



# Blackwater System

## **Information Pack**

Version 7.0  
March 2017



## Revision History

**Issue 1** 21 November 2000

**Issue 2** 6 April 2005

**Issue 2.1** 26 February 2007

Sectional run times altered to show only Reference Train.

**Issue 3** November 2008

**Issue 4** February 2012

**Issue 5** September 2013

**Issue 5.1** November 2013

Reference to Wurba Junction removed.  
Area included as part of Minerva.

**Issue 5.2** January 2014

Inclusion of Burngrove to Nogoia Section data.

**Issue 5.3** January 2014

Update of Burngrove to Nogoia Section data.

**Issue 5.4** August 2014

Reference to Gracemere and Kabra 'Passing Loops' removed.

**Issue 5.5** December 2014

Updated to reflect new duplicated sections between Rocklands and Burngrove.

**Issue 5.6** April 2015

Updated to reflect the new duplicated sections between Dingo and Bluff, the Lilyvale Passing loop, the extension of the system to include the section between Gregory and Oaky Creek, and the addition of the Wiggins Island Balloon Loop.

**Issue 5.7** January 2016

Asset data adjusted to reflect upgrades.

**Issue 5.8** July 2016

Updated notes for SRT.

**Issue 7.0** March 2017

Format changed, new asset data added, removal of Section Running Times.

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## Introduction

All railway operators wishing to operate in Queensland and on Aurizon Network Pty Ltd rail network require Accreditation under the Transport Infrastructure Act 1994 (Qld) and need to consider the following aspects of typical rail operations (note this is not an exhaustive list):

- Provisioning, stabling or stowing areas for Rolling stock
- Train crewing
- Safe working
- Training
- Route knowledge
- Environmental requirements
- Track standards
- Signalling and traction systems standards and constraints
- Safety training
- Management of risk
- Rolling stock registration and Train authorisation
- Legal issues as contained in Aurizon Network's Access Undertaking, Access Agreements and information contained in this pack.

Operators will be required to have Queensland Department of Transport and Main Roads accreditation, hold an Access Agreement with Aurizon Network and meet any conditions and precedents specified in the Access Agreement prior to commencing operations.

The Accreditation process requires applicants to demonstrate competence and capability to safely commence and maintain rail operations. The Accreditation process is managed by the Queensland Department of Transport and Main Roads, which is independent of Aurizon Network.

Contact details are:

Director of Rail Safety Regulation,  
PO Box 673  
Fortitude Valley QLD 4006

Operators need to be aware of and comply with other general legislation such as but not limited to Workplace Health & Safety, Environmental legislation and Heritage legislation.

This information package is issued as an *UNCONTROLLED DOCUMENT* and is planned to be reviewed annually. It is on the onus of enquirer to ensure they are using the current version of this document and /or the latest information.

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If you would like further information, or feel that any information contained within this document is incorrect, please contact us via email at [NAMSDataStewards@aurizon.com.au](mailto:NAMSDataStewards@aurizon.com.au)

In this document the legal entity Aurizon Network Pty Ltd is referred to as Aurizon Network.

Definitions – see *APPENDIX A*

## General Information

The Blackwater System is located in Central Queensland between the latitudes 23°8' S and 24°28' S and longitudes 148°5' E and 151°15' E.

The system primarily services coal mines off the Central Line and carries the product through to Stanwell Power Station, Gladstone Power Station and the Port of Gladstone via the North Coast Line.

The Blackwater System is bi-directional duplicated track with crossovers between Callemondah and Rocklands, between Rocklands and Dingo, between Umolo to Walton and between Bluff and Rangal, with the remainder being single line.

Because of changed traffic tasks (coal), this system now incorporates the section of track from Burngrove to Nogo to Minerva (previously part of the Central West System).

Loading balloon loops are located at East End, Boonal, Koorilgah, Curragh, Boorgoon, Kinrola, Ensham, Gordonstone, Rolleston, Minerva and Gregory with a spur line at Fairhill for Yongala. Triple unloading balloons are located at Golding, with unloading balloons at Stanwell Powerhouse, Fishermans Landing, Gladstone Powerhouse, Auckland Point, Barney Point and Comalco.

The Blackwater System is electrified by an autotransformer system with the overhead line equipment operating at 25 000 volts, 50 Hertz, alternating supply (25 kV, 50 Hz, ac).

Descriptive distances within this document are route kilometres and are general only, for accurate distances refer to relevant Working Plan and Sections. The origin point (0.000 km) for the Blackwater System is on the Up Road of track 14D just before signal 23P when heading towards Gracemere.

## General Climate

The system is situated in central Queensland and in a generally warm to hot climate.

The following sub-sections specify general climatic parameters. For latest and more specific information, potential railway operators should consult The Australian Bureau of Meteorology at their Internet Website [www.bom.gov.au](http://www.bom.gov.au).

### Cyclones

Tropical lows, which develop from November to April, occasionally deepen to cause tropical cyclones. Tropical cyclones show great variation in behaviour. They foster high winds, heavy, flood-producing rainfall (especially when a cyclone moves over high ground), and coastal storm surges.

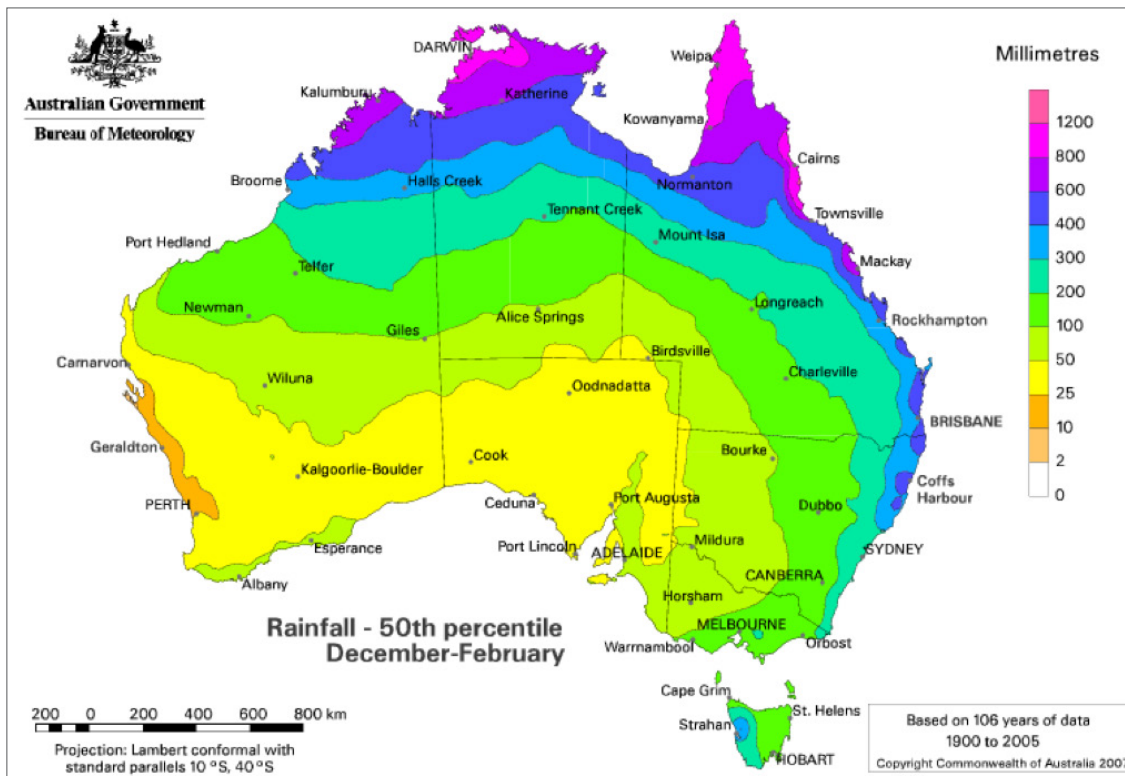
The high wind risk does not usually extend further inland than 50 km. Inland movement reduces the inflow of moisture and cyclone intensity declines, often within a few hours. Not all cyclones are severe.

### Humidity

This region could experience prolonged periods of high humidity and potential railway operators should consider this when planning / designing rolling stock and machinery to operate on this rail system.

