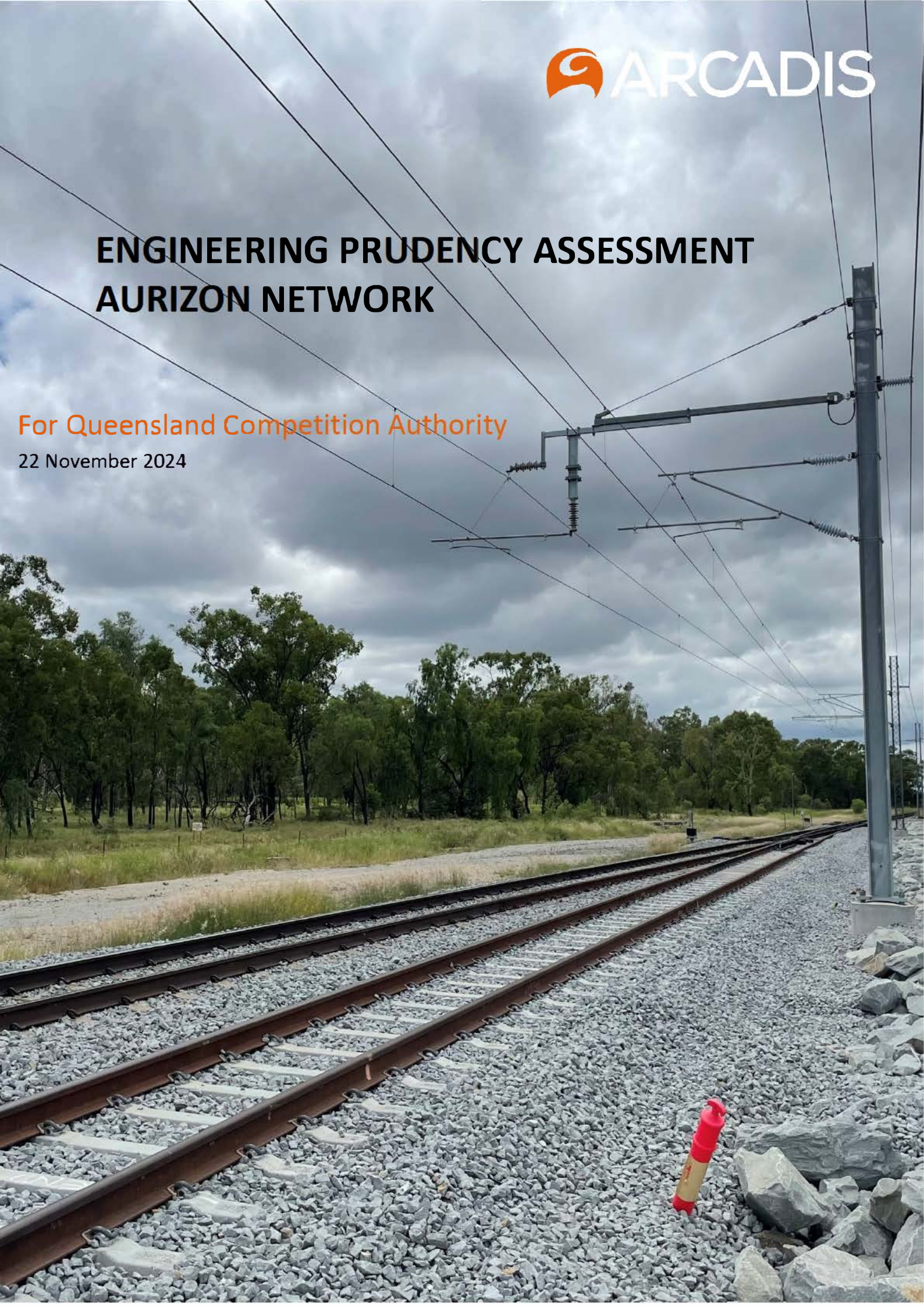


ENGINEERING PRUDENCY ASSESSMENT AURIZON NETWORK

For Queensland Competition Authority

22 November 2024





AURIZON NETWORK

Capital Expenditure and Maintenance Expenditure Claim

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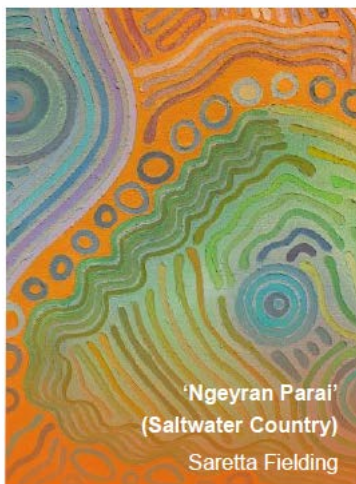
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'Ngeyran Parai'
(Saltwater Country)
Saretta Fielding

Arcadis acknowledges the Traditional Custodians of the land on which we work and live throughout Australia and recognize their continuing connection to Lands, Waters and Communities. We pay our respects Aboriginal and Torres Strait Islander Cultures and to Elders past, present and emerging.

Arcadis is committed to driving inclusion and diversity across our business. This includes specific and actionable policies that aim to make a positive impact on Aboriginal and Torres Strait Islander employment, education and a broader cultural change. Approved by Reconciliation Australia, Arcadis' Reconciliation Plan contains detailed and transparent strategies, targets and measurable actions. We continue to build respect, support education and create employment opportunities with Aboriginal and Torres Strait Island employees within our business.

Further information is [available here](#).


