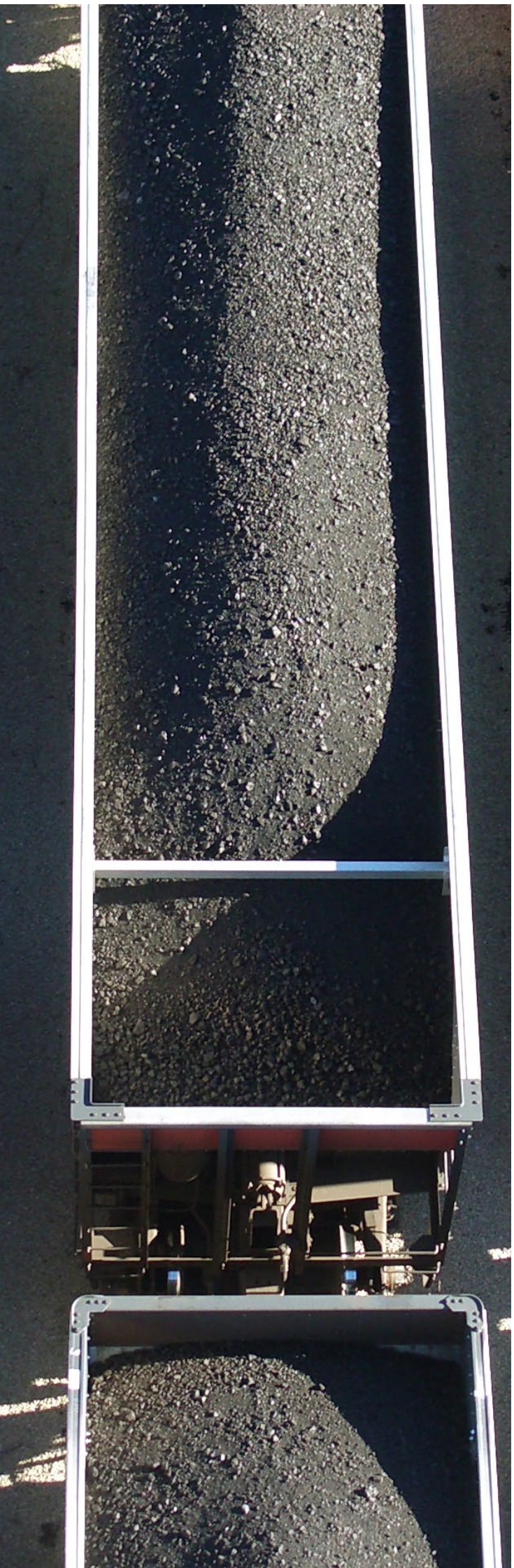


Independent Expert Recommendations to Queensland Competition Authority

Response to Aurizon Network's Detailed Response to the ICAR 2021

Redacted version

Date: 17 June 2022

COAL NETWORK CAPACITY CO.

Disclaimer

You must read the following notices before reading or making any use of this document or any information contained in this document. By continuing to read, use or otherwise act on this document, you agree to be bound by the following terms and conditions, including any modifications to them.

Confidentiality

This document and the information contained within it are strictly confidential and are intended for the exclusive benefit of the persons to whom it is given. It may not be reproduced, disseminated, quoted or referred to, in whole or in part, without the express consent of Coal Network Capacity Co Pty Ltd.

By receiving this document, you agree to keep the information confidential, not to disclose any of the information contained in this document to any other person and not to copy, use, publish, record or reproduce the information in this document without the prior written consent of Coal Network Capacity Co Pty Ltd, which may be withheld in its absolute discretion.

No Liability

To the maximum extent permitted by law, none of Coal Network Capacity Co Pty Ltd, their respective related bodies corporate, shareholders or affiliates, nor any of their respective officers, directors, employees, affiliates, agents or advisers (each a Limited Party) make any guarantees or make any representations or warranties, express or implied, as to or takes responsibility for, the accuracy, reliability, completeness or fairness of the information, opinions and conclusions contained in this document. No Limited Party represents or warrants that this document is complete.

To the maximum extent permitted by law, each Limited Party expressly disclaims any and all liability, including, without limitation, any liability arising out of fault or negligence, for any loss arising from the use of information contained in this document including representations or warranties or in relation to the accuracy or completeness of the information, statements, opinions or matters, express or implied, contained in, arising out of or derived from, or for omissions from, this document including, without limitation, any financial information, any estimates or projections and any other financial information derived therefrom. This includes for any indirect, incidental, consequential, special or economic loss or damage (including, without limitation, any loss of profit or anticipated profit, fines or penalties, loss of business or anticipated savings, loss of use, business interruption or loss of goodwill, bargain or opportunities).

Contents

1. Definitions and Key Reference Documents

1.1 Definitions

Terms that are capitalised within this document are defined terms as per **Part 12** of the Aurizon Network's 2017 Access Undertaking (UT5). The following additional definitions are provided:

Measure	Definition
Train Service Entitlement (TSE)	An Access Holder's entitlement pursuant to an Access Agreement to operate or cause to be operated a specified number and type of Train Services over the Rail Infrastructure (as defined in UT5) including within a specified time period, in accordance with specified scheduling constraints and for the purpose of either carrying a specified commodity or providing a specified transport service (UT5).
Train Path	Is the occupation of a specified portion of Rail Infrastructure, which may include multiple sections in sequential order, for a specified time. UT5 outlines that such Train Paths needing to be useable including in respect of return journeys. One (1) Train Path is equivalent to two (2) TSEs.

1.2 Key Reference Documents

The following documents/reports should be read in conjunction with this report and are referenced throughout this document:

- Independent Expert Initial Capacity Assessment Report (ICAR) – issued 27 October 2021;
- Independent Expert System Operating Parameters (SOP) – issued 27 October 2021;
- Aurizon Network's preliminary report in response to the Initial Capacity Assessment Report – issued 12 November 2021; and
- Aurizon Network's Detailed Response to the Initial Capacity Assessment Report – issued 14 March 2022 (Detailed Report).

2. Background

2.1 Requirements of 2017 Access Undertaking (UT5)

UT5 as approved by the Queensland Competition Authority (QCA), requires the Independent Expert to fulfil a number of key obligations as detailed in **Part 7A: Capacity** of UT5.

The key obligations relating to the CQCN annual capacity assessments are:

2.1.1 Initial Capacity Assessment

UT5 outlines the requirements that the Independent Expert (IE) must consider in undertaking the IE Initial Capacity Assessment of the CQCN. Key points to note are:

- To develop an Initial Capacity Assessment Report (ICAR) that sets out Deliverable Network Capacity (DNC), assumptions, constraints and Existing Capacity Deficits (ECDs), if applicable, for each Coal System, mainline and branch line;
- If the IE identifies in its assessment that there is Existing Capacity Deficits (ECDs) in respect of a Coal System, the quantum of the ECD, the Coal System and the location in the Coal System where the ECD arises, including, where identified by the IE, specific causes for the deficits and potential solutions for addressing the deficits; and
- The outcomes of the IE's assessment must be reported to the Queensland Competition Authority (QCA) and Aurizon Network in a redacted and unredacted form and to the Chair of the Rail Industry Group (RIG) in a redacted form.

The ICAR was finalised by the IE and provided to the QCA and Aurizon Network on 27 October 2021. The QCA subsequently published the ICAR (redacted) on 2 November 2021.

The Existing Capacity Deficits identified in the 2021 ICAR are summarised below in **figure 1** in Train Paths and **figure 2** in tonnes.

Figure 1: Summary of Existing Capacity Deficits (train paths) – 2021 ICAR

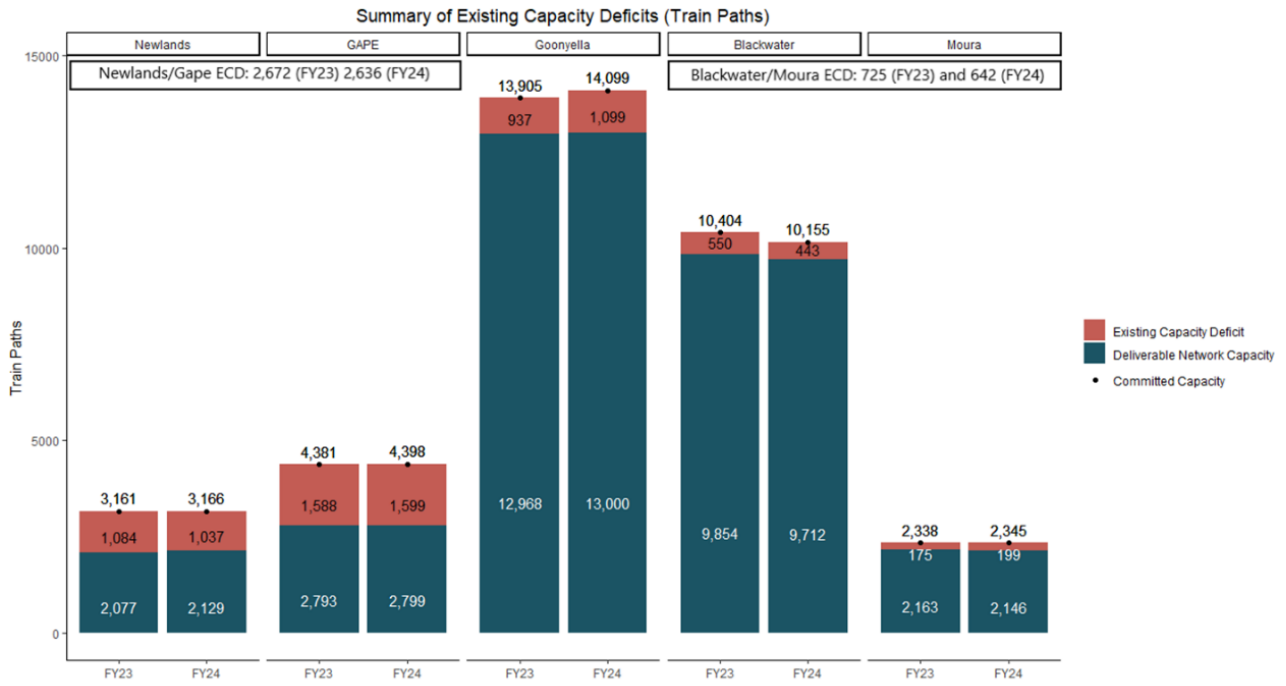
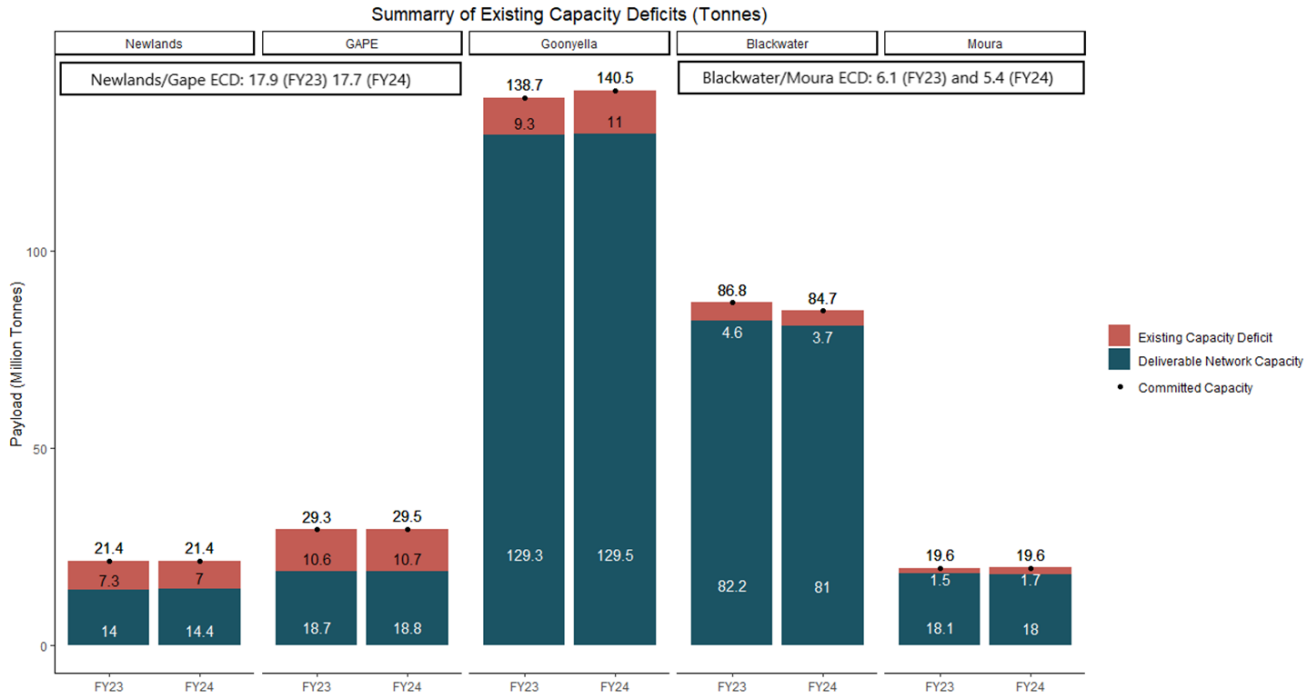


