



Network Development Plan | 2019

Aurizon Network



Table of Contents

1	Introduction.....	2
2	Existing Network	3
3	Expansion Studies	8

1 Introduction

The 2019 Network Development Plan (NDP) is prepared in accordance with Aurizon Network’s obligations under 7A.6 of the 2017 Access Undertaking (UT5). In line with UT5, Aurizon Network reviews and updates the NDP on an annual basis¹

The NDP examines how the Central Queensland Coal Network (CQCN) can be developed to meet the anticipated long-term growth requirements of coal supply chains operating throughout the CQCN

The 2019 NDP is prepared as an addendum to the 2016-17 NDP² as the Corridor Development Plans incorporate similar base demand to that currently contracted.

This addendum contains the following sections:

- **Section 2 – Existing Network**
An update replacing Section 02 of the 2016 – 17 NDP. Contains heatmaps describing latent network capacity based on updated contracted capacity and existing and planned infrastructure as per the System Operating Parameters (2019 SOP)
- **Section 3 – Expansion Studies**
General details of expansion studies currently being undertaken in the CQCN

Aurizon Network welcomes feedback from existing and prospective customers on the NDP and other capacity related documents via **NDP@aurizon.com.au**

Capitalised terms are as defined in UT5

¹ Clause 7A.6(c) of UT5

² <https://www.aurizon.com.au/What-we-deliver/Network#planning---development>

2 Existing Network

This section replaces Section 02 of the 2016 – 17 NDP. The coal throughput achieved (export and domestic) in the previous financial years is reviewed in Existing Network. The capacity of each section of the network is reviewed to identify the most constrained sections which provides the basis to Aurizon’s examination of growth opportunities.

The CQCN also operates a range of non-coal services including containerised freight, livestock, passenger and bulk freight which are all considered as part of the capacity evaluations.

2.1 Current state in context

In FY2019 Aurizon Network delivered 232.7mt of coal through the CQCN, up 1.4% from FY2018 and 10.4% from FY2017.

FY2017 throughput was impacted by an estimated 16mt because of Cyclone Debbie.