REVISIONS

	Date		Prepared by	Reviewed by	
A	12/11/2024	Draft for review	V. Thayanathan	C.Owen	QCA
B	22/11/2024	Draft for review	V. Thayanathan	C.Owen	QCA

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Arcadis has relied on information provided to it by Queensland Competition Authority and Aurizon Network to produce the report and arrive at its conclusions. The report is based upon information obtained on or before the report's completion (date above). Circumstances and events may occur following this date beyond our control and may affect the findings or projections contained in the report. We may not be held responsible for such circumstances of events and expressly disclaim any responsibility, therefore.

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1 INTRODUCTION

1.1 Background

The Queensland Competition Authority (QCA) is an independent statutory body responsible for implementing competition policy and regulating infrastructure owned by state and private entities that requires third-party access. As such, the QCA is responsible for the regulation of third-party access to below-rail infrastructure operated by Aurizon Network Pty Ltd (Aurizon Network).

Aurizon Network (Aurizon) is a wholly owned subsidiary of Aurizon Holdings Limited. Aurizon Network's below rail infrastructure comprises a 2,670-kilometre multi-user track network comprising four major coal systems and one connecting system servicing Queensland's Bowen Basin coal region: Newlands, Goonyella, Blackwater, and Moura with Goonyella Abbot Point Expansion - the connecting system link. Collectively this is known as the Central Queensland Coal Network (CQCN). The services provided by Aurizon Network's below rail network are declared for third-party access under the Queensland Competition Authority Act 1997 (the QCA Act).

1.2 Objective

The Queensland Competition Authority (QCA) is responsible for approving the Regulatory Asset Base (RAB) for the Central Queensland Coal Network. To ensure that current and future tariffs are charged fairly and for works deemed necessary, infrastructure work expenditure is subject to regulation from the Queensland Competition Authority Act 1997 (QCA Act) and the Queensland Competition Authority Regulation 2007 (QCA Regulation). Under the regulatory process, works must be submitted as a capital expenditure claim to the QCA, subject to the QCA approval process before inclusion in the RAB. An access undertaking, approved by the QCA and developed in accordance with the Act, provides a framework for the provision of access to Aurizon Network's rail network. The current undertaking agreement, *Aurizon Network 2017 Access Undertaking (UT5)*, approved by the QCA – October 2024. UT5 requires maintenance of a RAB reflecting the value of the CQCN infrastructure.

QCA has engaged Arcadis to perform a prudence and efficiency assessment of elements of Aurizon Network's rail infrastructure works in terms of their scope, standard and cost of the capital expenditure works. The acceptability of this claim will predominantly be based on clause 7A.11.6 and Schedule E of UT5; specifically, this requires a test of prudence and efficiency of scope, cost and standard. Arcadis has also assessed the budget exceedance of selected maintenance expenditure and assessed the reasonableness of these items which informs the prudence and efficiency of maintenance expenditure outlined in UT5 ds 7A.11.5.

1.3 Extent of review

Aurizon advised QCA it would be seeking approval of capital expenditure and maintenance expenditure claims across multiple locations within the CQCN. Chapter 2 assesses the prudence and efficiency of the Aurizon Network FY24 capital expenditure claim. Chapter 3 assesses the reasonableness of the Aurizon Network FY24 maintenance expenditure claim.

For this review, key elements of the works were assessed by the Arcadis team in line with the primary discipline aligned with that work. A summary of the cost claims Arcadis was asked to assess is provided in Tables 1-1 and 1-2.

Table 1-1 Summary of Arcadis Assessment – capital expenditure

Element	Location	Total Expenditure Claimed (\$ millions)
Connection infrastructure	Olive Downs	13.7
Turnout renewal	Blackwater	10.2

Element	Location	Total Expenditure Claimed (\$ millions)
Formation renewal	Moura	1.4
Total amount assessed by Arcadis		25.3

Table 1-2 Summary of Arcadis Assessment – maintenance expenditure

Element	Location	Total budget exceedance (\$ millions)	Total budget exceedance (%)
General track maintenance	Blackwater	3.6	16.4
General track maintenance	Goonyella	3.9	25.0
Signalling and telecommunications	Goonyella	3.5	33.3
General track maintenance	Moura	3.1	52.5
Total amount assessed by Arcadis		14.1	

2 CAPITAL EXPENDITURE ASSESSMENT

2.1 Capital Expenditure Methodology

Arcadis has implemented a target testing approach to advise QCA on the prudence of specific sections of the Aurizon Network Capital Expenditure for FY24. The table below outlines the capital expenditure submission items that Arcadis will assess in this report.

Table 2-1 Summary of Arcadis Assessment – capital expenditure assessment

Item	Location	Cost type	Assessment type
Customer specific rail infrastructure connection	Olive Downs	Capital expenditure	Prudence assessment
Turnout renewal	Blackwater	Capital expenditure	Prudence assessment
Formation renewal	Moura	Capital expenditure	Prudence assessment

Prudence assessment

Arcadis performed a desktop assessment of prudence and efficiency based upon preliminary information provided by Aurizon. This includes considering the framework template developed in alignment with the requirements of UT5 clause 7A.11.6¹ as well as Schedule E, which has been approved by the QCA. The key criterion used to create the framework is summarised in the flow chart depicted in Figure . Arcadis has used this framework to consider whether the scope, cost and standard are prudent and efficient in capital expenditure claims.