### Rainfall

Highest rainfall occurs on the seaward side of the Great Dividing Range. However, at times in summer the inland extension of low-level moist airflow, in combination with intense surface heating, produces significant thunderstorm activity. Rainfall is mostly confined to the summer months in the northern tropics, where in excess of 90% of the annual total is recorded between November and April. In the north, rain is mostly associated with monsoonal troughs. The wet season in Queensland is predominantly from January to April when monthly rain falls of 400 mm or more can occur. Flooding of low lying areas is likely to occur during periods of extreme rainfall.

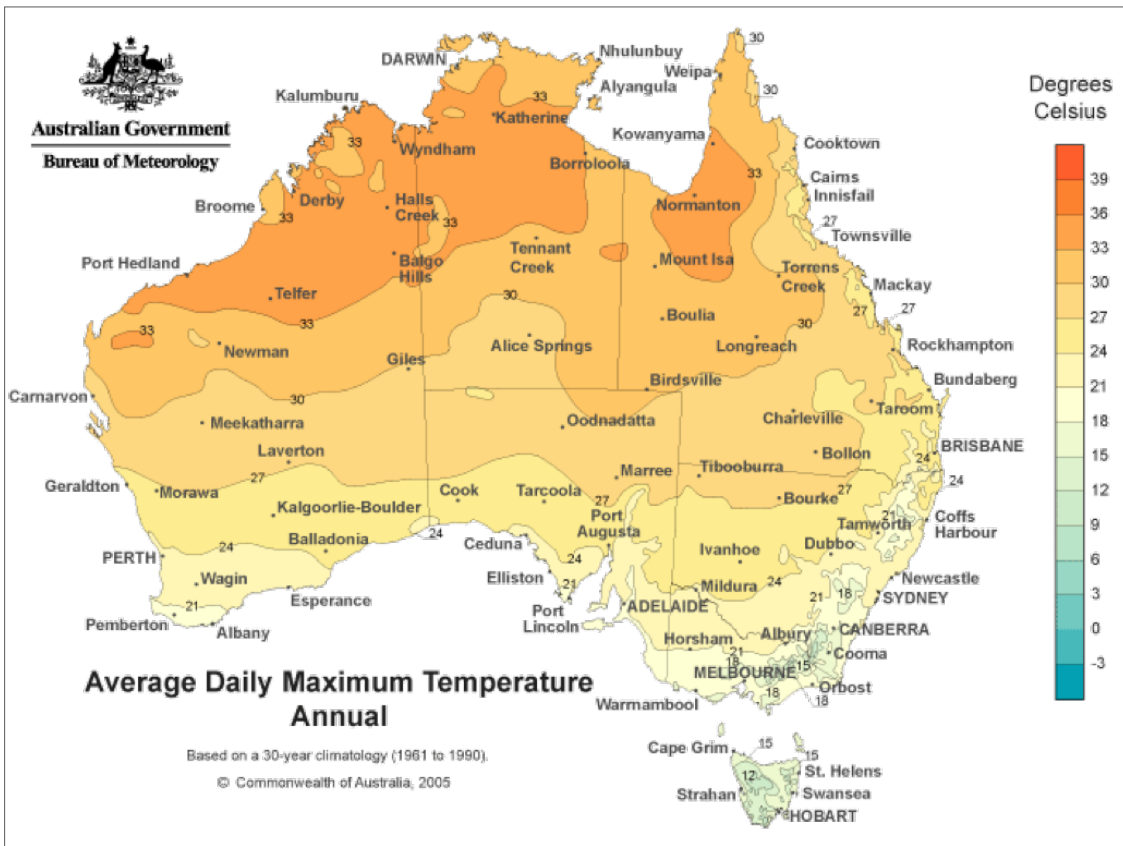


Information is available at the Bureau's website based on past rainfall totals and computer modelling for periods of up to about 3 months. It is important to check the latest information available from the Bureau prior to operating on the Aurizon Network.

## Temperatures

The average annual values of the daytime maximum of the hottest (January) and night-time minimum of the coldest (July) months are indicated on the climatic maps.

During the period of peak temperature, it may be an operational requirement that Line Speed be reduced to minimise the risk of incident (refer Operational Constraints).





## Description of the Railway

The track (1067 mm gauge) on the main trunk route from Blackwater to Gladstone is generally 60 kg/m rail with concrete sleepers.

Bridges allow the passage of 106 t (26.5 tal) wagons at 80 km/h. Allowable axle loads and speeds on branch lines vary as described below.

Based on the improved asset intelligence provided as a result of the Network Asset Management System, the following new totals are provided for this system. The linear data is accurate to sub-meter distances.

Asset Type	Length / Total
Total Track	1171.361 km (Includes yards, sidings & passing loops)
Duplicated Track	296.950 km
Passing Loops	27.298 km (16 Passing Loops)
Sidings	14.371 km (35 Sidings)
Electrified Track	1122.527 km (Includes yards, sidings & passing loops)
Access Roads	979.895 km (Including Left and Right side of track)
Level Crossings	228 Crossings
Lubricators	40 Sites
Crew Change Facilities	87 Sites
Turnouts	447 Turnouts (Mainline & Yards)

### Axle Loadings

Maximum axle load	Wheel configuration consistent with or otherwise generating a loading equivalent to
26.5 tal	M 220
20 tal	M 160
15.75 tal	M 130

### Basic Track Map

A basic track map is in *APPENDIX B*. If you require more information about the Blackwater System that is not included in this document then please contact us via our website [www.aurizon.com.au](http://www.aurizon.com.au) and then click on the Contact Us link and then fill in your enquiry details.

### **Callemondah to Rocklands (98.6 km)**

This section from the Callemondah Complex on the North Coast Line, north of Gladstone to the junction of the North Coast Line and Central Line at Rocklands consists of duplicated track with crossovers signalled for bi-directional running.

Track structure is 60 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes.

---

This section of track caters for various traffic types with corresponding maximum speeds, namely:

---

Freight	100 km/h running @ 20 tal
Mineral (Heavy Haul)	80 km/h running @ 26.5 tal
Locomotive hauled Passenger Services	100 km/h running
Inter City Express Services	120 km/h running
Tilt train Passenger Services	160 km/h running

---

The maximum grade (not compensated for horizontal alignment) that a Down train (northbound) will encounter is 1 in 57 whilst for an Up train (southbound) is 1 in 66.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	402 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (50 %) and medium to good (50 %).

### **Rocklands to Burngrove (202.3 km)**

This section from Rocklands on the North Coast Line to Burngrove on the Central Line consists of duplicated track, all signalled for bi-directional running.

Track structure is 60 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes.

---

This section of track caters for various traffic types with corresponding maximum speeds, namely:

---

General Freight	100 km/h running @ 20 tal
Mineral (Heavy Haul)	80 km/h running @ 26.5 tal
Locomotive hauled Passenger Services	100 km/h running

---

The maximum grade (not compensated for horizontal alignment) that a Down train (eastbound) will encounter is 1 in 49 whilst for an Up train (westbound) is 1 in 50.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	250 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (30 %) and medium to good (70 %).

### **Burngrove to Nogoia (60.8 km)**

This section from Burngrove to Nogoia on the Central Line consists of single track with passing loops and sidings at Tolmies, Comet and Yamala.

Track structure is predominately 50 kg/m rail on timber sleepers.

The maximum permissible axle load is 20 tonnes.

---

This section of track caters for various traffic types with corresponding maximum speeds, namely:

---

General Freight	80 km/h running @ 20 tal
Mineral (Heavy Haul)	80 km/h running @ 20 tal
Locomotive hauled Passenger Services	80 km/h running

---

The maximum grade (not compensated for horizontal alignment) that both a Down train (eastbound) and an Up train (westbound) will encounter is 1 in 49 for both directions.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	550 m
siding and depots	300 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (25 %) and medium to good (75 %).

### **Burngrove to Gregory & Oaky Creek Junction (82.9 km)**

This section from Burngrove (202.284 km) on the Central Line to Gregory Mine and Oaky Creek Junction consists of single track with passing loops at Crew, Fairhill, Yan Yan, Lilyvale and balloon loop at Gregory.

Track structure is 60 kg/m rail on concrete sleepers.

The maximum permissible axle loading is 26.5 tonnes.

The maximum allowable speed is 80 km/h for 26.5 tonne axle load and 100 km/h for 20 tonne axle load.