Figure 2: Summary of Existing Capacity Deficits (tonnes) – 2021 ICAR



2.1.2 Regulatory Process Overview After ICAR

Part 7A of UT5 sets out the process for the Independent Expert to undertake the ICAR, and for Aurizon Network's response. The summary below is from Aurizon Networks Detailed Report.

Independent Expert releases the ICAR	The ICAR has identified Existing Capacity Deficits in the Newlands, GAPE, Goonyella, Blackwater, and Moura Systems
Preliminary Report	Within 20 Business Days, Aurizon Network must provide a preliminary response to the ICAR. Aurizon Network's Preliminary Report provides our customers with our initial views on the causes of the Existing Capacity Deficits, and potential Transitional Arrangements.
Customer Engagement	Aurizon Network consults with affected End Users to seek agreement on Transitional Arrangements required to address the Existing Capacity Deficits.
Detailed Report	Aurizon Network consolidates customer feedback and finalises recommendations on Transitional Arrangements in the Detailed Report and provides this to the QCA, the Independent Expert and the Chair of the RIG. Aurizon Network notes that this detailed response was required to be delivered within 3 months of the ICAR being published. In consultation and agreement with our customers, this timeframe was agreed to be extended to provide more time for detailed consultation, with consideration to leave over the Christmas period. A further extension was sought by customers to better consider Aurizon Network's proposal. The detailed response has therefore been delayed by 6 weeks. However, this additional time has been valuable to both customers and Aurizon Network in developing this recommendation.
Transitional Arrangement Approval	If agreement is reached on the proposed Transitional Arrangements, the Independent Expert will consider and approve the efficiency of any capital spend before it's incurred. If no agreement is reached, the Independent Expert will make a recommendation to the QCA for its determination as to the most efficient way of addressing capacity deficits.
Implementation	Following QCA determination, Aurizon Network will implement those Transitional Arrangements which are within its control, and which would not place it in breach of UT5, any Access Agreements or any applicable Safe working Procedures and Safety

The Independent's Expert role is to therefore consider the recommendations identified by Aurizon Network in their final Detailed Report and undertake analysis of the recommended Transitional Arrangements and then make a recommendation to QCA on the way forward.

2.1.3 Transitional Arrangements to create capacity

Transitional Arrangements are changes that can be made to address any Existing Capacity Deficits identified within the ICAR. These changes can be classified under five different categories:

1. Changes to the operation and maintenance practices for the Rail Infrastructure;
2. Changes to the operations of Rollingstock by Railway Operators;
3. Changes to the operation and maintenance practices in respect of load-out facilities by customers and other interfaces forming part of the Supply Chain;
4. Voluntary relinquishment of Access Rights by Access Holders, where they are entitled to do so in accordance with their Access Agreement; and
5. Options for Expansions.

2.1.4 Independent Expert Report

Aurizon Network issued their Detailed Report on 14 March 2022. Aurizon Network have made recommendations on which Transitional Arrangements should be implemented to remedy the identified Existing Capacity Deficits. For detailed information on each of the Transitional Arrangement projects referenced in this report the reader should refer to Aurizon Network's Detailed Report.

Based on the Aurizon Network Detailed Report, this report outlines the IEs recommendations on which Transitional Arrangements should proceed. For ease, the nomenclature for each project has been kept the same as that provided in the Aurizon Network Detailed Report to the ICAR where applicable.

The Independent Expert has used cost and phasing information for the Transitional Arrangements as provided by Aurizon Network in their Detailed Report. Capacity benefit values outlined in this report are values as determined by the Independent Expert.

3. Assumptions - IE Recommendations

3.1 General

Key factors that have been considered in the Independent Experts recommendations are:

- the Existing Capacity Deficit must be ultimately remedied based off committed capacity;
- effective, efficient and prudent for the industry;
- information provided by Aurizon Network and model analysis using the 2021 ICAR results;
- which of the Aurizon Network's recommended Transitional Arrangements, or others identified by the Independent Expert, it considers will most effectively and efficiently resolve the Existing Capacity Deficit;
- taking into consideration the lowest net present cost applying the Discount Rate to all Access Holders of Transitional Arrangements;
- focus on FY23 and FY24 ECD's given the other three years in the ICAR period have passed or will be passed by the time any recommendations have been finalised by the Queensland Competition Authority;
- timelines for implementation of Transitional Arrangements are based on those provided by Aurizon Network in their Detailed Report;
- consultation feedback from stakeholders to Aurizon Network;
- current network and coal system operations; and
- capacity analysis on options utilising the CQCN dynamic simulation model.

The Independent Expert recommendations have not interrogated to any detailed level any engineering or cost estimates provided by Aurizon Network in their Detailed Report, as that is outside the IE scope outlined in UT5.

3.2 Process Followed

For Transitional Arrangements not agreed between Aurizon Network and Customers, the Independent Expert needs to assess what is 'Effective and Efficient' and consider the lowest net present cost and for Expansions (ie capital) consider what is 'Efficient and Prudent'. The Independent Expert can also consider other factors as part of its recommendations.

Factors to consider		
Primary	Effective	• The extent to which the ECD is addressed. • The individual contribution of each Transitional Arrangement to the ECD.
	Efficient	• The net present cost of each Transitional Arrangement. • The net present cost per unit of capacity created. • The net present cost per unit of capacity alignment to benchmarks.
Secondary	Risk	• Risks identified that could impact on the Effective and Efficient evaluation and outcome of a Transitional Arrangement
	Industry Feedback	• Current and future network operations and utilisation of latest and updated information in Transitional Arrangement implementation and industry involvement in key steps

In assessing each of the Transitional Arrangements and noting some have been phased, we have assumed;

- 'Effective' is the contribution of each Transitional Arrangement to alleviate the Existing Capacity Deficit through deliverable network capacity uplift. I.e. the higher the percentage each Transitional Arrangement alleviates the Existing Capacity Deficit the better. Capacity uplift of the Transitional Arrangement is a primary consideration of the recommendations;
- 'Efficient' is the net present cost which considers capital costs and operating cost impact. The lower the net present cost the better. The costs of the Transitional Arrangement is a primary consideration of the recommendations;
- how maintenance and operating costs are charged to End Users or reflected in the reference tariff;
- engaged with Aurizon Network on any Transitional Arrangements that impact operating costs and considered if these are annualised costs or may involve 'one off' additional costs;
- considered how capital costs represent an annualised cost for End Users;
- for Transitional Arrangements that have been considered as staged (ie recommended to undertake concept studies prior to any final decision on full implementation) the analysis has been undertaken on the full implementation capacity benefits and costs however taking into consideration the concept study costs and timing;
- for Transitional Arrangements that have capital cost ranges, the analysis considers both the low and high capital cost values;
- ranking then each Transitional Arrangement per Coal System based on above analysis and primary and secondary factors; and
- common sense application of expenditure and prioritisation based on CQCN operating practice.

3.2.1 Consistent Intent with UT5

The Transitional Arrangements can include options for Expansions (as defined in UT5) to the Rail Infrastructure in the relevant Coal System.

Any proposed Expansion to address an Existing Capacity Deficit cannot be constructed by Aurizon Network until the Independent Expert approves the proposed Expansion as providing the most efficient and prudent way of addressing the Existing Capacity Deficit.

The issue that has arisen, is that there are some separate recommendations in the Aurizon Network Detailed Report that have proposed some Concept Studies (or projects placed on hold until further information is available) be undertaken and that may not be fully contemplated by UT5.

The Independent Expert believes its recommendation are consistent with the intent of UT5 for prudent and effective solutions to be provided to resolve the deficits.

The IE recommendation identifies those Transitional Arrangements that are to be implemented immediately and those that are to follow a phased approach, referred to as "Staged Review".

4. Aurizon Network's Recommended Transitional Arrangements

In Aurizon Network's Detailed Report, it referenced the following key recommendations and commentary:

- In accordance with UT5, Aurizon Network must provide a recommendation to the Independent Expert and the Queensland Competition Authority (QCA) on how to improve capacity and resolve any Existing Capacity Deficits. Aurizon Network's Detailed Report provides Aurizon Network's recommendation following analysis and consultation with customers;
- Aurizon Network have noted through their consultation process that most customers are seeking a pragmatic phased program of work to resolve the Existing Capacity Deficits that is low cost and considers changes to demand and operational performance;
- Aurizon Network recommended an implementation approach that seeks to stage certain investments where they align with demand, and in some cases, further study and quantify the benefits of mutually exclusive Transitional Arrangements through Expansion concept studies;
- Aurizon Network notes that this approach is not considered in UT5, where a recommendation must be made on Transitional Arrangements, and those implemented;
- Aurizon Network has sought to recommend a flexible process that provides a pathway to achieve the required capacity, while ensuring prudency of investment as follows:
    - Where the choice or need for a Transitional Arrangement is clear, Aurizon Network has recommended proceeding with these; and
    - Where there are alternate options remaining to resolve the Existing Capacity Deficit, Aurizon Network recommends proceeding with Expansion studies to assess the benefits of these options further, and to enable a more informed investment decision to be made.

A summary of the Aurizon Network recommended approach for Transitional Arrangements for each Coal System, from their Detailed Report is shown below.