¹ Aurizon Network, 2017 Access Undertaking (UT5) (2024), page 196-197

Capital Expenditure Prudence and Efficiency

Key: Yes No

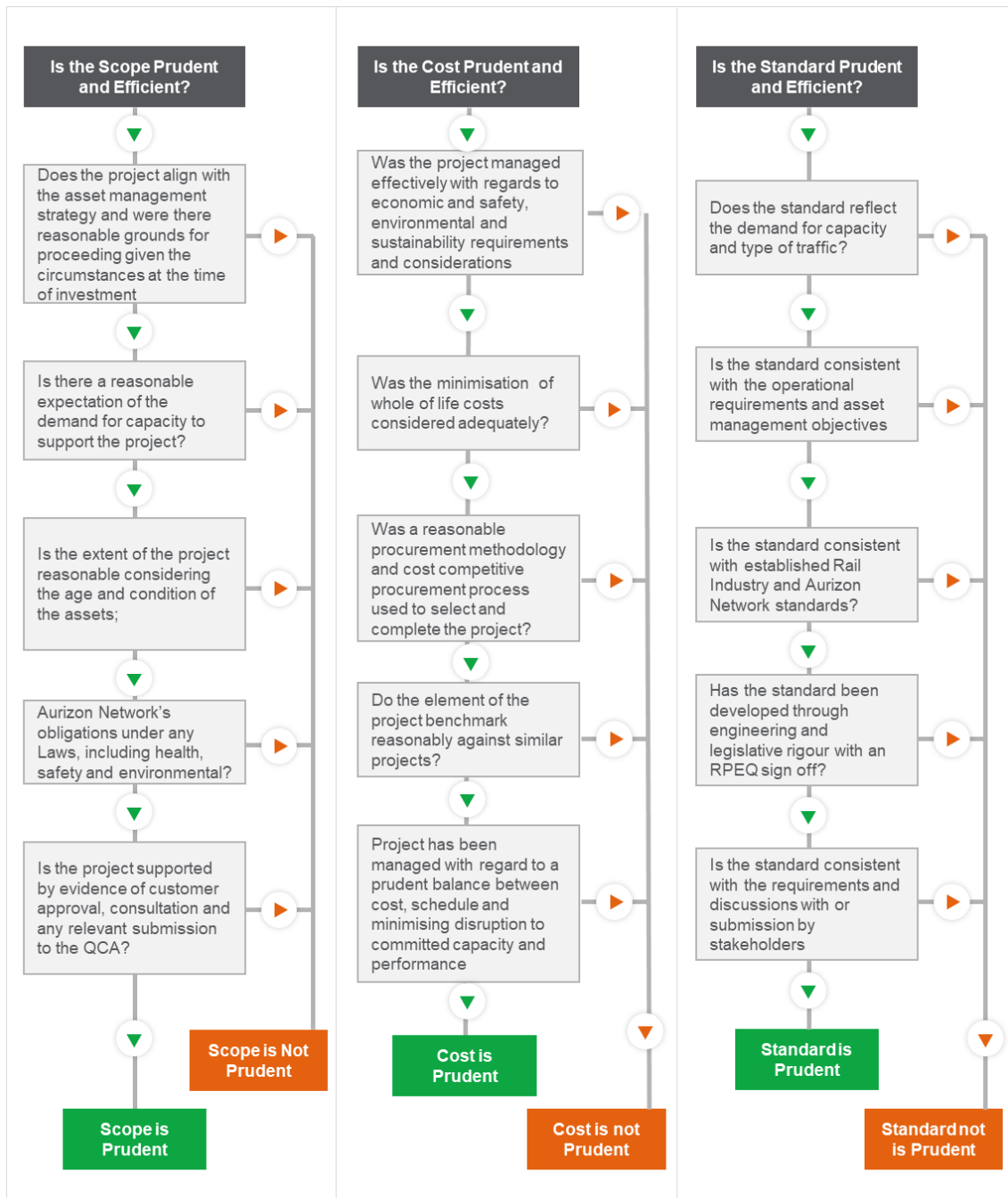


Figure 2-1 Summary of the critical criteria for the assessment of prudence and efficiency

2.2 Extent of review

Aurizon advised QCA it would be seeking approval of its capital expenditure claim across multiple locations within the QCN. QCA has requested Arcadis' advice on sections of this claim, to determine whether various items are prudent and efficient under clause 7A.11.6 and Schedule E of 2017 Access Undertaking (UT5). For this review, key elements of the works were assessed by the Arcadis team in line with the primary discipline aligned with that work. A summary of the cost claim Arcadis was asked to assess is provided in Table 2-2.

Table 2-2 Summary of Arcadis Assessment – capital expenditure

Element	Location	Total Expenditure Claimed (\$ millions)
Connection infrastructure	Olive Downs	13.7
Turnout renewal	Blackwater	10.2
Formation renewal	Moura	1.4
Total amount assessed by Arcadis		25.3

2.3 Prudency Assessments

2.3.1 Connection Works – Olive Downs

Overview

The connection works was developed to enable access to Pembroke Olive Downs mine. [REDACTED]

Table 2-3 provides a summary of the assessment of the connection works.

Table 2-3 Assessment of prudency for connection works

Prudent and Efficiency Assessment Outcome		
In accordance with clause 6.3.2, Schedule E of the Aurizon Network The 2017 Undertaking (UT5), was there sufficient demonstration of prudency and efficiency to satisfy:	Scope	✓
	Standard	✓
	Cost	✓
Capital Expenditure Claim (total construction)	\$ 13,691,278	Overall, the scope, standard and cost for the connection works is considered prudent and efficient.
Impact of findings on Claim	\$ 0	
TOTAL ACCEPTED	\$ 13,691,278	

Assessment of scope

Arcadis reviewed the scope, as defined in the information provided, including the RICD. [REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Based on the works undertaken, the project aligns with the proposed design.