The maximum grade (not compensated for horizontal alignment) that an Up train (northbound) will encounter is 1 in 72 whilst for a Down train (southbound) is 1 in 100.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	1400 m
balloon loop	400 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (30 %) and medium to good (70 %).

### **Gordonstone Junction - Gordonstone [Kestrel Mine] (12.8 km)**

This railway has its junction with the Gregory Branch Line at 52.120 km, near Yan Yan and consists of single track with balloon loop at Gordonstone.

Track structure is 53 kg/m rail on steel and concrete sleepers.

The maximum permissible axle load is 26.5 tonnes.

This section of track caters for block trains with a line speed of 60 km/h.

The maximum grade (not compensated for horizontal alignment) that a Down train (eastbound) will encounter is 1 in 114 whilst for an Up train (westbound) is 1 in 118.

---

#### Existing minimum nominal horizontal curve radii are as follows:

---

running line	850 m
balloon loop	300 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (50 %) and medium to good (50 %).

### **Mackenzie to Ensham (13.4 km)**

This railway has its junction with the Gregory Branch Line at Mackenzie (23.043 km) and consists of single track with balloon loop at Ensham.

Track structure is 53 and 60 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes.

The maximum allowable speed is 80 km/h.

The maximum grade (not compensated for horizontal alignment) that an Up train (westbound) will encounter is 1 in 65 whilst for a Down train (eastbound) is 1 in 1538.

---

#### Existing minimum nominal horizontal curve radii are as follows:

---

running line	850 m
balloon loop	299 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (50 %) and medium to good (50 %).

### **Yongala Siding (2.0 km)**

This railway is a dead-end off the southern end of Fairhill Passing Loop at 36.468 km on the Gregory Branch line.

Track structure is 47 kg/m rail on timber sleepers.

The maximum permissible axle load is 26.5 tonnes.

This section of track caters for block trains with a line speed of 10 km/h.

The maximum grade (not compensated for horizontal alignment) that a Down train (southbound) will encounter is 1 in 309 whilst for an Up train (northbound) is 1 in 116.

### **Rangal to Kinrola (18.5 km)**

This railway has its junction with the Central Line at Rangal (195.556 km) and consists of single track with passing loop at Tikardi and balloon loop at Kinrola. A balloon loop off the Kinrola Line at 9.552 km runs parallel with the main line to service the mine at Boorgoon.

Track structure is 60 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes at a speed of 60 km/h.

The maximum grade (not compensated for horizontal alignment) that a Down train (northbound) will encounter is 1 in 100 whilst for an Up train (southbound) the maximum grade is 1 in 75.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	400 m
balloon loop	201 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (50 %) and medium to good (50 %)

### **Kinrola Junction to Rolleston (108.5 km)**

This railway has its junction with the Rangal to Kinrola railway at 14.745 km and consists of single track with passing loops at Kenmare, Memooloo and a balloon loop at Rolleston.

Track structure is 50 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes at a speed of 80 km/h.

The maximum grade (not compensated for horizontal alignment) that a Down train (northbound) will encounter is 1 in 81 (15 kp) whilst for an Up (southbound) the maximum grade is 1 in 50.

The bridges on this railway are not fitted with walkways or handrails.

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Existing minimum nominal horizontal curve radii are as follows:

---

running line	1200 m
balloon loop	300 m
siding and depots	140 m

---

This corridor is completely fenced using 4 strand barbed wire and is good condition.

### **Blackwater to Laleham (16.99 km)**

This railway has its junction with the Central Line at 188.724 km and consists of single which Aurizon Network's network ends at the 16.99 km point.

Track structure is predominantly 47 kg/m rail on timber sleepers with some 53/60 kg/m rail on concrete and timber sleepers between Blackwater and Taurus.

The maximum permissible axle load is 26.5 tonnes at 60 km/h.

The maximum grade (not compensated for horizontal alignment) that a Down train (northbound) will encounter is 1 in 102 whilst for an Up train (southbound) the maximum grade is 1 in 76.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	608 m
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---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (50 %) and medium to good (50 %).

### **Taurus to Koorilgah Balloon (5.8 km)**

A balloon loop off the Laleham Line at Taurus (12.886 km) services the mine at Koorilgah.

Track structure is 47 kg/m rail on timber sleepers.

The maximum permissible axle load is 26.5 tonnes.

This section of track caters for block trains with a line speed of 25 km/h.

The maximum grade (not compensated for horizontal alignment) that an Up train (eastbound) will encounter is 1 in 80 whilst for a Down train (westbound) travels on a downgrade to Taurus, the junction on the Laleham Line.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	457 m
balloon loop	304 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (50 %) and medium to good (50 %).

### **Boonal Loop (3.4 km)**

This railway has its junction with the Central Line at 178.567 km and consists of single track with balloon loop servicing mines within the local area.

Track structure is 41 kg/m rail on timber sleepers.

The maximum permissible axle load is 26.5 tonnes.

This section of track caters for block trains with a line speed of 50 km/h.

The maximum grade (not compensated for horizontal alignment) that an Up train (westbound) train will encounter is 1 in 120 whilst for a Down train (eastbound) the grades are falling.

---

Existing minimum nominal horizontal curve radii are as follows:

---

balloon loop	199 m
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### **Sagittarius to Curragh (12.0 km)**

This railway has its junction with the Central Line at Sagittarius 192.023 km and consists of single track with balloon loop at Curragh.

Track structure is 53 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes.

This section of track caters for block trains with a line speed of 80 km/h.

The maximum grade (not compensated for horizontal alignment) that a Down train (southbound) will encounter is 1 in 203 whilst for an Up train (northbound) the maximum grade is 1 in 90.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	1200 m
balloon loop	300 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (30 %) and medium to good (70 %).

### **Warren to Stanwell Powerhouse Balloon Loop (5.1 km)**

A balloon loop off the passing loop at Warren to service the Stanwell Powerhouse consisting of single track.

Track structure is 60 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes.

This section of track caters for block trains with a line speed of 25 km/h.

The maximum grade (not compensated for horizontal alignment) that an Up train (southbound) will encounter is 1 in 116 whilst for a Down train (northbound) the grades are falling.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	450 m
balloon loop	300 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (30 %) and medium to good (70 %).

### **Aldoga to East End (11.9 km) Non Electrified**

A railway off the North Coast Line at Aldoga (557.299 km) to service the balloon loop at East End, consisting of single track.

Track structure is 53 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes.

This section of track caters for block trains with a line speed of 80 km/h.

The maximum grade (not compensated for horizontal alignment) that an Up train (eastbound) will encounter is 1 in 100 whilst for a Down train (westbound) train the maximum grade is 1 in 80.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	220 m
balloon loop	220 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (50 %) and medium to good (50 %).

### **Mt. Miller to Fisherman's Landing (8.267 km) Non Electrified and Comalco Balloon Loop**

A railway off the North Coast Line at Mt. Miller (542.454 km) to service the balloon loop at Fisherman's Landing consisting of single track. The Comalco balloon loop branches off this line at 1.438 km.

Track structure is 53 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes.

This section of track caters for block trains with a line speed of 60 km/h.

The maximum grade (not compensated for horizontal alignment) that an Up train (eastbound) will encounter is 1 in 112 whilst for a Down train (westbound) train the maximum grade is 1 in 85.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	212 m
balloon loop	220 m
siding and depots	140 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (50 %) and medium to good (50 %).

### **Aldoga Holding Roads to Wiggins Island Balloon Loop (24.2 km)**

A railway connected to the North Coast Line currently at Mt. Miller (545.275 km) to service the balloon loop at Wiggins Island consisting of single track. The track will eventually be tied in to the North Coast Line at 548.141 km

Track structure is 60 kg/m rail on concrete sleepers.

The maximum permissible axle load is 26.5 tonnes.

This section of track caters for block trains with a line speed of 50 km/h.

The maximum grade (not compensated for horizontal alignment) that an Up train (eastbound) will encounter is 1 in 117 whilst for a Down train (westbound) train the maximum grade is 1 in 200.

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	540 m
balloon loop	415 m

---

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (10 %) and medium to good (90 %).



### **Callemondah - Gladstone - Parana (9.3 km)**

This section of single track is part of the North Coast Line, running north from Parana through Gladstone Yard to Callemondah.