4.1 Newlands & GAPE Systems

The Deliverable Network Capacity in the Newlands and GAPE Systems, from the 2021 ICAR, combined is approximately 32 Mtpa. Demand has been consistently lower than the Committed Capacity of 50 Mtpa, averaging approximately 34 Mtpa over the past 4 years. Customers have however signalled an increase to this demand, and as such, Aurizon Network recommends implementation of the proposed Transitional Arrangements in a staged manner, providing capacity to meet the changing demand. The following Transitional Arrangements are recommended:

Table 1 Aurizon Network Recommended Transitional Arrangements - Newlands/GAPE

Stage	Transitional Arrangements	Capacity Benefit	Cost Estimate
Stage 1: Implement immediately	***NG1: Installation of RCS Signalling***	5.8Mtpa	$17.6m
	NG2: Optimised BCM	0.2Mtpa	Nil
	NG3: Collinsville Passing Loop Extension	2.0Mtpa	$334,000
	NG4: Collinsville Passing Loop 24hrs	1.7Mtpa	$10m[1]

[1] Final costs will be dependent on investigations into 24hr use.

Stage	Transitional Arrangements	Capacity Benefit	Cost Estimate
Stage 2: Implement when demand is above 38Mtpa and assess between 2 options	*NG5: Coral Creek Passing Loop*	2.5Mtpa	$19.9m
Stage 3: Implement when demand is nearing 50mtpa and assess prudency of option	*NG6: Pring Yard Additional Road*	2Mtpa	$15.9m

In addition to the above, Aurizon Network considers that due to the current low levels of demand, an assumption around the number of consists currently operating may increase as demand nears 50 Mtpa. Aurizon Network considers that by, when Rail Infrastructure constraints are relieved, increasing consists from 18, as assumed in the ICAR, to 22, additional throughput of up to 8mtpa can be achieved.

90% of affected End Users in GAPE and Newlands have approved Stage 1, and over 50% approve stage 2. There is 30% support for Stage 3. As such, Aurizon Network is seeking the Independent Expert to review the recommendations detailed in this Report, and for the QCA to make a determination as to what Transitional Arrangements will effectively and efficiently resolve the Existing Capacity Deficit.

4.2 Goonyella System

The Existing Capacity Deficit in the Goonyella System is approximately 11Mtpa. Aurizon Network's assessment indicates that there is no one major project that can resolve the deficit; rather a program of smaller projects is proposed. In line with customer feedback, Aurizon Network proposes initially implementing low-cost operating changes, and conducting further concept studies on certain Expansion options, to better inform investment decisions. The following Transitional Arrangements are recommended:

Table 2 Aurizon Network Recommended Transitional Arrangements - Goonyella

Implementation Approach	Transitional Arrangements	Capacity Benefit	Cost Estimate
Immediate Implementation	G1: Optimised BCM	2.8Mtpa	Nil
	G2: Yard Scheduling Improvements	1.1Mtpa	Nil
	G3: Connors Range Track Strengthening	1.6Mtpa	$163,000
Expansion Concept Study into the following:	G4: Connors Range Track Stability	2Mtpa	$41.5m - $71.5m
	G5: Jilalan Yard Additional Road	2.5Mtpa	$19.9m - $36.3m
	G6: Removal of operating restrictions on Balloon Loops	1Mtpa	$10m - $30m

Aurizon Network has received 100% approval for Transitional Arrangement G1, and 90% approval for G2. 70% approval has been received for the remaining Transitional Arrangements. As such, Aurizon Network is seeking the Independent Expert to review the recommendations detailed in this report, and for the QCA to make a determination as to what Transitional Arrangements will effectively and efficiently resolve the Existing Capacity Deficit.

4.3 Blackwater & Moura Systems

The Existing Capacity Deficit in the Blackwater System is approximately 5Mtpa, and a further 1Mtpa in the Moura System. The constraint has been identified as common between the two coal systems, being Callemondah Yard and the operations in and around the port. In the Blackwater System, requests to relinquish Access Rights have been received. Aurizon Network recommends these proceed as part of the Transitional Arrangements and recommends delivery of other projects to rectify the full deficit. The Following Transitional Arrangements are recommended:

Table 3 Aurizon Network Recommended Transitional Arrangements – Blackwater/Moura

Implementation Approach	Transitional Arrangements	Capacity Benefit	Cost Estimate
Immediate Implementation	**Relinquishment**	Up to 3Mtpa	Nil
	BM1: Optimised BCM	0.2Mtpa	Nil
	BM2: Yard Scheduling Improvements	2Mtpa	Nil
Expansion Concept Study into the following:	**BM3: Callemondah Yard Additional Road**	2Mtpa	$15.7m
	BM4: Moura provisioning at Stirrit	1Mtpa	13.7m

Aurizon Network received feedback from 82% of affected End Users. Of those that responded, 100% approval was provided for BM1 and BM2. A further 57% approved the progression of BM3 and BM4. As such, Aurizon Network is seeking the Independent Expert to review the recommendations detailed in this report, and for the QCA to make a determination as to what Transitional Arrangements will effectively and efficiently resolve the Existing Capacity Deficit.

5. Executive Summary

5.1 Independent Expert Recommendations

The Independent Expert has reviewed the Aurizon Network Detailed Report and makes the following recommendations to the QCA on the way forward to resolve the Existing Capacity Deficits identified in the Initial Capacity Assessment Report (27 October 2021).

The Independent Expert is recommending Transitional Arrangements occur in a prudent phased approach (Staged Review), particularly for projects that require further studies and analysis to provide the appropriate level of information.

The recommendations, and comparison between the IE recommended approach and Aurizon Network's is provided in **table 4** below. Where a staged review has been recommended the process outlined in 2.3 should be considered.

Appendices 1, 2 and 3 show detailed analysis outcomes for each Coal System and for each transitional Arrangement that was considered.

Table 4 Summary of Independent Expert recommendations

Coal System	Transitional Arrangement Project	IE Recommendation	Staged Review	Aurizon Recommendation Comparison	Comments
Newlands/GAPE					
NG1	RCS in Newlands	Immediate implementation	✗	Agree	
NG2	Optimised Ballast Cleaning Machine program	Immediate implementation	✗	Agree	
NG3	Collinsville Passing Loop Extension (day-time operation)	Immediate implementation	✓	Agree	This project proceeding immediately is dependent on Above Rail approval and no extension (additional costs) being required. Should this not occur then it is recommended that a further staged review be undertaken before being implemented
NG4	Collinsville Passing Loop 24 hour operation	Concept study undertaken	✓	Partial Agree	Concept study should proceed if day-time operations is implemented.
NG5	Coral Creek Passing	Hold [1]	✓	Partial Agree	Further work on Coral Creek Passing Loop to occur only after Staged review of Collinsville Loop 24 hour operation.
NG5A [2]	Coral Creek Passing Loop + Collinsville Passing Loop (day- time operations)	Hold	✓	Not considered	Aurizon Network analysis did not consider the option of running Coral Creek Passing Loop and Collinsville Passing Loop (day-time operation only) together. There is a capacity benefit to do so. Review as part of staged review process.
NG6	Pring Yard Additional Road	Hold	✓	Agree	No further immediate work undertaken until staged review of other projects confirms remaining ECD
-	Consist Number Increase	Implement as required	✗	Agree	While not a below rail project, it is highly recommended that consist numbers are increased to release additional capacity as required
Coal System	**Transitional Arrangement Project**	**IE Recommendation**	**Staged Review**	**Aurizon Recommendation Comparison**	**Comments**
Goonyella					
G1	Optimised Ballast Cleaning Machine program	Immediate implementation	✗	Agree	
G2	Jilalan Yard Scheduling Improvements	Immediate implementation	✗	Agree	Review outcomes as part of Annual Capacity Assessment process
G3	Connors Range Headway Reduction	Immediate implementation	✗	Agree	Review outcomes as part of Annual Capacity Assessment process
G5	Jilalan Additional Road	Concept Study undertaken	✓	Agree	Commence concept study however then review if to continue to implementation based on impact of other projects on capacity and further modelling assumption review.

IE-GY [3]	Installation of Crossovers	Further modelling analysis undertaken	✓	Not Agree	Further modelling work undertaken to establish key assumptions and potential capacity uplift with varying crossover locations
G4	Connors Range track stability	Hold	✓	Partial Agree	No further immediate work undertaken until staged review of other projects confirms remaining ECD
G6	Removal of operating restrictions on balloon loops	Hold	✓	Partial Agree	No further immediate work undertaken until staged review of other projects identifies need
-	Longer Delivery Windows at DBCT	Review	✓		While not a Below Rail project the longer delivery windows change that was implemented in early 2022 needs to be assessed as part of staged review to determine impact on capacity
Coal System	**Transitional Arrangement Project**	**IE Recommendation**	**Staged Review**	**Aurizon Recommendation Comparison**	**Comments**
Blackwater/Moura					
-	Relinquishments	Immediate implementation	✗	Agree	
BM1	Optimised Ballast Cleaning Machine Program	Immediate implementation	✗	Agree	
BM2	Callemondah Yard Scheduling improvements	Immediate implementation	✗	Agree	Review outcomes as part of Annual Capacity Assessment process
BM3	Callemondah Yard additional Road	Hold	✓	Partial Agree	No further immediate work undertaken until impact of other projects known
BM4	Moura provisioning at Stirrit	Hold	✓	Partial Agree	No further immediate work undertaken until impact of other projects known

1. Aurizon Network has advised that the Concept Study for Coral Creek is already complete
2. This transitional arrangement was not considered by Aurizon Network.
3. This was considered by Aurizon Network but was not included in their recommended Transitional Arrangements.

5.2 Resolving Existing Capacity Deficits

Based on the IE recommended way forward, the following provides how the ICAR identified Existing Capacity Deficit would be resolved through the process for each Coal System.

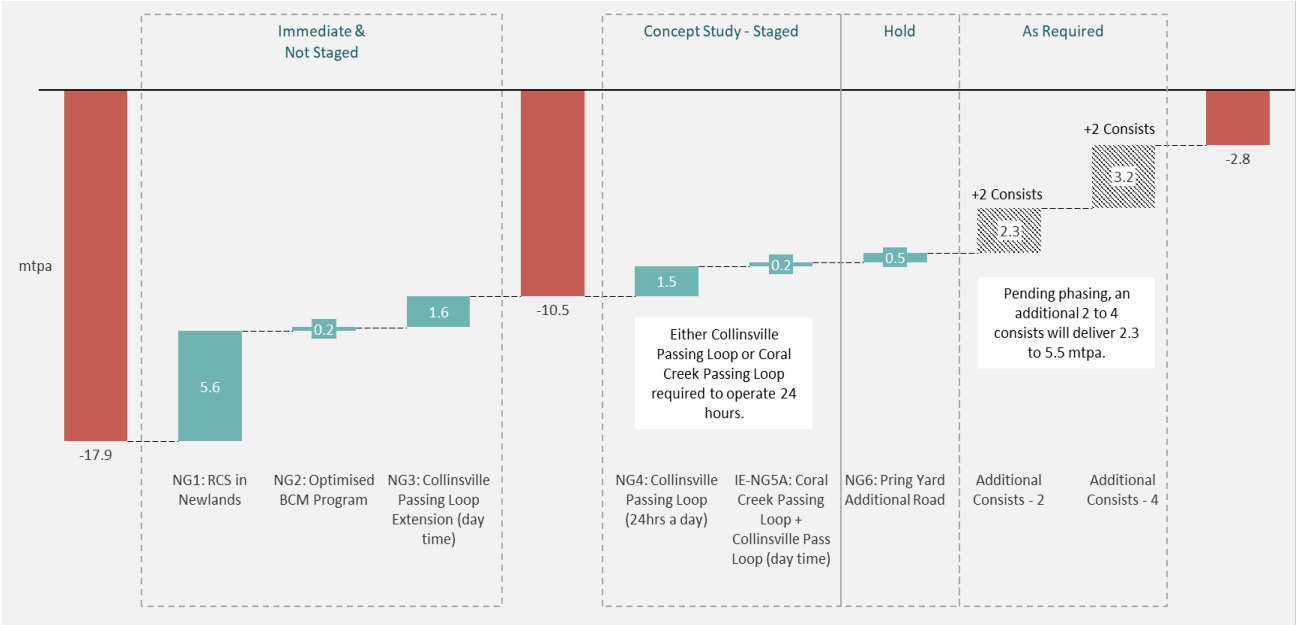
More detail on each Coal System can be found in **sections 6-8**.