Assessment of standard

The connection works are required to have regard to the required legislation, standards and guidelines, including Aurizon Network’s design and the CETS and CESS, Australian design and construction standards and all other State and Federal relevant legislation, standards and guidelines.

Australian Standards have been stipulated throughout the design. For Aurizon, civil and track works are business as usual, and it is noted that Aurizon standards have been considered in and aligned with, in all the design works. A visual inspection of the loop was carried out in February 2024. On visual inspection, no unusual items were noted.

From the information provided, Arcadis assesses that the standard of the civil works is prudent and efficient.

Assessment of cost

Arcadis assessed the cost of the Olive Downs Connecting Infrastructure capital expenditure claim for FY24. The total budget for the connection works consisted of \$13.3 million plus 10 per cent contingency, excluding GST. This is a total of \$14.7 million. For the purposes of the FY24 Aurizon Network Capital Expenditure Claim, Arcadis will assess the total amount claim in FY24. This amounts to \$13.7m. Per discussions with Aurizon Network, a further \$1 million is expected to be claimed in FY25.

[REDACTED]

Arcadis has reviewed cost information provided by Aurizon Network, including budget amount as well as a breakdown of actual costs in FY24. We note that overall the cost of the works appears to be reasonable considering similar works and environmental and regulatory considerations. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

Overall, based on Arcadis engineers' experience on similar projects, and our annual cost and commercial research undertaken on global and national construction costs, the cost is deemed prudent and efficient for the connection works.

2.3.2 Turnout Renewal – Blackwater

Overview

Turnout renewals for Blackwater are based on the 250/251 turnouts that have been progressed from FY21-FY24. In FY24, the full amount will be claimed. Per discussion with Aurizon, no amount relating to 250/251 turnouts has been claimed in previous years. Arcadis confirmed that this amount was not claimed in FY23.

Table 2-4 provides a summary of the assessment of the turnout renewal for Blackwater.

Table 2-4 Assessment of prudence for turnout renewal - Blackwater

Prudent and Efficiency Assessment Outcome			
In accordance with clause 6.3.2, Schedule E of the Aurizon Network The 2017 Undertaking (UT5), was there sufficient demonstration of prudence and efficiency to satisfy:	Scope	✓	Overall, the scope and standard for the turnout renewals is prudent and efficient. However, the cost is not efficient. Arcadis believe the re-scoping of concept and detailed design is not efficient and has reduced this from the approved claim.
	Standard	✓	
	Cost	x	
Capital Expenditure Claim (total construction)	\$ 10,177,237		
Impact of findings on Claim	\$ 550,000		
TOTAL ACCEPTED	\$ 9,627,237		

Assessment of scope

The scope of works for the two turnout renewals included the realignment of three arrival roads, renewal of two turnouts, signalling and OHLE changes and the installation of a new three track level crossing. A temporary construction level crossing was installed which was then sealed and made permanent. The need for a new three track level crossing is a consequence of having maintenance assets stranded in the middle of the yard which need suitable access, the previous access likely being unsuitable due to the sightlines it provided.

Additional cabling was required including redesign. The poor condition of existing conduits could have been foreseen by undertaking a survey in advance. Rocky ground conditions encountered could have been anticipated earlier since the geotechnical features of this depot are very familiar to its owner. The works were staged across multiple years which would have attracted multiple mobilisation and demobilisation costs, these are unavoidable.

Callemondah is a very busy yard and is easily disrupted if works are not carefully planned so a staged approach was a prudent strategy. Stage 2 of the project included the realignment of the arrival roads and as such relocation of signal 183. Both the delay and the cost increase appear to be prudent given the considerable change that is associated with a level crossing relocation. Arcadis has seen a considerable increase in signalling construction costs nationally over the last 3 years.

Assessment of standard

These works are required to have regard to the required legislation, standards and guidelines, including Aurizon Network's design and the CETS and CESS, Australian design and construction standards and all other State and Federal relevant legislation, standards and guidelines. It is expected that Australian Standards are to be stipulated throughout the design. Arcadis has reviewed the CQCN Maintenance and Renewals Strategies and Budgets for FY24 and notes that standards have been considered.

From the information provided, Arcadis assesses that the standard of the civil works is prudent and efficient.

Assessment of cost

A number of items exceeded original budget. However, the original budget estimate was taken from a concept design. This level of design often attracts significant risk when preparing cost estimates as it is not as comprehensive as a detailed design. This new level crossing was a redesign and incurred additional costs of \$600k which included excavation of a 'hill' to facilitate the crossing. The \$600k overspend was an estimate only, waiting until the new design was finalised. The necessity for a new (sealed) level crossing straight across the tracks to the stranded asset could have been anticipated earlier which would have avoided redesign and overspend. Using concept designs to prepare cost estimates and also estimating the overspend because a redesign is not available, and we would not expect this in a mature organisation.

Another item that was noted in our review was that the OHLE required \$250k of rework which included night-work, which comes at a premium. Per discussion with Aurizon, this was done due to constrained network and therefore strict timeframe to abide by. Given this explanation, the night-work is deemed reasonable.