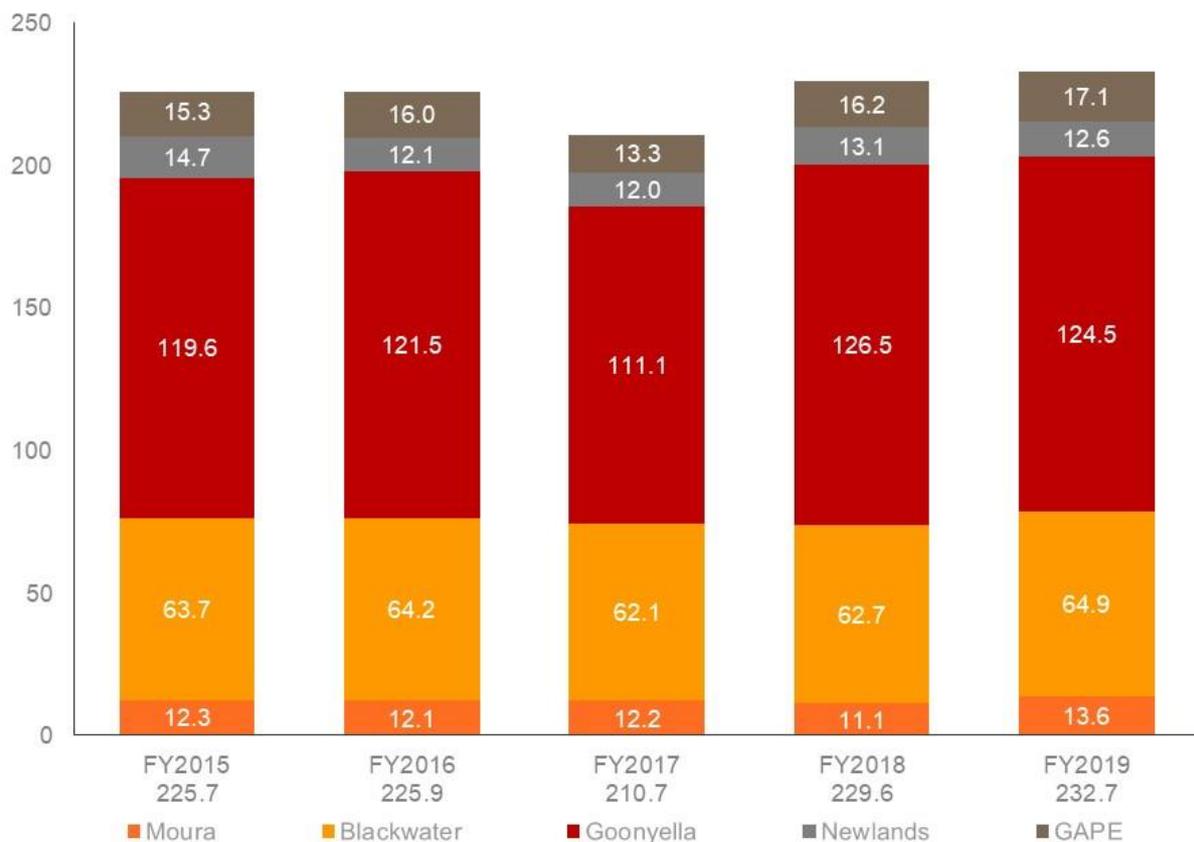


Figure 1: Actual throughput (mtpa) FY2015 - FY2019

2.2 Existing network capacity and constraints

2.2.1 Capacity analysis

Aurizon Network performed a Capacity Assessment as per Clause 7A.4.2 of UT5. The outcomes are published in the Capacity Assessment Report (CAR). The CAR describes the CQCN's ability to meet contracted Train Service Entitlements (TSEs).

The assessment was conducted using the Central Queensland Supply Chain Model (CQSCM) described in How plans are made¹.

2.2.2 NDP static analysis

Further to the CAR, the NDP contains a static review of each section of the network. The intention of this static analysis is to:

- evaluate the amount of latent capacity on the network and,
- identify which locations on the network have latent capacity or have reached capacity.

This is used as the baseline for capacity and if and where future capacity constraints are located for evaluating growth scenarios.

2.2.3 Presentation of the analysis

The capacity utilisation of each section of the network has been calculated to determine the unutilised train paths.

Unutilised train paths are converted into available track capacity using the payloads listed in the reference train criteria in Schedule F of UT5:

- Newlands: 6,800² tonnes
- Goonyella: 10,236 tonnes
- Blackwater: 8,369 tonnes
- Moura: 8,379 tonnes

The latent capacity on each section is presented with colour codes on the heat maps depicting the tonnage triggers for when augmentation to that section may be required.

This analysis is not intended to be definitive as there may be other triggers that require additional infrastructure that would be identified during a more detailed analysis.

¹ Section 1, 2016-2017 NDP

² Payload for GAPE will be used for GAPE and Newlands services. The Newlands nominal payload is not representative of trains that operate in the Newlands system

2.3 Newlands

2.3.1 Assumptions

The Newlands System capacity (Figure 2) has been assessed based on the infrastructure defined in the SOP which includes the following infrastructure and operational assumptions.

Remote Control Signalling (RCS)

The Newlands System currently operates with a mix of RCS and Direct Train Control – Mainline Point Indicators (DTC-MLPI) signalling. Full RCS installation on the remaining DTC-MLPI operated section of the Newlands System has been deferred while system demand is lower than the contract. As this infrastructure is intended to be in place prior to full contracted capacity being reached, the capacity assessment assumes RCS will be installed across the entire Newlands System.

Collinsville

Constraints on passing trains at Collinsville are assumed to be resolved as part of the baseline capacity of the system.