5.2.1 Newlands/GAPE

Newlands/GAPE has a combined Existing Capacity Deficit of 17.9 Mtpa as per 2021 ICAR. This would be reduced to ~10.5 Mtpa with the recommended three immediately implemented Transitional Arrangements (NG1, NG2 & NG3).

Figure 3 below shows the expected resolution of the Existing Capacity Deficit for Newlands/GAPE Coal Systems based on the recommended Transitional Arrangements. This shows that there would remain a small ECD however following the staged reviews through the process and continued optimisation of operational factors such as consist numbers and continued work on modelling assumption differences it is expected the ECD can be eliminated.

Figure 3 Newlands/GAPE ECD (tonnes) Impact – IE recommendations

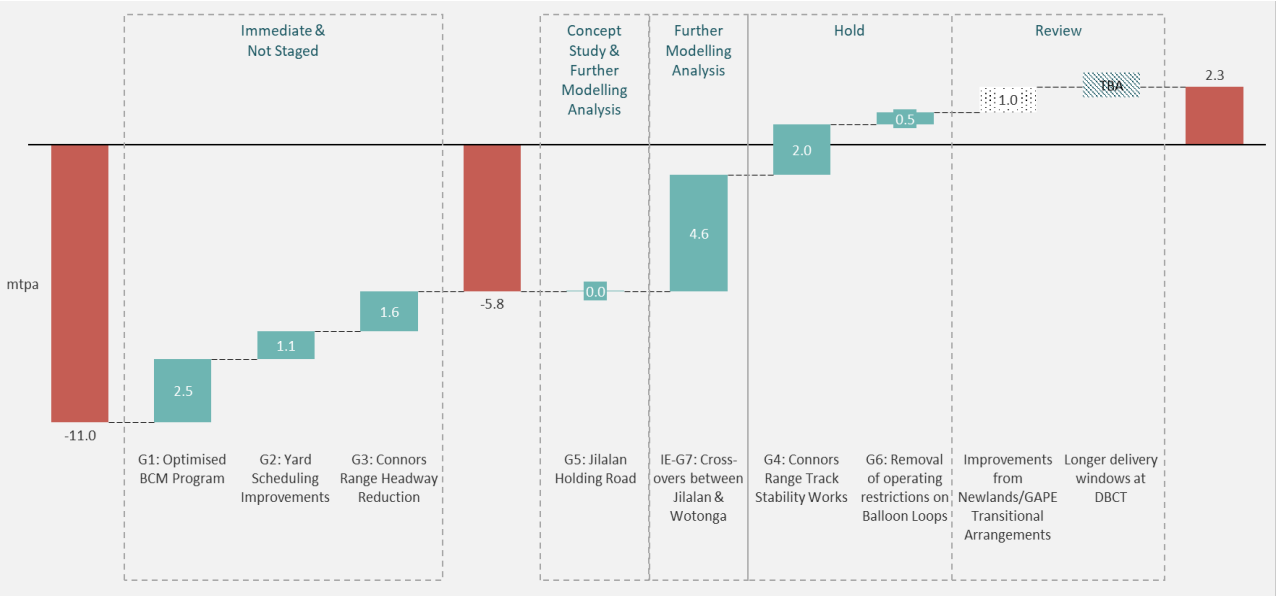


5.2.2 Goonyella

Goonyella had a combined Existing Capacity Deficit of ~ 10-11 Mtpa as per 2021 ICAR. This would be reduced to ~ 5-6 Mtpa with the recommended three immediately implemented Transitional Arrangements (G1, G2 & G3). There is also an impact on Goonyella DNC from some Transitional Arrangements likely to be implemented in Newlands/GAPE Coal Systems.

Following staged reviews for the remaining identified Transitional Arrangements and continued optimisation of operational factors the ECD can be the fully resolved over time. **Figure 4** shows the expected impact on the Existing Capacity Deficit of each Transitional Arrangement.

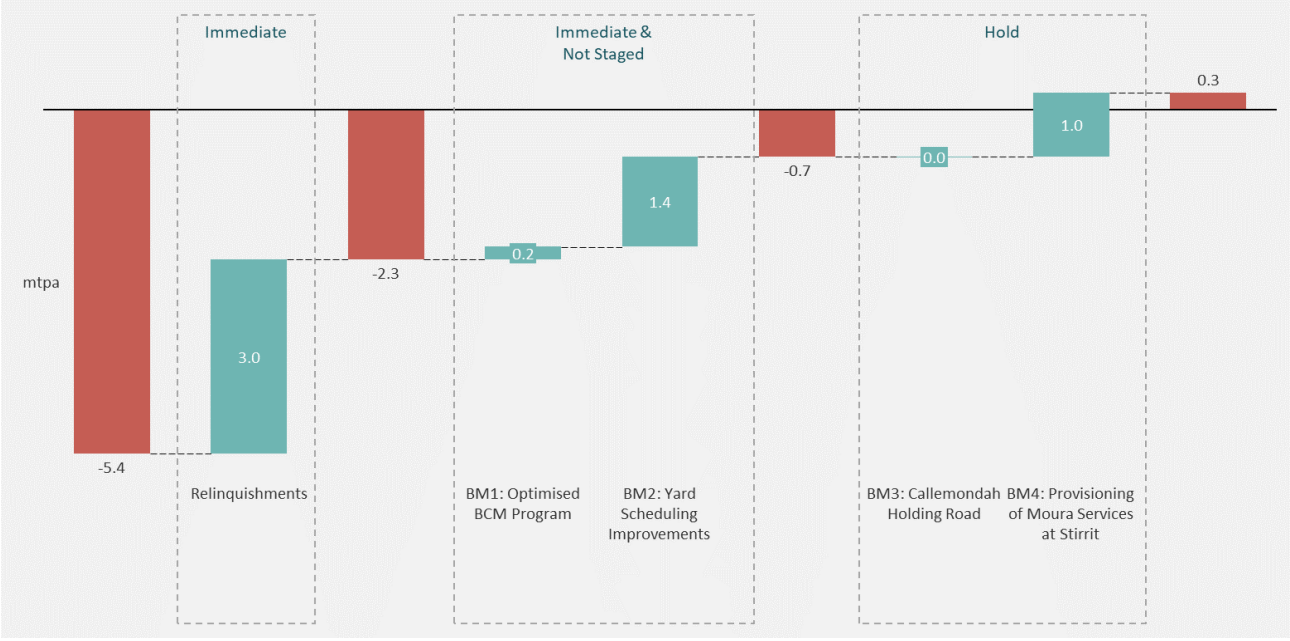
Figure 4 Goonyella ECD (tonnes) Impact – IE recommendations



5.2.3 Blackwater/Moura

Blackwater/Moura had combined ECD of ~5-6 Mtpa. This would be reduced to ~ 2.3 Mtpa after relinquishments and the two immediately implemented (BM1 & BM2) Transitional Arrangements. It is recommended that the remaining identified Transitional Arrangements be placed on hold until the impacts of the implemented projects and updated assessment capacity is known before proceeding with any further work. **Figure 5** shows the expected impact on the Existing Capacity Deficit of each Transitional Arrangement.

Figure 5 Blackwater/Moura ECD (tonnes) Impact – IE recommendations



6. Newlands/GAPE Coal System

6.1 ICAR Results Overview

The 2021 ICAR indicated that an Existing Capacity Deficit exists in both the Newlands and GAPE Systems. It indicates that the cause of the constraint is generally common across both systems and key factors for the cause are:

- **Signalling** – older forms of signalling used in some sections;
- **Headway** – longest section of track has a sixty (60) minute headway limit;
- **Rollingstock Fleet** – capacity can be increased when the headway and signalling in the coal systems is improved; and
- **Yard Congestion** – near maximum committed capacity and with increased rollingstock fleet numbers time in yard may become a capacity limiting constraint.

The 2021 ICAR findings are summarised in **table 5**:

Table 5: Summary of 2021 ICAR Results for Newlands and GAPE (Train Paths)

Coal System		FY20	FY21	FY22	FY23	FY24
Newlands	Committed Capacity	3,110	2,410	3,097	3,161	3,166
	Deliverable Network Capacity	1,899	1,727	2,047	2,077	2,129
	Existing Capacity Deficit	1,211	684	1,050	1,084	1,037
	% of Committed Capacity Achieved	61%	72%	66%	66%	67%
GAPE	Committed Capacity	4,419	4,286	4,389	4,381	4,398
	Deliverable Network Capacity	2,651	2,962	2,798	2,793	2,799
	Existing Capacity Deficit	1,769	1,324	1,591	1,588	1,599
	% of Committed Capacity Achieved	60%	69%	64%	64%	64%

The year with the greatest ECD identified in the ICAR was FY23 with 2,672 Train Paths or 17.9 M Tonnes for Newlands/GAPE combined.

6.2 Aurizon Network Recommended Transitional Arrangements

From Aurizon Networks' Detailed Report, they have noted in their recommendations that Demand has been consistently lower than the Committed Capacity of 50 Mtpa, averaging approximately 34 Mtpa over the past 4 years. Customers have however signalled an increase to this demand, and as such, Aurizon Network recommends implementation of the proposed Transitional Arrangements in a staged manner, providing capacity to meet the changing demand. The following Transitional Arrangements were recommended by Aurizon Network.

Table 6: Summary of Aurizon Network Recommended Transitional Arrangements for Newlands and GAPE

Stage 1	Project Reference	Transitional Arrangements	Capacity Benefit (Mtpa)	Capital Cost Estimate $M
Immediate Implementation	NG1	RCS in Newlands	5.25	$16.29
	NG2	Optimised BCM	0.2	$0
	NG3	Collinsville Passing Loop Extension 14-hour operation	1.75	$0.34
Stage 2				
Further Studies	NG4	Collinsville Passing Loop – 24hr operations	1.25	$10
	NG5	Coral Creek Passing Loop	2.5	$19.9
Stage 3				
Hold	NG6	Pring Yard Additional Road	0.5 – 2.0	$15.9

Aurizon Network are proposing that for Transitional Arrangements identified in stage 2 (NG4 & NG5), that only an initial concept study is undertaken and discussed with Customers prior to any further commitment to proceeding occurs. For the stage 3 Transitional Arrangement project (NG6), Aurizon Network is recommending no work is undertaken initially until further information and decisions occur from Stage 1 and 2 identified projects.