A cost of \$500k for control systems exceeded the initial estimate. It appears the tendered price was higher than the initial cost estimate. The budget was built in FY22 and since then, there has been a significant upward trend in the signalling and telecommunication market costs and the actual costs are deemed prudent and efficient.

Some flooding due to poor weather required pumping and this is an unforeseen event which the contracts will normally have provision for. Callemondah is badly drained and on poor ground and has historically presented ground engineering challenges which require extensive treatments. These works and their costs are reasonable.

We noted that a rescoping occurred and therefore two concept designs and detailed designs were undertaken. Per discussion with the project manager at Aurizon, it is understood that there was an error in the initial design which led to a new concept and detailed design to address the issue. We understand that these errors occur earlier on. However, this was not noted earlier and a detailed

design was undertaken. This led to redesigning and costs attached to this. Therefore, we are unable to assess these concept design and detailed design costs as efficient due to the changes. The total design and engineering costs for Callemondah 250/251 turnout renewals costs were \$1.1 million. We have taken the assumption that 50% of these costs relate to the original concept and detailed design, prior to rescoping. We deem these costs (\$550,000) as inefficient.

Aurizon provided Arcadis with documentation such as the budget, rebudgeting and noted that discussions with stakeholders including the Rail Industry Group (RIG) occur quarterly where they were informed about these costs. It is understood that although we do not deem this portion as efficient, these costs were unavoidable after noting the error in the design and were communicated with customers.

2.3.3 Formation Renewal – Moura

Overview

Formation renewal of \$1.4m has been fully completed and commissioned in FY24.

Table 2-5 provides a summary of the assessment of the formation renewal for Moura.

Table 2-5 Assessment of prudence for formation renewal - Moura

Prudent and Efficiency Assessment Outcome			
In accordance with clause 6.3.2, Schedule E of the Aurizon Network The 2017 Undertaking (UT5), was there sufficient demonstration of prudence and efficiency to satisfy:	Scope	✓	Overall, the scope, standard and cost for the formation renewal is considered prudent and efficient.
	Standard	✓	
	Cost	✓	
Capital Expenditure Claim	\$ 1,436,730		
Impact of findings on Claim	\$ 0		
TOTAL ACCEPTED	\$ 1,436,730		

Assessment of scope

The scope of works includes the following items:

- Mobilisation and demobilisation of site
- Materials such as ballast
- Earthworks
- Trackwork including plant, equipment and labour

The works are located on a twin curved section of track with transitions. The curves are at the end of long straight sections where trains will operate at an optimum speed.

Over time, acceleration and braking or deceleration forces and curving forces will impact the track which will lead to a number of defects which must be rectified to maintain safety. The kilometrage of the works aligns with the curve locations, suggesting this is indeed the case.

For this reason, the scope of works is prudent and reasonable.

The Moura Line is single track with limited passing loops and therefore sensitive to unplanned closures. Any opportunity to avoid unplanned closures through predictive maintenance is a reasonable strategy to maintain capacity.

Assessment of standard

These works are required to have regard to the required legislation, standards and guidelines, including Aurizon Network’s design and the CETS and CESS, Australian design and construction standards and all other State and Federal relevant legislation, standards and guidelines. Arcadis

notes that Aurizon standards are stipulated throughout the statement of work. In addition to this, Arcadis has reviewed the CQC Maintenance and Renewals Strategies and Budgets for FY24 and notes that standards have been considered.

Assessment of cost

Total costs of the formation renewal summed to \$1.4m. \$1.26m related to the statement of works, with the remainder being indirect costs. The length of works was 300m, this equates to a rate of \$4.2m per kilometre, which is not a particularly good rate but is a consequence of letting small packages of work. The same safety, procurement and administration activities are required but the economies of scale of a larger reconstruction are not realised. This is due to it being a small project. For example, mobilisation and de-mobilisation was \$106,000, which represents 7 per cent of total costs. Project management costs are 6 per cent which is a prudent amount.

Four invitation to tenders were issued to the market but only two companies participated in the tender. It is noted that reasonable procurement was undertaken. However, a lack of competitiveness in those who decided to tender led to higher costs. It is a difficult balance to achieve between making the packages large enough to attract economies of scale but not too large to exclude smaller contractors who can often be more agile. This area is in a location conducive to construction. It is located immediately adjacent to the Dawson Highway with a good opportunity for laydown and marshalling. The terrain is gently undulating, and the track is level and curved slightly. Sighting distances appear to be generous.

Considering this, in previous years costs would be lower. However, a lack of market competitiveness, coupled with rising costs, prices have increased. Therefore, a cost competitive procurement process was implemented by Aurizon, despite only two companies tendering. These costs are prudent and efficient

Arcadis noted that Aurizon suggested the suspension of 3G services by Telstra incurred unexpected costs. Arcadis discussed the reasoning for this as 3G was expected to be known. Aurizon maintained that the budget was estimated two years prior and therefore it did not consider the costs of 3G modem replacement. We would expect for these costs to have been adequately planned. However, we acknowledge that whether it was or was not included in the budget, these are necessary works that were out of Aurizon's control. Overall, the cost of the formation renewals are deemed prudent and efficient.

2.4 Capital Expenditure Conclusion

The following table reflects the prudence and efficiency of the capital expenditure items that Arcadis was requested to assess by QCA. All items are deemed prudent and efficient, except for turnout renewals in Blackwater, where 50 per cent of design costs were deemed inefficient.