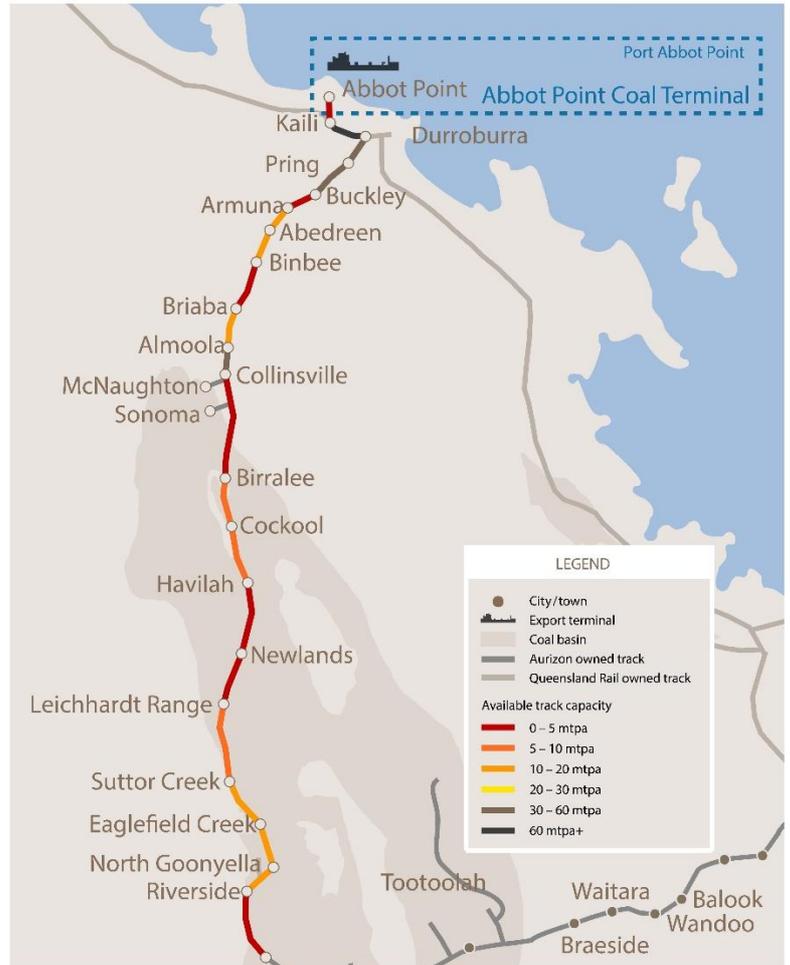


Figure 2: Newlands System available capacity and constraints

2.3.2 Capacity and constraints

The Newlands System, with the GAPE¹ infrastructure and the above assumptions provides sufficient capacity to meet the contracted capacity. Incremental capacity beyond this can be achieved through the addition of passing loops, duplications, deviations and operational changes.

¹ Goonyella to Abbot Point Expansion

2.4 Goonyella

2.4.1 Assumptions

The Goonyella System capacity (Figure 3) has been assessed based on infrastructure as defined in the SOP.

2.4.2 Capacity and constraints

The Goonyella System meets all contracted capacity requirements and has only limited latent capacity on the mainline trunk. Connors Range remains the constraining section in the Goonyella System.