Track structure from Parana to Callemondah is 60 kg/m rail on concrete sleepers with the track through Gladstone Yard being 47 kg/m rail on timber sleepers.

The maximum permissible axle load is 20 tonnes.

---

This section of track caters for various traffic types with corresponding maximum speeds, namely:

---

Freight	100 km/h running @ 20 tal
Locomotive hauled Passenger Services	100 km/h running
Inter City Express Services	120 km/h running
Tilt train Passenger Services	160 km/h running

---

The maximum grade (not compensated for horizontal alignment) that an Up train (southbound) will encounter is 1 in 50 whilst for a Down train (northbound) the maximum grade is 1 in 55.

---

Existing minimum nominal horizontal curve radii are as follows:

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running line	400 m
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---

At Parana, a connection from the North Coast Line to the Moura Short Line permits traffic to travel via the Moura Short Line bypassing Gladstone Yard and linking with the North Coast Line at Callemondah.

An Up train (southbound) will encounter downgrades whilst for a Down train (northbound) the maximum grade (not compensated for horizontal alignment) is 1 in 54.

---

Existing minimum nominal horizontal curve radius for the Parana connection is as follows:

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running line	402 m
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---

### **Gladstone Precincts**

Within the precincts of Gladstone station there are destinations for both general freight and block trains.

General traffic uses the balloon loops and sidings at Auckland Point with block (mineral) trains using Barney Point balloon loop and sidings.

Traffic using Barney Point balloon loop travels through South Gladstone yard via a dedicated route allowing 26.5 tal at 25 km/h, QAL Junction, over the North Coast Line and connects with the Moura Short Line west of Parana.

Track structure on the Barney point balloon loop is 53 kg/m rail on timber and concrete sleepers with the track to QAL Junction being 47 kg/m rail on timber sleepers. Line speed to QAL Junction (2.3 km) is 25 kph, QAL Junction to the Moura Short Line junction (1.6 km) the line speed is 60 kph. The section Barney Point to Moura Short Line is electrified.

Throughout Gladstone yard and Auckland Point balloon loops the track structure varies from 31, 41 and 47 kg/m rail on timber sleepers allowing 15.75 tal traffic at a line speed of 25 kph. The main access roads in this area are electrified.

The steepest grades in this area are 1 in 134 against the Up train (southbound).

---

Existing minimum nominal horizontal curve radii are as follows:

---

running line	260 m
siding and depots	140 m

---

### Callemondah Yard, Powerhouse and Golding Loops

Callemondah yard is the holding yard for trains accessing the Powerhouse Loop and the three balloon loops at Golding, with all roads electrified. Kwik Drop Door (KDD) triggers have been installed at all coal unloading facilities.

Track structure is a mix of 60 kg/m on concrete sleepers and 47 kg/m rail on timber sleepers.

The maximum permissible axle loading is 26.5 tonnes.

This section of track caters for traffic with a maximum speed of 25 km/h.

The maximum grade (not compensated for horizontal alignment) that a Down train (westbound) will encounter is 1 in 90 whilst for an Up train (eastbound) the grade is 1 in 96.

---

#### Existing minimum nominal horizontal curve radii are as follows:

---

running line	140 m
balloon loop	300 m
siding and depots	140 m

Fencing along this corridor complements adjacent land usage and is maintained at the following standard, poor (50 %) and medium to good (50 %).

### Nogoa to Minerva (46.4km) Non Electrified (Excluding 0.0km to 1.1km)

This single track railway heads south from Nogoa paralleling the Gregory Highway all the way to Springsure (elevation 325 m). At Gindie (elevation 227 m) the railway runs between the Gregory Highway and Fairbairn Dam.

With the railing of coal from Minerva Mine the section from Nogoa to Minerva is now considered part of the Blackwater System.

There is a passing loop on this section at Fernlees.

Track structure is a mix of 41 and 47 kg/m rail on timber sleepers.

The maximum permissible axle load Nogoa to Minerva is 20 tonnes and Minerva to Springsure is 15.75 tonnes.

The maximum allowable speed is 60 km/h to the Minerva and 40 km/h past the Minerva.

The maximum grade (not compensated for horizontal alignment) that both the Up train (northbound) and Down trains (southbound) will encounter is 1 in 33 (Sandhurst Creek).

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#### Existing minimum nominal horizontal curve radii are as follows:

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running line	150 m
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Fencing along this corridor compliments adjacent land usage and will be maintained at its current standard.

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#### Minimum nominal horizontal radius for new track or upgrade existing tracks is as follows:

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running line	2170 m	160 km/h running
	1662 m	140 km/h running
	1221 m	120 km/h running
	848 m	100 km/h running
	542 m	80 km/h running

balloon loop	300 m	minimum radius
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siding and depots	140 m
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## Description of the Track

The track on this system is a mix of 60 kg/m, 53 kg/m, 47 kg/m and to a lesser extent 41 kg/m rails with the associated sleeper types namely concrete and timber on crushed rock ballast. The rails are continuously welded except where glued insulated joints are used for train detection using track circuits.

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Speeds through the curved leg of turnouts are governed by the angle of that turnout i.e.

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1 in 12	25 km/h
1 in 12 (tangential)	40 km/h
1 in 16	50 km/h
1 in 25	80 km/h

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In general, curves (with the exception of turnout curves) are transitioned.

For more information on Working Plan and Section drawings, please contact us via our website [www.aurizon.com.au](http://www.aurizon.com.au) and then click on the Contact Us link and then fill in your enquiry details.

## Overhead Line Equipment

The Blackwater System is electrified by an autotransformer system with the overhead line equipment operating at 25 000 volts, 50 Hertz, alternating supply (25 kV, 50 Hz, ac). Distribution is via a contact wire suspended from a catenary wire and these two wires are held in place by supporting structures to maintain ideal pantograph/contact wire interaction.

Typically, the autotransformer system also uses a 25 kV AC feeder wire run on the back of the supporting structure which is used for voltage support throughout the electrified network.

The dual wire distribution system is automatically tensioned to maintain a constant wire tension and requires a pantograph uplift force of 80 N 3 10 N for smooth spark less current collection.

The contact wire height may vary from 4400 mm to 5850 mm above rail level.

Typically in the Blackwater System the traction system uses both rails for return current.

## Operational Constraints - Infrastructure

During the summer months of high temperatures, hot weather precautions for track stability are observed to reduce the risk of incident in accordance with Aurizon Network Safety and Security Standard SAF/STD/0075/CIV Hot Weather Precautions for Track Stability, namely:

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### Air Temperature 38°C and above

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On timber sleepers track, restrict EMU's to 80 km/h and all other trains to 60 km/h<sup>#</sup>

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On concrete sleepers track, restrict all trains to 120 km/h

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### Air Temperature 40°C and above

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On timber sleepers track, restrict EMU's to 60 km/h and all other trains to 40 km/h<sup>#</sup>

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On concrete sleepers track, restrict all trains to 60 km/h

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<sup>#</sup>Steel sleepers track and timber sleepers track with interspersed steel sleepers shall be regarded as equivalent to timber sleepers track for track stability.

Speed restrictions may also be put in place after maintenance activities in accordance with Aurizon Network Safety Standards.

The extent of restriction will depend upon the type of maintenance activity and risk of track misalignments.

Force Majeure Events will also see the imposition of speed restrictions, the extent and severity of the restrictions being dependent on the event.

## Operational Constraints - Rolling stock

All new rolling stock requires to be accepted via the Rolling Stock Authorisation Process. Rolling stock which conforms with Drawing Nos. 2236, 2237 and 2238 may operate in an unrestricted manner on main lines providing all other conditions of railing are met.

For rolling stock to conform with drawing numbers 2236, 2237 and 2238 the static rolling stock profile must be within the diagram. As well as the static component, dynamic effects need to be considered and these effects are contained within the Rolling Stock Interface Standard - SAF/STD/0145/INF/NET.

Rolling stock not conforming to these drawings may be accepted via the Rolling stock Authorisation Process and may be operated subject to constraints / limitations imposed as a result of the Authorisation Process.

Rolling stock conforming to A2-37328 is permitted to run on the Blackwater Systems providing all other conditions of railing are met.

Potential railway operators should ensure that they have the latest revision of these drawings before the planning and construction of rolling stock.

