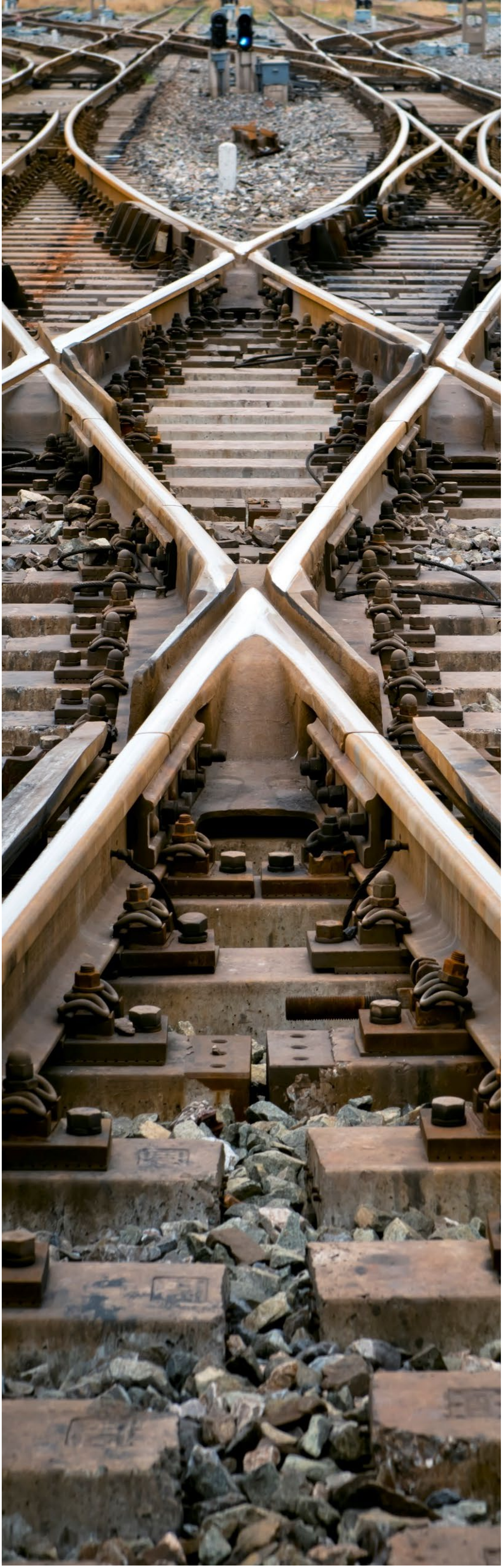

CENTRAL QLD COAL NETWORK

System Operating Parameters

For the Initial Capacity Assessment
(as per Aurizon Network 2017 Access Undertaking (UT5))

Redacted version

Date: 27 October 2021
Version: 2021 SOP

COAL NETWORK CAPACITY CO.

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Contents

Abbreviations

The following abbreviations are used throughout this document.

Table 1 Abbreviations

Abbreviation	Meaning
AN	Aurizon Network
AO	Aurizon Operations
BCM	Ballast Cleaning Machine
BRC	Bowen Rail Company
CQCN	Central Queensland Coal Network
CQCSM	Central Queensland Supply Chain Model
DBT	Dalrymple Bay Terminal
DNC	Deliverable Network Capacity
DTC	Direct Train Control
DTP	Daily Train Plan
DSM	CQCN Dynamic Simulation Model
FL	Fisherman’s Landing
FSS	Full System Shut
FY	Financial Year
GAPE	Goonyella to Abbott Point
GLR	Gross Load Rate
GUR	Gross Unload Rate
HPT	Hay Point Terminal
ICAR	Initial Capacity Assessment Report
IE	Independent Expert
IL	Inloader (Rail Receival Station)
ITP	Intermediate Train Plan
MBD	Model Basis Document
MLPI	Main Line Points Indicators
MTP	Monthly Train Plan

Abbreviation	Meaning
MTTF	Mean Time to Fail
MTTR	Mean Time to Repair
NQXT	North Queensland Export Terminal
NRG	Gladstone Powerhouse
NTSF	Nebo Train Support Facility
OHLE	Overhead Line Equipment
OR	OneRail
PCAR	Preliminary Capacity Assessment Report 2019
PN	Pacific National
QR	Queensland Rail
QAL	Queensland Alumina Limited
QCA	Queensland Competition Authority
RCS	Remote Control Signalling
RGTCT	RG Tanna Coal Terminal
RRS	Rail Receival Station (Inloader)
SAT	Ship Arrival table
SOP	System Operating Parameters
SRT	Sectional Running Time
TLO	Train Load Out
TSE	Train Service Entitlement
TSR	Temporary Speed Restriction
TTF	Time to Fail
TTR	Time to Repair
UT5	Aurizon Network 2017 Access Undertaking
UTM	Unit Train maintenance
WICET	Wiggins Island Coal Export Terminal

Definitions

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

Measure	Definition	Required per cycle
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 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.	2
Train Cycle	In general, train cycles typically proceed as follows: 1. Dispatch from Yard 2. Travel Empty to Mine 3. Load at TLO 4. Travel Loaded to Rail Receival Station 5. Unload 6. Travel Empty to Yard for possible provisioning and/or maintenance 7. Wait for next dispatch Cycle Time measures items 1 to 6 Turnaround Time measures items 1 to 7	1
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	1
Direct Train Control	As described in Section 4.5.2 Direct Train Control (DTC)	N/A
Rail Job	Rail Jobs represent rail orders equating to one train cycle each (consuming 2 TSEs)	N/A
Train Loadout	The upstream boundaries of the model are the Train Loadout (TLO) facilities at each mine, with their associated Balloon Loop. Coal enters the model at these facilities.	N/A
Train Consists	Train consists are classified by their motive power, as either Diesel or Electric.	N/A

1. Introduction

1.1. Requirements of 2017 Access Undertaking (UT5)

UT5 as approved by the Queensland Competition Authority (QCA), requires Capacity Assessments of each of the Central Queensland Coal Network's Coal Systems to be performed, as detailed in **Part 7A: Capacity**.

UT5 specifies two types of Capacity Assessments, as defined in section **7A.2 Definition of Deliverable Network Capacity (DNC)** and **System Capacity.**

For the Initial Capacity Assessment, only the DNC is required to be assessed.

UT5 also requires that:

- the assessment of capacity shall be based on an analysis using a Dynamic Simulation Model (DSM) of the Central Queensland Coal Network (CQCN);
- the System Operating Parameters (SOP) be documented. The SOP include the assumptions, inputs and methods used in the DSM for the analysis of DNC; and
- An Annual Capacity Assessment is to occur.

When a Capacity Assessment is undertaken, it is based on a definition of Capacity and the application of adefined methodology and input parameters. This document is the System Operating Parameters (**SOP**) and describes:

- the definition of DNC;
- the methodology;
- the input parameters used; and
- an explanation of why these inputs have been used when undertaking the Capacity Assessment.

1.2. Definition of Deliverable Network Capacity

The following extract defining Deliverable Network Capacity is taken from Part 7A.2 of UT5.

7A.2 Definition of Deliverable Network Capacity

(a) *For the purpose of this **Part 7A, Deliverable Network Capacity** means the capacity of the Rail Infrastructure, expressed as the maximum number of Train Paths (calculated on a Monthly and annual basis) that can be utilised in each Coal System (such Train Paths needing to be useable including in respect of return journeys), and the mainline and each branch line of that Coal System, taking into account the operation of that Coal System, having regard to:*

(i) *the way in which the relevant Coal System operates in practice, including those matters taken into consideration in formulating the System Operating Parameters;*
(ii) *reasonable requirements in respect of planned maintenance and a reasonable estimate of unplanned maintenance, repair, renewal and Expansion activities on the Rail Infrastructure;*
(iii) *reasonably foreseeable delays or failures of Rollingstock occurring in the relevant Supply Chain, both planned delays and failures and a reasonable estimate of unplanned delays and failures;*
(iv) *reasonably foreseeable delays associated with any restrictions (including speed restrictions, dwell times within Train Services and between Train Services and other operating restrictions)affecting the Rail Infrastructure;*
(v) *the context in which the Rail Infrastructure interfaces with other facilities forming part of, or affecting, the relevant Supply Chain (including loading facilities, load out facilities and coal export terminal facilities);*
(vi) *the need for Aurizon Network to comply with its obligations to provide access to non-coal traffic under Access Agreements, Passenger Priority Obligation or Preserved Train Path Obligations;*

(vii) *the Supply Chain operating mode (including at the loading facilities, load out facilities and coalexport terminal facilities);*
(viii) *interfaces between the different Coal Systems; and*
(ix) *the terms of Access Agreements (including the number of Train Service Entitlements for each origin and destination combination in that Coal System) relating to Train Services operating inthat Coal System.*

The DNC must be reported in Train Paths. All reference to DNC will be in Train Paths. Train service entitlements (TSE's) and tonnes will only be used for reporting purposes.

1.3. Addressing Deliverable Network Capacity

The analysis of DNC must take into account the operation of each Coal System, having regard to the factors identified in **Table 2** below. The table lists the sections of the SOP where consideration of these factors is addressed.

Table 2 Deliverable Network Capacity factors to be considered

UT5 Clause 7A.2(a)	Addressed in SOP Section
(i) the way in which the relevant Coal System operates in practice, including those matters taken into consideration in formulating the System Operating Parameters;	All
(ii) reasonable requirements in respect of planned maintenance and a reasonable estimate of unplanned maintenance, repair, renewal and Expansion activities on the Rail Infrastructure;	**Section 8** Below Rail Operations **Section 10** System Delays
(iii) *reasonably foreseeable delays or failures of Rollingstock occurring in the relevant Supply Chain, both planned delays and failures and a reasonable estimate of unplanned delays and failures;*	**Section 9** Above Rail Operations**Section 10** System Delays
(iv) reasonably foreseeable delays associated with any restrictions (including speed restrictions, dwell times within Train Services and between Train Services and other operating restrictions) affecting the Rail Infrastructure;	**Section 9** Above Rail Operations **Section 10** System Delays
(v) the context in which the Rail Infrastructure interfaces with other facilities forming part of, or affecting, the relevant Supply Chain (including loading facilities, load out facilities and coal export terminal facilities);	**Section 6** Train Loadouts **Section 7** Inloaders
(vi) the need for Aurizon Network to comply with its obligations to provide access to non-coal traffic under Access Agreements, Passenger Priority Obligation or Preserved Train Path Obligations;	**Section 11** Non-coal traffic
(vii) the Supply Chain operating mode (including at the loading facilities, load out facilities and coal export terminal facilities);	**Section 6** Train Loadouts **Section 7** Inloaders **Section 8** Below Rail Operations **Section 10** System Delays
(viii) *interfaces between the different Coal Systems; and*	**Section 4** Rail Infrastructure

(ix) *the terms of Access Agreements (including the number of Train Service Entitlements for each origin and destination combination in that Coal System) relating to Train Services operating in that Coal System.*	**Section 5** Demand

1.4. Information and Redaction

To the extent possible, this document has been drafted on an unredacted basis. Where the SOP contains information that is confidential to an Access Holder, Customer or Train Operator and is unable to be disclosed, it has been redacted in this document or incorporated into Appendices to this document which will be redacted when published.

2. System Operating Parameters

The System Operating Parameters (SOP) as outlined in UT5, represent the assumptions on the operation of each element of the coal Supply Chain and the interfaces between those elements including the Supply Chain operating mode, seasonal variations, and live run losses.

These assumptions are used in the DSM for the analysis of DNC. This document aims to provide the reader with an understanding of the SOP and how they are measured and treated within the DSM for each Coal System.

2.1. Structure of System Operating Parameters

The SOP are broken down into the following key areas:

- General Assumptions
- Rail Infrastructure;
- Demand;
- Train Loadout (TLO) which represents the upstream boundary of the DSM;
- Below Rail Operations;
- Above Rail Operations;
- Terminal Inloader for both export and domestic users which represents the downstream boundary of the DSM;
- System Delays; and
- Non-Coal Traffic.

For each key area, the parameters that impact the determination of DNC have been analysed and this document outlines how the DSM treats each of these.

2.2. DSM Scope

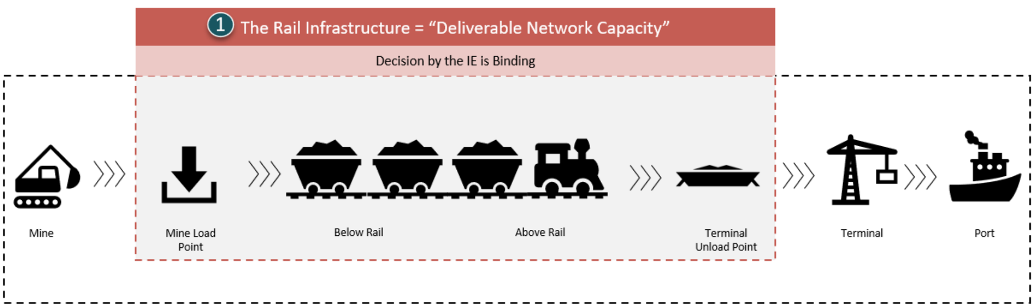
A DSM has been developed using the AnyLogic modelling software to determine the DNC of the CQCN and for each Coal System.

As a result, the scope of the DSM reflects the DNC definition and is between the boundaries of:

- Coal flow into wagons at Train Loadouts (TLOs); and
- Coal flow out of wagons at Rail Receival Stations (Inloaders).

and includes the components as outlined in Figure 1.

Figure 1 – Deliverable Network Capacity Boundaries



3. General Assumptions

There are several general assumptions used in the DSM and SOP:

- The IE has had to exercise judgement on a large range of issues in developing the SOP assumptions and application of these within the DSM. These are called out as appropriate in each section of the SOP.
- The Capacity Assessment Period for the ICAR is for the five (5) financial years FY20 to FY24 inclusive i.e. 1st July 2019 to the 30th June 2024, noting that UT5 defines the Capacity Assessment Period as the later of five (5) years, or peak capacity under the Access Agreements and the completion and commissioning of any Expansion that Aurizon Network is obliged to construct (other than as a result of a Deliverable Network Capacity Shortfall). Based on a review of the data, the ICAR has determined the Capacity Assessment Period is the five-year period outlined above as peak capacity occurs within this period.

- Unless stated otherwise in the relevant SOP section, historical data (typically FY18, FY19 and to a limited extent FY20) was used to develop SOP assumptions; and

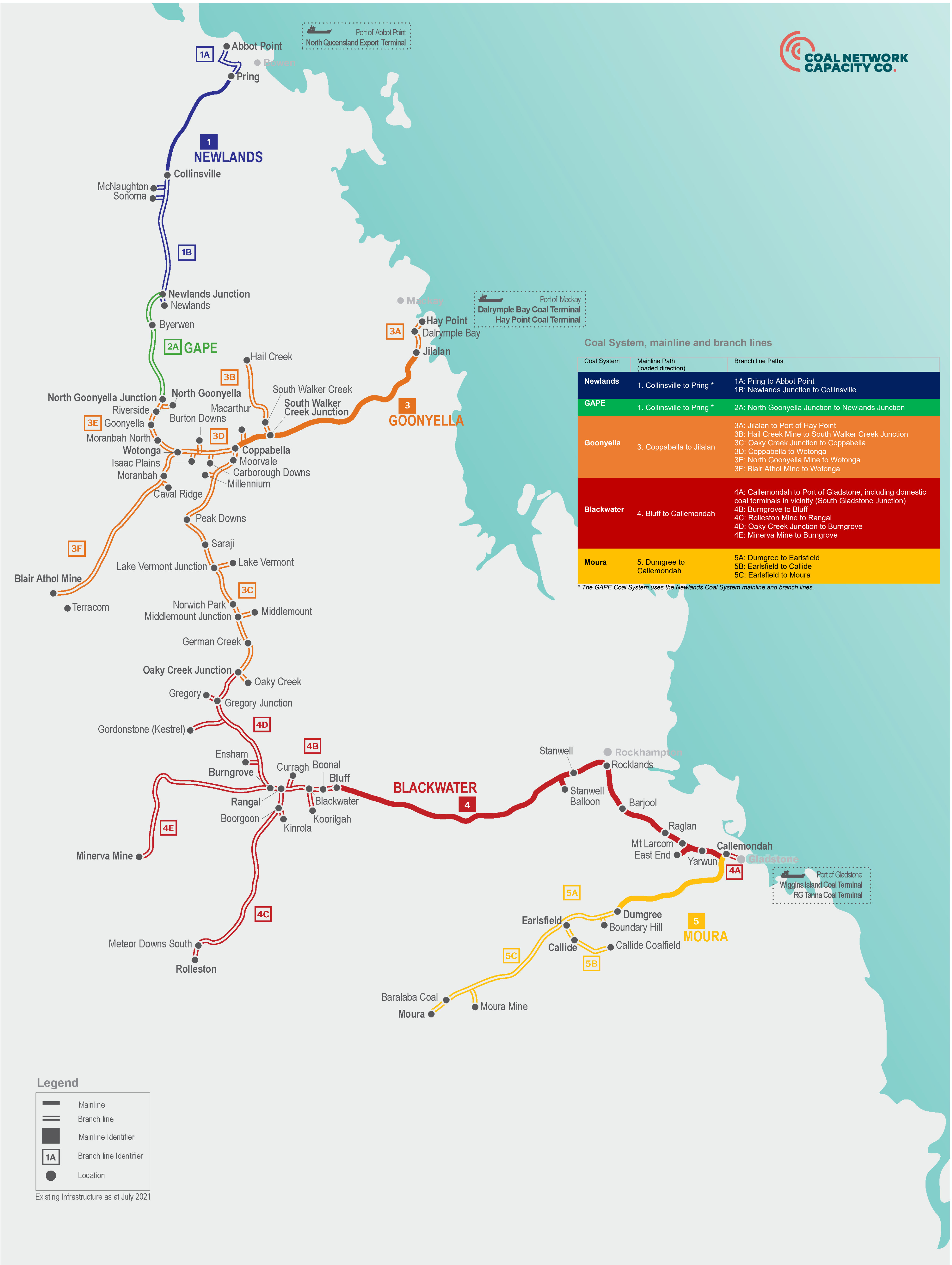
- Train paths include coal for export through terminals, domestic coal users and non-coal traffic.

4. Rail Infrastructure

4.1. Coal Systems

The modelled Rail Infrastructure covers the five (5) Coal Systems of the CQCN (as outlined in UT5). Newlands Coal System and the GAPE Coal System are not modelled independently of each other as they share common infrastructure. The GAPE project required a single GAPE derived and combined SOP to deliver the contracted capacity of both coal systems.

Figure 2: Extent of Modelled Rail Infrastructure



Coal System, mainline and branch lines

Coal System	Mainline Path (loaded direction)	Branch line Paths
Newlands	1. Collinsville to Pring *	1A: Pring to Abbot Point 1B: Newlands Junction to Collinsville
GAPE	1. Collinsville to Pring *	2A: North Goonyella Junction to Newlands Junction
Goonyella	3. Coppabella to Jilalan	3A: Jilalan to Port of Hay Point 3B: Hail Creek Mine to South Walker Creek Junction 3C: Oaky Creek Junction to Coppabella 3D: Coppabella to Wotonga 3E: North Goonyella Mine to Wotonga 3F: Blair Athol Mine to Wotonga
Blackwater	4. Bluff to Callemondah	4A: Callemondah to Port of Gladstone, including domestic coal terminals in vicinity (South Gladstone Junction) 4B: Burngrove to Bluff 4C: Rolleston Mine to Rangal 4D: Oaky Creek Junction to Burngrove 4E: Minerva Mine to Burngrove
Moura	5. Dumgree to Callemondah	5A: Dumgree to Earlsfield 5B: Earlsfield to Callide 5C: Earlsfield to Moura

** The GAPE Coal System uses the Newlands Coal System mainline and branch lines.*

The five (5) CQCN Coal Systems and the associated branch lines and main lines used in the DSM to assess the DNC are outlined in **Table 3.**

Table 3 Coal System, Mainline and Branch lines

Coal System	Mainline Path (loaded direction)	Branch Line Paths
Newlands	1.Collinsville to Pring*	1A: Pring to Abbot Point 1B: Newlands Junction to Collinsville
GAPE	1.Collinsville to Pring*	2A: North Goonyella Junction to Newlands Junction
Goonyella	3. Coppabella to Jilalan	3A: Jilalan to Port of Hay Point 3B: Hail Creek Mine to South Walker Creek Junction 3C: Oaky Creek Junction to Coppabella 3D: Coppabella to Wotonga 3E: North Goonyella Mine to Wotonga 3F: Blair Athol Mine to Wotonga
Blackwater	4. Bluff to Callemondah	4A: Callemondah to Port of Gladstone, including domestic coal terminals in vicinity (South Gladstone Junction) 4B: Burngrove to Bluff 4C: Rolleston Mine to Rangal 4D: Oaky Creek Junction to Burngrove 4E: Minerva Mine to Burngrove
Moura	5. Dumgree to Callemondah	5A: Dumgree to Earlsfield 5B: Earlsfield to Callide 5C: Earlsfield to Moura

**the GAPE Coal System uses the Newlands Coal System Mainline and branch lines.*

The specific sections of each Coal System that have been modelled in the DSM are listed in **table 4.** Some smaller balloon loops between TLO's and a branchline or mainline are modelled in the DSM however may not be noted in **table 4.**

Table 4 Extent of Modelled Rail Infrastructure

Goonyella System	• DBT to Jilalan	
	• HPT to Jilalan	
	• Jilalan to Coppabella	*(the Trunk, Goonyella Mainline)*
	• Coppabella to Wotonga	*(the Trunk)*
	• South Walker Junction to Hail Creek mine	*(the Hail Creek branch)*
	• Coppabella to Oaky Creek Junction	*(the South Goonyella branch)*
	• Wotonga to North Goonyella	*(the North Goonyella branch)*
	• Wotonga to Blair Athol	*(the West Goonyella branch)*
Newlands System	• NQXT to Kaili	
	• Kaili to Durroburra	*(North Coast Line)*
	• Durroburra to Pring	
	• Pring to Collinsville	*(Newlands Mainline)*
	• Collinsville to Newlands Mine	
	• McNaughton to Collinsville	

GAPE System	• Newlands Junction to North Goonyella Junction	*(the Goonyella Newlands connection)*
Blackwater System	• Oaky Creek Junction to Burngrove	
	• Minerva to Nogoa	
	• Rolleston to Rangal	*(including Bauhinia branch)*
	• Nogoa to Burngrove to Rangal to Bluff	
	• Bluff to Rocklands	*(Blackwater Mainline)*
	• Rocklands to Aldoga	*(North Coast Line)*
	• Aldoga to WICET	*(North Coast Line)*
	• Aldoga to Callemondah	*(North Coast Line)*
	• Callemondah to RGTCT	
	• Callemondah to NRG (Gladstone Powerhouse)	
	• Mt Miller to Comalco and Fisherman's Landing	
	• East End Junction to East End Balloon Loop	
	• Oaky to Oaky Creek Junction	
Moura System	• Callemondah to South Gladstone to QAL	*(Moura Short Line)*
	• Callemondah to Dumgree	*(Moura Mainline)*
	• Dumgree to Earlsfield	
	• Earlsfield to Callide	
	• Earlsfield to Baralaba	

4.2. Private Infrastructure

DNC is determined on Rail Infrastructure as defined in UT5. Private Infrastructure does not form part of the definition of Rail Infrastructure, however, it is included in the DSM to simulate infrastructure interfaces within the Rail Infrastructure. Private Infrastructure is not used in calculating DNC of the Rail Infrastructure.