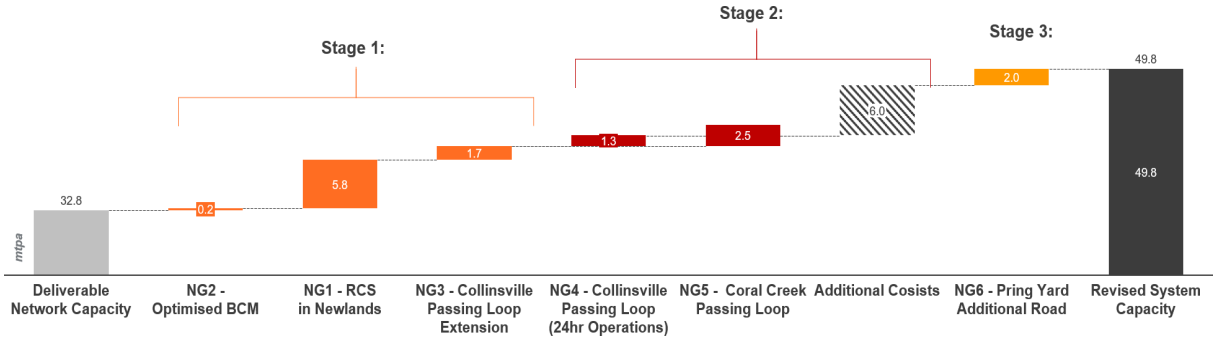
In addition to the above, Aurizon Network considers that due to the current low levels of demand, an assumption around the number of consists currently operating may increase as demand nears 50 Mtpa. Aurizon Network considers that by, when Rail Infrastructure constraints are relieved, increasing consists from 18, as assumed in the ICAR, to 22, additional throughput of up to 8 Mtpa can be achieved.

Aurizon Network noted that 90% of affected End Users in GAPE and Newlands have approved Stage 1, and over 50% approve stage 2. There is 30% support for Stage 3.

For the GAPE and Newlands Systems, Aurizon Network is proposing to resolve the Existing Capacity Deficit through a staged implementation approach. This approach is recommended to match demand in the GAPE and Newlands system, and also to enable the impact of changing demand to be recognised in investments.

The staged approach recommended by Aurizon Network is shown in **figure 6** with the capacity values Aurizon Network have used shown. Specific details on each project can be found in Aurizon Network's Detailed Report.

Figure 6: Newlands and GAPE Transitional Arrangement Bridge



6.3 Independent Expert Analysis of Proposed Transitional Arrangements

The Independent Expert has undertaken the following steps in reviewing each of the proposed Transitional

Arrangement projects put forward by Aurizon Network for Newlands/GAPE (or any additional options considered by the Independent Expert):

- verified the expected capacity uplift for each project from the CQCN Independent Expert model output;
- engaged with Aurizon Network on expected capital costs, concept study costs and operating cost impacts for each project;
- calculated a net present cost for each project from above;
- considered other factors such as industry feedback, risk, timing of project implementation and coal system operations as they occur in practice;
- reviewed any other options other than those presented by Aurizon Network; and
- determine if recommendation to proceed is made.

Appendix 1 shows the detailed analysis workings.

A summary of key analysis outcomes for each is shown in **table 7**.

Table 7 Analysis Newlands/GAPE Transitional Arrangements

Transitional Arrangement	Effective Score [1] [Low to High]	Efficient Score [2] [Low to High]	Industry Support [3]	Risk [4]	Overall Score [5]
NG1: RCS in Newlands			92%		1
NG2: Optimised BCM Program			92%		0
NG3: Collinsville Passing Loop Extension (day time)			92%		1
IE-NG3A: Collinsville Passing Loop Extension (14 hrs) - with cost risk					2
NG4: Collinsville Passing Loop (24hrs a day)			58%		5
NG5: Coral Creek Passing Loop			58%		3
IE-NG5A: Coral Creek Passing Loop + Collinsville Pass Loop (day time)			58%		4
NG6: Pring Yard Additional Road			25%		12

1. Effective score assesses the benefit generated as a percentage of the ECD.

2. Efficient score assesses the annualised cost per benefit generated.

3. Industry support below 75% impacts on the overall score.

4. Where a risk has been flagged, this impacts on the overall score.

5. Initiatives with an overall score of 5 or lower are preferred Transitional Arrangements.

6.4 Independent Expert Recommended Transitional Arrangements

Based on the review process outlined above, the Independent Expert is recommending the way forward for Newlands/GAPE Transitional Arrangements as shown in **table 8.** A comparison of IE recommendations to Aurizon Networks recommendations is also shown.

Table 8 Independent Expert Recommendations – Newlands/GAPE

Coal System	Transitional Arrangement Project	IE Recommendation	Staged Review	Aurizon Recommendation Comparison	Comments
Newlands/GAPE					
NG1	RCS in Newlands	Immediate implementation	✗	Agree	
NG2	Optimised Ballast Cleaning Machine program	Immediate implementation	✗	Agree	
NG3	Collinsville Passing Loop Extension (day-time operation)	Immediate implementation	✓	Agree	This project proceeding immediately is dependent on Above Rail approval and no extension (additional costs) being required. Should this not occur then it is recommended that a further staged review be undertaken before being implemented
NG4	Collinsville Passing Loop 24 hour operation	Concept study undertaken	✓	Partial Agree	Concept study should proceed if day-time operations is implemented.
NG5	Coral Creek Passing	Hold [1]	✓	Partial Agree	Further work on Coral Creek Passing Loop to occur only after Staged review of Collinsville Loop 24 hour operation.
NG5A [2]	Coral Creek Passing Loop + Collinsville Passing Loop (day- time operations)	Hold	✓	Not considered	Aurizon Network analysis did not consider the option of running Coral Creek Passing Loop and Collinsville Passing Loop (day-time operation only) together. There is a capacity benefit to do so. Review as part of staged review process.
NG6	Pring Yard Additional Road	Hold	✓	Agree	No further immediate work undertaken until staged review of other projects confirms remaining ECD
-	Consist Number Increase	Implement as required	✗	Agree	While not a below rail project it is highly recommended that consist numbers are increased to release additional capacity as required

6.5 Immediate Implementation Projects

The three 'immediate implementation' projects (NG1, NG2 and NG3) projects will increase capacity by ~ 7.4 Mtpa once fully implemented. The IE agrees with the Aurizon Network recommendations for NG1 and NG2. It also agrees with NG3 noting there may be a review process required dependent on outcomes of the initial works.

The RCS (NG1) installation provides the most significant capacity uplift for Newlands/GAPE and provides the greatest opportunity for other Transitional Arrangements to have a significant impact on capacity so it is recommended that this project should be completed as quickly and efficiently as possible.

6.6 Phased Projects

On the assumption that ~ 7.4 Mtpa of capacity uplift will be achieved through the transitional arrangements recommended to proceed immediately, this would have the Newlands/GAPE Coal Systems operating at ~ 40 Mtpa. At this point there would remain ~ 10 Mtpa of ECD.

With the Collinsville passing loop assumed to be in operation for 14 hours per day at this point, the full benefit of increasing consist numbers is not realised, however it is recommended that the industry would look to take advantage of increasing consist numbers at this point in time (dependent on demand at the time) which could result in an additional uplift in capacity of ~ 2-3 Mtpa (2-3 extra consist) to ~ 43 - 44 Mtpa for the two coal systems.

There are multiple options around passing loops for Newlands/GAPE with all having interdependencies and potential duplication of costs. On this basis, Aurizon Network has recommended that further work be undertaken before any final decision is made in consultation with the industry. The Independent Expert agrees with this for moving forward.

The scenarios below assume that the Collinsville Passing Loop is operating for ~ 14 hours per day (NG3). As there are a number of options on the most optimum way forward regarding passing loops a number of scenario's are shown below. Background information on the multiple scenarios is:

- Collinsville Passing Loop (NG3) is in use for day-time operations only assuming that the loop is able to be extended by ~16 metres at a cost of ~$304k and the Above Rail providers agree. This would provide an immediate 1.6 Mtpa capacity uplift (recommended project);
- Should Collinsville Passing Loop not be able to be extended without further work being undertaken (involving civil works) the total cost would then increase to ~$5M to achieve the 1.75 Mtpa uplift in capacity. This project is referenced as NG3A. Other options may then need to be considered before the additional $4.5M is spent. This would be dependent on the likelihood of the 24-hour operation taking place using Collinsville Loop (NG4). This could include 82 wagon operation as an interim approach;
- Ultimately to eliminate the ECD in Newlands/GAPE efficiently and effectively, there needs to be at least a single passing loop in operation 24 hours per day;
- Aurizon Network has indicated that a project to investigate if Collinsville Passing Loop can be used 24 hours per day (NG4) requires $100k concept design works to be undertaken with any full cost likely to be ~$10M for a 1.5 Mtpa capacity benefit. End Users have indicated limited support with a number of concerns over community impact;
- Should the NG4 project not proceed, then operating Collinsville Passing Loop for day-time operations only (NG3 or NG3A) provides only a partial solution. There is a positive impact on capacity however if Collinsville Loop is operating in daytime only and Coral Creek loop is in full operation. In this situation,

the additional $4.5M capital spend for NG3A may not be considered sensible and work on Coral Creek Passing loop (NG5) may be more cost effective; and

- Installing Coral Creek passing Loop (NG5) provides a 24-hour operation for a similar capacity benefit to a fully operational Collinsville Loop.

6.6.1 Scenario 1

Project	Stage of Implementation	Risk to implementation	Concept Study Cost	Total Capital Cost	Capacity Benefit (Mtpa)
NG3 Collinsville Loop day-time extension	Immediate	Moderate (Above Rail approval of use)	-	$0.6M	1.6
NG4 Collinsville Loop 24-hour operations	Staged	High (community concerns)	$0.1M	$10.1M	1.5
Total				**$10.7M**	**3.1**

6.6.2 Scenario 2

Project	Stage of Implementation	Risk to implementation	Concept Study Cost	Total Capital Cost	Capacity Benefit (Mtpa)
NG3A Collinsville Loop day-time extension with additional civils	Staged	Low	-	$5.1M	1.6
NG4 Collinsville Loop 24-hour operations	Staged	High (community concerns)	$0.1M	$10.1M	1.5
Total				**$15.2M**	**3.1**

6.6.3 Scenario 3

Project	Stage of Implementation	Risk to implementation	Concept Study Cost	Total Capital Cost	Capacity Benefit (M tonnes per annum)
NG3 Collinsville Loop day-time	Staged	Low	-	$0.6M	1.75
NG5 Coral Creek Passing Loop	Staged	Low	-	$20.7M	1.8
Total				**$21.2M**	**3.6**

6.6.4 Scenario 4

Project	Stage of Implementation	Risk to implementation	Concept Study Cost	Total Capital Cost	Capacity Benefit (Mtpa)
NG5 Coral Creek Passing Loop	Staged	Low	-	$20.7M	2.8
Total				**$20.7M**	**2.8**