## Trackside Detection Equipment

### Dragging Equipment Detectors (DED)

Dragging equipment detectors are placed at strategic locations along the route to give early warning of rolling stock defects and minimise the effect of any derailment incident.

Operators are required to stop immediately if advised of a dragging equipment detection by the train controller.

Locations are as follows:

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#### Rocklands – Stanwell

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2.803 km	-	1 track
4.219 km	-	1 track
12.381 km	-	1 track
15.889 km	-	2 tracks
20.173 km	-	1 track
2.356 km	-	1 track (Stanwell Balloon)

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#### Warren – Boonal

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32.720 km	-	2 track
42.804 km	-	2 track
51.213 km	-	2 track
61.254 km	-	2 track
70.623 km	-	2 track
79.894 km	-	2 track
90.084 km	-	2 track
100.329 km	-	2 track
109.812 km	-	2 track
123.424 km	-	2 track
133.829 km	-	2 track
146.149 km	-	1 track
152.748 km	-	1 track
158.957 km	-	1 track
165.314 km	-	1 track
176.053 km	-	1 track

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178.561 km	-	2 tracks
180.580 km	-	1 track (Boonal Siding)
184.448 km	-	2 tracks
<b>Blackwater - Koorilgah</b>		
6.400 km	-	1 track
10.885 km	-	1 track
4.700 km	-	1 track (Koorilgah Balloon)
<b>Sagittarius - Curragh</b>		
190.982 km	-	2 tracks
190.990 km	-	2 tracks
194.388 km	-	2 tracks
<b>Blackwater - Rangal</b>		
4.000 km	-	1 track (Curragh Balloon)
12.763 km	-	1 track (Curragh Balloon)
<b>Rangal - Kinrola</b>		
3.064 km	-	1 track
8.426 km	-	1 track
12.060 km	-	1 track
14.040 km	-	1 track
3.588 km	-	1 track (Boorgoon Balloon)
18.763km	-	1 track (Kinrola Balloon)
<b>Kinrola Junction - Rolleston</b>		
5.601 km	-	1 track
42.440 km	-	1 track
53.106 km	-	1 track
56.456 km	-	1 track
99.400 km	-	1 track
<b>Burngrove - Gregory</b>		
5.251 km	-	1 track

19.000 km	-	1 track
27.000 km	-	1 track
42.243 km	-	1 track
44.000 km	-	1 track
56.300 km	-	1 track
65.840km	-	1 track (Gregory Balloon)
13.680 km	-	1 track (Ensham Balloon)
3.500 km	-	1 track (Gordonstone Line)
13.834 km	-	1 track (Gordonstone Balloon)

#### Rangal to Emerald

198.980 km	-	1 track
200.200 km	-	1 track

#### Nogoa - Minerva

3.061 km	-	1 track
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#### Hot Box / Hot Wheel Detectors (HBD/HWD)

Hot Box / Hot Wheel Detectors are located at the following locations:

#### Rocklands - Rangal

38.674 km	-	2 tracks (HWD)
110.069 km	-	2 tracks (HBD)
152.171 km	-	1 track (HWD)
173.285 km	-	1 track (HBD)
192.011 km	-	1 track (HWD)

#### Wheel Impact Detectors

Flat wheel detection equipment operates on the North Coast Line between Epala and Raglan at 581.233 km.

#### Axle Counters

In Remote Controlled Signalling (RCS) Territory west of Bluff on branch lines an axle counter system has been provided to detect occupancy of a section of track. An axle counter at each end of a section determines whether an axle is entering or leaving the section and counts the number of axles passing the counter in each direction. By keeping an accurate count of axles into the section, then the number of axles out of the section, the system can determine if the section is occupied or not.

## Weighbridges

In general weighbridges are located on balloon loop immediately after the loadout station for the purpose of overload detection.

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On the Blackwater System weighbridges are located at:

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Gregory

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Gordonstone

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Yongala

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Ensham

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Curragh

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Koorilgah

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Kinrola

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Boorgoon

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East End

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At East End the overload protection for wagons is provided in the form of a Belt Weigher (Beltometer)

The maximum permitted speed of trains over weigh-in-motion weighbridges is 10 km/h.

Train weigh data will be available to operators for their trains.



## Information Systems

ViziRail is an Operational Information System developed specifically to meet business and regulatory requirements relative to managing operations on the Aurizon network. It provides valuable information regarding train performance, rail maintenance activities and network incident data.

This integrated scheduling and network monitoring tool provides Aurizon with a source of network information and is used within all Network Planning, Yard and Control Centres operated by Aurizon.

The integrated modules within ViziRail include:

- LTP - Long Term Planning module where timetable specific train templates are created and maintained. This module also includes the ability to generate scenario's for 'what if' analysis.
- STP - The Short Term Planning of trains including the ability to plan around train constraints and add ad hoc services.
- Possessions - Planned infrastructure maintenance for the network, including actual data relating to activities that occur on day of operations.
- Speed Restrictions - The capture of network speed restrictions, including when the restriction is imposed and lifted.
- Planning Graphs + Train Control Diagrams - A visual and interactive representation of a geographical area, these graphs display all train services, possessions and speed restrictions within the selected time frame. Ggraphs can be accessed in LTP or STP mode.
- Train Notices - Advice provided to stakeholders about activities on the network such as vehicle authority to travel, speed restrictions and possessions.
- Incidents - Capturing the events relating to incidents on the network, with the ability to provide advice to Aurizon management and customers as required
- ATR - Actual Train Running captures all day of operation events for a train, including delays, cancellations and terminations which can be linked to incidents as required
- BLD - Train Consists are linked to trains on day of operation and includes rollingstock validation, dangerous goods advice and data relating to the actual weight and length of trains.

Operators will be required to have Queensland Department of Transport and Main Roads accreditation, hold an Access Agreement with Aurizon Network and meet any conditions and precedents specified in the Access Agreement prior to commencing operation

## Operational Systems and Train Control

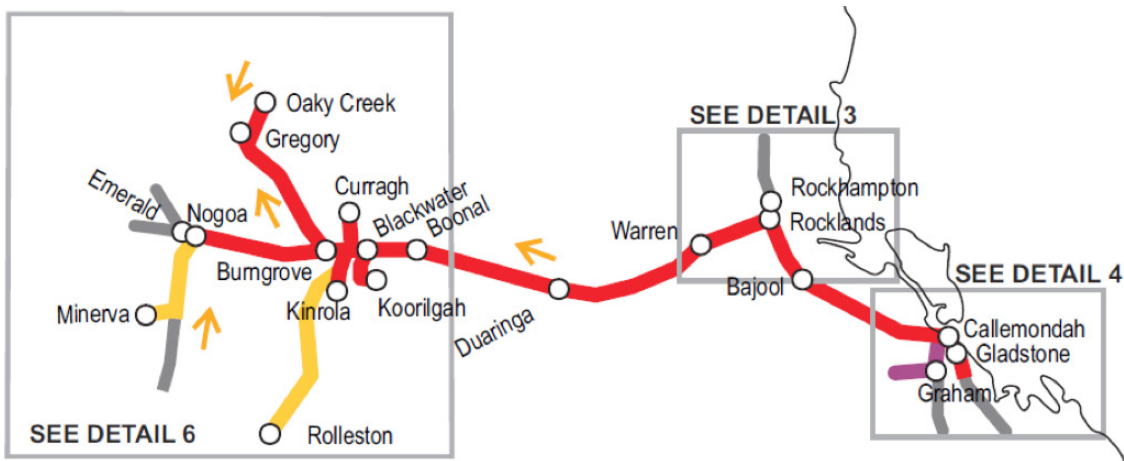
The Blackwater system is operated by Remote Control Signalling (RCS), with train movements controlled from Rockhampton.