The DSM considers all Private Infrastructure for coal and non-coal traffic as included in **Appendix D**.

Boundary locations where non-coal traffic may enter the CQCN include:

- Newlands/GAPE Coal System Kaili, Durroburra
- Goonyella Coal System: Yukan, Mt McLaren
- Blackwater Coal System: Rocklands, Nogoa, Parana
- Moura Coal System: N/A

4.3. Modelled Rail Infrastructure for New Mines

Yet-to-be-built Rail Infrastructure is included in the DSM to service new mines for which Access Agreements exist and is shown in **Appendix D.**

4.4. Electrification

Most of the CQCN is electrified and can operate Electric Trains. Those parts that are not electrified, and therefore can only operate Diesel Trains are shown below. The DSM has the capability, of these sections of the Network, being serviced by both diesel and electric trains if required.

- Newlands Coal System
  - the Goonyella Newlands Connection, and

    - the Carmichael branch line
- Goonyella Coal System
    - Terracom branch line at Blair Athol
- Blackwater Coal System
    - Burngrove to Nogoa to Minerva; and
    - Mt Miller to Comalco and Fisherman's Landing
- QAL siding
- Meteor Downs South Balloon loop
- Moura Coal System (all)

4.5. Signalling

The CQCN uses Remote Control Signalling (RCS) and Direct Train Control (DTC). The DSM considers signalling that is installed in the CQCN.

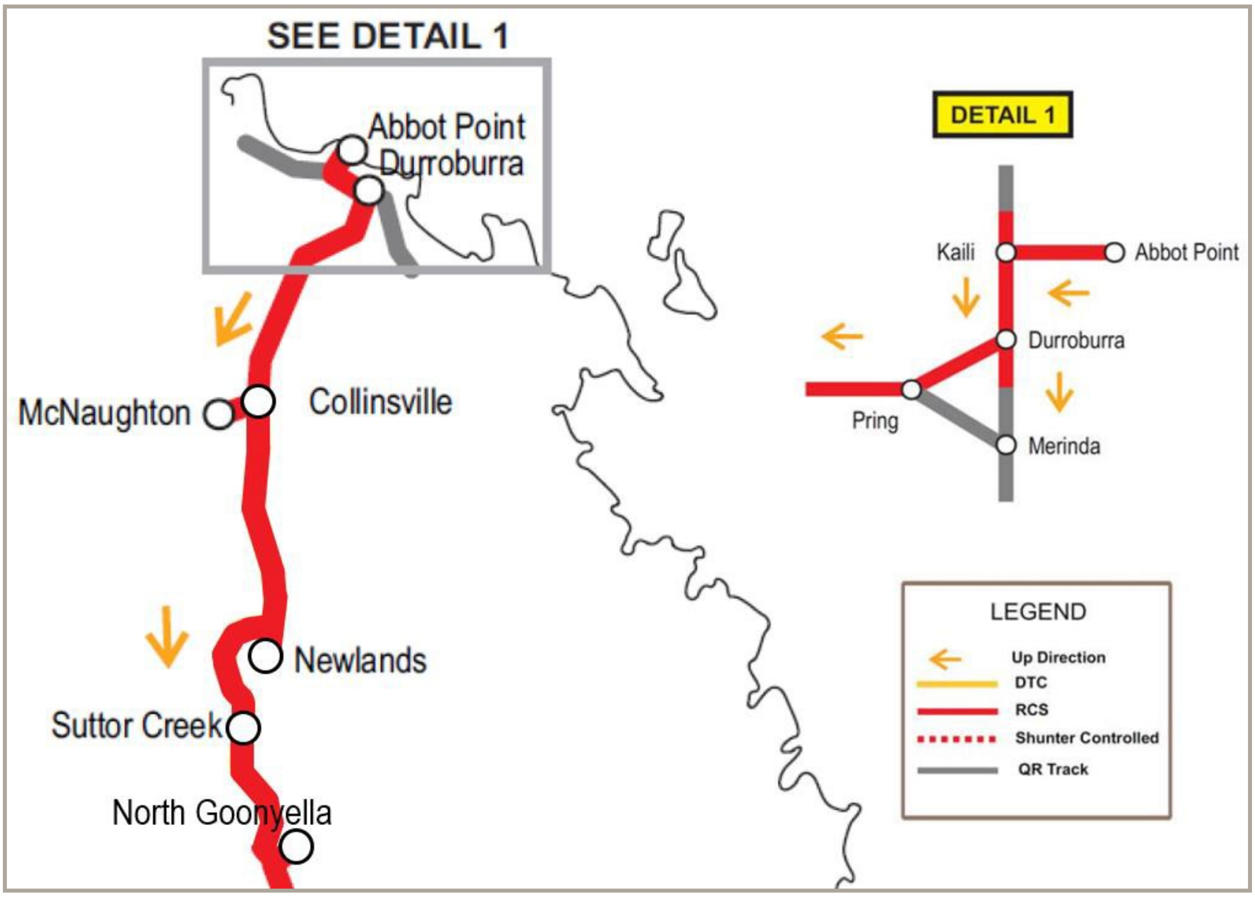
The signalling configuration (consistent with AN's 2019 System Operating Parameters) for each Coal System is shown below. There have been two minor changes made to signalling (as advised by AN) since publication of the AN 2019 System Operating Parameters.

Newlands Coal System/GAPE Coal System

The Newlands Coal System currently operates with a mix of RCS and DTC-MLPI signalling. The Birralee, Cockool and Havilah passing loops operate with DTC-MLPI.

Figure 3 is from AN's 2019 SOP however please note that RCS is not installed as shown between McNaughton Junction and Newlands Junction.

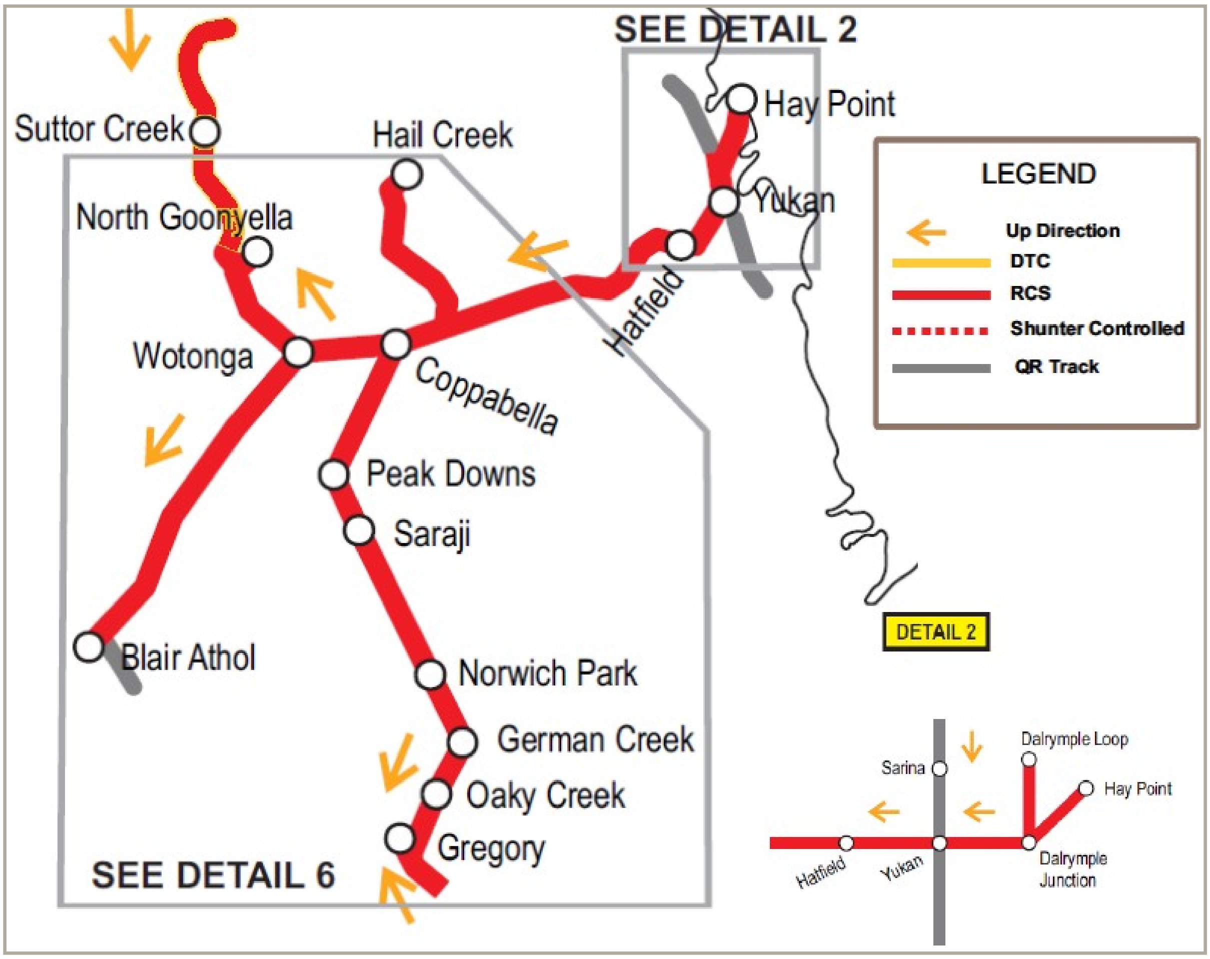
Figure 3 **Newlands Coal System/GAPE Coal System Signalling**



Goonyella Coal System

The Goonyella Coal System has RCS installed throughout.

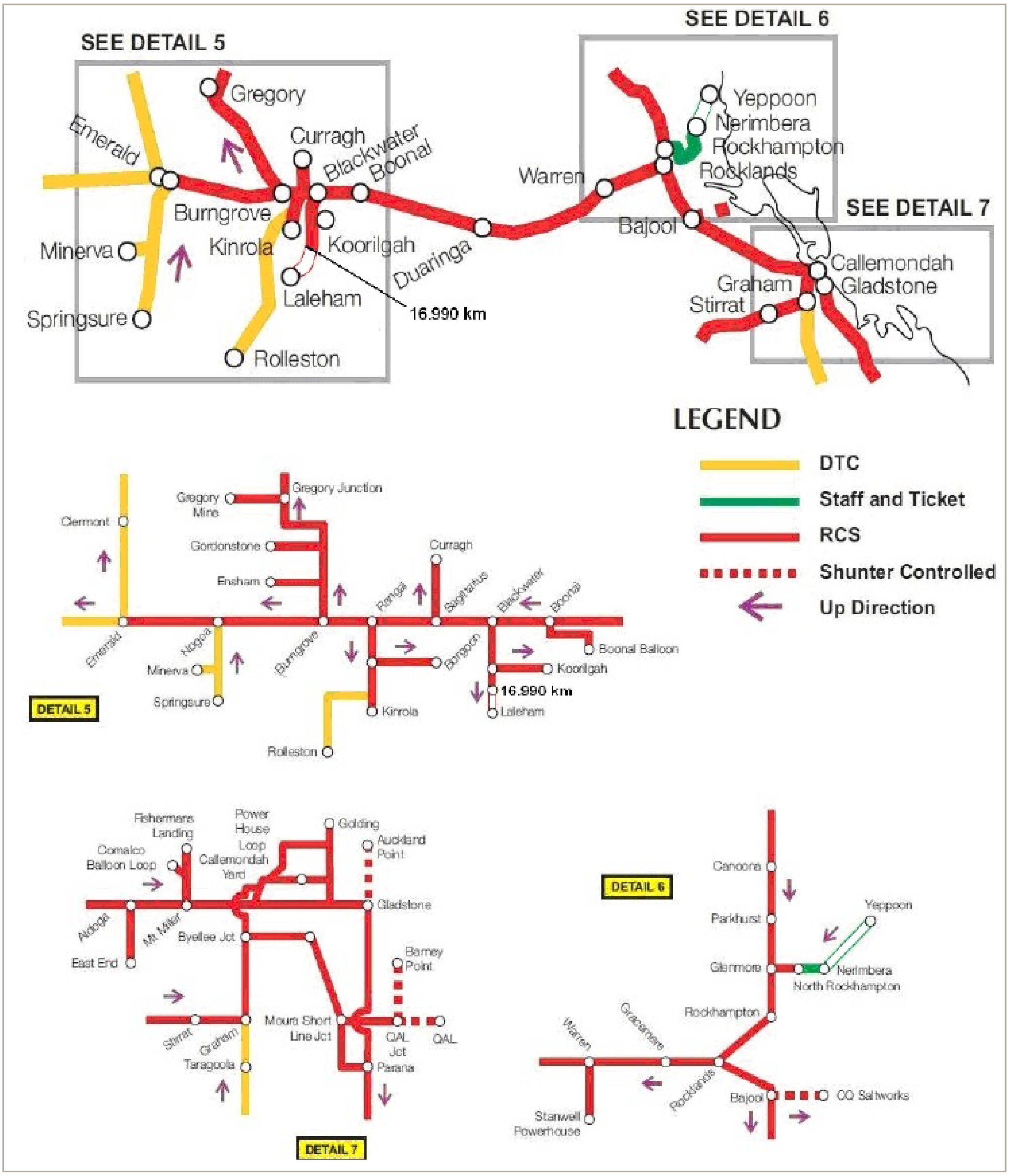
Figure 4 Goonyella Coal System Signalling



Blackwater Coal System

The Blackwater Coal System has RCS installed throughout except for the Rolleston and Minerva branches, Memooloo and Starlee passing loops which have DTC Directional Running installed.

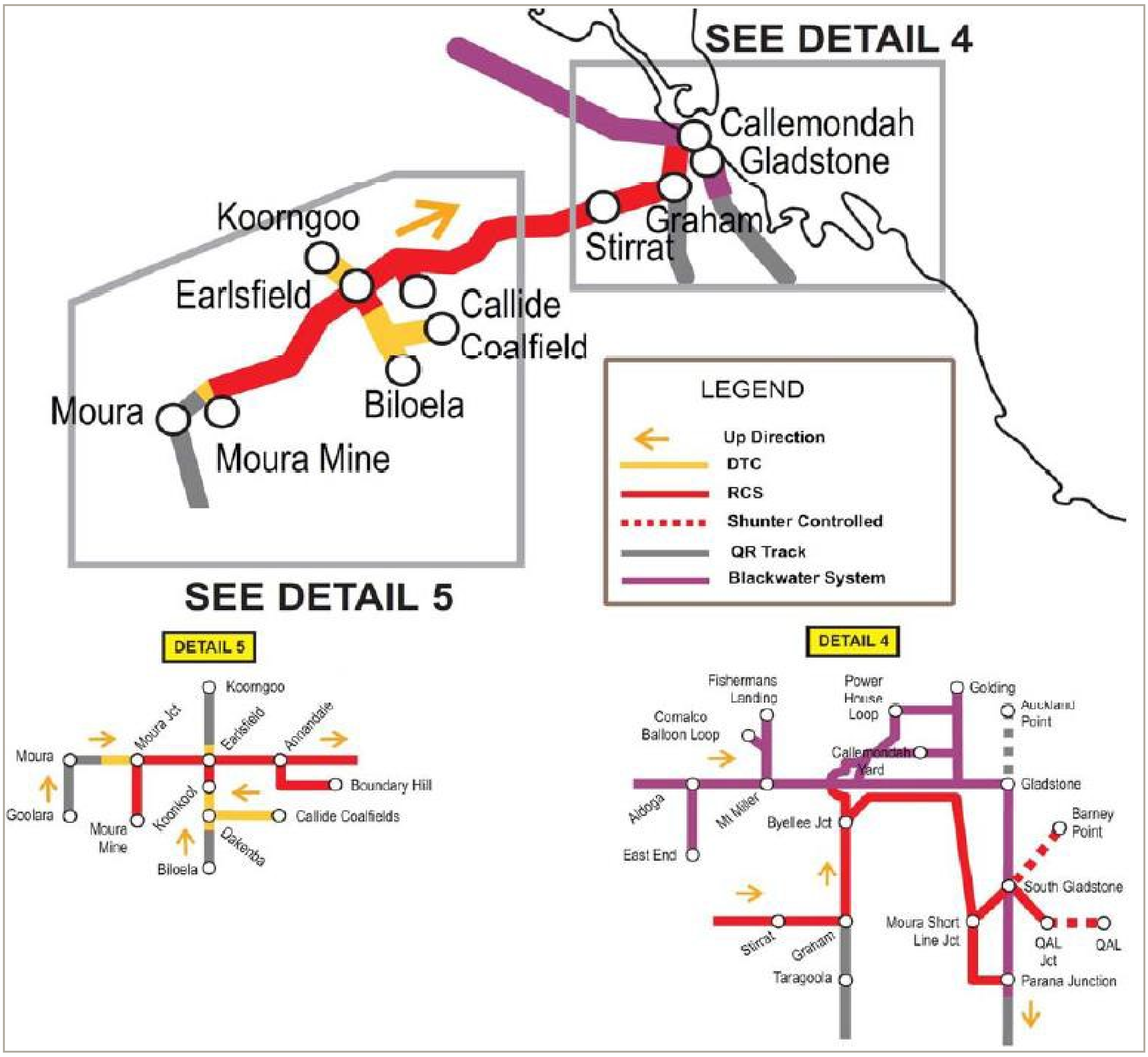
Figure 5 Blackwater Coal System Signalling



Moura Coal System

The Moura Coal System is largely RCS except for DTC on the Dakenba branch (to Callide) and DTC-MLPI west of Moura mine junction to Baralaba.

Figure 6 Moura Coal System Signalling



4.5.1. Remote Control Signalling (RCS)

Rail traffic movements are regulated by signals controlled from a remote location and/or automaticallyby the passage of rail traffic. Only one rail traffic movement can be on a signalled section at one time. This is the default mode of operation of the DMS.

4.5.2. Direct Train Control (DTC)

Rail traffic movement is governed by instructions contained in DTC Authorities issued by the AN network control officer to rail traffic crew. DTC Authorities give rail traffic possession of blocks of track. The crossing of trains at passing loops incurs delays that are in addition to the time the first train spends waiting for the second train to cross. There are two types of DTC, as follows. The time impacts of DTC are described in **Section 3.4.3** DTC Signalling.

Directional Running

Passing loop turnouts are arranged with trailable facing points such that trains can travel through the passing loop without requiring the train crews to operate turnouts.

Main Line Points Indicators (DTC-MLPI)

Passing Loops have power operated turnouts and illuminated indicators to give train crews advanced indication of the direction the turnout is set. Train crews can set the turnout using a hand-held remote control.

4.5.3. DTC Signalling

When trains cross at passing loops in DTC territory, delays apply depending on the type of DTCimplemented. All delays are in addition to Sectional Running Times and stopping and starting durations.

DTC Directional Running

- The first train to arrive at the passing loop stops and incurs a delay of 10 minutes.
- The second train must also stop at the passing loop, and incurs a delay of 10 minutes, then departs.
- Once the second train has departed the passing loop, the first train incurs a further delay of 6 minutes before being allowed to depart.