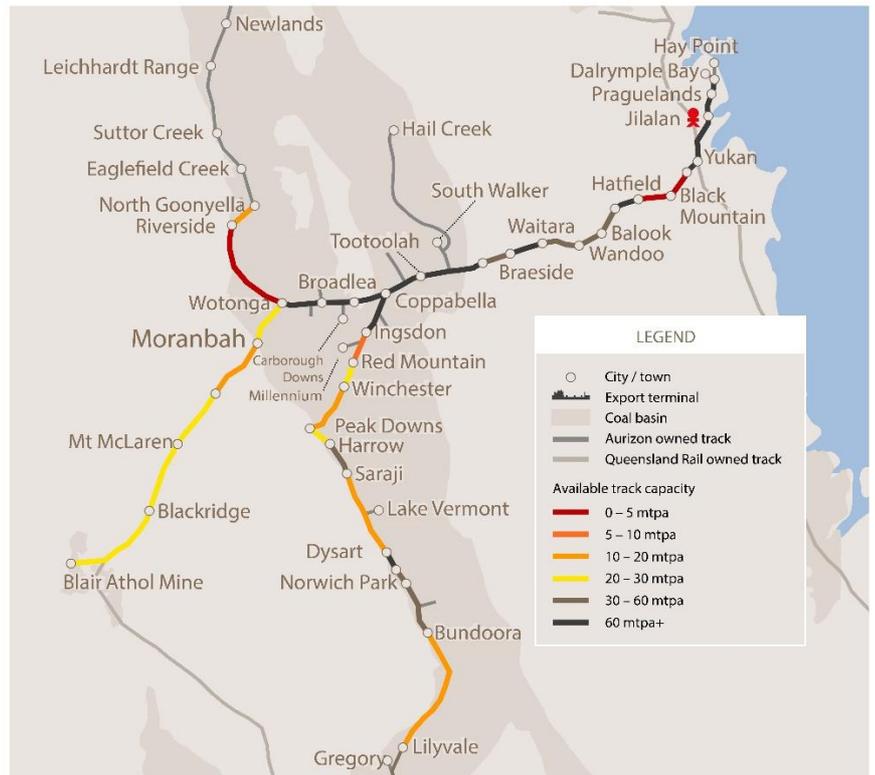


Figure 3: Goonyella System available capacity and constraints

2.5 Blackwater / Moura

2.5.1 Assumptions

The Blackwater and Moura System capacity (Figure 4) has been assessed based on the infrastructure as defined in the SOP.

Starlee passing loop

Starlee passing loop is the preferred solution to provide additional contracted capacity on the Bauhinia branch and is assumed to be built as per infrastructure described in the 2019 SOP.

2.5.2 Capacity and constraints

The Blackwater and Moura Systems both provide sufficient capacity to support contracted capacity.



Figure 4: Blackwater and Moura System available capacity and constraints

3 Expansion Studies

This section provides general details of current expansion studies being undertaken as per Clause 8.3 of UT5 by Aurizon Network. The Concept Studies identify feasible solutions capable of delivering expansion capacity identified by their respective Demand Assessments. Pre-feasibility studies show general details of current options being considered.

3.1 Bauhinia branch expansion

The constraint to capacity in the southern part of the Bauhinia Branch is the headway on the single line section between Memooloo and Rolleston.

Preferred Solution

The study determined that Starlee passing loop is the preferred solution to provide the required increase in capacity. The passing loop is proposed to be constructed at 78.7km to 80.7km with an estimated cost of between \$9m – \$13m.

3.2 Newlands expansion for 124 wagon trains

Aurizon Network has undertaken a concept level study to assess the infrastructure and other changes required to operate 124 wagon trains on the Newlands and GAPE systems based on demand information received.

Preferred Solutions

Two options were developed that provide capacity for up to four 124 wagon trains to operate:

1. Low risk, high cost solution recommends extending all passing loops and holding locations at the port and Pring yard at an estimated cost of \$130m (+/- 50%)
2. High risk option that only extends 3 passing loops and holding locations at the port and Pring yard along with development of operational protocols to manage complexity with an estimated cost of \$60m (+/- 50%)

3.3 Newlands and GAPE expansion 2019

This study was triggered by enquiries that would result in a potential 60mtpa of contracted capacity to Abbot Point Coal Terminal (APCT). The options support changed demand origins and increased demand to 60mtpa.

Preferred Solutions

Two expansion options have been developed and recommended to proceed to pre-feasibility based on demand information received by Aurizon Network:

1. 50mtpa –this option has new passing loops, signalling and telecommunication, train control and asset protection upgrades with an estimated cost of \$100m (+/- 50%)
2. 60mtpa – all infrastructure required in option 1 as well as port and yard upgrades, passing loop extensions and longer rolling stock with an estimated cost of \$190m (+/- 50%)

Although the current nameplate capacity of the Newlands and GAPE systems is 50mtpa, demand information indicates that alternate demand traverses different sections of the network.

3.4 Goonyella system expansion

Aurizon Network are currently undertaking a Concept Study into increasing the capacity of the Goonyella system. This study is considering demand scenarios up to 165mtpa with a range of origins in line with the outcomes of the Demand Assessment. The concept study is expected to be completed in December 2019.