Following exceptions:

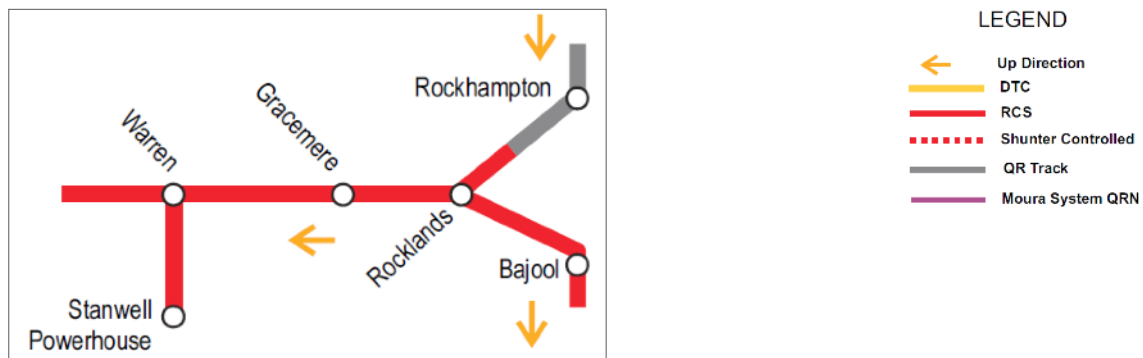
Gladstone Yard	RCS and Rail Operator (RO) Controlled
Auckland Point	Rail Operator (RO) Controlled
Barney Point and QAL	Rail Operator (RO) Controlled

Callemondah - Gladstone Powerhouse and Callemondah - Golding are controlled from the Callemondah signal cabin.

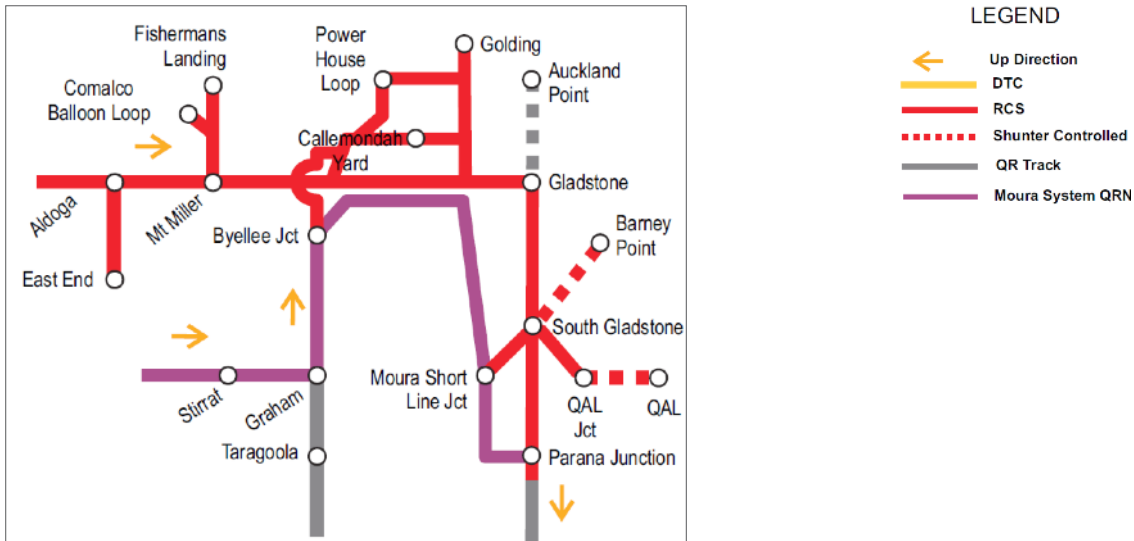
Train Control map:



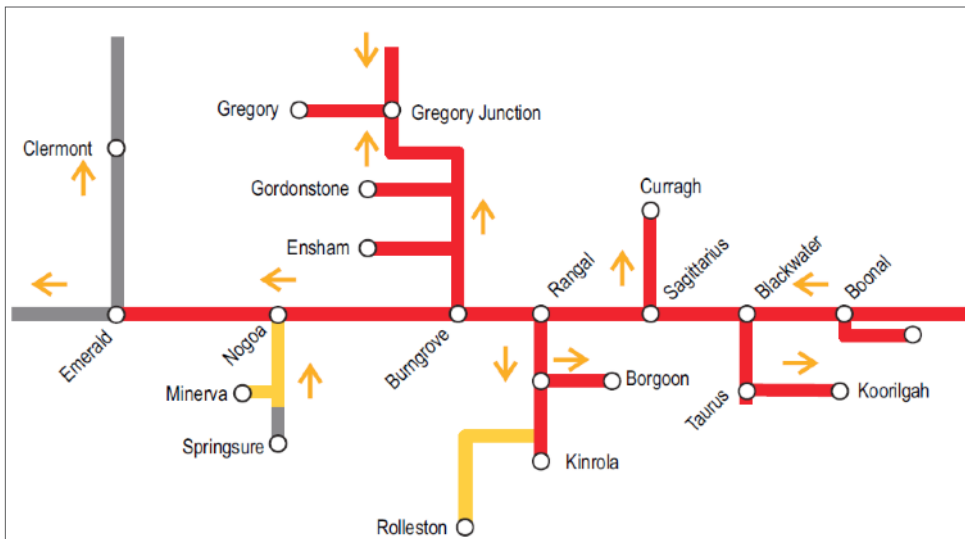
Detail 3:



Detail 4:



Detail 6:



## Communications

Communications on the Blackwater System between Driver and Controller is via a UHF radio system (Train Control Radio - TCR) utilising a number of Aurizon Network channels and frequencies.

Transceivers “auto” switch channels to suit geographical location. Frequency specification and coverage details are available as part of the “Access Enquiry Process”.

Access to the Maintenance Supervisory Radio System (MSR) can be gained by using Aurizon Network telephone extensions depending on location or UHF radio system utilising Aurizon Network channels.

In addition, all current locomotives (including Multiple Units and Miscellaneous Vehicles such as Rail Motors) carry and all units new to the system will be required to carry a UHF radio operating on Aurizon Network Channel 1. This provides on-board and wayside communications including end to end, train to train and train to track gangs over a distance on average of 8 - 10 km.

Communications on board locomotives must conform to Aurizon Network Safety and Security Standard SAF/STD/0014/TEL - Mobile Voice Radio Communications Systems.

## Incident Recovery Time and Management

Between Callemondah and Rocklands on the North Coast Line, it is anticipated that a minor incident could result in disruption to services for 6 hours and a major incident for 2 days. Between Rocklands and Burngrove on the Central Line, it is anticipated that a minor incident could result in disruption to services of 8 hours and a major incident for 3 days. On all branch lines, it is anticipated that a minor incident could result in disruption to services of 8 hours and a major incident for 3 days. The impact of incidents, be they major or minor may be lessened on duplicated track between Callemondah and Rocklands on the North Coast Line and on the Central Line over the 3 duplicated sections Westwood - Windah, Tunnel - Aroona and Duaringa - Wallaroo. To enable quick response in case of emergency, latitudes and longitudes of passing loops are detailed below:

Location	Latitude	Longitude
Gladstone	23° 50' S	151° 15' E
Callemondah	23° 52' S	151° 13' E
Fisherman's Landing	23° 49' S	151° 10' E
East End	23° 53' S	150° 57' E
Raglan	23° 43' S	150° 49' E
Bajool	23° 39' S	150° 38' E
Rocklands	23° 24' S	150° 30' E
Rockhampton	23° 22' S	150° 30' E
Warren	23° 30' S	150° 18' E
Westwood	23° 37' S	150° 09' E
Edungalba	23° 43' S	149° 51' E
Bluff	23° 34' S	149° 04' E
Blackwater	23° 35' S	148° 52' E
Laleham	23° 56' S	148° 49' E
Curragh	23° 29' S	148° 49' E
Kinrola	23°44' S	148° 48' E
Burngrove	23° 35' S	148° 44' E
Gordonstone	23° 16' S	148° 16' E
Gregory	23° 09' S	148° 24' E
Memooloo	24° 06' S	148° 43' E
Rolleston	24° 27' S	148° 26' E
Tolmies	23° 35' S	148° 44' E
Comet	23° 36' S	148° 32' E
Yamala	23° 34' S	148° 21' E

## Rail/Road Interfaces

Operators on the Blackwater System will encounter 228 Rail / Road Interfaces categorised as follows:

Public (with Active Flashing Light/Boom Gate Control)	-	39
Public (with Passive Control - Signs)	-	46
Occupation (Private Access with Active Control)	-	3
Occupation (Private Access with Passive Control)	-	103
Aurizon Network (Active Control)	-	3
Aurizon Network (Passive Control)	-	33

These are located as follows:

	Public		Occupation		Maintenance	
	Active	Passive	Active	Passive	Active	Passive
Parana - Rocklands	14	6	0	12	3	12
Central Line	18	18	1	14	0	14
Rocklands - Golding Balloon	0	0	0	12	0	0
Sagittarius - Curragh	0	0	0	4	0	0
Blackwater - Laleham	0	4	1	1	0	1
Rangal - Bauhinia	4	1	1	21	0	1
Burngrove - Gregory	1	5	0	33	0	3
Nogoa - Springsure	2	12	0	7	0	2

## Rail Operations and the Environment

All railway operators are required to comply with all relevant State, Federal and Local Legislation and Laws, current at the time, relating to the management and protection of the Environment.