DTC with Main Line Point Indicators

- The first train to arrive at the passing loop stops and incurs a delay of 20 minutes.
- The second train must also stop at the passing loop, and incurs a delay of 10 minutes, then departs.
- Once the second train has departed the passing loop, the first train incurs a further delay of 21 minutes before being allowed to depart.

4.6. Rail Depots

The modelled rail depots are listed in **Table 5.**

Table 5: Modelled Rail Depots

Coal Systems	Modelled Depots
Newlands, GAPE	Pring
Goonyella	JilalanNebo
Blackwater, Moura	Callemondah

Depots are modelled at a macro, rather than micro, level. AN's **Line Diagrams** shows the yards with red roads (owned and operated by AN) and blue roads (typically owned by Above Rail operators). The blue roads are where major wagon and locomotive maintenance is done.

The break-up/make-up and shunting of consists from red roads to blue roads is not modelled explicitly, neither are the maintenance works performed on blue roads.

From a modelling perspective, the DSM assumes:

- Queueing roads for loaded trains waiting for an IL and for empty trains waiting for dispatch;
- Locations where trains may be provisioned, examined, attended by trade staff, or have crew changes; and
- Uses data assumptions provided by Above Rail operators on provisioning cycles, time for provisioning, crew change timing within yards and unit time maintenance for each consist type.

The number of roads modelled at each of the Rail Yards are listed in **Table 6**.

Table 6: Default Number of Roads at each Rail Yard

Rail Yard	Roads
Pring	6
Jilalan	12
Nebo	6
Callemondah	12

At Callemondah, the DSM does not distinguish between arrival roads and departure roads. All roads are pooled and can be used for queueing either loaded or empty trains. The powerhouse roads are considered separate to the yard. Restrictions on the number of trains that can be provisioned or maintained at the same time effectively mimic the limited number of arrival and departure roads.

4.7. Location Specific Features

The following location specific features are noted:

[redacted]

4.8. Sectional Running Times

Sectional Running Times (SRTs) describe how long it takes an empty or loaded train to traverse each track section:

- For coal traffic, the SRTs have been taken from Aurizon Network's **System Operating Parameters(2019)** and are reproduced here in **Appendix A** – Sectional Running Times. The 2019 SRT's are used for the ICAR determination to match the data period as outlined in UT5. The Annual Capacity Assessment will use the latest SRT's each year.
- For non-coal traffic, see **Section 11** Non-coal traffic and **Appendix A** – Sectional Running Times.

In some instances, sections have been divided into two to accommodate a proposed new mine and it's balloon loop/TLO (see Section 5). Where this has been done, the SRT has been distributed across the two sections in proportion to their length.

4.9. Stopping and Starting Delays

While SRTs reflect the travel time for a continuously moving train (in the absence of any speed restrictions), if a train needs to start or stop, additional travel time is incurred on the relevant section. Starting and stopping delays included in the DSM are included in **table 7.** The times were based on a statistical analysis of historical data.

Table 7: Stopping and Starting Delays by Coal System

Coal System	Starting Delay (mins)	Stopping Delay (mins)
Newlands	4	3
Goonyella	4	3
Blackwater	2	3
Moura	2	3

5. Demand

5.1. Measurement of demand

DNC is measured in Train Paths.

The DSM considers demand as a critical primary driver for coal services, i.e., requests for the delivery of coal, from mines to terminals and domestic users and non-coal traffic.

Demand can be expressed in TSEs for the purposes of railing demand (consistent with Access Agreements), or in tonnes to describe the quantity of coal to deliver.

The DSM uses TSEs as the input for demand.

Demand and in particular Committed Capacity is determined by the Access Agreements.

UT5 requires the ICAR to be determined on a DNC Analysis linked to "the extent to which the Deliverable Network Capacity can deliver the Committed Capacity". Committed Capacity is the portion of Capacity that is required to meet Train Service Entitlements, renewal obligations, and Passenger Priority Obligations or Preserved Path Obligations, to provide Access Rights where AN has contractually committed to Expansion or Customer Specific Branch line in relation to those Access Rights.

Committed Capacity is used as the base demand profile against which DNC is assessed, and if necessary, demand for all Committed Capacity is scaled up linearly until DNC of the Rail Infrastructure is reached.

Demand data was sourced from AN current as of July 2021. This represented contracted TSEs per 30-day month up to and beyond the end of the capacity assessment period from July 2019 (FY20) to June 2024 (FY24). UT5 defines the Capacity Assessment Period as the later of 5 years or peak capacity under the Access Agreements. the IE has determined from the data that peak capacity occurs within the five-year capacity assessment period outlined above.

Where Access Agreements have rights for renewal occurring during the Capacity Assessment Period, contracted TSEs per month were extended up to June 2024, using the value of the final month of the existing contract.

5.2. DSM Implementation

Demand is drawn in the DSM from a list of Rail Jobs. Each Rail Job corresponds to a set of one or more train orders for a given origin/destination pair, with a timestamp of when it becomes available to process. A destination can be a coal terminal, domestic user and/or a non-coal traffic exit of the network.

The input for demand is based on the contracted TSEs per 30-day month, where it is assumed that everyone Train Path consumes 2 TSEs: one for empty travel, one for loaded travel. Contracted TSEs for each month are adjusted according to the number of days in each month:

$$\text{Actual TSEs} = 2 \times \text{round}\left(\frac{\text{Contract TSEs per 30-day month} \times \text{days in month}}{30 \times 2}\right)$$

The list of individual Rail Jobs to determine DNC is created in two parts from the monthly contracted TSE totals: one is even railings and the other is campaign railings. Each coal terminal was reviewed to understand its designed mode of operation and its impact on Rail Infrastructure capacity. Other domestic users and non-coal traffic destinations were assumed as even railing.

A. Even Railings:

- The list of Rail Jobs for all terminals excluding DBT, consists of single train cycle orders, based on the monthly contracted TSEs. Each Rail Job's priority is the percentage satisfaction of its contract up to that point in the list (**see figure 7 below**).
- Rail jobs are not restricted within the month, rather they are available to rail at any time. In this way the intended even railing pattern is targeted by the prioritisation while allowing the use of sprint capacity in some parts of a month to compensate for maintenance in other parts.

B. Campaign Railings:

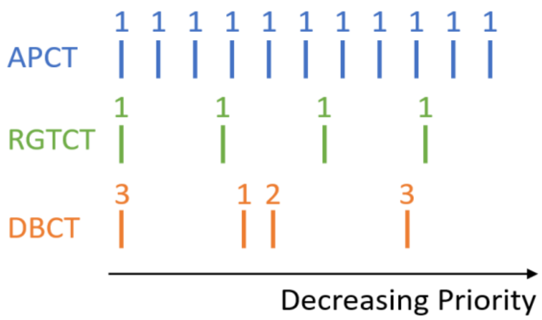
- In contrast, DBT operates as a cargo assembly terminal. To mimic the typical campaign railing pattern without modelling the terminal's internal operation, a dynamic ship arrival table (SAT) is generated from the expected tonnes carried by each mine/terminal contract. The expected tonnes consider light loading and all other loading considerations, inducing train trips as close to the contracted TSEs as possible, as well as historical cargo size information.
- As train payloads vary randomly, and the ships are discrete, the total of the required train cycles cannot always be a perfect match with the contracted TSEs. The Rail Job for each shipping cargo is created with a priority equal to the ship's arrival time in the month as a percentage. No terminal stockyard is modelled that could restrict the number of ships being processed in parallel, therefore all jobs are available to be railed from the beginning of the month, analogously to the even railings jobs described above.
- For campaign railing only to DBT, TSEs are converted into tonnes using tonnes = TSE/2 * expected payload, where expected payload includes the effects of light loading on the mean payload as outlined in **section 6.4**. This is required as a result of the linkage to ship parcel size. This is not applicable to even railing terminals.

When a campaign railing job commences, it locks the TLO from being used by another job until that job is finished. If there is another TLO in the balloon loop, this is not locked.

When multiple mines use the same balloon loop, the DSM assumes they are using the same TLO. However, even railings can still dispatch trains to the same TLO. [redacted]

The two prioritisations are then merged and ordered by the Rail Jobs' priorities.

Figure 7: Illustrative example of Rail Job prioritisation. DBT operates as cargo assembly while others prioritise based on individual contract satisfaction



When the DSM is used to test the ability of the Rail Infrastructure to meet contracts within a month, at the end of each month any pending Rail Jobs (i.e., the train is not dispatched prior to month end), are removed, and may no longer be railed for. Jobs are considered railed for within a month so long as the train is dispatched within that month.

5.3. Cross System Traffic

Cross system traffic is included in the DSM and demand profile. Cross system traffic includes any origin that is in one coal system and delivers to a destination in a different coal system. GAPE Coal System train services are not considered as cross system traffic as outlined in UT5.

There are only a handful of cross system origin/ destinations which operate in the Blackwater and Goonyella Coal Systems.

6. Train Loadouts

6.1. Overview

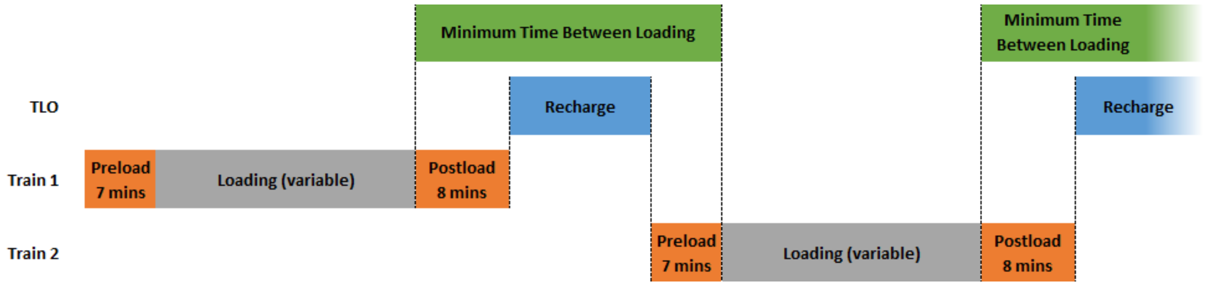
The upstream boundaries of the DSM are the Train Loadout (TLO) facilities at each mine, with their associated balloon loop. Coal enters the DSM at these facilities. Coal is always available subject to the constraints of the load point capability. In the DSM, the duration that trains spend in the balloon loops is based on the following components and conditions of the use of TLOs, including:

- Access to the TLO facility, regulated by:
  - how many trains the balloon loop can hold **(see Section 6.2)** – this determines whether trains can queue for loading at the TLO in the balloon loop, or on the network in a passing loop; and
  - the availability of the TLO itself, allowing for planned maintenance (see **Section 5.3**).
- The duration that each train spends at the TLO, determined from the parameters of train loading:
  - the duration of other activities such as pre and post load;
  - the train payloads **(see Section 6.4);**
  - the equipment gross loading rates (GLRs), which include the effect of unplanned delays to both the loading equipment and the operations immediately beyond the TLOs **(see Section 6.5**); and
  - the minimum separation time between loading of trains, including the time taken for loading equipment to be ready for their next job, i.e., recharge.
- Cycle-related activities such as crew changes, as applicable for the origin/destination pair.
- The duration that trains spend waiting for access back on to the network, which is dependent on the state of local network traffic.

The sequence of events that a train undergoes upon arrival at a TLO is summarised below, and shown graphically in **figure 8.**

- The TLO becomes ready to load after the minimum time between loading duration has passed,following completion of loading of the previous train. Its length is based on observations of a sustainable minimum separation in historical data;
- The train becomes ready to load after the pre-load duration of 7 minutes. The pre-load duration is allowed to occur in parallel with the minimum time between loading;
- The train is loaded by the TLO, with the train loading duration being based on payload and gross load rate values. The DSM samples a distribution representing train payload, and a second distribution representing GLR, and then calculates load duration by dividing the sampled payload by the sampled GLR; and
- On completion of loading, the following two activities commence in parallel:
  - the train must wait a post-load duration of 8 minutes before it can try to move out of theballoon loop to access the network; and
  - the TLO begins its minimum time between loading in preparation for loading the next train.

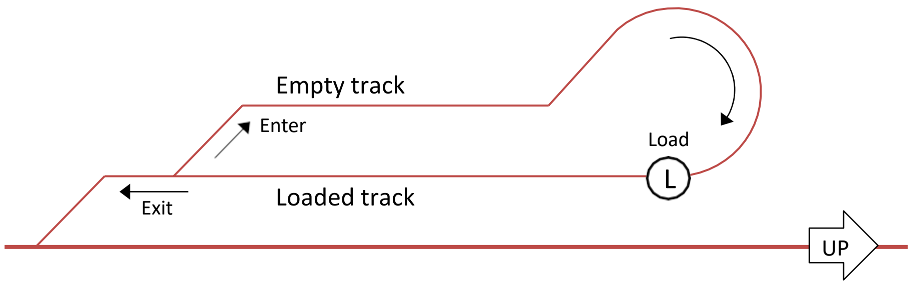
Figure 8: Gantt Chart for choke feeding of TLO



6.2. Balloon Loop Capacities

The infrastructure properties of balloon loops differ between mines, with consequences for the queueing of trains for TLO access**. Figure 9** shows a typical balloon loop arrangement.

Figure 9: Generic Balloon Loop Layout



The following configurations were identified:

- For some mines, trains have to queue on the network if the TLO is in use and wait until the currently loading train has exited the balloon loop;
- Some mines can accept an empty train while the loaded train is still in the balloon loop, but onlyonce the loaded train has had its loading completed;
- Some mines can accept the next train into the balloon loop while the previous train is still loading; and
- Some mines can queue more than one train in the balloon loop before the loaded train has to exit.

In all of these cases, the already loaded train has to move off the loaded track and exit the balloon loop before the next train can commence its actual loading phase. The DSM track booking mechanism will make the train wait on the last "safe to stop" section before the TLO's balloon loops. They will only be able to move off towards the balloon loop once the previously loaded train has exited and crossed at the respective passing loop.

The maximum trains in a balloon loop used by the DSM is shown in **table 8**. For a number of TLO's where in practice they can hold one full train while another is being loaded these have been shown as two train capacity in the DSM. Note that not-yet-built TLOs are assumed to have maximum standard balloon loops.

Table 8: TLO Balloon Loop Parameters

Coal System	Mine	Maximum Trains in Balloon Loop
Newlands, GAPE	Byerwen	[redacted]
	Collinsville	[redacted]
	Newlands	[redacted]
	Sonoma	[redacted]
Goonyella	Blair Athol (Terracom)	[redacted]
	Burton	[redacted]
	Carborough Downs	[redacted]
	Caval Ridge	[redacted]
	Clermont	[redacted]
	Coppabella	[redacted]
	German Creek	[redacted]
	Goonyella	[redacted]
	Hail Creek	[redacted]
	Isaac Plains	[redacted]
	Lake Vermont	[redacted]
	Middlemount	[redacted]
	Moorvale	[redacted]
	Moranbah North	[redacted]
	North Goonyella	[redacted]
	Oaky Creek	[redacted]
	Olive Down South	[redacted]
	Peak Downs	[redacted]
	Millenium	[redacted]
	Riverside	[redacted]
	Saraji	[redacted]
	South Walker Creek	[redacted]
Blackwater	Boonal	[redacted]
	Boorgoon	[redacted]
	Curragh	[redacted]
	Ensham	[redacted]
	Gregory	[redacted]
	Kestrel	[redacted]
	Kinrola	[redacted]
	Koorilgah	[redacted]
	Meteor Downs South	[redacted]
	Minerva	[redacted]
	Rolleston	[redacted]
	Washpool	[redacted]
Moura	Baralaba	[redacted]
	Boundary Hill	[redacted]
	Callide	[redacted]
	Moura	[redacted]

6.3. TLO Availability

The availability of the TLOs can be limited due to planned maintenance of the train loading system.

Historical data reviewed for one Coal System from the period of FY16 to FY18 indicated that there was no significant alignment between the timing of TLO planned maintenance events and full system shuts (FSS). Data for the same period for the CQCN indicated that the duration of planned maintenance events was variable over time and for TLOs.

To simplify the application of TLO planned maintenance events in the DSM, they were applied independently of FSS's, and at regular intervals, having equal duration at each occurrence. The number of events per year and the duration per event adopted was guided by the historical data for each TLO. To avoid maintenance events across TLOs being unrealistically aligned, a random time offset was added for the first event on each mine.

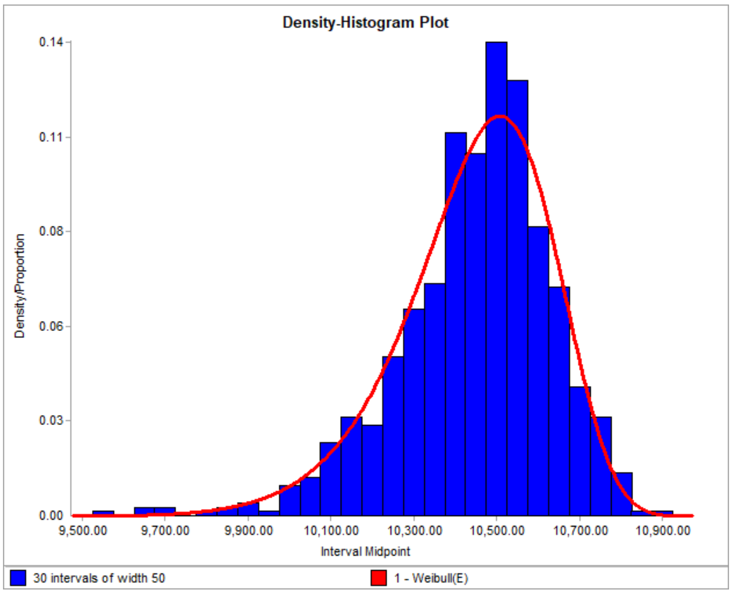
For TLOs that show no planned maintenance, the maintenance is assumed to occur during full system shuts only and hence is not explicitly modelled.

6.4. Payloads

The analysis of historical actual Payload data indicated two categories: full Payloads and light Payloads. Payloads were light if they were below a specified threshold. A different threshold applies to each Coal System as the train lengths and axle load limits vary.

The light load threshold for each Coal System is shown in **table 9**. For each TLO, a distribution was fitted to the full Payload data, as shown in the example in **figure 10** (for a Goonyella Coal System TLO with full Payloads greater than 9,500 tph).

Figure 10: Example of a distribution fitted to historical full Payloads for a Goonyella Coal System TLO



As the count of data points for light loads for any single TLO is considered low, all the light load data from every TLO within each Coal System was pooled. One light load Payload size distribution was fitted per Coal System. The probability of occurrence of a light load for a given mine was calculated as the percentage of all light loads out of all train loads, by Coal System.

Table 9: Light Loading by Coal System

Coal System	Light Load Threshold (t)	Chance of Light Load
Newlands	6,000	3.7%
Goonyella	9,500	12.0%
Blackwater	7,500	4.6%
Moura	7,500	8.4%

For DSM implementation, a test is performed every time a train presents at a TLO to determine whether the Payload will be a light load or a full load. The Payload is then sampled from the corresponding distribution.

An analysis of Payload variability was undertaken for historical Payloads of existing TLOs in the CQCN.

No light loads are used for the short Moura Coal System trains. Minerva Payloads are limited by the branch line axle load limit of 20 tonnes.

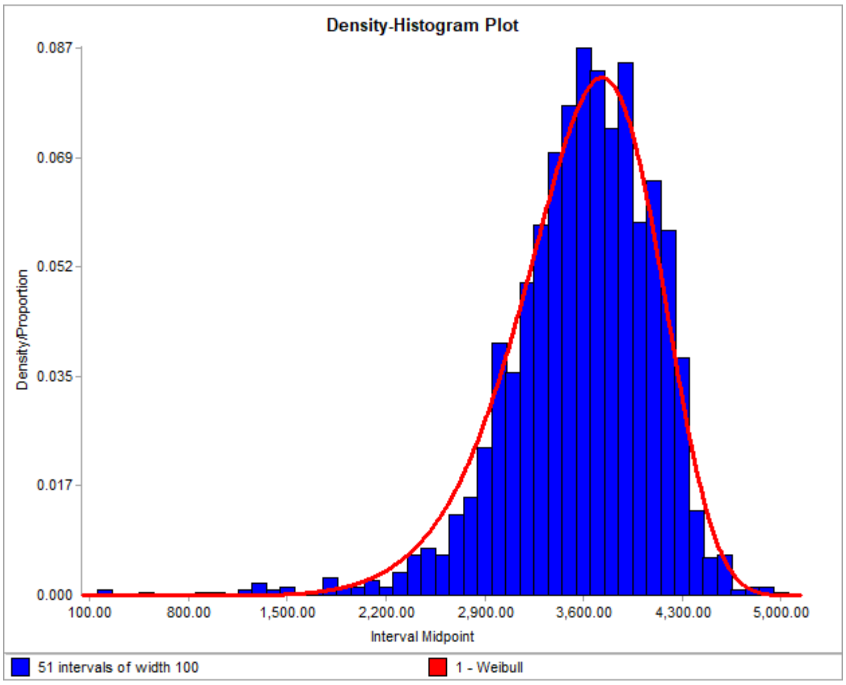
6.5. TLO Gross Load Rates

Train loading job data was provided by Above Rail operators for the two-year period from January 2018 to December 2019. The gross load rate (GLR) for each job was calculated by dividing actual Payload by the difference between the start and end loading timestamps (i.e., the gross loading time).