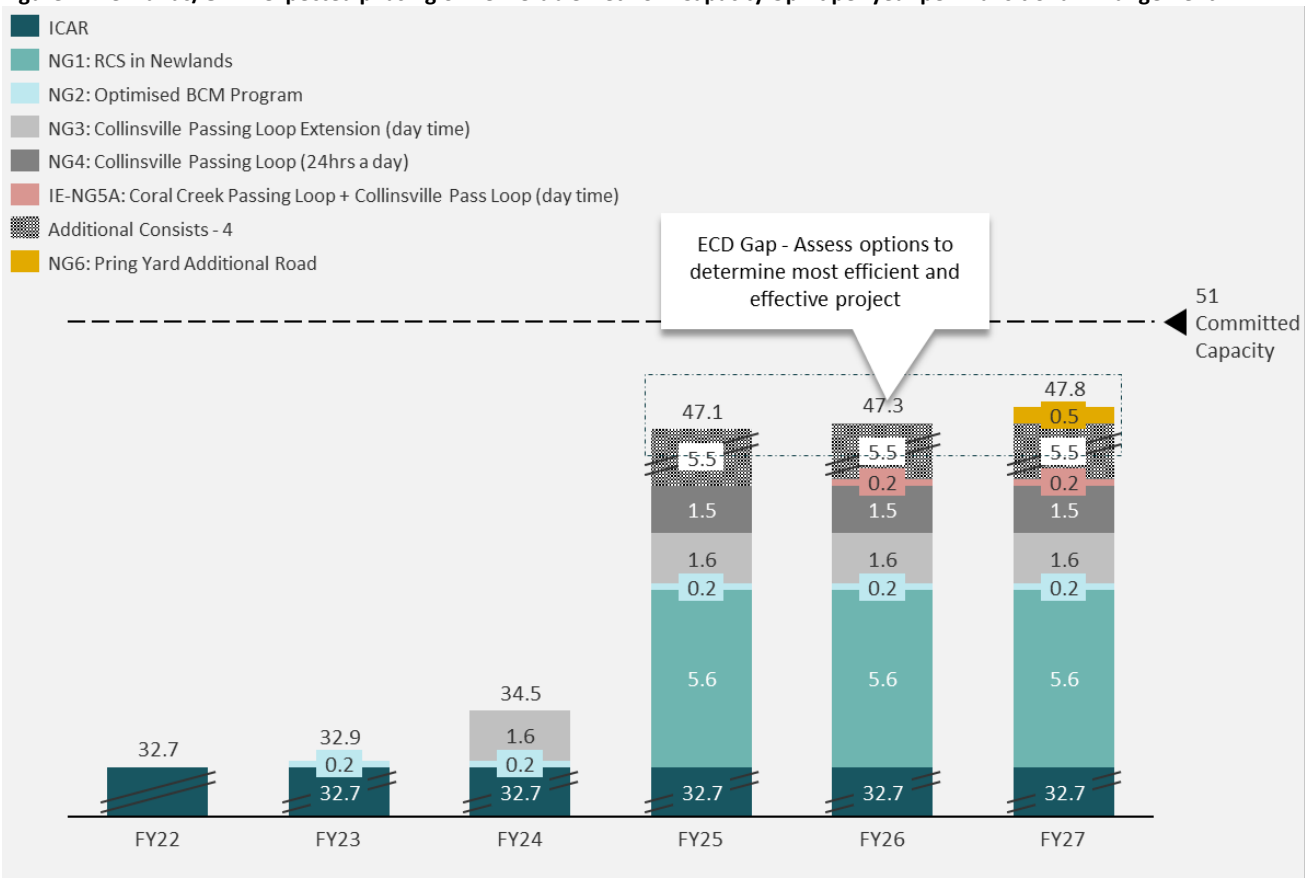
The Independent Expert supports Aurizon Network's recommendation to procced with Collinsville Passing Loop extension by ~16 metres (NG3) given its significant capacity benefit, speed of implementation and low capital cost. However, should Above Rail indicate that the ~16 metre extension cannot be utilised using the current Newlands/GAPE consist configuration (84 wagon trains), the Independent Expert recommends that Aurizon Network cease any further work on this project and re-engage with Customers on the best way forward.

Given the Coral Creek passing Loop project has its concept study already complete (NG5) and should Collinsville Passing Loop 24-hour operation not proceed, it is likely that any staged review process will have sufficient information to decide which of the above four (4) scenarios represent the most efficient and effective to proceed.

6.7 Recommended Final review

The recommendations above will see an increase in Newlands/GAPE capacity increase as follows with the likely timing of implementation, and impact capacity shown:

Figure 7: Newlands/GAPE expected phasing of Deliverable Network Capacity Uplift per year per Transitional Arrangement



At this point, and with additional consists operating, the Newlands/GAPE system will be operating at approximately 48 Mtpa capacity. The ECD is still yet to be fully resolved (a further ~ 2-3 Mtpa). It is recommended that when the industry has agreed on the preferred passing loop configuration, at that point a decision be made on whether scoping studies on the Pring Additional Road project (NG6) be reviewed.

7. Goonyella Coal System

7.1 ICAR Results Overview

The 2021 ICAR indicated that an Existing Capacity Deficit exists in Goonyella. It indicates that the cause of the constraint can be in a number of areas and key factors to be considered include:

- **Yard Congestion** – near maximum committed capacity and with increased rollingstock fleet numbers time in yard may become a capacity limiting constraint;
- **Connors Range** – Connors range is a steep downhill gradient on the trunk of the Goonyella Coal System between Coppabella and Jilalan. This section (Hatfield to Yukan) carries all Goonyella traffic to the ports and has the longest headway on the Goonyella trunk system. A potential opportunity to increase capacity is to facilitate shorter headway times;
- **Railing Operations** – the Goonyella Coal System supplies two coal terminals with the operations of Dalyrmple Bay Coal Terminal, being cargo assembly, this results in the system running outside an even railing process;
- **Balloon Loop Capacities** – the capacity of balloon loops to hold trains before, during and after loading at a TLO can impact rail capacity; and
- **Crossovers –** given Goonyella has a number of highly congested sections, the potential use of strategically placed crossovers could allow trains to move across sections and reduce congestion.

The ICAR findings are summarised in **Table 9**:

Table 9: Summary of ICAR Results for Goonyella

Coal System		FY20	FY21	FY22	FY23	FY24
Goonyella	Committed Capacity	13,782	13,893	13,879	13,905	14,099
	Deliverable Network Capacity	12,449	12,441	12,933	12,968	13,000
	Existing Capacity Deficit	1,333	1,452	946	937	1,099
	% of Committed Capacity Achieved	90%	90%	93%	93%	92%

The year with the greatest ECD identified (from FY22 onwards) in the 2021 ICAR was FY24 with 1,099 Train Paths or ~11 M Tonnes.

7.2 Aurizon Network Recommended Transitional Arrangements

The Existing Capacity Deficit in the Goonyella System is approximately 10 - 11Mtpa. Aurizon Network's assessment indicates that there is no one major project that can resolve the deficit; rather a program of smaller projects is proposed. In line with customer feedback, Aurizon Network proposed initially implementing low-cost operating changes, and conducting further concept studies on certain Expansion options, to better inform investment decisions. The following Transitional Arrangements were recommended by Aurizon Network:

Table 10: Summary of Aurizon Network Recommended Transitional Arrangements for Goonyella

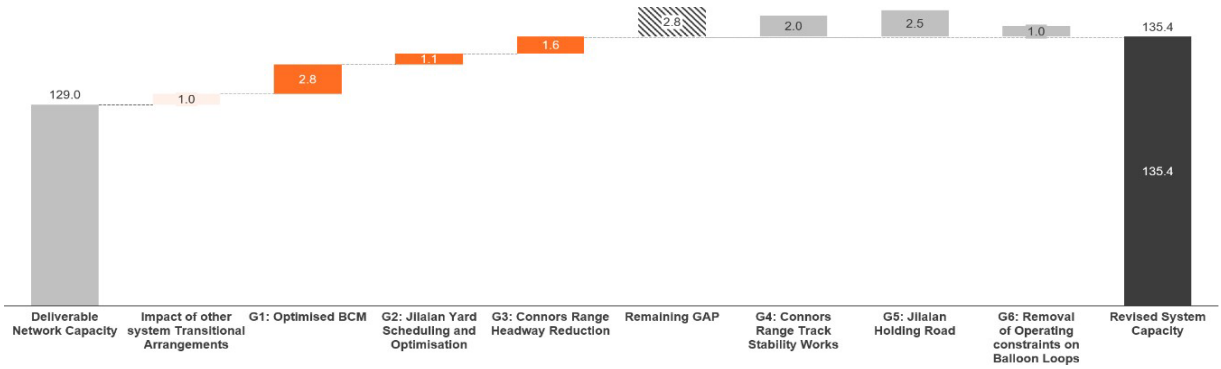
Stage 1	Project Reference	Transitional Arrangements	Capacity Benefit (Mtpa)	Capital Cost Estimate $M
Immediate Implementation	G1	Optimise Ballast Cleaning machine program	2.8	-
	G2	Jilalan yard Scheduling improvements	1.1	-
	G3	Connors Range headway reduction	1.6	$0.16
Stage 2	**Project Reference**	**Transitional Arrangements**	**Capacity Benefit (Mtpa)**	**Capital Cost Estimate $M**
Further Studies	G4	Connors Range Track stability works	2	$41.5 – $71.5
	G5	Jilalan Additional road	2.5	$19.9 - $36.3
	G6	Removal of operating restrictions some balloon loops	1	$10-$30M

Aurizon Network has received 100% approval for Transitional Arrangement G1, and 90% approval for G2. 70% approval has been received for the remaining Transitional Arrangements.

Aurizon Network noted they were seeking to implement a pragmatic approach to ensure the best outcome can be reached. They proposed to proceed with low risk, low-cost Transitional Arrangements as soon as possible. Where an Existing Capacity Deficit remains, Aurizon Network proposes to take forward several Expansion options to a Concept study, to enable Goonyella customers to better understand the scope, design, cost, and risk elements for each of the projects.

The staged approach by Aurizon Network is shown in **figure 9**. The capacity values shown are those assumed by Aurizon Network. Specific details on each project can be found in Aurizon Network's Detailed Report.

Figure 9: Aurizon Network Goonyella Transitional Arrangement Bridge



7.3 Independent Expert Analysis of Proposed Transitional Arrangements

The Independent Expert has undertaken the following steps in reviewing each of the proposed Transitional Arrangement projects put forward by Aurizon Network for the Goonyella System (or any additional options considered by the IE):

- verified the expected capacity uplift for each project from the CQCN IE model output;
- engaged with Aurizon Network on expected capital costs, concept study costs and operating cost impacts for each project;
- calculated a net present value for each project from above;
- considered other factors such as industry feedback, risk, timing of project implementation and coal system operations as they occur in practice;
- identified if any transitional arrangements for other coal systems may impact on Goonyella capacity; and

- determine if recommendation to proceed is made.

Appendix 2 has the detailed analysis.