Table 2-6 Summary of Arcadis Assessment – capital expenditure

Element	Location	Aurizon Capital Expenditure Claimed (\$ millions)	Arcadis Assessment of Prudent and Efficient capital expenditure	Difference
Connection infrastructure	Olive Downs	13.7	13.7	-
Turnout renewal	Blackwater	10.2	9.6	0.6
Formation renewal	Moura	1.4	1.4	-
Total capital expenditure		25.3	24.7	0.6

3 MAINTENANCE EXPENDITURE

3.1 Maintenance Expenditure Methodology

Arcadis has been engaged to assess reasonableness of the maintenance costs relating to the Aurizon Network FY24 Maintenance Claim as it triggers UT5 clause 7A.11.5 (f)², whereby QCA will 'consider any item in a Maintenance Costs Claim which is at least \$2 million more than the corresponding item in the Approved Maintenance Strategy and Budget for a Coal System' and assess whether these are prudent and efficient.

In this assessment, Arcadis has applied a reasonableness assessment that will inform QCA of the prudence and efficiency of these maintenance expenditure exceedances. Reasonableness is defined as a rational, justifiable, and logically based approach using professional judgment and informed decisions supported by available data and aligned with prudence cost requirements. It considers compliance requirements such as CETS, CESS, and safety, as well as the organisation's strategic objectives and performance requirements. When distinguishing between maintenance and capital expenditure, reasonableness involves applying sound judgment to determine if an activity aligns with the criteria for each category. Our assessment of reasonableness involves considering the pertinent financial, regulatory, and strategic aspects of the submission investment. Reasonableness evaluates the outcome in relation to the criteria of prudence and cost efficiency. This can be assessed in conjunction with the prudence and efficiency assessment applied in UT5 clause 7A.11.5. Table 3-1 outlines the items being assessed in the FY24 maintenance expenditure claim.

Table 3-1 Summary of Arcadis Assessment – maintenance expenditure assessment

Item	Location	Cost type	Assessment type
General track	Blackwater	Maintenance expenditure	Reasonableness assessment
General track	Goonyella	Maintenance expenditure	Reasonableness assessment
General track	Moura	Maintenance expenditure	Reasonableness assessment
Signalling and telecommunications	Goonyella	Maintenance expenditure	Reasonableness assessment

3.2 Extent of review

Aurizon advised QCA it would be seeking approval maintenance expenditure claims across multiple locations within the CQCEN. QCA has requested Arcadis' advice on sections of this claim, to determine whether various items are prudent and efficient under clause 6.2.3 of 2017 Access Undertaking (UT5).

For this review, key elements of the works were assessed by the Arcadis team in line with the primary discipline aligned with that work. A summary of the cost claim Arcadis was asked to assess is provided in Table 3-2.

² Aurizon Network, 2017 Access Undertaking (UT5) (2024), page 194-196

Table 3-2 Summary of Arcadis Assessment – maintenance expenditure

Element	Location	Total budget exceedance (\$ millions)	Total budget exceedance (%)
General track maintenance	Blackwater	3.6	16.4
General track maintenance	Goonyella	3.9	25.0
Signalling and telecommunications	Goonyella	3.5	33.3
General track maintenance	Moura	3.1	52.5
Total amount assessed by Arcadis		14.1	

The assessment of the claim was conducted with respect to the Terms of Reference³ as set by the QCA and the terms and criteria outlined in clause 7A.11.5(h) and having regard to the more detailed framework that applies to determination of prudence and efficiency of Aurizon Network’s maintenance expenditure claims and summarised above.

3.3 Reasonableness assessments

3.3.1 General Track Maintenance

The costs for general track maintenance exceeded a budget of \$21.9m by \$3.6m, to land to a total of \$25.5m. This was driven by a number of factors outlined in Table 3-3. Below, Arcadis has assessed these items on a reasonableness basis.

Table 3-3 Breakdown of general track maintenance FY24 for selected locations

Budget exceedance (\$millions)	Blackwater	Goonyella	Moura
Labour and indirect costs	1.0	1.3	1.3
Contractors costs	1.3	1.8	0.9
Materials and external plant	1.3	0.3	0.4
Efficiency	0.8	0.7	0.1
Other	-0.8	-0.2	0.4
Total general track maintenance exceedance	3.6	3.9	3.1

Labour and indirect costs

Labour costs are mainly driven by an increase of 5.5 per cent in labour costs across Infrastructure Enterprise Agreement outcomes, as well as other drivers. Based on Arcadis’ experience, we have seen an increase in labour costs for skilled workers in the rail sector due to multiple rail-related projects across Australia, leading to market pressure which has resulted in an increase in wages

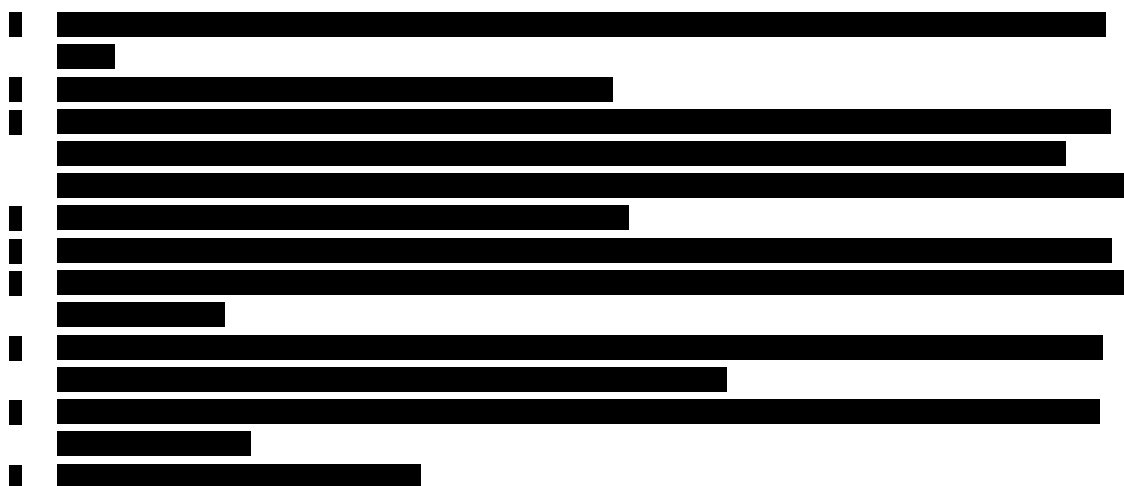
³ Queensland Competition Authority Terms of Reference – 24/10/2024