The use of the gross loading time captures any delays that occur during loading, removing the need to explicitly model delay events. This does not capture any delays to the start of loading. If the typical GLR for a TLO showed marked changes over time that may be associated with an upgrade of the loading system, only the most recent portion of the data was retained.

Distributions were fitted to the GLR data for each TLO. An example of a GLR histogram and fitted distribution for an unidentified TLO is shown in **figure 11.**

Figure 11: Example GLR histogram and fitted distribution for a single TLO



6.6. TLO Data

Appendix F contains data used within the DSM for each TLO modelled, including load time. Gross loading rate planned maintenance outside FSS, light loading assumptions and pre and post load times.

7. Inloaders

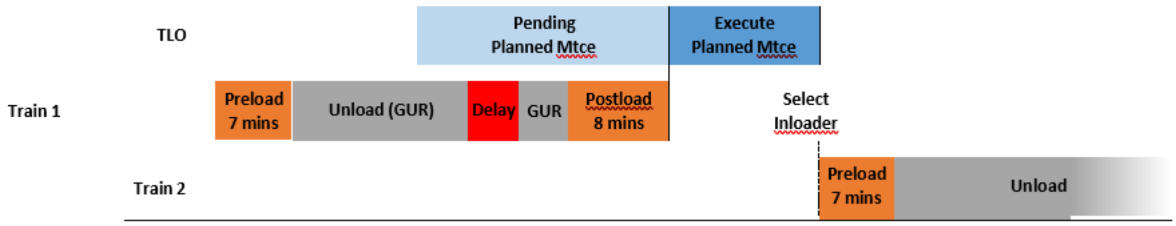
7.1. Overview

The downstream boundaries of the DSM are the rail receival stations (RRS), or Inloaders (IL), at each export terminal and domestic user facility. Coal exits the DSM at these facilities. To model the duration that trains spend in the unloading balloon loops, the following components and conditions of the use of ILs are captured:

- The availability of the ILs for trains to enter, allowing for planned maintenance;
- The duration that trains spend at the ILs, allowing for:
  - the duration of activities such as pre- and post- unload;
  - the train Payloads;
  - the equipment gross unloading rates (GUR), which include the effect of short delays stemming from both the unloading equipment and the operations immediately beyond the ILs; and
  - unplanned delays longer than those captured in GUR variation.
- Availability of network infrastructure for trains to leave the ILs and return to maintenance/dispatch locations.

The modelled sequence of activities in the unloading process is illustrated in **figure 12.**

Figure 12: Gantt Chart for Unloading of Trains



At terminals with multiple ILs, loaded trains arriving at the terminal are placed in a queue awaiting an available IL. Loaded trains are only allocated to an available IL when the next one becomes available. ILs serve trains on a first-come first-served basis. At RGTCT, the IL selection process is also constrained by stockyard connectivity restrictions by checking whether an arriving train's coal product is able to be loaded through the selected IL.

Once allocated an IL, the train moves to the IL, waits for the pre-unload delay duration, and begins unloading its payload at a sampled GUR. Additional failure events (based on operating time) represent the unplanned delays in the unloading process **(see section 7.3).** After unloading, the train waits for the post-unload delay duration and is then ready to depart for its next task. The train may potentially have to wait for the network to become available to leave the IL departure track.

At the completion of post-unload, the IL becomes available for selection by the next train waiting to unload, or for completing pending planned maintenance. However, the next train can only commence unloading once the departure track has been vacated.

At RGTCT there are some restrictions that apply for some belts for some origin/destinations. The DSM has made some allowance for this.

7.2. Inloading Loop Capacities

IL balloon loops are assumed to possess one arrival track and one departure track each, which are both used during the unloading process. Each arrival track can only hold one train.

7.3. Inloader Availability

The availability of the terminal ILs is constrained by planned maintenance of the inloading system, and additionally by unplanned outages during operating time. For terminals with multiple ILs the DSM treats each IL separately.

Planned maintenance on the ILs is applied during FSSs, for the same duration as each FSS.

Historical data provided by the Terminals indicates the possibility of major planned maintenance on the ILs outside FSSs, however, these vary widely in both duration and timing, without a predictable pattern, indicating that they represent specific one-off events that are not applicable for the assessment of network capacity.

When a specific IL undergoes planned maintenance, it is not available for selection by arriving trains. If a train is currently being unloaded at the scheduled start time of a planned maintenance event, the unloading process is allowed to finish first **(see figure 12 above**).

Unplanned outages are modelled as randomised delay events during the unloading process, during which the train still occupies the IL, but no unloading takes place. These delays are applied using a time-to-failure (TTF) and a time-to-repair (TTR), which are sampled from distributions for each IL.These distributions have been derived from historical unloading duration data received from Above Rail operators and/or export terminals.

7.4. IL Gross Unload Rates

Train unloading Job data was provided by multiple Above Rail operators and/or export terminals.

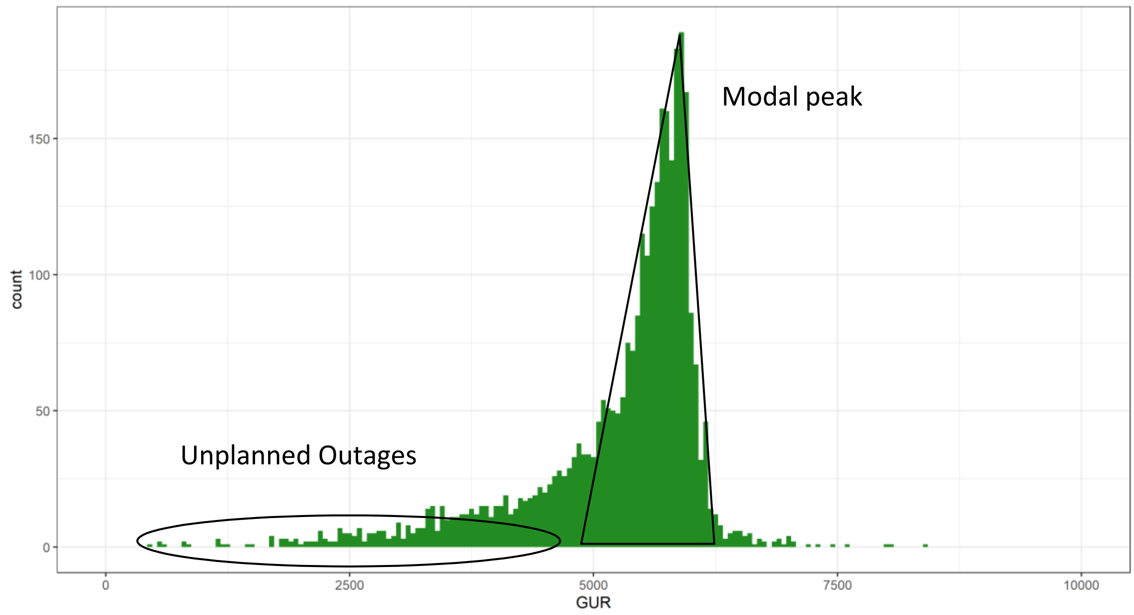
The gross unload rate (GUR) for each unloading job was calculated from the historic Payload and gross unloading time, capturing any delays that occurred during unloading.

The typical spread of GUR is illustrated in the example in **Figure 13**. The majority of unload jobs complete at a rate close to equipment capability, with some variability due to downstream activities and individual attributes of a train load, e.g., sticky coal, free-flowing coal etc. The unload jobs that encountered unplanned outages result in a “long tail” of significantly lowered rates.

To capture this behaviour, the variation in GUR has been represented in the DSM as:

- a triangular distribution for the baseline inloading rate to fit the modal peak, and
- unplanned outages (see **Section 7.3**), defined by TTF and TTR, to represent the tail of the distribution.

Figure 13: Example GUR histogram



7.5. IL Data

Appendix G contains data used within the DSM for each IL modelled including availability, gross unload rate, time at terminal etc.

8. Below Rail Operations

This section describes how the DSM captures the way in which the Coal Systems operate in practice. The DSM does not explicitly copy real world operations step by step. For instance, the DSM does not generate an Intermediate Train Plan, however, instead, the DSM captures how the end result of the real-world operations planning process plays out.

8.1. Pathing

The travel of trains over mainline sections of track is governed by network Train Paths. Such paths typically originate at dispatch locations such as Pring, Jilalan and Callemondah for empty travel, and staging locations such as Bluff and Coppabella for loaded travel. Paths are defined by their frequency and clockface departure time at the origin, as shown in **table 10**.

Separation times are applied as shown in **table 10** between paths.

Table 10: Path Frequencies and Clockface Times

Coal System	Mainline Path	Separation	Clockface Time
Newlands	ex Pring, empty	60 minutes	0:50, 1:50, 2:50, …
Newlands	ex Collinsville, loaded	60 minutes	0:22, 1:22, 2:22, …
Goonyella	ex Jilalan, empty	20 minutes	0:00, 0:20, 0:40, …
Goonyella	ex Coppabella, loaded	20 minutes	0:10, 0:30, 0:50, …
Blackwater	ex Callemondah, empty	15 minutes	0:00, 0:15, 0:30, 0:45, …
Blackwater	ex Kabra, empty	15 minutes	0:00, 0:15, 0:30, 0:45, …
Blackwater	ex Bluff, loaded	20 minutes	0:10, 0:30, 0:50, …
Blackwater	ex Rocklands, loaded	20 minutes	0:10, 0:30, 0:50, …
Moura	ex Callemondah, empty	90 minutes	0:15, 1:45, 3:15, …
Moura	ex Dumgree, loaded	90 minutes	0:17, 1:47, 3:17, …

When a train arrives at a path-controlled section of track, it requests a path and dwells in its current location until it is allowed to depart on a path along the mainline. The departure time is calculated based on the next path that is available for use, and from the travel time required from the current location to meet a path at the mainline entry point. Once the train has departed to meet the path, its movements are not scheduled in advance, and its progress along the route is managed by the track control algorithm of the rail microsimulation.

In practice, a disciplined schedule is used to ensure crossing activities are managed and optimised. The DSM consider paths are network Train Paths, as opposed to System Paths, whereby a loaded train departs a staging point (e.g., Coppabella) on a path that is aligned to meet a pre-scheduled terminal inloading slot. Hence loaded trains are not sequenced when taking their final path to the terminal from a staging point. Instead, trains leave on a network Train Path and travel to the corresponding rail yard to queue, if necessary, for the first available suitable terminal IL.

The DSM enforces pathing separation of 15 mins west of Kabra and 20 mins east of Rocklands in the Blackwater Coal System to accommodate non-coal traffic that operates on preserved paths.

Network Train Paths can be used in whole or in part. In addition to coal train traffic, paths are also used for freight train traffic. Paths are marked unavailable for use if they are reserved for timetabled passenger trains, or would coincide with track closures on path-controlled sections.

In contrast to mainline sections of track, travel on branch lines is not path-controlled, but instead governed by headway and track booking requirements. This means that trains do not need to wait for a clock-face path to travel from a mainline turn-off to the loadout balloon loop. Conversely, trains leave balloon loops after they have finished loading, and travel run-when-ready until they arrive at a network location from which the onwards location mainline paths are enforced.

8.2. Dispatch

In the real-world operation of the CQCN, railing is planned with weeks of look-ahead in a complex vertically separated planning regime designed to coordinate between numerous Access Holders and service providers. These plans are then implemented and adjusted in day of operations management.

The DSM does not attempt to replicate this process and its various actors with their individual objectives and constraints. Instead, it aims to capture the outcome of a successful planning process through the modelled dispatching algorithm.

The dispatching algorithm decides how Rail Jobs are assigned to available trains.

Rail jobs are generated from the demand described in **section 5.** Additional demand, such as domestic users' demand reinjected into the list as high priority rail jobs to ensure that these requirements are met.

For each idle train arriving at a dispatch location, the list of available Rail Jobs is searched in order until one is found that satisfies the following criteria:

- There is outstanding demand to rail remaining in the Rail Job;
- The Rail Job's TLO is available at the expected time of the train's arrival, in particular:
    - The maximum number of trains per day dispatched to the TLO has not been reached;
    - The maximum number of simultaneous trains on the way to the TLO has not been reached; and
    - The estimated loading period is not expected to clash with another train;
- The selected train is suitable for railing between the mine and terminal in question. This takes into account both above rail contracts and physical constraints; and
- The train's journey to the loadout is not expected to be interrupted by network closures or planned maintenance.

If a Rail Job has been found that passes all of the above checks, the train is assigned to be dispatched to the respective mine for delivery to the respective terminal. It then embarks on the first step of its train cycle task sequence **(see section 9** - Train Cycles). Typically, this involves requesting a path for mainline travel.

If no Rail Job is found for a given train, the search for a matching train job for the next train commences.

8.3. Rail Microsimulation

The travel of trains between points on the network is handled by the DSM's rail microsimulation engine. This engine monitors and directs the movement of trains over tracks,respecting the following principles:

- Train routing: The rail microsimulation engine chooses the route from each train's current location to the next task in the current train cycle. The travel of the train along the chosen route is controlled in increments that depend on the current network status;
- Plan and execute train movements: For each train movement along a route, a sequence of tracks is

chosen and booked to the next "safe to stop" section. When the sequence of bookings is made, the train travels along the booked sequence of tracks, with the rail engine monitoring its progress and applying travel-related events (such as delays, see **section 10 System Delays**) until the train reaches the last booked track. This process is repeated until the train reaches the destination of its route; and

- Negotiation of train meets to avoid deadlocks. The track booking algorithm is designed to manage the meeting of trains on a local scale, employing a first-come first-served approach. It considers track availability and usage by other trains at the time of booking in a way that ensures that trains only stop in locations where oncoming traffic is able to go around them.

8.4. Planned maintenance

8.4.1. Types of Maintenance

There are 5 types of planned maintenance that need to be considered in the DSM:

1. Possessions: Maintenance, Renewals and Construction;
2. System Closures (Full System Shuts);
3. Infrastructure Inspection;
4. The transport of material or work trains to and from the site of maintenance; and
5. Maintenance on the move, e.g., rail grinding

From a capacity modelling perspective, the main distinction between these types of maintenance is whether they prevent network Train Paths and/or rail assets from being used for train traffic, or not.

Possessions, system closures and maintenance on the move events occupy track resources for a predetermined amount of time. They are modelled explicitly by applying a schedule of track maintenance events that identifies which track assets are unavailable at what time and for how long. The DSM applies the time allocation for the activities monthly.

The transport of material or work trains to and from site and maintenance on the move activities are scheduled to occur as required and could impact Train Paths.

8.4.2. Data – Planned Maintenance and System Shuts

The data sets for planned maintenance and system shuts used in the DSM was provided by AN and represents the actual, planned and future CQCN maintenance calendars. The data represented:

- actuals for FY20;
- actual and forecasts for FY21;
- forecasts as agreed with the Rail Industry Group for FY22; and
- forecast assumptions for FY23 and FY24 using predominantly the data from FY22.

The planned maintenance and system shut data does not include unplanned maintenance, emergency maintenance, or maintenance on the move, all of which are captured separately and represented as General Delays, using historical data.

Planned maintenance is broken down to a track section level in the DSM.

The planned maintenance for each Financial Year of the capacity period, split into major maintenance groupings, is summarised in **Appendix B: Summary of Planned Track Maintenance.**

8.4.3. Possessions

Possessions are the temporary closure and/or occupation by AN on part of the Rail Infrastructure for the purposes of carrying out work on or in the proximity of the Rail Infrastructure which may affect the safety of any person or property. In real-life operations, only part of the Possessions for a Financial Year is known ahead of its start. Additional possessions are added as the need for works on specific assets arises. In the DSM, the look-ahead for train dispatch and running is short enough that both long and short term planned possessions can be assumed to be known at the time needed, therefore they are all included in the maintenance calendar.

Where possessions occur on one track in a duplicated section, the DSM allows the remaining track to be occupied for both up and down traffic.

In the DSM, planned maintenance events will commence whether a train is on that section of track or not. If a train is occupying the track the DMS allows it to move off. After that, the DSM does not allow another train to occupy the section of track until the Planned maintenance activity is complete.

Planned maintenance events can occur in the DSM whilst the track is experiencing a failure. As failures are triggered by a train passing over the track, this case implies that there is a train on the track in that moment. The DSM will allow the failure to run and end independently of the planned maintenance, and let the train go away in either case.

8.4.4. Full System Shuts (FSS)

FSSs are pre-planned periods for which all traffic in a Coal System is shut down in order to allow for major works on a variety of assets in multiple locations. The duration of such events ranges from 12 to 108 hours at a time. During such events, trains are typically stowed at rail yards, balloon loops, and other parts of the network; the exact planning of locations and timing depends on the works of the individual closure.

FSSs are modelled as planned maintenance events that stop the travel of trains and the dispatch of train services to any mines. In addition, all ILs of all terminals in the respective Coal System are made unavailable for the duration of the closure (mainlines only). The implementation of towage and the related staggered shutdown and restart of operations is described in **Section 9.4 Stowage.**

For a FSS, the DSM assumes a train is not dispatched if travel intersects a FSS based on a minimum travel time. For each Coal System a multiplier of 1.5 of minimum travel time is used to account for any delays.

8.4.5. Infrastructure Inspection

Infrastructure inspections are carried out using a hi rail vehicle, a car fitted with wheels that allow the car to travel on the rail infrastructure. These inspections are scheduled and the DSM has assumed the section of the track is deemed unavailable for coal services during the time when hi rail is on the section.

8.4.6. Transport material or work trains to and from the site of maintenance

In practice, it is typical for moving equipment to be scheduled around coal and other services.

8.4.7. Maintenance on the move

The predicted schedule for maintenance on the move is not included in the maintenance calendar described in this section. While technically distinct from possessions, they both generate the same capacity outcome in terms of the inability of the DSM to schedule Rail Jobs.

9. Above Rail Operations

9.1. Consists and Fleets

Assumptions are made for the number and type of trains available in each coal system to reflect the expected fleet sizes required to meet the demand. This may differ from the amount allocated by each Above Rail operator to meet their Above Rail Committed Capacity. A consist type is applied to each origin/destination as per historical data provided.

Train consists are classified as either diesel or electric. Diesel consists can access the whole CQCN while electric consists can only access the electrified parts of the CQCN, see **Section 4.4 Electrification.** Diesel and electric locomotives have different maintenance and provisioning requirements.

Consist lengths, and hence Payloads, also vary from Coal System to Coal System, and also within a given Coal System. Consist length is not considered directly in the DSM however is accounted for through the varying origin/destination groupings and relevant Above Rail providers. The DSM determines Payloads for TLO related activities based on historical data, as described **in Section 6.4 Payloads.**

Consists are grouped into fleets based on their Above Rail operator, their motive power, the Coal System they are based in (as defined by the terminals they service), and the yard where they are maintained and provisioned.

The DSM does not include the temporary transfer of consists of one Coal System's fleet to another to accommodate demand fluctuations between Coal Systems. All consists stay based in the Coal System they are defined in while allowing travel between Coal Systems. For example, Blackwater Coal System-based consists can travel to Goonyella Coal System TLOs for haulage to Gladstone Port, but they do not load at a Blackwater or Goonyella Coal Systems TLO for haulage to the Port of Hay Point. Further, it is assumed that Moura Coal System fleet consists service only the Moura Coal System TLOs.

The number of consists in each fleet is considered in the following two ways within the DSM:

1. When assessing the DNC, the capacity should not be constrained by the current number of consists (as DNC is a measure of maximum number of Train Paths for the Rail Infrastructure), and so the number is artificially inflated, under the assumption that the Above Rail operators will provide the consists needed to realise the DNC.
2. When assessing current world scenarios, the actual current number of consists, as advised by the Above Rail operators, is used.

Haulage from a TLO to a terminal can only be assigned to consists in fleets for which the Above Rail operator has a haulage contract. Ad-hoc services with an alternate Above Rail operator are not included in the DSM. In some instances, the haulage task is contracted to more than one fleet. In this case, the proportion of haulage by fleet is not input to the DSM, but rather is an output, as dictated by fleet availability at dispatch.

9.2. Train Cycles

In general, train cycles typically proceed (standard) as follows:

- Dispatch from Yard (Pring, Jilalan, Nebo, Callemondah);
- Travel empty to TLO;
- Load at TLO;
- Travel loaded to IL;

- Unload; and
- Travel empty to yard for possible provisioning and/or maintenance, then dispatch.

Exceptions to the typical train cycles are described in **Section 9.3 Non-standard Cycles.**

Throughout train cycles, consists obey all necessary pathing and separation rules relevant to their network locations.