A summary of key analysis outcomes for each is shown in **table 11**:

Table 11 Analysis Goonyella Transitional Arrangements

Transitional Arrangement	Effective Score [1] [Low to High]	Efficient Score [2] [Low to High]	Industry Support [3]	Risk [4]	Overall Score [5]
G1: Optimised BCM Program			100%		0
G2: Yard Scheduling Improvements			90%		1
G3: Connors Range Headway Reduction			70%		1
G4: Connors Range Track Stability Works - Low Cost			70%		4
G4: Connors Range Track Stability Works - High Cost					6
G5: Jilalan Holding Road - IE Benefit - Low Cost			70%		11
G5: Jilalan Holding Road - IE Benefit - High Cost					11
G5: Jilalan Holding Road - AN Benefit - Low Cost					2
G5: Jilalan Holding Road - AN Benefit - High Cost					3
G6: Removal of operating restrictions on Balloon Loops - Low Cost			70%		8
G6: Removal of operating restrictions on Balloon Loops - High Cost					9
IE-G7: Cross-overs between Jilalan & Wotonga			Unknown		6

1. Effective score assesses the benefit generated as a percentage of the ECD.

2. Efficient score assesses the annualised cost per benefit generated.

3. Industry support below 75% impacts on the overall score.

4. Where a risk has been flagged, this impacts on the overall score.

5. Initiatives with an overall score of 5 or lower are preferred Transitional Arrangements.

7.4 Independent Expert Recommended Transitional Arrangements

Based on the review process outlined above, the Independent Expert is recommending for Goonyella Transitional Arrangements as shown in **table 12**. A comparison of IE recommendations to Aurizon Network recommendation is also shown.

Table 12 Independent Expert Recommendations – Goonyella

Coal System	Transitional Arrangement Project	IE Recommendation	Staged Review	Aurizon Recommendation Comparison	Comments
Goonyella					
G1	Optimised Ballast Cleaning Machine program	Immediate implementation	✗	Agree	
G2	Jilalan Yard Scheduling Improvements	Immediate implementation	✗	Agree	Review outcomes as part of Annual Capacity Assessment process
G3	Connors Range Headway Reduction	Immediate implementation	✗	Agree	Review outcomes as part of Annual Capacity Assessment process
G5	Jilalan Additional Road	Concept Study undertaken	✓	Agree	Commence concept study however then review if to continue to implementation based on impact of other projects on capacity and further modelling assumption review.
IE-GY [3]	Installation of Crossovers	Further modelling analysis undertaken	✓	Not Agree	Further modelling work undertaken to establish key assumptions and potential capacity uplift with varying crossover locations
G4	Connors Range track stability	Hold	✓	Partial Agree	No further immediate work undertaken until staged review of other projects confirms remaining ECD
G6	Removal of operating restrictions on balloon loops	Hold	✓	Partial Agree	No further immediate work undertaken until staged review of other projects identifies need
-	Longer Delivery Windows at DBCT	Review	✓		While not a Below Rail project the longer delivery windows change that was implemented in early 2022 needs to be assessed as part of staged review to determine impact on capacity.

7.5 Immediate Implementation

The three identified for 'immediate implementation' projects (G1, G2, G3) will increase capacity by ~5.2 Mtpa (once fully implemented). The IE agrees with Aurizon Network recommendations for all three projects.

It should be noted that for Goonyella Coal System, capacity benefits are realised through some Transitional Arrangements recommended for Newlands/GAPE. These are namely the installation of RCS signalling and the implementation of an additional passing loop. These have a positive impact of ~1 Mtpa of capacity for Goonyella.

With the additional ~1 Mtpa benefit realised from some Newlands/GAPE Transitional Arrangements from the immediate implementation projects list, the total increase in capacity is expected to be ~6.2 Mtpa. The Annual Capacity Assessment process should be utilised to determine if these projects meet their estimated capacity uplift when complete.

The ICAR identified that current operating practice in Goonyella Coal System has some campaign railing influences and in early 2022 some changes have been implemented around longer delivery window management for DBCT that could see a positive impact on Deliverable Network Capacity. By mid-2023 and as per of the Annual Capacity Assessment process actual operating data can be assessed to gauge what this impact may be.

7.6 Phased Projects

On the assumption that ~6.2 Mtpa of capacity uplift will be achieved through the Transitional Arrangements recommended to proceed immediately (as outlined in **section 7.5** above and including the Newlands/GAPE impacts) this would have the Goonyella Coal System operating at ~135 Mtpa. There remains ~4.8 Mtpa of ECD at this point.

Therefore, to remedy the remaining ECD, it is recommended that a staged study approach is undertaken. The following projects should commence further analysis/study work with a review point implemented once this analysis has been completed and consultation/agreement with Customers to occur at the point on next steps.

G5 **Jilalan Additional Road** - undertake concept study work in conjunction with a review of key modelling assumptions.

IE-G7 **Crossovers -** complete an initial review of modelling assumptions and modelling analysis of specific benefits of varying crossover combinations. Once this is complete, re-engage with Customers to determine if any further studies would proceed.

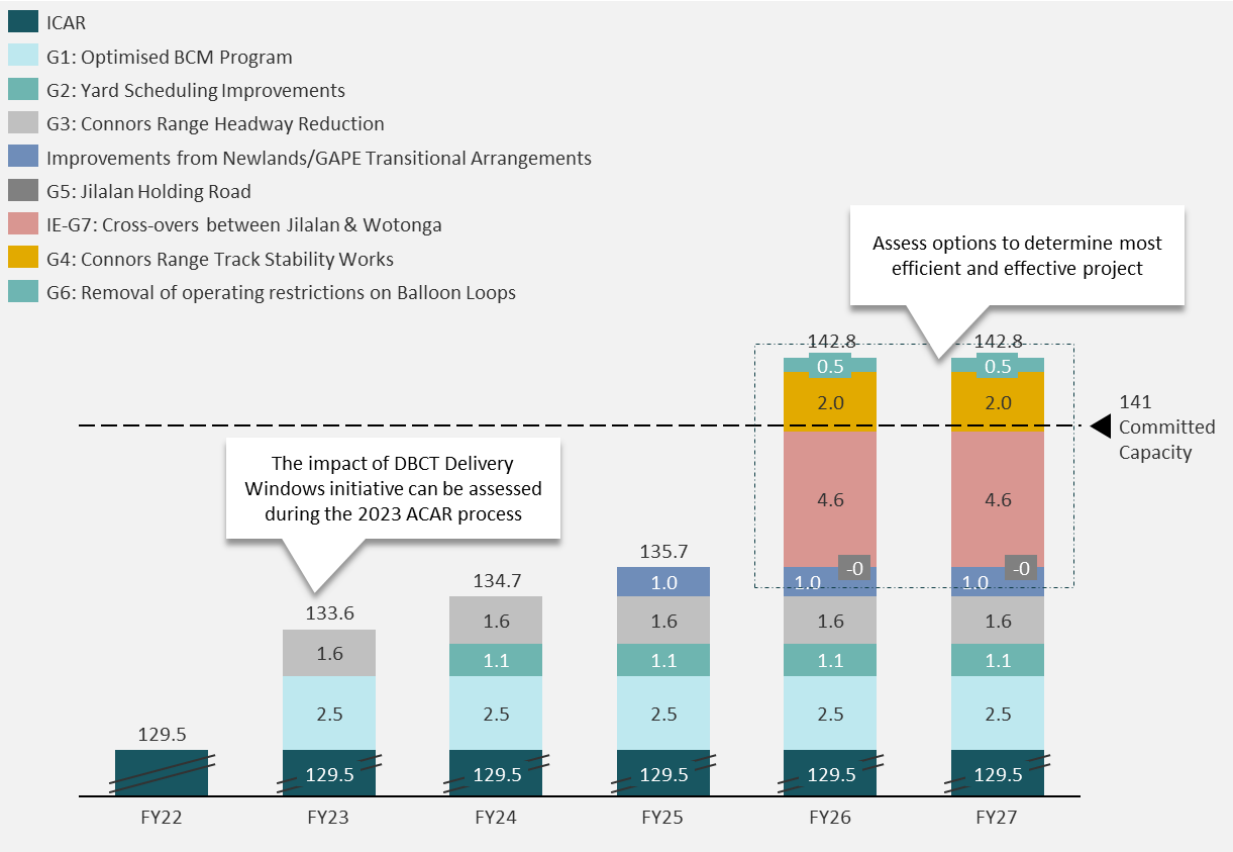
The Independent Expert modelling analysis has shown that the G5 and IE-G7 projects have the potential to increase capacity by ~5 Mtpa. This would solve the remaining ECD. However, further analysis to confirm modelling assumptions and related potential capacity benefits should occur as a first priority and in conjunction the concept study work on the Jilalan holding road (G5).

The Connors Range Track Stability Works (G4) and Removal of Operating Restrictions on Balloon Loops (G6) projects should remain as potential opportunities however no further work (ie placed on Hold) until a decision is made by Aurizon Network and Customers on projects G5 and IE-G7 and in conjunction with the Annual Capacity Assessment process to determine the remaining ECD to be resolved.

7.7 Recommended Final review

The recommendations above will see an increase in Goonyella capacity increase as follows (**figure 10**) with the likely timing of implementation, and impact capacity shown:

Figure 10: Goonyella Expected phasing of Deliverable Network Capacity Uplift per year per Transitional Arrangement



8. Blackwater/Moura Coal System

8.1 ICAR Results Overview

The 2021 ICAR indicated that an Existing Capacity Deficit exists in Blackwater/Moura. It indicates that the cause of the constraint can be in a number of areas and key factors to be considered include:

- **Yard Congestion** – Callemondah is a critical facility for both Blackwater and Moura systems, as it provides the location where all services undertake provisioning, maintenance inspections, minor maintenance work and shunting activities. Trains can be occupying the yard longer than planned activities.
- **Scheduling and Reliability** – a decline in optimisation of key operational factors can lead to trains spending additional time in the yards while they wait for connections which creates congestion and can prevent trains from entering the yard, resulting in more delays on the mainline.

The ICAR findings are summarised in **table 13**:

Table 13: Summary of ICAR Results for Blackwater/Moura

Coal System		FY20	FY21	FY22	FY23	FY24
Blackwater	Committed Capacity	9,259	9,918	10,473	10,404	10,155
	Deliverable Network Capacity	9,550	10,649	10,260	9,854	9,712
	Existing Capacity Deficit	0	0	214	550	443
	% of Committed Capacity Achieved	103%	107%	98%	95%	96%
Moura		FY20	FY21	FY22	FY23	FY24
	Committed Capacity	2,294	2,282	2,338	2,338	2,345
	Deliverable Network Capacity	2,178	2,165	2,241	2,163	2,146
	Existing Capacity Deficit	116	118	97	175	199
	% of Committed Capacity Achieved	95%	95%	96%	93%	92%

The year with the greatest ECD identified (from FY22 onwards) in the ICAR was FY23 for Blackwater with 550 Train Paths or ~4.5 M Tonnes. For Moura it was FY24 with 199 Train Paths or ~ 1.6 M tonnes. For both Blackwater and Moura FY24 ECD is ~ 5.4 M tonnes.

8.2 Aurizon Network Recommended Transitional Arrangements

The Existing Capacity Deficit in the Blackwater/Moura Systems is approximately 5.4 Mtpa,. The constraint has been identified as common between the two coal systems, being Callemondah Yard and the operations in and around the port.

