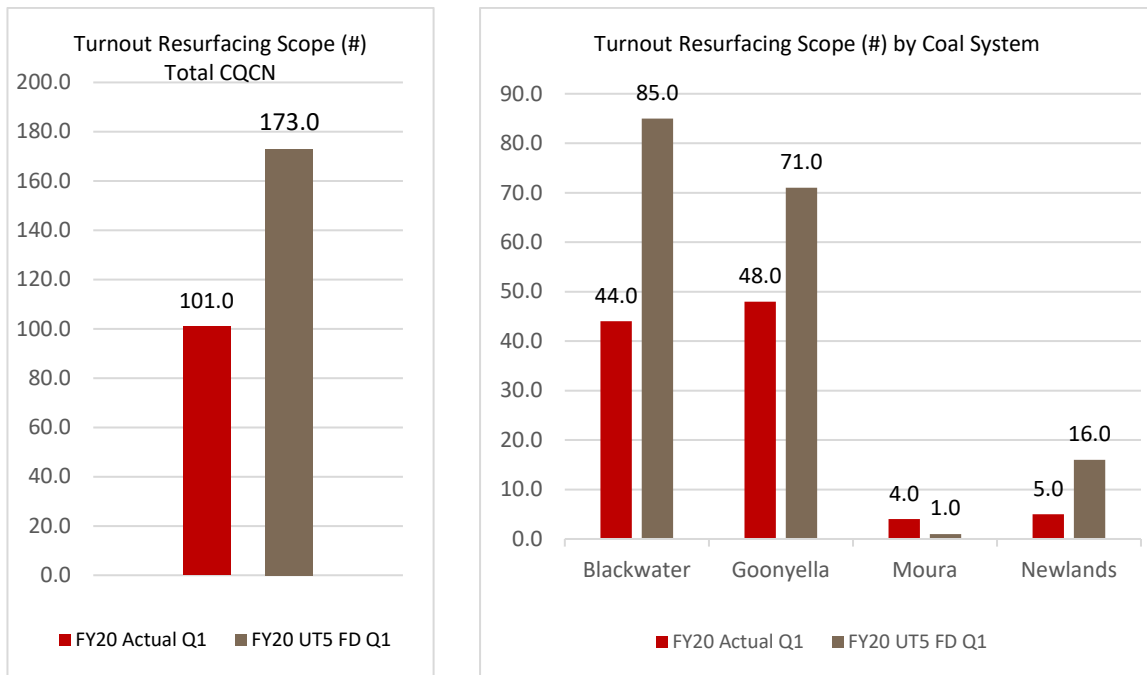
- > At the end of August 2019, a new plant and track utilisation strategy commenced in the Blackwater system. This strategy is presently on trial only and has resulted in increased scope in Blackwater for the Reporting Period
- > Scope in Goonyella was unable to be met in the Reporting Period due to Resurfacing plant assisting renewal works
- > Closure in Newlands is planned in October 2019

During the Reporting Period, the Resurfacing team delivered 22% of the total UT5 Final Decision Mainline scope for FY2020.



**Figure 8 - Resurfacing (Mainline) by System**

Resurfacing (Turnouts) by system for the Reporting Period is shown below in **Figure 20**.



**Figure 20 - Resurfacing (Turnouts) by System**

During the Reporting Period, Resurfacing completed 101 turnouts; 72 turnouts less than plan. The strategy for completing Resurfacing turnouts has changed for FY2020 than previous years. Scope is now evenly planned across the months rather than in previous years where majority of scope was completed in the beginning of the financial year.