9.2.1. Planned maintenance

Planned maintenance activities include examinations/inspections, unit train maintenance, trade staff attendance, provisioning and cab cleaning. Each activity is described generally with a frequency, duration, capacity to service multiple train consists simultaneously, and any restriction on working hours.This is based on information provided by the Above Rail operators. Maintenance activities are all assumed to take place at the rail depots at which the fleet is based, as per **Section 4.6 Rail Depots.**

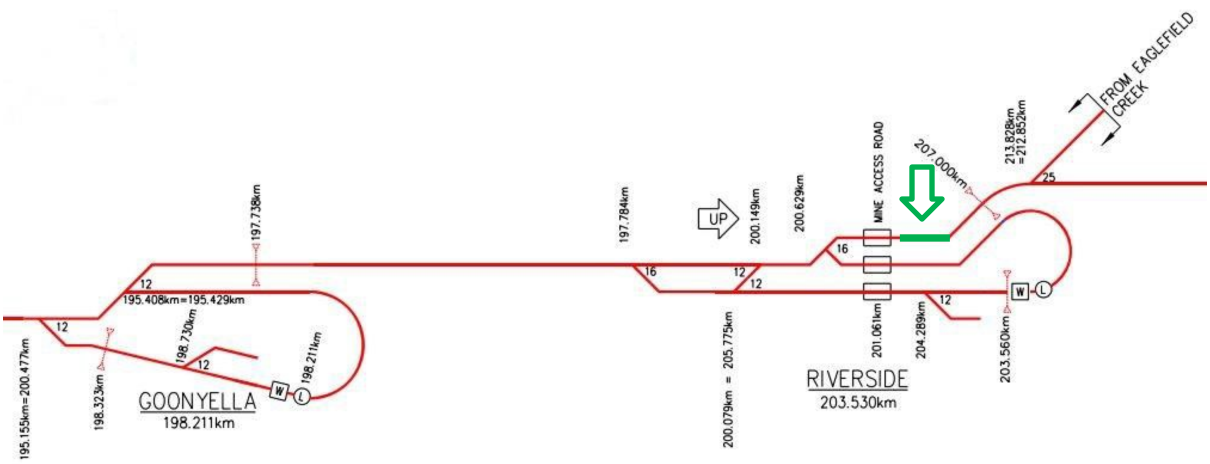
It is noted that planned maintenance affects the availability of consists, and hence only contributes to system performance when testing scenarios with real consist numbers. When testing capacity scenarios, the number of consists in each Coal System is increased artificially so that the fleet size is not a constraint, avoiding the need to model availability constraints.

9.2.2. Crew changes

At various stages in this cycle, crew changes will take place. These occur most commonly at yards, TLOs and/or staging points such as Coppabella, Bluff and Kabra, but actual locations depend on the individual cycle. All crew changes involve the application of stopping and starting time allowances and a time for the actual crew change. Crew change times are different when they occur within a yard. **Appendix I** has the detailed information on times for each location.

Crew changes for Pring based services travelling into the Goonyella Coal System (i.e., GAPE Coal System services) occur on the track indicated in **figure 14**.

Figure 14: Riverside crew change location



9.3. Non-Standard Cycles

9.3.1. General

Exceptions to the standard train cycle identified in **section 9.2** include:

[redacted]

- Trains that have unloaded at the following locations do not return to the Callemondah yard until the end of their following cycle; instead, these trains are dispatched from their unload point;
  - WICET;
  - Rio Tinto Aluminium;
  - Fisherman's Landing;
  - Stanwell Powerhouse (in the DSM, trains that unload at Stanwell Powerhouse then return to Bluff to be dispatched); and
  - [redacted]
- Most loaded trains passing through Callemondah are provisioned while loaded before unloading at RGTCT;
- There is no provisioning of trains at the WICET balloon loop (noting a trial is underway to allow for mobile provisioning at WICET) or at the Stanwell Powerhouse;
- WICET trains only carry out one cycle before being allocated back to Callemondah for provisioning; and
- Further specific occurrences of non-standard cycles are listed in **section 8.**

9.3.2. NQXT trains for Riverside, Goonyella, and Moranbah North

Entry to the Riverside, Goonyella and Moranbah North balloon loops is from the south only. NQXT trains for the Riverside, Goonyella and Moranbah North TLOs must travel south past the balloon loop entry, change ends, and then reverse into the loop. Similarly, when the loaded train departs these balloon loops, the train must travel south until it has cleared the balloon loop, then change ends and return to NQXT. These manoeuvres take place on the North Goonyella Junction to Newlands Junction branch line, with an average delay of around 30 minutes.

9.3.3. Other Considerations

The DSM has made assumptions that are non-standard for the following Above Rail train cycles:

[redacted]

9.4. Stowage

In actual operations, consists are stowed in suitable locations during FSS, typically rail yards, balloon loops, and on the network, as there are insufficient roads at the main rail yards to store all consists. Stowage locations are customised to the specific works of each FSS to allow a quick return to normal operation, so their planning varies between individual FSSs.

Therefore, the DSM does not explicitly implement stowage procedures. Instead, it simulates their effects as follows:

- Trains are not dispatched to a mine if their predicted travel to the mine will coincide with a scheduled FFS;
- For a FSS, the DSM assumes a train is not dispatched if travel intersects a FSS based on a minimum travel time. For each system a multiplier of 1.5 of minimum time is used to account for any delays;
- Already dispatched trains are allowed to travel up until the beginning of a shut, and are then stopped at strategic locations, forcing them to queue on the network. This captures the staggered restart outcome of well-organised stowage; and
- An additional look-ahead for shuts of 48 hours is applied for cross-system train services from the Newlands Coal System to Goonyella Coal System mines. This is done to ensure that the trains have enoughtime to return from the mine, and do not become trapped due to a Newlands Coal System shut, effectively imposing a Newlands Coal System FSS.

10. System Delays

Infrequent extreme weather events that disrupt operations in part of the supply chain (e.g. cyclones) are not included in the DSM. These large force majeure events are not modelled. Any smaller events that may be classified as force majeure for commercial purposes, are captured as General Delay data and included in the model assumptions.

Catastrophic equipment and infrastructure failures are not included in the DSM. An example of this is the washout of the dual track truck on the Sarina Range caused by rainfall associated with Cyclone Debbie in March 2017.

10.1. General Delays

At times, trains must fully stop due to breakdowns, failures and faults that occur within the supply chain (Faults).

These Faults may be due to various reasons such as rollingstock defects, track defects, signal failures, telemetry failures, objects on the track, etc. These stops are recorded as delays (Delays). Several trains may be delayed by the same Fault.

When considering Delays in the DSM, Fault events need to be generated, with the DMS then determining the consequential Delay impact of these faults, i.e., how many trains are delayed, and for how long. That is, Faults are a DSM input, and Delays are a DSM output.

However, there is no historical data available that records the Fault that causes Delays, but there is historical data on Delays impacting trains. DSM inputs defining Faults were developed by fitting distributions describing Faults such that the DSM produced Delays in a similar manner to the historical Delay data.

Delay data was filtered to use only those Delays that are not explicitly captured elsewhere in the DSM. For instance, Temporary Speed Restrictions (TSRs) are explicitly modelled (**see Section 10.3 Temporary Speed Restrictions)**, and so Delays due to TSRs were not included in the analysis.

Similarly, Delays due toTLOs and ILs were excluded, as were Delays due to large force majeure events.

Faults are represented in the DMS as *Track Failures* that only occur when a train is on the track, and hence are a property of the track sections and the distance travelled by each train. The inputs include distributions that describe:

- the number of times a track section is crossed between Faults; and
- the duration of the Faults.

10.2. Crew Change Delays

Crew change delays are handled separately from other delays as they are attached to specific activities (crew changes) and their locations. Crew change delays are delays on top of the regular train crew change durations provided by the Above Rail operators.

Crew change delays are applied at the end of the modelled crew changes. The train then waits the delay length at the crew change location before moving off as normal. Each crew change has:

- a chance to delay the train after completion: 67% of historical crew changes incur some delay; and
- a delay length, which is sampled from a distribution in which 95% of delays are less than 30 minutes.

10.3. Temporary Speed Restrictions

Occasionally, circumstances will require the placement of Temporary Speed Restrictions (TSRs) on different track sections. When a TSR is in place, trains must travel at a slower speed across the relevant speed-restricted length, effectively adding extra time to the SRT for the relevant section. This extra time consists of:

- the time it takes the train to decelerate to the lower speed;
- the time spent travelling the restricted length at the lower speed; and
- the time it takes the train to accelerate back up to the usual speed for that section.

Historical TSR data was analysed to derive DSM inputs that would generate TSR events. There was a range of TSR events that suggest the following needed to be accounted for:

- There are significant geographic factors affecting TSRs, such as soil conditions that create mud holes. Some locations have no TSRs at all, while others have TSRs of varying degrees of severity; and
- There are significant seasonal factors affecting TSRs, with generally higher TSR counts in the summer months than in the winter months presumably due to the increase in heat and rain.

To account for these factors, each track section was split into four (4) groups based upon their total time under TSRs: no TSRs, and low, mid and high impact TSRs. Each of the three (3) groups of sections with TSRs was given their own:

- Time-to-Fail (TTF) distribution, describing the time between TSR events;
- Time-to-Repair (TTR) distribution, capturing the duration of TSR events; and
- Magnitude distribution, capturing the magnitude of the additional time added to the SRT during the TSR.

TSR’s were applied in the DSM by month and per track section (where the historical data showed a TSR had been applied). A summary of these parameters is provided in **table 11.** Seasonal variability was accounted for in the TTF.

When TSRs are applied to a double track section, there is an equal probability (1/3) of the TSR being applied to the Up Track, Down Track, or Both Tracks, regardless of whether the section falls into the Low, Mid, or High TSR group.

Table 11: Temporary Speed Restriction parameters

Parameter	Description	Measure	Units	Low	Mid	High
TTF	Time between TSR events	Range of monthly means	Days	166-464	32-85	1-35
TTR	Duration of TSR events	Mean	Days	23	30	35
Magnitude	Additional time added to SRT	Mean	Minutes	2.6	2.6	1.6

10.4. Cancellations

A probability of cancellation of a Train Service at every dispatch is specified for each Coal System. A cancellation is considered to occur after a train has been assigned a Rail Job and a dispatch path.

The consequence of a cancellation is that the train and the Rail Job are delayed from running again for a given duration. Cancellations are assumed to delay a particular Rail Job from being serviced for the separation time between paths from the dispatch location.

Cancellations assumptions used in the DSM per Coal System are:

- Goonyella - 10.2%
- Blackwater - 8.2%
- Moura - 10%
- Newlands, GAPE - 10.1%

11. Non-coal traffic

11.1. Overview

AN is obliged to provide access to non-coal traffic under Access Agreements, Passenger Priority Obligation or Preserved Train Path Obligations, including the obligations under sections 265 and 266 of the Transport Infrastructure Act, 1994 (Qld). AN must prioritise Timetabled Traffic services ahead of Cyclic Traffic (i.e., coal traffic, unless the unloading destination is a domestic power station).

The DMS includes non-coal traffic that runs on a regular weekly schedule and is prioritised over all coal traffic. The DSM does not include non-coal traffic that runs on an ad hoc basis.

Contracted and preserved Train Path data used for non-coal services current as at July 2021. The DSM considers delays, maintenance, FSS, etc of below rail impacts on the Coal System where non-coal operates however does not allow for any maintenance, provisioning, and trips to/from rail yards and Above Rail delays. The DSM assumes these activities typically occur outside the AN Rail Infrastructure.

The DSM allows for entry and exit paths into the Coal System that may include Private Infrastructure.

Non-coal timetabled traffic includes:

- Passenger trains;
  - Rockhampton Tilt Train (between Brisbane and Rockhampton)
  - Spirit of Queensland (between Brisbane and Cairns)
  - Spirit of the Outback (between Brisbane and Longreach, via Emerald)
- Livestock;
- Freight;
- Limestone; and
- Grain (which is seasonal and is assumed in the DSM to run from September – December only)

In the DSM, non-coal traffic types run to their own:

- **Timetable**, as documented in **Appendix C – Non-coal traffic timetables.**
- **Sectional Running Times**, as documented in **Appendix A – Sectional Running Times.**

11.2. Non-passenger traffic

Timetables were provided by AN. Where appropriate, all timetables were adjusted to fit within an MTP-style plan, for compatibility with path dispatch within the DSM.

Timetables are input to the DSM as regular weekly schedules with a start junction, an end junction, and a departure time. A path aligned with each timetabled departure is reserved ahead of time to ensure the timetable is met. Once injected into the network, non-passenger traffic then interacts with coal traffic.

SRTs for non-passenger traffic were calculated from the scheduled section run times given in the data provided. Distinct SRT inputs were derived for each of the following traffic types:

- Limestone;

- Livestock and Freight; and
- Grain

11.3. Passenger traffic

Passenger traffic travels on:

- the Blackwater Coal System on the North Coast Line between Parana (at Gladstone) and Rocklands;
- the Blackwater Coal System on the Central West Line between Rocklands and Nogoa; and
- the Newlands Coal System on the North Coast Line between Durroburra and Kaili.

Timetables were sourced from the published timetables.

11.3.1. Blackwater Coal System

The DSM ensures priority for passenger traffic over all other types of traffic by reserving paths without actually dispatching a train. The key assumption here is that in any potential interaction with other traffic,the passenger train would be given priority. Most passenger traffic travels faster than other kinds of traffic, so it is necessary to remove the preceding path as well. Timetables are input to the DSM as:

- a start junction (the path dispatch location);
- an end junction;
- a departure time (as at the location of the path dispatcher); and
- the number of paths to remove.

11.3.2. Newlands Coal System

The Spirit of Queensland travels in the Newlands Coal System at a location upstream of the path dispatcher at Pring, so this traffic is input as a regular timetable, similar to other non-passenger traffic in **Section 11.3** above. This traffic runs to its own SRTs (see SRT Type PASSENGER in **Appendix A – Sectional Running Times).**

Appendix A: Sectional Running Times

This Appendix contains input Sectional Running Times for:

- Coal Trains in the CQCN; and
- Non-coal trains in the CQCN

A1 Coal trains

Newlands and GAPE Coal Systems

The following tables of SRTs for Empty and Loaded running are for Pring-based diesel trains travelling in the Newlands and GAPE Coal Systems. Only Sections that Pring-based trains travel on are included.

Location from	Location to	Empty (mins)	Loaded (mins)
Newlands Trunk			
NQXT	Kaili	13	17
Kaili	Durroburra	8	10
Durroburra	Pring	11	3
Pring	Buckley	5	6
Buckley	Armuna	13	15
Armuna	Aberdeen	12	10
Aberdeen	Binbee	12	9
Binbee	Briaba	14	15
Briaba	Almoola	16	31
Almoola	Collinsville	6	6
Collinsville	McNaughton Junction	4	4
McNaughton Junction	Sonoma Junction	7	6
Sonoma Junction	Birralee	10	10
Birralee	Cockool	15	16
Cockool	Havilah	15	18
Havilah	Newlands Junction	13	13
Goonyella Newlands Connection			
Newlands Junction	Leichardt Range	8	7
Leichhardt Range	Byerwen Junction	11	12
Byerwen Junction	Suttor Creek	11	11
Suttor Creek	Eaglefield Creek	21	24
Eaglefield Creek	North Goonyella Junction	8	8
North Goonyella Branch			
North Goonyella Junction	Riverside	15	14
Riverside	Goonyella	6	7
Goonyella	Moranbah North Junction	5	4
Moranbah North Junction	Wotonga	16	15
West Goonyella Branch			
Wotonga	Moranbah	19	15
Moranbah	Caval Ridge Junction	3	5

Location from	Location to	Empty (mins)	Loaded (mins)
Caval Ridge Junction	Villafranca	13	17
Villafranca	Mount McLaren	18	22
Mount McLaren	Blackridge	21	23
Blackridge	Blair Athol Junction	15	21
Wotonga to Coppabella			
Wotonga	Isaac Plains Junction	3	2
Isaac Plains Junction	Mallawa	3	3
Mallawa	Carborough Downs Junction	8	12
Carborough Downs Junction	Broadlea	5	5
Broadlea	Coppabella	13	19
South Goonyella Branch			
Coppabella	Moorvale Junction	5	16
Moorvale Junction	Ingsdon	2	4
Ingsdon	Millennium Junction	5	8
Millennium Junction	Red Mountain	7	7
Red Mountain	Winchester	9	9
Winchester	Peak Downs	13	12
Peak Downs	Harrow	13	15
Harrow	Saraji	6	8
Saraji	Lake Vermont Junction	16	18
Lake Vermont Junction	Dysart	4	3
Dysart	Stephens	7	7
Stephens	Norwich Park	9	11
Norwich Park	Middlemount Junction	12	17
Mine Spurs			
Blair Athol Junction	Blair Athol	3	2
Byerwen Junction	Byerwen	10	10
Caval Ridge Junction	Caval Ridge	15	12
Lake Vermont Junction	Lake Vermont	11	7
McNaughton Junction	McNaughton	8	6
Middlemount Junction	Middlemount	21	11
Newlands Junction	Newlands	8	9
Riverside	Riverside Balloon	4	1
Sonoma Junction	Sonoma	9	1

Goonyella Coal System

The following tables of SRTs for empty and loaded running are for Jilalan and Nebo-based electric and diesel trains travelling in the Goonyella Coal System.

Location from	Location to	Empty (mins)	Loaded (mins)
Goonyella Trunk			
Dalrymple Bay	Dalrymple Bay Staging	3	3
Dalrymple Bay Staging	Dalrymple Crossover Points	4	6
Hay Point	Hay Point Entry	4	8
Hay Point Entry	Dalrymple Crossover Points	9	4
Dalrymple Crossover Points	Praguelands	7	6
Praguelands	Jilalan	6	1
Jilalan	Yukan	7	10
Yukan	Black Mountain	13	19
Black Mountain	Hatfield	12	12
Hatfield	Bolingbroke	12	12
Bolingbroke	Balook	13	14
Balook	Wandoo	7	14
Wandoo	Waitara	11	14
Waitara	Braeside	10	6
Braeside	Mindi	9	14
Mindi	South Walker Junction	7	7
South Walker Junction	Tootoolah	6	6
Tootoolah	Macarthur Junction	4	4
Macarthur Junction	Coppabella	9	5
Coppabella	Broadlea	11	19
Broadlea	Carborough Downs Junction	2	5
Carborough Downs Junction	Mallawa	9	9
Mallawa	Isaac Plains Junction	2	4
Isaac Plains Junction	Wotonga	2	3
South Goonyella Branch			
Coppabella	Moorvale Junction	6	13
Moorvale Junction	Ingsdon	2	2
Ingsdon	Millennium Junction	5	7
Millennium Junction	Red Mountain	6	6
Red Mountain	Olive Downs Junction	6	5
Olive Downs Junction	Winchester	3	3
Winchester	Peak Downs	13	11
Peak Downs	Harrow	13	14

Location from	Location to	Empty (mins)	Loaded (mins)
South Goonyella Branch			
Harrow	Saraji	6	13
Saraji	Lake Vermont Junction	15	22
Lake Vermont Junction	Dysart	4	3
Dysart	Stephens	7	7
Stephens	Norwich Park	9	11
Norwich Park	Middlemount Junction	12	17
Middlemount Junction	Bundoora	2	3
Bundoora	German Creek	4	6
German Creek	Oaky Creek	15	20
Oaky Creek	Lilyvale	13	12
Lilyvale	Gregory Junction	1	2
North Goonyella Branch			
Wotonga	Moranbah North Junction	16	17
Moranbah North Junction	Goonyella	4	3
Goonyella	Riverside	4	4
Riverside	North Goonyella Junction	12	15
West Goonyella Branch			
Wotonga	Moranbah	16	16
Moranbah	Caval Ridge Junction	4	3
Caval Ridge Junction	Villafranca	12	16
Villafranca	Mount Mclaren	17	21
Mount Mclaren	Blackridge	21	22
Blackridge	Blair Athol Junction	16	19
Mine Spurs			
South Walker Junction	Bidgerley Junction	5	1
Bidgerley Junction	South Walker (Bidgerley Balloon)	6	2
Bidgerley Junction	Hail Creek	38	30
Blair Athol Junction	Blair Athol	2	3
Carborough Downs Junction	Carborough Downs	9	1
Caval Ridge Junction	Caval Ridge	13	11
Goonyella	Goonyella Balloon	2	1
Isaac Plains Junction	Isaac Plains	5	2
Macarthur Junction	Macarthur (Coppabella Mine)	5	1
Mallawa	Burton	3	1
Middlemount Junction	Middlemount	19	9
Millennium Junction	Millennium	2	2
Moorvale Junction	Moorvale	6	1
Moranbah North Junction	Moranbah North	3	4
North Goonyella Junction	North Goonyella	3	3
Peak Downs	Peak Downs Balloon	5	2
Riverside	Riverside Balloon	4	1
Saraji	Saraji Balloon	1	2

Blackwater Coal System

The following tables of SRTs for empty and loaded running are for Callemondah-based electric and dieseltrains travelling in the Blackwater Coal System and Goonyella Coal System.