Aurizon Network currently has a number of licences and/or approvals for activities undertaken at either Aurizon Network facilities or on the Aurizon Network corridor. Aurizon Network's licences and approvals fall under two main areas:

1. Fixed Locations;

Aurizon Network has a number of licences for activities managed by its operational Business Groups in particular locations, such as refuelling locations.

2. Itinerant or Varied Locations;

Aurizon Network also has a number of licences for activities that occur at more than one location, such as maintenance activities.

Railway operators will need to ascertain with the Department of Environment and Heritage Protection or Other Regulatory Body their responsibilities in regard to obtaining an Environmental Authority (ies) for the type of operation proposed.

Copies of all Environmental Authorities administered in Queensland are available upon request from the Department of Environment and Heritage Protection.

### Environmental Noise

The Transport Infrastructure Act recognises a railway as a beneficial asset, which is necessary for the community's environmental, social and economic well-being.

Queensland Rails Code of Practice for Railway Noise Management ("the Noise Code") nominates "planning levels" for railway noise which may be used as a guide in deciding a reasonable noise level for the activity. The Noise Code recognises, however, those levels may not be appropriate for an existing railway. It envisages that it may be reasonable to apply the levels only in the long term to allow time to progressively reduce any significantly adverse effects on the environmental values from its operation.

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The long term planning levels are:

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LAeq (24 hour)	65dBA
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LAmx	87dBA
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They are to be assessed one (1) metre in front of the most exposed part of the building facade of an affected noise sensitive place.

(Note: the Noise Code is a industry code approved by State Minister for Environment under Section 5478 of Environment Protection Act)

### Code of Practice for Railway Noise Management

Noise is recognised as a form of environmental nuisance in the Environment Protection Act. Aurizon Network intends to meet its general environmental duty with respect to noise by implementing the Noise Code.

The purpose of the Noise Code is to provide a means by which Aurizon Network can demonstrate it is taking reasonable and practicable measures to minimise unreasonable interference with the acoustic amenity of neighbouring noise-sensitive communities from Aurizon Network's railway activities.

The Noise Code is a self imposed set of rules for carrying out all Aurizon Network railway activities.

It is not intended to manage the noise impacts of a third party's operational activities. It is to be made available to third parties operating trains on Aurizon Network infrastructure to the extent that its terms are reasonably applicable to those operators. It is expected that all Rail Operators will abide by the Code.

### Wheel Squeal & Flanging

Wheel Squeal is caused by friction forces between the top of rail and wheel interface. Whereas, flanging noise is predominantly caused by friction forces between the side of rail and wheel interface. Continuous or sustained wheel squeal produced primarily on the low rail side, is distinct from discontinuous “flanging noise” that is produced on the high rail side. Continuous wheel squeal is of a high level, and Aurizon Network experience is that it may cause significant community reaction, while flanging noise is of a lower level and is more accepted by the community.

Generally, tighter radius curves (i.e. under 300 metre radius) when associated with a number of rolling stock factors that promote wheel squeal, may result in squeal being produced. Rolling stock factors that may promote wheel squeal include:

- Higher wheel hardness
- Stiff primary suspensions
- High centre plate friction
- Worn wheel treads
- Misaligned axles
- Unmatched wheel tread diameters, and
- Incorrectly adjusted sidebearers

### Noise Complaints

Aurizon Network is corporately committed to act towards its neighbours in a considerable and reasonable manner. This good neighbour commitment assumes a reasonable degree of tolerance from neighbours and a commitment by Aurizon Network to take action where appropriate.

Where Aurizon Network receives complaints about noise from railway activities for which Aurizon Network may be responsible, Aurizon Network responds to those complaints and maintains records of those complaints in accordance with its Environmental Management System (EMS).

Where available, generic data will be supplied on request to a third party operator who is proposing operations within a defined network. That data will indicate those areas where Aurizon Network has received prior complaints relating to its train operations. It will be made available when a third party operator is undertaking the development of its Environmental Investigation and Risk Management Report as part of its Access Agreement conditions.

### Third Party Requirements

Any railway operator obtaining access to Aurizon Network network shall be required to commission an environmental investigation of the proposed operations. This investigation will be conducted by a suitably qualified person, reasonably acceptable to both parties.

In response to the findings of such an investigation, the operator shall produce an Environmental Investigation and Risk Management Report that identifies the risks of Environmental Harm associated with the operation and provides proposed controls to address the risks. This shall be reviewed by, and agreed with, Aurizon Network.

In addition, the operator shall have in place an EMS, which, amongst other things, has regard for the issues, risk and control measures identified in the Environmental Investigation and Risk Management Report. Further details on requirements for environmental issues can be found in Aurizon Network Access Undertaking.

Aurizon Network has determined that it holds no EMS documentation that, without disclosure to a third party operator, would either:

- Compromise or restrict a third party's operations or increase or place at risk the environmental performance of the third party operator or itself, and
- Limit or restrict the abilities of a third party operator to develop such documentation that would not be reasonably expected of the operator to develop on its own behalf, commensurate with the size and subsequent environmental risks of the proposed operations and the organisational resources available to it, to undertake such operations.

Any EMS documentation (wholly or partially) identified as specifically relating to the control of corridor infrastructure (below rail) environmental issues, will be made available to the operator to assist in formulating appropriate and consistent operational (above rail) controls within their Environmental Investigation and Risk Management Report and EMS.

### **Coal Dust Mitigation**

Network is corporately committed to reducing its operational impact on the communities and environment it operates through. Coal dust is recognised as a form of environmental nuisance in the Environmental Protection Act 1994.

Aurizon Network has developed a Coal Dust Management Plan with the participants of the central Queensland coal supply chain. This plan has been approved by the Department of Environment and Resource Management and includes dust mitigation methods which must be adhered to:

#### **Mines**

Mine loading methodologies at each loadout must deliver a veneered 'garden bed profile' to the wagon surface (e.g. edge of loaded coal 100mm below cant rail, levelled top, loading methodology to maximum volume [taking into consideration axle load] and minimises coal spillage outside the wage. Install a veneering spray station at the mine loadout, spray the loaded coal surface with approved veneer and integrate veneering with loading methodology. Mines and operators are to ensure their direct employment and contract loaders adhere to the changing loading requirements.

#### **Ports**

Export and domestic unloading facilities must ensure all wagons are fully unloaded and a clean wagon is presented to the rail corridor. A wagon cleaning facility or some other dust mitigation means should be implemented to reduce hang up coal and parasitic coal.

### **Maximum Train Length**

The maximum length of trains is determined by:

- requirements for crossing/passing other trains
- requirements for braking performance of the train
- capacity of the route
- drawgear capacity
- train handling
- requirements for road/pedestrian access across the track

Where it is necessary for a train to cross, pass or be passed by another train, the maximum train length allowable shall be such that the comparison train length (including allowance for stretching and train handling) is not longer than the crossing loop length. Variations of train length for a particular train configuration is possible and would need to be negotiated as part of access agreement negotiations.

### **Rolling Stock Braking Rate**

Signal design parameters and train braking characteristics will be compared during the development of the Interface Risk Management Plan.



## Future Infrastructure Improvements

Future improvements planned for the system as funding becomes available include:

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### Current committed projects:

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Rail Upgrade

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Formation Strengthening

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### Network improvements identified but yet to be committed/funded have been broken into broad categories:

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Maintain Reliability and Efficiency

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Power Supply Equipment Replacement

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Increase Capacity

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## Infrastructure Management and Access

Not all mainline, sidings, yards, load and unloading facilities that connect to Aurizon Network owned track is owned and managed by Aurizon Network.

Third party access to non Aurizon Network managed infrastructure is by commercial arrangement with the relevant party.