across Australia. It is also noted that as per the Occupation Shortage List 2024 (Australian Government, 2024), the following occupations are classified as being in shortage:

- electrical engineers
- electrical linesworker
- railway track worker

This wage increase, with labour exceeding budgetary expectations is in line with market conditions in FY24.

In addition to these labour increases, indirect labour costs were included in this category. It is noted that the approved budget was built in January 2022. Since then, Australia has seen a tight labour market and note that railway maintenance requires specialised skills. Per discussion with Aurizon, to retain staff, there were multiple initiatives they did in FY24 that was not included in initial budget such as:



Arcadis completed a substantive analytic to illustrate the impact of the combined wage increase and initiatives in locations that exceeded its budgetary allowance.

Blackwater

Arcadis has assumed that labour is █ per cent of general track maintenance costs. This assumption is based on the review of spend by activity. 5.5 per cent of assumed labour relating to general track maintenance costs of \$21.9m is \$█m. Therefore, there is \$█m remaining to investigate. This is driven by indirect labour costs used to address skilled labour shortages and attrition risk, in addition to the wage 5.5% increase addressed by initiatives above. These █ incentives were provided to staff in both Civil and Electrical disciplines and additional apprentices for critical roles and locations. Arcadis deems the budgetary exceedance reasonable given the labour market conditions of FY24.

Goonyella

Arcadis has assumed that labour is █ per cent of general track maintenance costs. This assumption is based on the review of spend by activity. 5.5 per cent of assumed labour relating to general track maintenance costs of \$16m is \$█m. Therefore, there is \$█m left to investigate. This is driven by indirect labour costs used to address skilled labour shortages and attrition risk, in addition to the wage 5.5% increase addressed by initiatives above. These █ incentives were provided to staff in both Civil and Electrical disciplines and additional apprentices for critical roles and locations. Arcadis deems the budgetary exceedance reasonable given the labour market conditions of FY24.

Moura

Per discussion with Aurizon, labour in Moura relates to █ per cent of general track maintenance costs. 5.5 per cent of assumed labour relating to general track maintenance costs of \$5.9m is \$█m. Therefore, there is \$█m of budget variance that was required to be further investigated. Per discussion with Aurizon, this is driven by indirect labour costs used to address skilled labour shortages and attrition risk, in addition to the wage 5.5% increase addressed by initiatives above.

These [REDACTED] incentives were provided to staff in both Civil and Electrical disciplines and additional apprentices for critical roles and locations. Arcadis deems the budgetary exceedance reasonable given the labour market conditions of FY24. Contractor costs

Contractor costs exceeded budget across all three locations. This is driven by two main components:

- Extension of the QR track geometry recording car contract
- Fire and safety management

Due to a delay in the commissioning of ATIS, a new infrastructure that would supplement Track Geometry Car and therefore significantly reduce its requirement, created a need to extend the Geometry Car contract. It is noted that the geometry car is part of the safety management system and is therefore a requirement, if not supplemented by ATIS. Arcadis flagged that a delay in the commissioning of ATIS should lead to any costs incurred due to delays to be passed onto the company at fault. [REDACTED]

[REDACTED] Overall, the exceedance of these costs in Blackwater, Goonyella and Moura is deemed reasonable.

Fire and safety management was the other item that exceeded pre-approved maintenance expenditure budget. Arcadis would expect that these costs to be relatively predictable as this is a fire and safety issue that should be managed as a business as usual item. However, per discussion with Aurizon, it is understood that historically, fire and vegetation management was reactive, not preventative. Therefore the budget to ensure a predictive management strategy was built on reactive spend on historical fire and safety management. Historically, costs for this have been relatively volatile due to its reactive nature. Therefore, it was difficult to predict the preventative measures. Further, following the La Nina wet weather period and impacts of wet weather during Q2 and Q3 FY24 saw a substantive amount of vegetation growth throughout the corridor, requiring increased levels of corrective maintenance to prevent interference with train running, road access and completion, which were corrective works were required in addition to the package of preventative works described above. Arcadis deems these costs reasonable across Blackwater, Goonyella and Moura.

Materials and plant

The budget exceedance of materials and external plant was driven by an increase in ballast costs across the three locations. The largest exceedance was seen in Blackwater, where the budget exceedance was \$1.3 million, which made up 36 per cent of the total budget exceedance. Aurizon Network noted that an increase in ballast prices of approximately 17 per cent led to this budget exceedance. Arcadis delved deeper to understand the contracting between Aurizon Network and its suppliers. It is understood that there are [REDACTED] suppliers of ballast throughout CQCN [REDACTED]

[REDACTED], it is not practical to source all the full CQCN ballast from a single supplier given the distance between Aurizon Network locations and quarry locations. Aurizon Network has additionally sought to mitigate the risk of future material pricing changes. Arcadis notes that a 17 per cent increase in ballast pricing is in line with current market conditions. Overall, we deem this budget exceedance as reasonable.