Location from	Location to	Empty (mins)	Loaded (mins)
North Coast Line			
Callemondah	Mount Miller	12	14
Mount Miller	Wiggins Island Junction	2	2
Wiggins Island Junction	Yarwun	1	2
Yarwun	Aldoga	6	7
Aldoga	Mount Larcom	9	12
Mount Larcom	Ambrose	4	4
Ambrose	Epala	5	7
Epala	Raglan	9	8
Raglan	Marmor	11	10
Marmor	Bajool	8	9
Bajool	Archer	9	10
Archer	Midgee	7	8
Midgee	Rocklands	8	9
Blackwater Trunk			
Rocklands	Gracemere	7	8
Gracemere	Kabra	11	15
Kabra	Warren	6	6
Warren	Wycarbah	11	10
Wycarbah	Westwood	9	10
Westwood	Windah	10	19
Windah	Grantleigh	10	12
Grantleigh	Tunnel	8	9
Tunnel	Edungalba	10	19
Edungalba	Aroona	11	10
Aroona	Duaringa	7	10
Duaringa	Wallaroo	13	15
Wallaroo	Tryphinia	11	10
Tryphinia	Dingo	12	14
Dingo	Umolo	7	8
Umolo	Parnabal	3	4
Parnabal	Walton	8	4
Walton	Bluff	11	13
Bluff	Boonal Balloon Points	9	12
Boonal Balloon Points	Blackwater	12	13
Blackwater	Sagittarius	3	6
Sagittarius	Rangal	5	5
Rangal	Burngrove	7	8

Location from	Location to	Empty (mins)	Loaded (mins)
South Goonyella Branch			
Burngrove	Washpool Junction	7	8
Washpool Junction	Crew	1	1
Crew	Mackenzie	12	14
Mackenzie	Fairhill	11	12
Fairhill	Yan	12	13
Yan	Gregory Junction	9	10
Gregory Junction	Lilyvale	2	2
Lilyvale	Oaky Creek Junction	13	15
Oaky Creek Junction	German Creek Junction	16	16
German Creek Junction	Bundoora	2	4
Bundoora	Middlemount Junction	2	2
Middlemount Junction	Norwich Park	14	14
Norwich Park	Stephens	10	12
Stephens	Dysart	8	7
Dysart	Lake Vermont Junction	3	5
Rolleston (Bauhinia) Branch			
Rangal	Tikardi	7	6
Tikardi	Boorgoon Junction	5	6
Boorgoon Junction	Kinrola Junction	6	8
Kinrola Junction	Kenmare	23	22
Kenmare	Memooloo	27	34
Memooloo	Starlee	31	30
Starlee	Meteor Downs Junction	17	18
Meteor Downs Junction	Rolleston	8	8
Minerva Branch			
Burngrove	Tolmies	3	2
Tolmies	Comet	23	35
Comet	Yamala	20	24
Yamala	Nogoa	18	21
Nogoa	Minerva Balloon	92	98
Domestic and Export Terminals			
Golding	Gladstone Powerhouse Junction	8	5
Gladstone Powerhouse Junction	Callemondah	10	7
Gladstone Powerhouse	Callemondah	11	2
Wiggins Island	Wiggins Island Staging	8	6
Wiggins Island Staging	Wiggins Island Junction	6	7
Comalco Balloon Junction	Fisherman's Landing	6	9
Stanwell Powerhouse	Warren	5	3

Location from	Location to	Empty (mins)	Loaded (mins)
Mine Spurs			
Boonal Balloon Points	Boonal Balloon	3	1
German Creek	German Creek Balloon	5	4
Kinrola Junction	Kinrola	6	4
Lake Vermont Junction	Lake Vermont	12	19
Mackenzie	Ensham	12	10
Oaky Creek Junction	Oaky Creek	6	6
Sagittarius	Curragh	13	11
Yan	Gordonstone Balloon	13	12

Moura Coal System

The following tables of SRTs for empty and loaded running are for Callemondah-based diesel trains travelling in the Moura Coal System.

Location from	Location to	Empty (mins)	Loaded (mins)
Moura Trunk			
Callemondah	Byellee	8	11
Byellee	Stowe	15	13
Stowe	Graham	5	9
Graham	Stirrat	10	9
Stirrat	Clarke	20	24
Clarke	Fry	10	11
Fry	Mount Rainbow	21	24
Mount Rainbow	Dumgree	19	29
Dumgree	Boundary Hill Junction	13	17
Boundary Hill Junction	Annandale	3	1
Annandale	Earlsfield	7	14
Earlsfield	Belldeen	23	23
Belldeen	Moura Mine Junction	21	39
Callide Branch			
Earlsfield	Koonkool	7	5
Koonkool	Dakenba	26	20
Dakenba	Callide Coalfields	17	21
Mine Spurs			
Boundary Hill Junction	Boundary Hill	7	4
Moura Mine Junction	Moura Mine	2	2
Moura Mine Junction	Baralaba Balloon Loop	31	31
Gladstone Surrounds			
Gladstone QAL SDG	South Gladstone	5	7
Parana	Callemondah	11	10
South Gladstone	Parana	7	10

A2 Non-coal Trains

Limestone

The following table of SRTs for up and down running is for diesel trains carrying Limestone and travellingbetween East End and Fisherman's Landing in the Blackwater Coal System. Only sections that these trains travel on are included.

Location from	Location to	Up (mins)	Down (mins)
East End Mine	East End Junction	10	10
East End Junction	Aldoga	5	5
Aldoga	Yarwun	9	9
Yarwun	Mt Miller	6	6
Mt Miller	Comalco Junction	3	3
Comalco Junction	Fisherman's Landing Unloader	8	3

Passenger

The following table of SRTs for up and down running is for the diesel Spirit of Queensland passenger trains travelling in the Newlands Coal System. Only sections that these trains travel on are included.

Location from	Location to	Up (mins)	Down (mins)
Durroburra	Kaili	5	6

Freight and Livestock

The following table of SRTs for up and down running is for diesel Freight and Livestock trains travelling in the Blackwater and Newlands Coal Systems. Only sections that these trains travel on are included.

Location from	Location to	Up (mins)	Down (mins)
Parana	Callemondah	9.2	9.9
Callemondah	Mt Miller	14	13.6
Mt Miller	Yarwun	5.5	6.5
Yarwun	Aldoga	7.2	8.4
Aldoga	Mt Larcom	8.2	10.6
Mt Larcom	Ambrose	3.7	5.1
Ambrose	Epala	7.3	7
Epala	Raglan	9.7	8.1
Raglan	Marmor	10.4	9.7
Marmor	Bajool	8.1	8.7
Bajool	Archer	9.1	9.3
Archer	Midgee	6.5	7.6
Midgee	Rocklands	9.4	12.7
Rocklands	Gracemere	9.8	10.6
Gracemere	Kabra	8.1	9.8
Kabra	Warren	11.2	13.1

Location from	Location to	Up (mins)	Down (mins)
Warren	Wycarbah	11	12.4
Wycarbah	Westwood	10	12.5
Westwood	Windah	9.7	19.5
Windah	Grantleigh	10.9	12.8
Grantleigh	Tunnel	7.8	12
Tunnel	Edungalba	10	19.3
Edungalba	Aroona	10.6	10.4
Aroona	Duaringa	9.3	9.4
Duaringa	Wallaroo	13	14.7
Wallaroo	Tryphinia	11	10.8
Tryphinia	Dingo	12	14
Dingo	Umolo	9.7	6.9
Umolo	Parnabal	7.1	5.2
Parnabal	Walton	7.2	4
Walton	Bluff	14.1	14.4
Bluff	Boonal Balloon Points	11	9.6
Boonal Balloon Points	Boonal	1.7	2.1
Boonal	Blackwater	8.8	10.8
Blackwater	Sagittarius	3	4.1
Sagittarius	Rangal	4.3	3.7
Rangal	Burngrove	6.2	5
Burngrove	Tolmies	2.2	1.8
Tolmies	Comet	17.5	22.9
Comet	Yamala	18.4	18.7
Yamala	Nogoa	20.7	19.5
QNIP02	Durroburra	1	1.1
Durroburra	Kaili	7	6.3
Kaili	QNIP01	2	1.8

Grain

The following table of SRTs for up and down running is for diesel Grain trains travelling in the Blackwater and Goonyella Coal Systems. Only sections that these trains travel on are included.

Location from	Location to	Up (mins)	Down (mins)
Parana	Callemondah	8	11
Callemondah	Mt Miller	11	8
Mt Miller	Yarwun	6	7
Yarwun	Aldoga	8	8
Aldoga	Mt Larcom	8	8
Mt Larcom	Ambrose	4	6
Ambrose	Epala	5	4

Location from	Location to	Up (mins)	Down (mins)
Epala	Raglan	6	7
Raglan	Marmor	9	7
Marmor	Bajool	6.9	10
Bajool	Archer	8	10
Archer	Midgee	5	6
Midgee	Rocklands	7	7
Rocklands	Gracemere	9	9
Gracemere	Kabra	6	9
Kabra	Warren	11.9	15
Warren	Wycarbah	11	13
Wycarbah	Westwood	9	12
Westwood	Windah	9	19
Windah	Grantleigh	10	10
Grantleigh	Tunnel	7.5	9
Tunnel	Edungalba	11	19
Edungalba	Aroona	8	11
Aroona	Duaringa	7	8
Duaringa	Wallaroo	11	14
Wallaroo	Tryphinia	11	12
Tryphinia	Dingo	12	12
Dingo	Umolo	7	9
Umolo	Parnabal	6	9
Parnabal	Walton	4	4
Walton	Bluff	13	11
Bluff	Boonal Balloon Points	12	11
Boonal Balloon Points	Boonal	1	4
Boonal	Blackwater	9	10
Blackwater	Sagittarius	3	3
Sagittarius	Rangal	4	4
Rangal	Burngrove	6	7
Burngrove	Tolmies	2	4
Tolmies	Comet	20	30
Comet	Yamala	20	25
Yamala	Nogoa	20	25
Yukan	Black Mountain	18	20
Black Mountain	Hatfield	11	12
Hatfield	Bolingbroke	11	15
Bolingbroke	Balook	13	14
Balook	Wandoo	9	11
Wandoo	Waitara	11	13
Waitara	Braeside	6.3	6
Braeside	Mindi	9	13

Location from	Location to	Up (mins)	Down (mins)
Mindi	South Walker Junction	6	7
South Walker Junction	Tootoolah	7	6
Tootoolah	Macarthur Junction	4	6
Macarthur Junction	Coppabella	11	10
Coppabella	Broadlea	18	21
Broadlea	Carborough Downs Junction	3	5
Carborough Downs Junction	Mallawa	7	9
Mallawa	Isaac Plains Junction	3	3
Isaac Plains Junction	Wotonga	2	3
Wotonga	Moranbah	11	12
Moranbah	Caval Ridge Junction	2	3
Caval Ridge Junction	Villafranca	14	15
Villafranca	Mt McLaren	20	25

Appendix B: Summary of Planned Track Maintenance

FY20

FY20 Maintenance hours by mainline and branch line

Line	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
B.L. - Blair Athol Mine to Wotonga	26	10	13	36	12	16	33	16	19	9	176	12	**376**
B.L. - Burngrove to Bluff	167	81	188	124	114	154	89	20	122	78	70	117	**1,324**
B.L. - Callemondah to Port of Gladstone	145	116	193	147	40	97	38	55	305	129	60	100	**1,426**
B.L. - Coppabella to Wotonga	24	29	10	22	95	19	66	10	13	5	440	38	**770**
B.L. - Earlsfield to Callide	-	-	-	16	-	-	-	-	-	-	-	-	**16**
B.L. - Earlsfield to Dumgree	-	13	31	90	-	-	-	-	-	-	31	-	**165**
B.L. - Earlsfield to Moura	42	22	-	-	-	19	-	-	109	-	-	8	**200**
B.L. - Oaky Creek Junction to Coppabella	161	10	87	61	61	53	46	5	83	174	123	121	**984**
B.L. - Oaky Creek Junction to Burngrove	29	17	50	6	40	8	94	15	342	16	-	27	**645**
B.L. - Hail Creek Mine to South Walker Creek Juncti	-	11	7	3	-	-	-	-	52	-	-	10	**83**
B.L. - Jilalan to Port of Hay Point	38	23	27	8	35	23	7	42	65	42	153	40	**506**
B.L. - Minerva Mine to Burngrove	14	53	27	164	69	-	-	-	-	29	94	133	**583**
B.L. - Newlands Mine to Collinsville	22	81	13	30	11	17	25	28	51	106	34	60	**479**
B.L. - North Goonyella Junction to Newlands Juncti	48	60	67	32	37	-	16	16	51	75	48	37	**488**
B.L. - North Goonyella Mine to Wotonga	13	20	15	10	28	20	75	-	20	42	303	19	**565**
B.L. - Pring to Abbot Point	22	23	-	-	-	6	-	-	9	20	12	31	**122**
B.L. - Rolleston Mine to Rangal	25	19	19	38	42	12	26	8	15	20	16	9	**248**
M.L. - Bluff to Callemondah	721	629	791	1,004	1,038	382	484	611	826	546	429	648	**8,110**
M.L. - Collinsville to Pring	54	94	19	60	14	6	17	17	44	33	50	28	**436**
M.L. - Coppabella to Jilalan	438	440	280	337	351	373	289	150	400	281	808	590	**4,737**
M.L. - Dumgree to Callemondah	83	31	100	57	34	36	10	28	190	120	25	78	**791**
Total	**2,072**	**1,784**	**1,937**	**2,248**	**2,019**	**1,243**	**1,316**	**1,019**	**2,716**	**1,725**	**2,872**	**2,105**	**23,055**

FY20 Maintenance hours by Coal System

Coal System	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Blackwater	1,101	916	1,268	1,483	1,342	654	731	709	1,610	818	670	1,034	**12,337**
Goonyella	748	604	506	511	614	504	533	238	684	601	2,050	861	**8,453**
Moura	125	65	131	164	34	55	10	28	299	120	56	86	**1,172**
Newlands/GAPE	98	199	32	90	30	30	42	45	122	186	95	124	**1,093**
Grand Total	**2,072**	**1,784**	**1,937**	**2,248**	**2,019**	**1,243**	**1,316**	**1,019**	**2,716**	**1,725**	**2,872**	**2,105**	**23,055**

FY21

FY21 Maintenance hours by mainline and branch line

Line	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
B.L. - Blair Athol Mine to Wotonga	22	-	-	31	11	39	-	69	11	8	-	14	**204**
B.L. - Burngrove to Bluff	193	117	215	28	223	12	86	-	72	115	148	144	**1,352**
B.L. - Callemondah to Port of Gladstone	94	103	79	55	44	93	-	34	218	75	14	21	**831**
B.L. - Coppabella to Wotonga	65	75	6	57	17	5	10	-	150	12	33	39	**469**
B.L. - Earlsfield to Callide	-	-	-	16	-	-	-	-	-	-	-	-	**16**
B.L. - Earlsfield to Dumgree	-	-	-	92	-	-	-	-	-	-	24	-	**115**
B.L. - Earlsfield to Moura	45	9	-	-	-	2	-	-	100	12	-	6	**174**
B.L. - Oaky Creek Junction to Coppabella	63	49	50	18	25	53	34	9	122	112	71	105	**710**
B.L. - Oaky Creek Junction to Burngrove	9	11	4	-	4	-	-	14	-	5	-	4	**51**
B.L. - Hail Creek Mine to South Walker Creek Juncti	-	10	-	3	-	-	-	-	44	-	-	13	**71**
B.L. - Jilalan to Port of Hay Point	32	17	12	63	15	26	-	42	35	35	15	20	**313**
B.L. - Minerva Mine to Burngrove	5	9	53	52	48	-	-	-	-	52	44	84	**347**
B.L. - Newlands Mine to Collinsville	26	44	13	36	-	17	17	-	42	43	20	23	**280**
B.L. - North Goonyella Junction to Newlands Juncti	120	108	72	-	77	-	24	72	23	72	96	6	**669**
B.L. - North Goonyella Mine to Wotonga	115	12	-	7	23	56	-	-	60	27	3	131	**434**
B.L. - Pring to Abbot Point	7	24	-	-	-	6	-	-	11	25	12	32	**116**
B.L. - Rolleston Mine to Rangal	12	21	18	43	12	12	39	7	11	12	6	6	**198**
M.L. - Bluff to Callemondah	744	806	801	581	578	450	499	374	728	442	644	400	**7,046**
M.L. - Collinsville to Pring	37	26	32	85	-	6	-	-	33	82	34	20	**355**
M.L. - Coppabella to Jilalan	591	462	364	301	383	124	216	322	181	387	438	238	**4,006**
M.L. - Dumgree to Callemondah	33	41	238	46	39	-	-	17	237	25	7	32	**715**
Total	**2,211**	**1,945**	**1,958**	**1,514**	**1,498**	**900**	**925**	**960**	**2,078**	**1,541**	**1,608**	**1,338**	**18,474**

FY21 Maintenance hours by Coal System

Coal System	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Blackwater	1,056	1,066	1,170	759	909	567	624	429	1,029	700	856	659	**9,825**
Goonyella	1,007	734	505	481	545	302	283	514	603	654	655	560	**6,844**
Moura	78	50	238	154	39	2	-	17	337	37	31	39	**1,020**
Newlands/GAPE	70	94	45	121	5	30	17	-	108	150	66	81	**785**
Grand Total	**2,211**	**1,945**	**1,958**	**1,514**	**1,498**	**900**	**925**	**960**	**2,078**	**1,541**	**1,608**	**1,338**	**18,474**

FY22

FY22 Maintenance hours by mainline and branch line

Line	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
B.L. - Blair Athol Mine to Wotonga	20	-	-	34	9	43	-	72	9	11	-	15	**211**
B.L. - Burngrove to Bluff	158	153	99	215	155	13	83	72	-	140	100	80	**1,267**
B.L. - Callemondah to Port of Gladstone	97	77	84	44	61	95	-	23	-	88	14	21	**604**
B.L. - Coppabella to Wotonga	45	36	3	26	11	6	-	-	143	44	59	39	**411**
B.L. - Earlsfield to Dumgree	-	-	-	-	-	-	-	-	-	-	27	-	**27**
B.L. - Earlsfield to Moura	40	13	-	35	19	2	-	-	4	-	-	10	**123**
B.L. - Oaky Creek Junction to Coppabella	119	230	110	93	20	-	19	-	52	114	84	102	**943**
B.L. - Oaky Creek Junction to Burngrove	5	11	4	141	10	-	-	-	-	5	-	9	**185**
B.L. - Hail Creek Mine to South Walker Creek Juncti	-	13	-	5	-	-	-	-	39	-	-	13	**70**
B.L. - Jilalan to Port of Hay Point	57	33	24	11	5	31	-	55	168	47	12	-	**444**
B.L. - Minerva Mine to Burngrove	-	9	29	27	22	-	-	-	-	7	119	7	**219**
B.L. - Newlands Mine to Collinsville	82	43	53	-	-	17	9	-	33	38	20	23	**319**
B.L. - North Goonyella Junction to Newlands Juncti	198	120	72	-	85	-	72	72	85	-	120	6	**829**
B.L. - North Goonyella Mine to Wotonga	14	16	-	9	19	-	-	-	13	12	2	27	**114**
B.L. - Pring to Abbot Point	10	24	-	-	-	6	-	-	9	19	12	32	**111**
B.L. - Rolleston Mine to Rangal	23	21	29	33	21	4	26	7	16	4	-	6	**189**
M.L. - Bluff to Callemondah	429	555	381	999	849	368	512	338	542	593	495	377	**6,438**
M.L. - Collinsville to Pring	58	26	78	29	-	6	-	-	26	72	33	20	**348**
M.L. - Coppabella to Jilalan	388	553	256	276	329	107	186	236	326	224	416	270	**3,567**
M.L. - Dumgree to Callemondah	30	25	14	225	19	-	-	14	133	34	8	20	**521**
Total	**1,771**	**1,958**	**1,238**	**2,202**	**1,633**	**697**	**908**	**888**	**1,599**	**1,451**	**1,522**	**1,074**	**16,940**

FY22 Maintenance hours by Coal System

Coal System	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Blackwater	711	827	627	1,459	1,118	480	621	439	558	835	728	499	**8,903**
Goonyella	782	1,001	465	454	464	186	277	435	823	453	695	465	**6,500**
Moura	70	38	14	260	38	2	-	14	137	34	35	30	**671**
Newlands/GAPE	208	92	132	29	13	29	9	-	81	129	65	80	**867**
Grand Total	**1,771**	**1,958**	**1,238**	**2,202**	**1,633**	**697**	**908**	**888**	**1,599**	**1,451**	**1,522**	**1,074**	**16,940**

FY 23

FY23 Maintenance hours by mainline and branch line

Line	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
B.L. - Blair Athol Mine to Wotonga	19	-	-	33	10	42	-	77	8	11	-	14	**215**
B.L. - Burngrove to Bluff	158	160	90	215	179	8	83	72	-	140	100	81	**1,286**
B.L. - Callemondah to Port of Gladstone	97	75	83	60	49	91	21	4	-	88	14	22	**604**
B.L. - Coppabella to Wotonga	43	42	-	25	12	5	-	-	135	78	31	39	**412**
B.L. - Earlsfield to Dumgree	-	-	-	-	-	-	-	-	-	-	26	-	**26**
B.L. - Earlsfield to Moura	35	13	-	41	17	2	-	-	4	-	-	9	**121**
B.L. - Oaky Creek Junction to Coppabella	116	233	106	97	20	-	20	11	44	124	87	91	**947**
B.L. - Oaky Creek Junction to Burngrove	72	11	4	141	10	-	-	-	-	5	-	9	**252**
B.L. - Hail Creek Mine to South Walker Creek Juncti	-	14	-	5	-	-	-	-	37	-	-	13	**68**
B.L. - Jilalan to Port of Hay Point	55	35	23	11	6	29	19	13	159	47	14	-	**409**
B.L. - Minerva Mine to Burngrove	-	9	29	28	21	-	-	-	-	7	119	7	**220**
B.L. - Newlands Mine to Collinsville	82	55	46	-	-	17	9	-	44	27	19	23	**321**
B.L. - North Goonyella Junction to Newlands Juncti	202	72	72	-	85	-	72	72	85	-	144	6	**809**
B.L. - North Goonyella Mine to Wotonga	14	17	-	9	21	-	-	10	9	12	3	27	**122**
B.L. - Pring to Abbot Point	10	23	-	-	-	6	-	-	9	19	23	24	**112**
B.L. - Rolleston Mine to Rangal	23	20	29	37	19	4	25	6	17	4	-	6	**190**
M.L. - Bluff to Callemondah	418	580	382	998	895	340	504	359	536	580	514	339	**6,446**
M.L. - Collinsville to Pring	58	25	79	25	-	6	-	-	26	73	31	20	**344**
M.L. - Coppabella to Jilalan	392	475	265	260	344	89	188	262	375	154	473	267	**3,545**
M.L. - Dumgree to Callemondah	31	25	14	180	17	-	-	13	132	34	8	23	**476**
Total	**1,825**	**1,887**	**1,222**	**2,166**	**1,703**	**640**	**939**	**898**	**1,620**	**1,402**	**1,604**	**1,019**	**16,927**