In the Blackwater System, requests to relinquish Access Rights have been received. Aurizon Network recommends these proceed as part of the Transitional Arrangements and recommends delivery of other projects to rectify the full deficit. The following Transitional Arrangements were recommended by Aurizon (**table 14**):

Table 14: Summary of Aurizon Network Recommended Transitional Arrangements for Blackwater and Moura

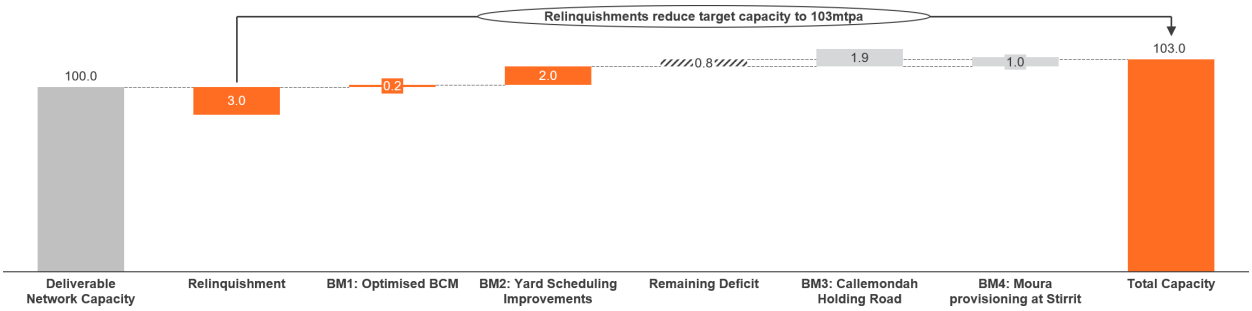
Stage 1	Project Reference	Transitional Arrangements	Capacity Benefit (Mtpa)	Capital Cost Estimate $M
Immediate Implementation		Relinquishments	~ 3	0
	BM1	Optimised Ballast Cleaning machine program	0.2	0
	BM2	Callemondah Yard Scheduling Improvements	2	0
Stage 2				
Further Studies	BM3	Callemondah Yard additional road	2	15.7
	BM4	Moura provisioning at Stirrit	1	13.7

Aurizon Network received feedback from 82% of affected End Users. Of those that responded, 100% approval was provided for BM1 and BM2. A further 57% approved the progression of BM3 and BM4.

Aurizon Network proposed an approach similar to the Goonyella system for Blackwater and Moura. Aurizon Network is seeking to proceed with low risk, low-cost Transitional Arrangements as soon as possible. Where an Existing Capacity Deficit remains, Aurizon Network is seeking to take forward several Expansion options to a Concept study, to enable the industry to better understand the scope, design, cost, and risk elements for each of the projects.

The staged approach recommended by Aurizon Network is shown in **figure 11** with the capacity values shown those used by Aurizon Network.

Figure 11: Blackwater & Moura Transitional Arrangement Bridge



8.3 Independent Expert Analysis of Proposed Transitional Arrangements

The Independent Expert has undertaken the following steps in reviewing each of the proposed Transitional Arrangement projects put forward by Aurizon Network for the Blackwater and Moura Systems (or any additional options considered by the Independent Expert);

- verified the expected capacity uplift for each project from the CQCN IE model output;
- engaged with AN on expected capital costs, concept study costs and operating cost impacts for each project;
- calculated a net present value for each project from above;
- considered other factors such as industry feedback, risk, timing of project implementation and coal system operations as they occur in practice;
- identified if any transitional arrangements for other coal systems may impact on Blackwater/Moura capacity; and

- determine if recommendation to proceed is made.

Appendix 3 shows the detailed workings.

A summary of key analysis outcomes for each is shown in **table 15**:

Table 15 Analysis Blackwater/Moura Transitional Arrangements

Transitional Arrangement	Effective Score [1] [Low to High]	Efficient Score [2] [Low to High]	Industry Support [3]	Risk [4]	Overall Score [5]
BM1: Optimised BCM Program			100%		0
BM2: Yard Scheduling Improvements			100%		1
BM3: Callemondah Holding Road - Low Benefit			63%		11
BM3: Callemondah Holding Road - High Benefit					2
BM4: Provisioning of Moura Services at Stirrit			63%		3

1. Effective score assesses the benefit generated as a percentage of the ECD.
2. Efficient score assesses the annualised cost per benefit generated.
3. Industry support below 75% impacts on the overall score.
4. Where a risk has been flagged, this impacts on the overall score.
5. Initiatives with an overall score of 5 or lower are preferred Transitional Arrangements.

8.4 Independent Expert Recommended Transitional Arrangements

8.4.1 Relinquishments

Aurizon Network received requests to relinquish committed capacity as part of the process. The relinquishment requests varied between FY23, FY24 and FY25 however it is considered appropriate to consider the lowest relinquishment capacity (occurs in FY25). As a result, approximately 3 Mtpa (372 Train Paths) of capacity is recommended to be relinquished. The impact of this relinquishment on the Existing Capacity Deficit is shown in **table 16.**

Table 16: Impact of Relinquishments on the ECD (Train paths)

	Coal System	FY23	FY24	FY25 onwards
ICAR Existing Capacity Deficit	Blackwater	550	443	443
	Moura	175	199	199
Relinquishments	Blackwater	-501	-443	-372
	Moura	0	0	0
Remaining Existing Capacity Deficit	Blackwater	265	252	372
	Moura	0	0	0

The Independent Expert is recommending that the relinquishments be immediately implemented. The Independent Expert has modelled the Blackwater and Moura Coal Systems assuming relinquishments of 372 Train Paths (~3Mtpa) for multiple parties and has made assumptions around the system operations as a result of these relinquishments.

This has shown that the ECD for Moura has now been extinguished. Even though the relinquishments are related to the Blackwater System, many of the major constraints in the Blackwater/Moura systems relate to common infrastructure such as Callemondah Yard and this has impacted the recalculated Deliverable Network Capacity.

8.4.2 Recommendations

Given the relinquishments have now been assumed to be enacted, the Existing Capacity Deficit that now needs to be resolved by Transitional Arrangements is ~3 Mtpa (i.e. is now reduced as result of relinquishments).

Based on the review process outlined above, the Independent Expert is recommending for Blackwater/Moura the Transitional Arrangements as shown in **table 17**. A comparison of IE recommendations to Aurizon Network recommendation is also shown.

Table 17 Independent Expert Recommendations – Blackwater/Moura

Coal System	Transitional Arrangement Project	IE Recommendation	Staged Review	Aurizon Recommendation Comparison	Comments
Blackwater/Moura					
-	Relinquishments	Immediate implementation	✗	Agree	
BM1	Optimised Ballast Cleaning Machine Program	Immediate implementation	✗	Agree	
BM2	Callemondah Yard Scheduling improvements	Immediate implementation	✗	Agree	Review outcomes as part of Annual Capacity Assessment process
BM3	Callemondah Yard additional Road	Hold	✓	Partial Agree	No further immediate work undertaken until impact of other projects known.
BM4	Moura provisioning at Stirrit	Hold	✓	Partial Agree	No further immediate work undertaken until impact of other projects known.

8.5 Immediate Implementation

The projects shown for 'immediate implementation' (BM1, BM2) above should be approved by the QCA and implemented immediately on the assumption that there remains an Existing Capacity Deficit of ~2 Mtpa. The IE agrees with Aurizon Network recommendations for these projects.

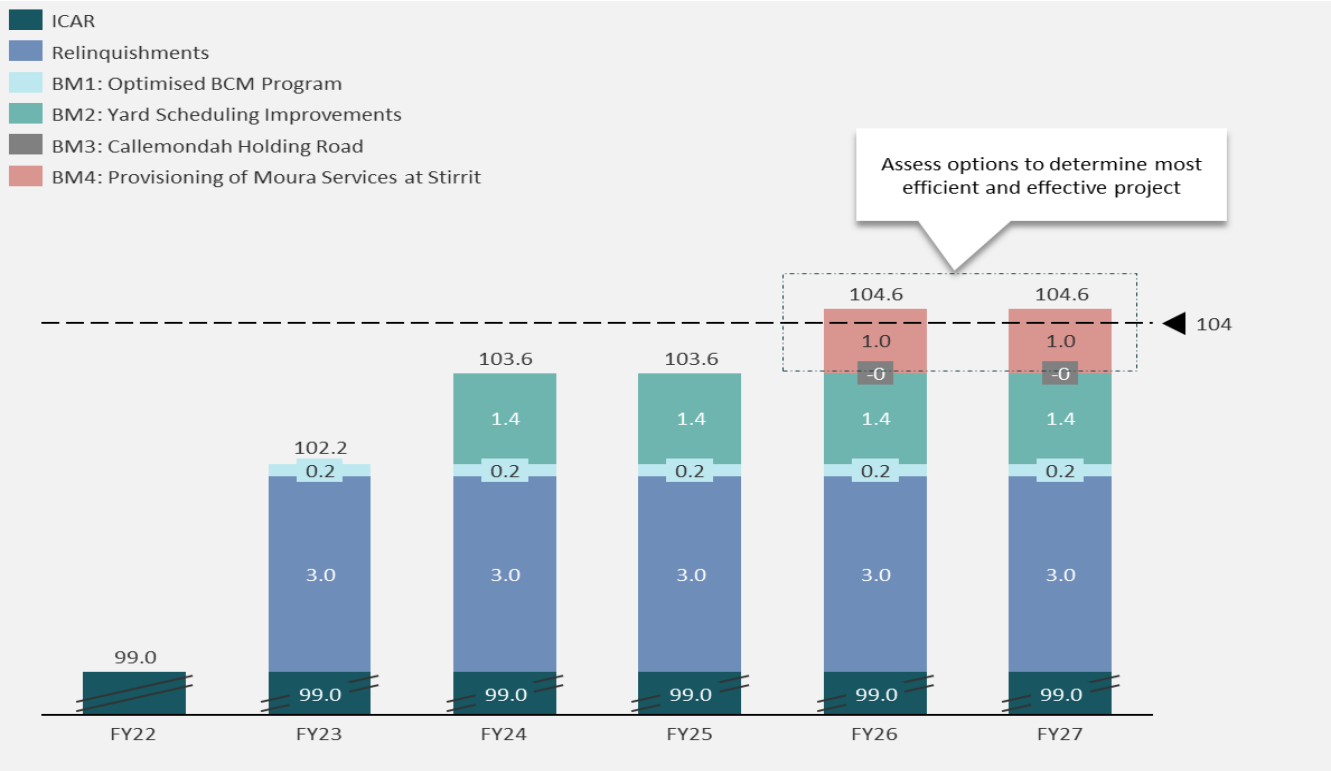
These two projects will increase capacity by ~1.6 Mtpa (once fully implemented). Modelling shows that the Optimised Ballast Cleaning Machine program project could have further upside to capacity dependent on consist numbers. The Annual Capacity Assessment process should be utilised to determine if these projects meet their estimated capacity uplift when complete.

8.6 Staged Review

On the assumption that ~1.6 Mtpa of capacity uplift will be achieved through the transitional arrangements recommended to proceed immediately (in section above), this would have the Blackwater/Moura Systems within < ~1 Mtpa of the committed capacity.

Given the small outstanding Existing Capacity Deficit, at this point in time it is recommended that the BM3 Callemondah Yard Additional Road and BM4 Moura provisioning at Stirrit projects should remain as potential opportunities however no further work (ie placed on Hold) until the impact of projects BM1 and BM2 can be assessed and in conjunction with the Annual Capacity Assessment process determines the remaining ECD to be resolved.

Figure 12: Blackwater/Moura Expected phasing of Deliverable Network Capacity Uplift per year per Transitional Arrangement



APPENDIX 1: Newlands/GAPE – Analysis and ranking of Transitional Arrangements

APPENDIX 2: Goonyella – Analysis and ranking of Transitional Arrangements

APPENDIX 3: Blackwater/Moura – Analysis and ranking of Transitional Arrangements