Efficiency and other

Efficiency budget exceedance occurred in both Blackwater (\$0.8m) and Goonyella (\$0.7m). Per discussion with Aurizon, the efficiency component of the budget was a top-down approach where Aurizon and its customers agreed on applying a percentage reduction to the overall budget, where Aurizon would find efficiencies to reduce spend. In the absence of a bottom-up efficiency build up, Aurizon Network pro-rated the efficiency value across Coal Systems and maintenance activities (excluding rail grinding) when reporting. To find efficiencies, Aurizon Network pursued a range of incremental initiatives through its continuous improvement program to improve safety, productivity and cost efficiency.

From these discussions, this was an allocation of a reduction in budget, rather than a budget exceedance. It is understood that a reduction in actuals was not met in full in both Blackwater and Goonyella. Overall, this explanation is deemed reasonable given the budget exceedance was not made, rather than an unplanned top down budget reduction was applied across these locations.

The efficiency amount in Blackwater is fully offset by the other component within general track maintenance expenditure. Similarly, the efficiency amount in Goonyella of \$0.7m is partially offset by \$0.2m in other in the general track maintenance component. The efficiency and other component in Moura sums to \$0.5m. These amounts are deemed immaterial according to UT5 7A.11.5 (f)(ii)(3) which has a materiality threshold of \$2 million.

3.3.2 Signalling and Telecommunications Maintenance – Goonyella

Maintenance overspend in signalling and telecommunications for Goonyella was \$3.5m. This was predominately driven by labour and indirect labour cost overspend of \$3.1m. Per discussion with Aurizon, labour and indirect labour costs represented approximately [REDACTED] % of the FY24 Signalling and Telecoms budget. In line with the labour exceedance for general track maintenance, Aurizon experienced a number of challenges in attracting and retaining qualified rail specialist, particularly relating to the electrical discipline. Arcadis acknowledges that signalling and telecommunications is a highly specialised area that requires skilled workers that have been difficult to source in a labour constrained market. It is also noted that the Occupation Shortage List (Australian Government, 2024) recognises that a shortage for electrical engineers and electrical linesworkers exist not only in Queensland, but in Australia.

Arcadis further investigated the reasoning behind the budgetary exceedance being in Goonyella relative to other locations. Aurizon stated that the higher than budget spend in Goonyella was predominately driven by additional labour and indirect costs in the Control Systems North team. The Control Systems North team includes trade and support staff located across Jilalan and Moranbah depots. Aurizon Network implemented attraction and retention initiatives as highlighted in the labour related section of the general track maintenance section of this report. In addition to these costs, the Goonyella system also hired contractors. As a result of skilled labour shortages, Aurizon Network engaged contract labour hire in Electrical (Moranbah and Jilalan) depots for critical roles across the discipline to support full-time staff including support for apprentice and trainee resource levels. The increase in contract labour hire cost was partially offset by a reduction in internal labour costs where positions were unable to be recruited. The success of the attraction and retention incentives should benefit customers by reducing reliance on external contractor labour, [REDACTED]

The budgetary exceedance was higher in Goonyella relative to other locations due to activity mix variation, which is the difference between the assumed activity mix in each System when setting the FY24 budget and actual activity mix. Activity mix is allocated based on historical maintenance expenditure and the actual activity mix delivered during the year. The maintenance activities that are actually delivered during the year are prioritised to ensure network safety and reliability. The location and nature of works may result in variations between budget assumptions (between Coal Systems and between maintenance categories) and will impact the categories in which costs will actualise. The variance of \$0.4m between labour related costs and other items is deemed immaterial according to UT5 7A.11.5 (f)(ii)(3) which has a materiality threshold of \$2 million. Arcadis deems the budget exceedance for signalling and telecommunications maintenance in Goonyella as reasonable.

3.4 Maintenance Expenditure Conclusion

The following table reflects the reasonableness of the maintenance expenditure items that Arcadis was requested to assess by QCA. All items are deemed reasonable.

Table 4-1 Summary of Arcadis Assessment – maintenance expenditure

Category	Location	Total budget exceedance (\$ millions)	Total budget exceedance deemed reasonable	Difference
General track maintenance	Blackwater	3.6	3.6	-
General track maintenance	Goonyella	3.9	3.9	-
Signalling and telecommunications	Goonyella	3.5	3.5	-
General track maintenance	Moura	3.1	3.1	-
Total amount assessed by Arcadis		14.1	14.1	-

APPENDICES



A. LIST OF DOCUMENTS PROVIDED

The following is a list of all documents provided by Aurizon for this assessment:

- Aurizon Network FY24 Capital Expenditure Claim (September 2024)
- Aurizon Network FY24 Maintenance Costs Claim (September 2024)
- Rail Infrastructure Construction Deed
- FY24 Capital Claim Workbook
- Callemondah Project Document
- FY24 EOFY Status Report – Permanent Way
- FY24 EOFY Status Report – Civil Renewals
- Callemondah Design Timeline
- FY24 MRSB Final Proposal
- Network Change Board Charter – January 2023
- Turnout Project Report (Callemondah 250/251)
- Olive Downs IFC drawings

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