FY23 Maintenance hours by Coal System

Coal System	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Blackwater	696	856	618	1,479	1,173	444	633	441	553	822	747	464	**8,926**
Goonyella	855	889	466	441	484	165	298	444	841	427	751	451	**6,511**
Moura	66	38	14	221	33	2	-	13	136	34	34	32	**623**
Newlands/GAPE	208	103	125	25	13	29	9	-	91	119	73	72	**867**
Grand Total	**1,825**	**1,887**	**1,222**	**2,166**	**1,703**	**640**	**939**	**898**	**1,620**	**1,402**	**1,604**	**1,019**	**16,927**

FY 24

FY24 Maintenance hours by mainline and branch line

Line	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
B.L. - Blair Athol Mine to Wotonga	19	-	-	33	19	29	-	71	8	13	-	13	**204**
B.L. - Burngrove to Bluff	159	167	82	215	179	8	82	72	-	140	100	80	**1,285**
B.L. - Callemondah to Port of Gladstone	98	74	84	59	49	93	21	6	-	88	14	22	**607**
B.L. - Coppabella to Wotonga	43	42	-	34	5	4	-	79	82	82	36	35	**444**
B.L. - Earlsfield to Dumgree	-	-	-	-	-	-	-	-	-	-	26	-	**26**
B.L. - Earlsfield to Moura	37	13	-	41	-	2	-	-	4	-	-	8	**105**
B.L. - Oaky Creek Junction to Coppabella	116	240	100	96	25	-	23	41	24	151	80	82	**977**
B.L. - Oaky Creek Junction to Burngrove	72	11	4	141	10	-	-	-	-	5	-	9	**252**
B.L. - Hail Creek Mine to South Walker Creek Juncti	-	14	-	5	-	-	-	-	36	-	-	12	**66**
B.L. - Jilalan to Port of Hay Point	55	35	22	10	7	22	22	23	144	52	16	-	**410**
B.L. - Minerva Mine to Burngrove	-	17	22	36	14	-	-	-	-	7	119	7	**221**
B.L. - Newlands Mine to Collinsville	82	58	45	-	-	17	9	4	40	27	19	23	**324**
B.L. - North Goonyella Junction to Newlands Juncti	202	72	72	-	77	-	72	72	85	-	144	6	**802**
B.L. - North Goonyella Mine to Wotonga	14	17	-	9	27	-	-	7	9	14	3	24	**123**
B.L. - Pring to Abbot Point	10	25	-	-	-	6	-	-	9	19	23	24	**115**
B.L. - Rolleston Mine to Rangal	23	20	29	36	19	4	24	7	16	4	-	6	**188**
M.L. - Bluff to Callemondah	438	572	378	1,008	905	308	522	417	458	594	547	290	**6,438**
M.L. - Collinsville to Pring	58	27	76	30	-	6	-	4	22	73	31	20	**348**
M.L. - Coppabella to Jilalan	392	482	259	273	357	62	199	233	407	106	513	214	**3,497**
M.L. - Dumgree to Callemondah	26	25	14	180	33	-	11	-	132	34	8	21	**483**
Total	**1,844**	**1,911**	**1,189**	**2,206**	**1,727**	**561**	**985**	**1,035**	**1,474**	**1,408**	**1,680**	**895**	**16,915**

FY24 Maintenance hours by Coal System

Coal System	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Blackwater	718	860	600	1,495	1,177	413	650	502	474	837	780	413	**8,919**
Goonyella	855	902	454	460	512	117	316	525	781	418	793	381	**6,513**
Moura	63	38	14	221	33	2	11	-	136	34	34	29	**615**
Newlands/GAPE	208	111	122	30	5	29	9	8	83	119	73	72	**869**
Grand Total	**1,844**	**1,911**	**1,189**	**2,206**	**1,727**	**561**	**985**	**1,035**	**1,474**	**1,408**	**1,680**	**895**	**16,915**

Appendix C: Non-coal Traffic Timetables

Summary of non-coal traffic timetables

Traffic type		From	To	Number of modelled services per week
Passenger	Rockhampton Tilt	Gladstone	Rocklands	8
		Rocklands	Gladstone	8
	Spirit of QLD	Gladstone	Rocklands	8
		Rocklands	Gladstone	8
		Durroburra	Kaili	5
		Kaili	Durroburra	5
	Spirit of Outback	Gladstone	Nogoa	2
		Nogoa	Gladstone	2
Limestone		East End mine	Fisherman's Landing	42
		Fisherman's Landing	East End mine	42
		Graham	Fisherman's Landing	14
		Fisherman's Landing	Graham	14
Livestock		Parana	Rocklands	9
		Rocklands	Parana	9
		Rocklands	Nogoa	8
		Nogoa	Rocklands	8
Freight		Parana	Rocklands	78
		Rocklands	Parana	79
		Parana	Mt Miller siding	2
		Mt Miller siding	Rocklands	2
		Rocklands	Nogoa	2
		Nogoa	Rocklands	2
		Durroburra	Kaili	37
		Kaili	Durroburra	36
Grain		Parana	Rocklands	3
		Rocklands	Parana	3
		Rocklands	Nogoa	3
		Nogoa	Rocklands	3
		Yukan	Mt McLaren	4
		Mt McLaren	Yukan	4

Non-coal traffic timetable inputs

Route	Departure day and time
Spirit of Queensland Merinda – Wathana	Sun 07:20
Spirit of Queensland Merinda – Wathana	Tue 07:20
Spirit of Queensland Merinda – Wathana	Wed 07:20
Spirit of Queensland Merinda – Wathana	Thu 07:20
Spirit of Queensland Merinda – Wathana	Sat 07:20
Spirit of Queensland Wathana – Merinda	Sun 17:07
Spirit of Queensland Wathana – Merinda	Mon 17:07
Spirit of Queensland Wathana – Merinda	Wed 17:07
Spirit of Queensland Wathana – Merinda	Thu 17:07
Spirit of Queensland Wathana – Merinda	Fri 17:07
East End – Fisherman’s Landing	Sun 03:17
East End – Fisherman’s Landing	Mon 03:17
East End – Fisherman’s Landing	Tue 03:17
East End – Fisherman’s Landing	Wed 03:17
East End – Fisherman’s Landing	Thu 03:17
East End – Fisherman’s Landing	Fri 03:17
East End – Fisherman’s Landing	Sat 03:17
East End – Fisherman’s Landing	Sun 07:17
East End – Fisherman’s Landing	Mon 07:17
East End – Fisherman’s Landing	Tue 07:17
East End – Fisherman’s Landing	Wed 07:17
East End – Fisherman’s Landing	Thu 07:17
East End – Fisherman’s Landing	Fri 07:17
East End – Fisherman’s Landing	Sat 07:17
East End – Fisherman’s Landing	Sun 11:41
East End – Fisherman’s Landing	Mon 11:41
East End – Fisherman’s Landing	Tue 11:41
East End – Fisherman’s Landing	Wed 11:41
East End – Fisherman’s Landing	Thu 11:41
East End – Fisherman’s Landing	Fri 11:41
East End – Fisherman’s Landing	Sat 11:41
East End – Fisherman’s Landing	Sun 15:57
East End – Fisherman’s Landing	Mon 15:57
East End – Fisherman’s Landing	Tue 15:57
East End – Fisherman’s Landing	Wed 15:57
East End – Fisherman’s Landing	Thu 15:57
East End – Fisherman’s Landing	Fri 15:57
East End – Fisherman’s Landing	Sat 15:57
East End – Fisherman’s Landing	Sun 19:57

Route	Departure day and time
East End – Fisherman's Landing	Mon 19:57
East End – Fisherman's Landing	Tue 19:57
East End – Fisherman's Landing	Wed 19:57
East End – Fisherman's Landing	Thu 19:57
East End – Fisherman's Landing	Fri 19:57
East End – Fisherman's Landing	Sat 19:57
East End – Fisherman's Landing	Sun 23:13
East End – Fisherman's Landing	Mon 23:13
East End – Fisherman's Landing	Tue 23:13
East End – Fisherman's Landing	Wed 23:13
East End – Fisherman's Landing	Thu 23:13
East End – Fisherman's Landing	Fri 23:13
East End – Fisherman's Landing	Sat 23:13
Fisherman's Landing – East End	Sun 01:00
Fisherman's Landing – East End	Mon 01:00
Fisherman's Landing – East End	Tue 01:00
Fisherman's Landing – East End	Wed 01:00
Fisherman's Landing – East End	Thu 01:00
Fisherman's Landing – East End	Fri 01:00
Fisherman's Landing – East End	Sat 01:00
Fisherman's Landing – East End	Sun 05:13
Fisherman's Landing – East End	Mon 05:13
Fisherman's Landing – East End	Tue 05:13
Fisherman's Landing – East End	Wed 05:13
Fisherman's Landing – East End	Thu 05:13
Fisherman's Landing – East End	Fri 05:13
Fisherman's Landing – East End	Sat 05:13
Fisherman's Landing – East End	Sun 09:32
Fisherman's Landing – East End	Mon 09:32
Fisherman's Landing – East End	Tue 09:32
Fisherman's Landing – East End	Wed 09:32
Fisherman's Landing – East End	Thu 09:32
Fisherman's Landing – East End	Fri 09:32
Fisherman's Landing – East End	Sat 09:32
Fisherman's Landing – East End	Sun 14:00
Fisherman's Landing – East End	Mon 14:00
Fisherman's Landing – East End	Tue 14:00
Fisherman's Landing – East End	Wed 14:00
Fisherman's Landing – East End	Thu 14:00
Fisherman's Landing – East End	Fri 14:00
Fisherman's Landing – East End	Sat 14:00

Route	Departure day and time
Fisherman's Landing – East End	Sun 18:19
Fisherman's Landing – East End	Mon 18:19
Fisherman's Landing – East End	Tue 18:19
Fisherman's Landing – East End	Wed 18:19
Fisherman's Landing – East End	Thu 18:19
Fisherman's Landing – East End	Fri 18:19
Fisherman's Landing – East End	Sat 18:19
Fisherman's Landing – East End	Sun 22:00
Fisherman's Landing – East End	Mon 22:00
Fisherman's Landing – East End	Tue 22:00
Fisherman's Landing – East End	Wed 22:00
Fisherman's Landing – East End	Thu 22:00
Fisherman's Landing – East End	Fri 22:00
Fisherman's Landing – East End	Sat 22:00
Parana – Rocklands	Mon 04:15
Parana – Rocklands	Tue 04:15
Parana – Rocklands	Wed 04:15
Parana – Rocklands	Fri 04:15
Parana – Rocklands	Sat 04:15
Rocklands – Parana	Mon 19:16
Rocklands – Parana	Tue 19:16
Rocklands – Parana	Wed 19:16
Rocklands – Parana	Fri 19:16
Rocklands – Parana	Sat 19:16
Rocklands – Nogoa	Mon 05:04
Rocklands – Nogoa	Tue 05:04
Rocklands – Nogoa	Thu 05:04
Rocklands - Nogoa	Fri 05:04
Nogoa – Rocklands	Mon 11:08
Nogoa – Rocklands	Tue 11:08
Nogoa – Rocklands	Thu 11:08
Nogoa – Rocklands	Fri 11:08
Parana – Rocklands	Sun 01:02
Parana – Rocklands	Sun 02:47
Parana – Rocklands	Sun 14:36
Parana – Rocklands	Sun 16:48
Parana – Rocklands	Sun 19:17
Parana – Rocklands	Mon 05:06
Parana – Rocklands	Mon 06:57
Parana – Rocklands	Mon 11:34
Parana – Rocklands	Tue 05:06

Route	Departure day and time
Parana – Rocklands	Tue 06:57
Parana – Rocklands	Tue 12:01
Parana – Rocklands	Tue 20:00
Parana – Rocklands	Wed 05:06
Parana – Rocklands	Wed 06:57
Parana – Rocklands	Wed 12:01
Parana – Rocklands	Wed 20:00
Parana – Rocklands	Thu 04:50
Parana – Rocklands	Thu 06:57
Parana – Rocklands	Thu 12:01
Parana – Rocklands	Thu 20:00
Parana – Rocklands	Fri 04:50
Parana – Rocklands	Fri 06:57
Parana – Rocklands	Fri 12:01
Parana – Rocklands	Sun 03:00
Parana – Rocklands	Mon 03:00
Parana – Rocklands	Tue 03:00
Parana – Rocklands	Wed 03:00
Parana – Rocklands	Thu 03:00
Parana – Rocklands	Fri 03:00
Parana – Rocklands	Sat 03:00
Parana – Rocklands	Sun 06:15
Parana – Rocklands	Mon 06:15
Parana – Rocklands	Tue 06:15
Parana – Rocklands	Wed 06:15
Parana – Rocklands	Thu 06:15
Parana – Rocklands	Fri 06:15
Parana – Rocklands	Sat 06:15
Parana – Rocklands	Sun 11:15
Parana – Rocklands	Mon 11:15
Parana – Rocklands	Tue 11:15
Parana – Rocklands	Wed 11:15
Parana – Rocklands	Thu 11:15
Parana – Rocklands	Fri 11:15
Parana – Rocklands	Sat 11:15
Parana – Rocklands	Sun 15:15
Parana – Rocklands	Mon 15:15
Parana – Rocklands	Tue 15:15
Parana – Rocklands	Wed 15:15
Parana – Rocklands	Thu 15:15
Parana – Rocklands	Fri 15:15

Route	Departure day and time
Parana – Rocklands	Sat 15:15
Parana – Rocklands	Sun 19:15
Parana – Rocklands	Mon 19:15
Parana – Rocklands	Tue 19:15
Parana – Rocklands	Wed 19:15
Parana – Rocklands	Thu 19:15
Parana – Rocklands	Fri 19:15
Parana – Rocklands	Sat 19:15
Parana – Rocklands	Mon 23:30
Parana – Rocklands	Tue 23:30
Parana – Rocklands	Wed 23:30
Parana – Rocklands	Thu 23:30
Parana – Rocklands	Fri 23:30
Rocklands – Parana	Sat 00:06
Rocklands – Parana	Sat 03:56
Rocklands – Parana	Sat 04:36
Rocklands – Parana	Sat 09:36
Rocklands – Parana	Mon 03:56
Rocklands – Parana	Tue 03:56
Rocklands – Parana	Wed 03:56
Rocklands – Parana	Thu 03:56
Rocklands – Parana	Fri 03:56
Rocklands – Parana	Mon 05:56
Rocklands – Parana	Tue 05:56
Rocklands – Parana	Wed 05:56
Rocklands – Parana	Thu 05:56
Rocklands – Parana	Fri 05:56
Rocklands – Parana	Sat 05:56
Rocklands – Parana	Sun 07:56
Rocklands – Parana	Mon 07:56
Rocklands – Parana	Tue 07:56
Rocklands – Parana	Wed 07:56
Rocklands – Parana	Thu 07:56
Rocklands – Parana	Fri 07:56
Rocklands – Parana	Sat 07:56
Rocklands – Parana	Sun 10:56
Rocklands – Parana	Mon 10:56
Rocklands – Parana	Tue 10:56
Rocklands – Parana	Wed 10:56
Rocklands – Parana	Thu 10:56

Route	Departure day and time
Rocklands – Parana	Fri 10:56
Rocklands – Parana	Sat 10:56
Rocklands – Parana	Sun 12:56
Rocklands – Parana	Mon 12:56
Rocklands – Parana	Tue 12:56
Rocklands – Parana	Wed 12:56
Rocklands – Parana	Thu 12:56
Rocklands – Parana	Fri 12:56
Rocklands – Parana	Sat 12:56
Rocklands – Parana	Sun 15:16
Rocklands – Parana	Mon 15:16
Rocklands – Parana	Tue 15:16
Rocklands – Parana	Wed 15:16
Rocklands – Parana	Thu 15:16
Rocklands – Parana	Fri 15:16
Rocklands – Parana	Sat 15:16
Rocklands – Parana	Sun 17:56
Rocklands – Parana	Mon 17:56
Rocklands – Parana	Tue 17:56
Rocklands – Parana	Wed 17:56
Rocklands – Parana	Thu 17:56
Rocklands – Parana	Fri 17:56
Rocklands – Parana	Sat 17:56
Rocklands – Parana	Sun 20:36
Rocklands – Parana	Mon 20:36
Rocklands – Parana	Tue 20:36
Rocklands – Parana	Wed 20:36
Rocklands – Parana	Thu 20:36
Rocklands – Parana	Fri 20:36
Rocklands – Parana	Sat 20:36
Rocklands – Parana	Sun 23:16
Rocklands – Parana	Mon 23:16
Rocklands – Parana	Tue 23:16
Rocklands – Parana	Wed 23:16
Rocklands – Parana	Thu 23:16
Rocklands – Parana	Fri 23:16
Rocklands – Parana	Sat 23:16
Parana – Mt Miller	Wed 07:30
Mt Miller – Rocklands	Tue 17:51
Rocklands – Nogoa	Wed 12:38
Rocklands – Nogoa	Sun 15:08

Route	Departure day and time
Nogoa – Rocklands	Tue 06:37
Nogoa – Rocklands	Fri 06:37
Merinda – Wathana	Sun 01:25
Merinda – Wathana	Mon 01:25
Merinda – Wathana	Tue 01:25
Merinda – Wathana	Wed 01:25
Merinda – Wathana	Thu 01:25
Merinda – Wathana	Fri 01:25
Merinda – Wathana	Sat 01:25
Merinda – Wathana	Sun 06:20
Merinda – Wathana	Mon 06:20
Merinda – Wathana	Tue 06:20
Merinda – Wathana	Wed 06:20
Merinda – Wathana	Thu 06:20
Merinda – Wathana	Fri 06:20
Merinda – Wathana	Sat 06:20
Merinda – Wathana	Sun 09:40
Merinda – Wathana	Mon 09:40
Merinda – Wathana	Tue 09:40
Merinda – Wathana	Wed 09:40
Merinda – Wathana	Thu 09:40
Merinda – Wathana	Fri 09:40
Merinda – Wathana	Sat 09:40
Merinda – Wathana	Sun 10:40
Merinda – Wathana	Mon 10:40
Merinda – Wathana	Tue 10:40
Merinda – Wathana	Wed 10:40
Merinda – Wathana	Thu 10:40
Merinda – Wathana	Fri 10:40
Merinda – Wathana	Sat 10:40
Merinda – Wathana	Mon 12:35
Merinda – Wathana	Fri 12:35
Merinda – Wathana	Sun 15:28
Merinda – Wathana	Mon 15:28
Merinda – Wathana	Tue 15:28
Merinda – Wathana	Wed 15:28
Merinda – Wathana	Thu 15:28
Merinda – Wathana	Fri 15:28
Merinda – Wathana	Sat 15:28

Route	Departure day and time
Wathana – Merinda	Sun 01:40
Wathana – Merinda	Mon 01:40
Wathana – Merinda	Tue 01:40
Wathana – Merinda	Wed 01:40
Wathana – Merinda	Thu 01:40
Wathana – Merinda	Fri 01:40
Wathana – Merinda	Sat 01:40
Wathana – Merinda	Sun 03:50
Wathana – Merinda	Mon 03:50
Wathana – Merinda	Tue 03:50
Wathana – Merinda	Wed 03:50
Wathana – Merinda	Thu 03:50
Wathana – Merinda	Fri 03:50
Wathana – Merinda	Sat 03:50
Wathana – Merinda	Sun 10:50
Wathana – Merinda	Mon 10:50
Wathana – Merinda	Tue 10:50
Wathana – Merinda	Wed 10:50
Wathana – Merinda	Thu 10:50
Wathana – Merinda	Fri 10:50
Wathana – Merinda	Sat 10:50
Wathana – Merinda	Wed 12:35
Wathana – Merinda	Sun 16:30
Wathana – Merinda	Mon 16:30
Wathana – Merinda	Tue 16:30
Wathana – Merinda	Wed 16:30
Wathana – Merinda	Thu 16:30
Wathana – Merinda	Fri 16:30
Wathana – Merinda	Sat 16:30
Wathana – Merinda	Sun 20:10
Wathana – Merinda	Mon 20:10
Wathana – Merinda	Tue 20:10
Wathana – Merinda	Wed 20:10
Wathana – Merinda	Thu 20:10
Wathana – Merinda	Fri 20:10
Wathana – Merinda	Sat 20:10
Parana – Rocklands	Mon 01:45
Parana – Rocklands	Thu 01:45
Parana – Rocklands	Sat 01:45
Rocklands – Parana	Sun 21:36