For more defined ownership of track please email - [access.services@aurizon.com.au](mailto:access.services@aurizon.com.au) or visit our website [www.aurizon.com.au](http://www.aurizon.com.au) and then click on the Contact Us link and then fill in your enquiry details.

## APPENDIX A Definitions (State wide)

### **Access Agreement**

The agreement between Aurizon Network and a Railway Operator detailing all terms and conditions applicable to the operation of the Railway Operator's trains on the Aurizon Network.

### **Access Undertaking**

A document approved by the Queensland Competition Authority (QCA) in accordance with the QCA Act 1997 (Q) that sets out principles for negotiating access to Aurizon Network's declared services.

### **Accreditation**

Accreditation in accordance with part 4, Chapter 6 of the Transport Infrastructure Act 1994 (Queensland) and "Accredited" has a similar meaning.

### **ATP (Automatic Train Protection)**

Automatic Train Protection is a computer controlled system designed to make sure the train

- does not exceed the current speed limit
- does not exceed the limit of authority generated by the interlocking (and usually indicated by a signal at STOP)
- does not make unreasonable train movements during shunting, when stationary, or at start up

### **AWS (Automatic Warning System)**

Automatic Warning System is designed to

- provide an in-cab visible and audible indication of the aspect displayed in the next signal
- prompt and warn the train driver of a RESTRICTED signal aspect displayed in the next signal
- stop the train if the driver fails to acknowledge the AWS alarm of a RESTRICTED signal aspect

### **Axle Counters**

At some locations in Remote Controlled Signalling (RCS) Territory an axle counter system has been provided to detect occupancy of a section of track.

An axle counter at each end of a section determines whether an axle is entering or leaving the section and counts the number of axles passing the counter in each direction. By keeping an accurate count of axles into the section, then the number of axles out of the section, the system can determine if the section is occupied or not.

### **Block Train**

A train consisting entirely of similar classes of wagons of axle loads over 12.2 tonnes marshalled together for a certain class of traffic. The definition is also extended to cover trains in which 12 or more such wagons loaded to more than 12.2 tonnes gross per axle are included within a length of 315 metres or less of the train.

### **Comparison Train Length**

Static train length and 2% of static train length (train handling allowance) + 125mm per vehicle (for coupler and draw gear tolerances).

### **Crossing Loop Length**

The maximum length in metres of the train which can be accommodated in the loop to allow normal operation of the signalling systems for crossing or passing movements.

### **Daily Train Plan (DTP)**

Collectively, the scheduled times for all Train Services operating on Aurizon Network's Rail Infrastructure and any Planned Possession on a particular day.

### **Declared Services**

Services declared as available for access by third party operators in accordance with the QCA Act 1997 (Q).

### **Declared Infrastructure**

Infrastructure declared as available for access by third party operators in accordance with the QCA Act 1997 (Q).

### **Design Neutral Temperature**

The rail temperature at which the track is designed to be stress free as defined in Aurizon Network's Civil Engineering Track Standards Part 2 (CETS 2).

### **Direct Traffic Control (DTC)**

Direct Traffic Control (DTC) is an absolute block safeworking system used to control the movement of trains in non-signalled territory.

Central to DTC is an on-board DTC computer which displays authorities stored in its database. The relevant authority is activated by the train crew following an exchange of codes between the crew and the controller. Codes are exchanged verbally using the train control radio.

The procedures governing the operation of DTC are detailed in Aurizon Network's Safety Management System Standard saf/std/0041/swk/net "Direct Traffic Control Manual".

### **Dragging Equipment Detectors (DED)**

A mechanism positioned on sections of track to detect any dragging equipment on train.

### **Dragging Equipment Detectors Alarm (DED Alarm)**

Part of the Aurizon Network System which advises the Train Controller either by a computer prompt message that a D.E.D. has been activated and the train driver by a recorded voice message.

### **Electromagnetic Compatibility (EMC)**

The ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

**EPP (Noise)**

Environmental Protection (Noise) Policy 1997; Subordinate Legislation to the Queensland Environmental Protection Act 1994.

**FMS**

Freight Management System (FMS), a mainframe computer based application that monitors overall train performance.

**Force Majeure Event**

Means any cause, event or circumstance, or combination of causes, events or circumstances, which is beyond the reasonable control of the Party affected thereby and which by the exercise of due diligence such Party is not reasonably able to prevent or overcome, including but not limited to, results of abnormal weather conditions, act of God, breakdown of any facilities or machinery or unavailability of essential equipment, strikes or other industrial dispute.

**Hot Wheel & Bearing Detectors (HWD/HBD)**

Heat sensors located at strategic locations on the system that identify abnormal temperatures in wheels and wheel bearings as the train passes over, transmits a signal to the train control panel that necessitates an inspection of the suspect wagon and remedial action

**KP**

Kilometre Post

**Line Code**

Line Code, a unique alpha-numeric identifier applied to a section of track on the network and usually run from junction point to junction point. Each numeric identifier is unique and can be further rolled up into Corridors using the alpha identifier.

**LSC**

Line Section Code, a unique alpha-numeric identifier applied to a section of the network.

**LWR**

Long welded rail. Rail that has mechanical rail joints spaced at intervals between 110m and 220m.

**Master Train Plan (MTP)**

Collectively, the scheduled times as advised by Aurizon Network from time to time for all Train Services operating on Aurizon Network's Rail Infrastructure where such scheduled times remain unchanged from week to week, and any Planned Possessions.

**Nominal Rail Size**

Rail sizes 20, 31 and 41 kg/m are all nominal rail sizes used to group together a range of rail types and sizes originally designated in the imperial unit "lb/yd". The term "nominal" is used in recognition of the variation in the dimensions, mass and engineering properties of the rails in this category.

**Railway Operator**

A person who has, or is seeking, Access from Aurizon Network to operate Train Services on the Rail Infrastructure and who is, or who will become, Accredited in respect of those Train Services.

**Red-Boarded Line**

A line with a stop board attached to the rail preventing traffic entering the section

**Remote Controlled Signalling (RCS)**

A system of safeworking where train movements are governed by aspects displayed in Colour Light Signals which are controlled from a remote location and by the passage of trains. Some colour light signals and points may be released by the Train Controller to be operated from a local area by using:

- a local control panel;
- an electrically released shunting frame;
- a zone released shunting system, or
- emergency push buttons.

Railway Operators trains are expected to meet existing signalling standards to ensure track circuits and other signalling equipment operate safely and effectively - in particular Aurizon Network's Safety Management System SAF/STD/0006/SIG/NET "Principles for the Signalling of Trains" must be complied with.

**Remote Train Overview Application (RTOA)**

A PC based system providing real time operational information, gathering information on train running and rail network status for immediate and continuously updated display and historical analysis.

**Rolling stock Authorisation Process**

The process for determining and validating rolling stock compliance and registration as detailed in Aurizon Network's Safety and Security Standard SAF/STD/0068/RSK/NET - Rolling stock Compliance, Validations and Registration.

Being a multi-tier client-server application, different levels of access/security ensure confidentiality of an Operator's train performance statistics.

**Standard Train**

The predominant type of train operating on the line/system.

**SWR**

Short welded rail. Rail that has mechanical rail joints spaced at intervals less than 110m.

**Train Authorisation**

The process for acceptance of a train configuration whose rolling stock is registered under Aurizon Network's Safety Management System SAF/STD/0068/RSK/NET - Rolling stock Validation, Acceptance and Registration.

**Unit Train**

A train composed entirely of the one class and one draw gear classification of rolling stock.

**Universal Traffic Control (UTC)**

A PC based train control supervisory system that provides the means to remotely control train movements over a large area and provide management and train users with real time train related information.

**ViziRail**

A fully integrated scheduling, possession planning, monitoring and reporting tool for managing the Aurizon Network's below-rail network.

ViziRail also supports the provision of all QCA and Queensland Transport (QT) reporting requirements.

**Weather Monitoring System (WMS)**

Remote weather monitoring stations providing critical information regarding temperature, rainfall and stream levels.

**Wheel Impact Load Detector (WILD)**

In track monitoring system to identify wheel flats.

**YCS**

Yard Control System (YCS), a mainframe computer based application that monitors overall location and status of approved rolling stock.

APPENDIX B System Map (CQCN South)