Route	Departure day and time
Rocklands – Parana	Tue 21:36
Rocklands – Parana	Fri 21:36
Rocklands – Nogoa	Mon 10:00
Rocklands – Nogoa	Thu 10:00
Rocklands – Nogoa	Sat 10:00
Nogoa – Rocklands	Mon 02:56
Nogoa – Rocklands	Wed 02:56
Nogoa – Rocklands	Sat 02:56
Yukan – Mt McLaren	Mon 05:05
Yukan – Mt McLaren	Tue 05:05
Yukan – Mt McLaren	Thu 05:05
Yukan – Mt McLaren	Fri 05:05
Mt McLaren – Yukan	Mon 09:15
Mt McLaren – Yukan	Tue 09:15
Mt McLaren – Yukan	Thu 09:15
Mt McLaren – Yukan	Fri 09:15

Passenger traffic path removal inputs

Traffic	Path dispatch location	End location	Departure day and time	Number of paths removed
Spirit of Outback	Callemondah	Nogoa	Wed 02:45	2
Spirit of Outback	Callemondah	Nogoa	Sat 23:15	2
Spirit of Outback	Bluff	Parana	Mon 21:30	1
Spirit of Outback	Bluff	Parana	Thu 21:30	1
Rockhampton Tilt	Callemondah	Rocklands	Sun 17:00	2
Rockhampton Tilt	Callemondah	Rocklands	Mon 17:00	2
Rockhampton Tilt	Callemondah	Rocklands	Tue 17:00	2
Rockhampton Tilt	Callemondah	Rocklands	Thu 17:00	2
Rockhampton Tilt	Callemondah	Rocklands	Fri 17:00	2
Rockhampton Tilt	Callemondah	Rocklands	Sat 17:00	2
Rockhampton Tilt	Callemondah	Rocklands	Sun 23:15	2
Rockhampton Tilt	Callemondah	Rocklands	Tue 23:15	2
Rockhampton Tilt	Bluff	Parana	Sun 03:30	2
Rockhampton Tilt	Bluff	Parana	Mon 03:30	2
Rockhampton Tilt	Bluff	Parana	Mon 12:00	2
Rockhampton Tilt	Bluff	Parana	Tue 03:30	2
Rockhampton Tilt	Bluff	Parana	Wed 03:30	2
Rockhampton Tilt	Bluff	Parana	Thu 03:30	2

Traffic	Path dispatch location	End location	Departure day and time	Number of paths removed
Rockhampton Tilt	Bluff	Parana	Fri 03:30	2
Rockhampton Tilt	Bluff	Parana	Sat 03:30	2
Spirit Queensland	Callemondah	Rocklands	Sun 22:15	2
Spirit Queensland	Callemondah	Rocklands	Mon 22:15	2
Spirit Queensland	Callemondah	Rocklands	Tue 22:15	2
Spirit Queensland	Callemondah	Rocklands	Wed 22:15	2
Spirit Queensland	Callemondah	Rocklands	Thu 08:15	2
Spirit Queensland	Callemondah	Rocklands	Thu 22:15	2
Spirit Queensland	Callemondah	Rocklands	Fri 22:15	2
Spirit Queensland	Callemondah	Rocklands	Sat 22:15	2
Spirit Queensland	Bluff	Parana	Sun 20:50	2
Spirit Queensland	Bluff	Parana	Mon 20:50	2
Spirit Queensland	Bluff	Parana	Tue 06:49	2
Spirit Queensland	Bluff	Parana	Tue 20:50	2
Spirit Queensland	Bluff	Parana	Wed 20:50	2
Spirit Queensland	Bluff	Parana	Thu 20:50	2
Spirit Queensland	Bluff	Parana	Fri 20:50	2
Spirit Queensland	Bluff	Parana	Sat 20:50	2
Livestock	Parana	Rocklands	Sun 04:16	1
Livestock	Parana	Rocklands	Thu 04:16	1
Livestock	Rocklands	Parana	Sun 19:17	1
Livestock	Rocklands	Parana	Thu 19:17	1
Livestock	Rocklands	Nogoa	Tue 17:05	1
Livestock	Rocklands	Nogoa	Wed 05:05	1
Livestock	Rocklands	Nogoa	Sat 05:05	1
Livestock	Rocklands	Nogoa	Sat 17:05	1
Livestock	Nogoa	Rocklands	Tue 23:09	1
Livestock	Nogoa	Rocklands	Wed 11:09	1
Livestock	Nogoa	Rocklands	Sat 11:09	1
Livestock	Nogoa	Rocklands	Sat 23:09	1
Freight	Parana	Mt Miller	Fri 7:31	1
Freight	Mt Miller	Rocklands	Sat 15:56	1
Freight	Parana	Rocklands	Sun 07:01	1
Freight	Parana	Rocklands	Sun 19:01	1
Freight	Parana	Rocklands	Mon 07:01	1
Freight	Parana	Rocklands	Mon 19:01	1
Freight	Parana	Rocklands	Tue 07:01	1
Freight	Parana	Rocklands	Tue 19:01	1
Freight	Parana	Rocklands	Wed 07:01	1

Traffic	Path dispatch location	End location	Departure day and time	Number of paths removed
Freight	Parana	Rocklands	Wed 19:01	1
Freight	Parana	Rocklands	Thu 07:01	1
Freight	Parana	Rocklands	Thu 19:01	1
Freight	Parana	Rocklands	Fri 07:01	1
Freight	Parana	Rocklands	Fri 19:01	1
Freight	Parana	Rocklands	Sat 07:01	1
Freight	Parana	Rocklands	Sat 19:01	1
Freight	Parana	Rocklands	Tue 14:31	1
Freight	Rocklands	Parana	Sun 03:31	1
Freight	Rocklands	Parana	Sun 15:31	1
Freight	Rocklands	Parana	Mon 03:31	1
Freight	Rocklands	Parana	Mon 15:31	1
Freight	Rocklands	Parana	Tue 03:31	1
Freight	Rocklands	Parana	Tue 15:31	1
Freight	Rocklands	Parana	Wed 03:31	1
Freight	Rocklands	Parana	Wed 15:31	1
Freight	Rocklands	Parana	Thu 03:31	1
Freight	Rocklands	Parana	Thu 15:31	1
Freight	Rocklands	Parana	Fri 03:31	1
Freight	Rocklands	Parana	Fri 15:31	1
Freight	Rocklands	Parana	Sat 03:31	1
Freight	Rocklands	Parana	Sat 15:31	1
Freight	Rocklands	Parana	Sat 23:01	1
Limestone	Fisherman's Landing	Graham	Sun 01:52	1
Limestone	Fisherman's Landing	Graham	Mon 02:02	1
Limestone	Fisherman's Landing	Graham	Tue 02:12	1
Limestone	Fisherman's Landing	Graham	Wed 02:22	1
Limestone	Fisherman's Landing	Graham	Thu 02:32	1
Limestone	Fisherman's Landing	Graham	Fri 02:42	1
Limestone	Fisherman's Landing	Graham	Sat 02:52	1
Limestone	Fisherman's Landing	Graham	Sun 13:52	1
Limestone	Fisherman's Landing	Graham	Mon 14:02	1
Limestone	Fisherman's Landing	Graham	Tue 14:12	1
Limestone	Fisherman's Landing	Graham	Wed 14:22	1
Limestone	Fisherman's Landing	Graham	Thu 14:32	1
Limestone	Fisherman's Landing	Graham	Fri 14:42	1
Limestone	Fisherman's Landing	Graham	Sat 14:52	1
Limestone	Graham	Fisherman's Landing	Sun 00:28	1
Limestone	Graham	Fisherman's Landing	Mon 00:28	1
Limestone	Graham	Fisherman's Landing	Tue 00:28	1

Traffic	Path dispatch location	End location	Departure day and time	Number of paths removed
Limestone	Graham	Fisherman's Landing	Wed 00:28	1
Limestone	Graham	Fisherman's Landing	Thu 00:28	1
Limestone	Graham	Fisherman's Landing	Fri 00:28	1
Limestone	Graham	Fisherman's Landing	Sat 00:28	1
Limestone	Graham	Fisherman's Landing	Sun 12:28	1
Limestone	Graham	Fisherman's Landing	Mon 12:28	1
Limestone	Graham	Fisherman's Landing	Tue 12:28	1
Limestone	Graham	Fisherman's Landing	Wed 12:28	1
Limestone	Graham	Fisherman's Landing	Thu 12:28	1
Limestone	Graham	Fisherman's Landing	Fri 12:28	1
Limestone	Graham	Fisherman's Landing	Sat 12:28	1

Appendix D: Modelled Rail Infrastructure for Private Infrastructure and new Mines

Private Infrastructure

Private Infrastructure that has been modelled within the DSM, however does not impact DNC is:

[redacted]

Appendix E: Committed Capacity Demand (TSEs)

FY20 (TSEs)

xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	[redacted]	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	[redacted]	[redacted]	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	[redacted]	[redacted]	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	[redacted]	[redacted]	[redacted]	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	[redacted]	[redacted]	[redacted]	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	[redacted]	[redacted]	[redacted]	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	[redacted]	[redacted]	[redacted]	xxx	xxx
xxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	[redacted]	[redacted]	[redacted]	[redacted]	xxx	xxx	xxx
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Appendix F: Train Loadout Parameters

The following data relates to train loadout key parameters used in the DSM.

Pre and post load times are applied equally across all TLO's and is summarised in the main body of the SOP.

Planned Maintenance

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For TLOs in the table above that show no planned maintenance, the maintenance is assumed to occurduring FFSs only and hence is not explicitly modelled.

Gross Load Rate

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			[redacted]	XXX
			[redacted]	XXX
XXXX	XXXX	XXXX	[redacted]	XXX
			[redacted]	XXX
			[redacted]	XXX
			[redacted]	XXX
XXXX	XXXX	[redacted]	XXX	XXX
			XXX	XXX
XXXX	[redacted]	[redacted]	XXX	XXX
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XXXX	[redacted]	[redacted]	XXX	XXX
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Payload

xxx	xxx	xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx	xxx	xxx
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	xxx	xxx	xxx	xxx	[redacted]
				xxx	[redacted]
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	xxx	[redacted]	[redacted]	xxx	xxx
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xxx	[redacted]	[redacted]	xxx	xxx	xxx
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	[redacted]	xxx	xxx	xxx	xxx
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xxx	xxx	xxx	xxx	xxx	[redacted]
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				[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	xxx	xxx	xxx
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	[redacted]	xxx	xxx	xxx	xxx
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xxx	[redacted]	xxx	xxx	xxx	xxx
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				xxx	xxx
				xxx	xxx
				xxx	[redacted]
xxx	xxx	xxx	xxx	xxx	[redacted]
				xxx	[redacted]
				xxx	[redacted]
				xxx	[redacted]
xxx	xxx	xxx	xxx	xxx	[redacted]
				xxx	[redacted]
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				[redacted]	xxx
xxx	xxx	xxx	xxx	[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
xxx	xxx	xxx	[redacted]	[redacted]	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
xxx	xxx	[redacted]	[redacted]	xxx	xxx
				xxx	xxx
				xxx	xxx
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				xxx	xxx
				xxx	xxx
xxx	[redacted]	[redacted]	xxx	xxx	xxx
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				xxx	xxx
				xxx	[redacted]
				xxx	[redacted]
				xxx	[redacted]
				xxx	[redacted]
xxx	xxx	xxx	xxx	[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
	xxx	xxx	xxx	[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
				xxx	xxx
				xxx	xxx
xxx	xxx	xxx	[redacted]	xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
xxx	[redacted]	[redacted]	xxx	xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
xxx	[redacted]	xxx	xxx	xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx

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Lightload Payload

xxx	xxx	xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx	xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	[redacted]
				xxx	[redacted]
xxx	xxx	xxx	xxx	xxx	[redacted]
				xxx	[redacted]
				xxx	[redacted]
				[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
xxx	xxx	xxx	[redacted]	[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
				[redacted]	xxx
				xxx	xxx
xxx	xxx	[redacted]	[redacted]	xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
xxx	[redacted]	[redacted]	xxx	xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
xxx	[redacted]	xxx	xxx	xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
				xxx	xxx
xxx	xxx	xxx	xxx	xxx	xxx
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				xxx	xxx
				xxx	xxx
				xxx	xxx

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Appendix G: Inloader Parameters (per Terminal)

The following data relates to inloader key parameters used in the DSM.

Pre and post unload times are applied equally across all Inloaders and is summarised in the body of the SOP.

Historical data provided by the terminals indicates the possibility of major planned maintenance on the ILs outside FSSs, however, these vary widely in both duration and timing, without a predictable pattern, indicating that they represent specific one-off events that are not applicable for the assessment of DNC.

Where there was more than one inloader, assumptions were applied equally to each.

Inloader planned maintenance

xxx	xxx	xxx
xxx	xxx	xxx
xxx	xxx	xxx
xxx	xxx	xxx
xxx	xxx	xxx
xxx	xxx	xxx
xxx	xxx	xxx
xxx	xxx	xxx
xxx	xxx	xxx
xxx	xxx	[redacted]

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Inloader Gross Unload Rate

xxx	[redacted]	[redacted]		xxx		
			xxx	xxx	xxx	xxx
xxx	[redacted]	[redacted]	xxx	xxx	xxx	xxx
xxx	[redacted]	[redacted]	xxx	xxx	xxx	xxx
xxx	[redacted]	[redacted]	xxx	xxx	xxx	xxx
xxx	[redacted]	[redacted]	xxx	xxx	xxx	xxx
xxx	[redacted]	xxx	xxx	xxx	xxx	xxx
[redacted]	[redacted]	xxx	xxx	xxx	xxx	xxx
[redacted]	[redacted]	xxx	xxx	xxx	xxx	xxx
[redacted]	[redacted]	xxx	xxx	xxx	xxx	xxx
[redacted]	[redacted]	xxx	xxx	xxx	xxx	xxx

Inloader unplanned maintenance – cycle

XXX	XXX	XXX XXX	XXX XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	[redacted]	XXX
XXX	XXX	XXX	XXX	XXX	[redacted]	[redacted]
XXX	XXX	XXX	XXX	[redacted]	[redacted]	[redacted]
XXX	XXX	XXX	XXX	[redacted]	[redacted]	[redacted]
XXX	XXX	XXX	XXX	[redacted]	[redacted]	[redacted]
XXX	XXX	XXX	XXX	[redacted]	[redacted]	XXX
XXX	XXX	XXX	XXX	[redacted]	[redacted]	XXX
XXX	XXX	XXX	XXX	[redacted]	[redacted]	XXX
XXX	XXX	XXX	XXX	[redacted]	XXX	XXX

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Inloader unplanned maintenance - du[redacted]

XXX	XXX	[redacted]	XXX	XXX	XXX	XXX
XXX	XXX	[redacted]	XXX	XXX	XXX	XXX
XXX	[redacted]	[redacted]	XXX	XXX	XXX	XXX
XXX	[redacted]	[redacted]	XXX	XXX	XXX	XXX
XXX	[redacted]	[redacted]	XXX	XXX	XXX	XXX
XXX	[redacted]	XXX	XXX	XXX	XXX	XXX
XXX	[redacted]	XXX	XXX	XXX	XXX	XXX
XXX	[redacted]	XXX	XXX	XXX	XXX	XXX
XXX	[redacted]	XXX	XXX	XXX	XXX	XXX
[redacted]	[redacted]	XXX	XXX	XXX	XXX	XXX

Appendix H: Below Rail Parameters

General delays per Coal System

xxx	xxx	xxx	xxx	[redacted]
xxx	xxx	xxx	xxx	[redacted]
xxx	xxx	xxx	xxx	[redacted]
xxx	xxx	xxx	xxx	[redacted]
xxx	xxx	xxx	xxx	[redacted]

[redacted]

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[redacted]

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Appendix I: Above Rail Parameters (per Operator)

The following data relates to Above Rail operators that is used in the DSM.

Consist Type and numbers per Coal System and per Above Rail operator

The following are the consist types and numbers used in the DSM:

xxx	xxx	[redacted]	xxx	xxx
xxx	xxx	[redacted]	xxx	xxx
	xxx	[redacted]	xxx	xxx
	xxx	[redacted]	xxx	xxx
xxx	xxx	[redacted]	xxx	xxx
	xxx	[redacted]	xxx	xxx
	[redacted]	[redacted]	xxx	xxx
	[redacted]	xxx	xxx	xxx
	[redacted]	xxx	xxx	xxx
xxx	[redacted]	xxx	xxx	xxx
	[redacted]	xxx	xxx	xxx
	[redacted]	xxx	xxx	xxx
	[redacted]	xxx	xxx	xxx
xxx	[redacted]	xxx	xxx	xxx
xxx	xxx	xxx	xxx	xxx

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* For Bowen Rail Company for FY2024, 3 consists are considered

Crew Change Locations

The following details where crew changes are allowed for in the DSM. At various stages in this cycle, crew changes will take place. These occur most commonly at yards, TLOs and/or staging points such as Coppabella, Bluff and Kabra, but actual locations depend on the individual cycle.

xxx	xxx	xxx
xxx	xxx	[redacted]
xxx	xxx	[redacted]
xxx	xxx	[redacted]
xxx	xxx	[redacted]
xxx	xxx	[redacted]
xxx	xxx	xxx
xxx	[redacted]	xxx
xxx	[redacted]	xxx
xxx	[redacted]	xxx
xxx	[redacted]	xxx
xxx	[redacted]	xxx
xxx	[redacted]	xxx
xxx	[redacted]	xxx
xxx	[redacted]	xxx
xxx	[redacted]	xxx

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Depot Assumptions

The following parameters re used by the DSM for yards/depots (crew change info for yards is shown in 20.2).

xxx	xxx	xxx	xxx
xxx			
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	**xxx**	**xxx**	[redacted]
xxx			
xxx	xxx	xxx	[redacted]
xxx	xxx	xxx	[redacted]
xxx	xxx	xxx	[redacted]
xxx	xxx	[redacted]	[redacted]
xxx	xxx	[redacted]	[redacted]
xxx	xxx	[redacted]	[redacted]
xxx	xxx	[redacted]	xxx
xxx	[redacted]	[redacted]	**xxx**
xxx			
xxx	[redacted]	[redacted]	xxx
xxx	[redacted]	[redacted]	xxx
xxx	[redacted]	xxx	xxx
xxx	[redacted]	xxx	xxx
xxx	[redacted]	xxx	xxx
xxx	[redacted]	xxx	xxx
[redacted]	**xxx**	**xxx**	**xxx**
xxx			
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx

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* The cycle for Callemondah for diesel and electric consists for empty and loaded is 1 cycle.

Appendix J: Other Parameters

Temporary Speed Restrictions (TSRs)

TSRs time between events

xxx	xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	[redacted]
	xxx	xxx	xxx	[redacted]
	xxx	xxx	xxx	[redacted]
	xxx	xxx	xxx	[redacted]
	xxx	xxx	xxx	[redacted]
	xxx	xxx	xxx	[redacted]
xxx	xxx	xxx	xxx	[redacted]
	xxx	xxx	xxx	[redacted]
	xxx	xxx	xxx	xxx
	xxx	xxx	[redacted]	xxx
	xxx	xxx	[redacted]	xxx
	xxx	xxx	[redacted]	xxx
	xxx	xxx	[redacted]	xxx
	xxx	xxx	[redacted]	xxx
	xxx	[redacted]	[redacted]	xxx
	xxx	[redacted]	[redacted]	xxx
	xxx	[redacted]	[redacted]	xxx
	[redacted]	[redacted]	xxx	xxx
xxx	[redacted]	[redacted]	xxx	xxx
	[redacted]	[redacted]	xxx	xxx
	[redacted]	[redacted]	xxx	xxx
	[redacted]	[redacted]	xxx	xxx
	[redacted]	xxx	xxx	xxx
	[redacted]	xxx	xxx	xxx
	[redacted]	xxx	xxx	xxx
	[redacted]	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx

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TSR Duration

Application - After waiting the sampled time between events, the TSR will sample to determine if it applies to all tracks with probability 1/3 or if it applies to a random track (chosen uniformly) with probability 2/3.

xxx	xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx	xxx

TSR Penalty

xxx	xxx	xxx	xxx	xxx
xxx	xxx	xxx	xxx	xxx
			xxx	xxx
xxx	xxx	xxx	xxx	xxx
			xxx	[redacted]
xxx	xxx	xxx	xxx	[redacted]
			xxx	[redacted]

TSR by section

xxx	xxx	[redacted]	xxx
xxx	xxx	xxx [redacted]	xxx
		xxx [redacted]	xxx
		xxx [redacted]	xxx
		[redacted]	xxx
		[redacted]	xxx
		[redacted]	xxx
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	xxx [redacted]	[redacted]	xxx
	[redacted]	[redacted]	xxx
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	[redacted]	xxx	xxx
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		xxx	[redacted]
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		xxx	xxx
		xxx	[redacted]
		xxx	[redacted]

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