

# Tablelands System

## Information Pack

**Cairns to Forsyth**

**Normanton to Croydon**

### Version Information

Version 3.0: 05/10/2016

- Removed closed lines/systems
- Updated References Queensland Rail Network to Queensland Rail
- Updated References Queensland Transport to DTMR
- Removed references 2005 Access Undertaking
- EPA changed to Department
- Updated Standards references
- Updated Line Diagrams
- Updated Climate Information
- Updated Track Grade
- Updated Network Control Regions & Singalling Centres
- Updated Safeworking Systems
- Update Noise Management System

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## Introduction

The detail provided in this pack relates to infrastructure and operational information necessary to develop a conceptual operating plan/Access Application. It is envisaged that Access Seekers will liaise closely with Queensland Rail to formulate a detailed operating specification as part of a full access agreement negotiation. Operational parameters outlined in this pack may be varied by mutual agreement with **Queensland Rail**.

All railway operators, wishing to operate in Queensland, require Accreditation under the Transport Infrastructure Act 1994 (Qld) and need to consider, but not limited to, the following aspects of typical rail operations:-

- Provisioning, stabling or stowing areas for rollingstock
- Train crewing
- Safeworking
- Training
- Route knowledge
- Environmental requirements
- Track standards
- Signalling and traction systems standards and constraints
- Safety training
- Management of risk
- Rollingstock registration and Train authorisation
- Legal issues as contained in Queensland Rail's Access Undertaking, Access Agreements and information contained in this pack.

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

Accreditation means an applicant has confirmed that they are able to meet the requirements to carry out railway operations in Queensland. The Director-General, the Department of Transport and Main Roads, must be satisfied that the applicant has demonstrated:

- Effective management and control of rolling stock
- Competence and capacity to manage risks to safety associated with railway operations
- Competence and capacity to implement the required safety management system and has met the legislative requirements
- Financial capacity, or public risk insurance arrangements for potential liabilities.

Contact details are:

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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 package is issued to railway operators as an UNCONTROLLED DOCUMENT and is reviewed annually. It is the onus of railway operators to ensure they are using the current version of this document.

This Information Pack is provided for information purposes only and Queensland Rail does not make any representation or warranty, express or implied, as to the accuracy, suitability or completeness of the information. To the extent that any inconsistency arises between this Information Pack and the Access Agreement or Queensland Rail’s Access Undertaking, the provisions of the Access Agreement and Queensland Rail’s Access Undertaking shall prevail.

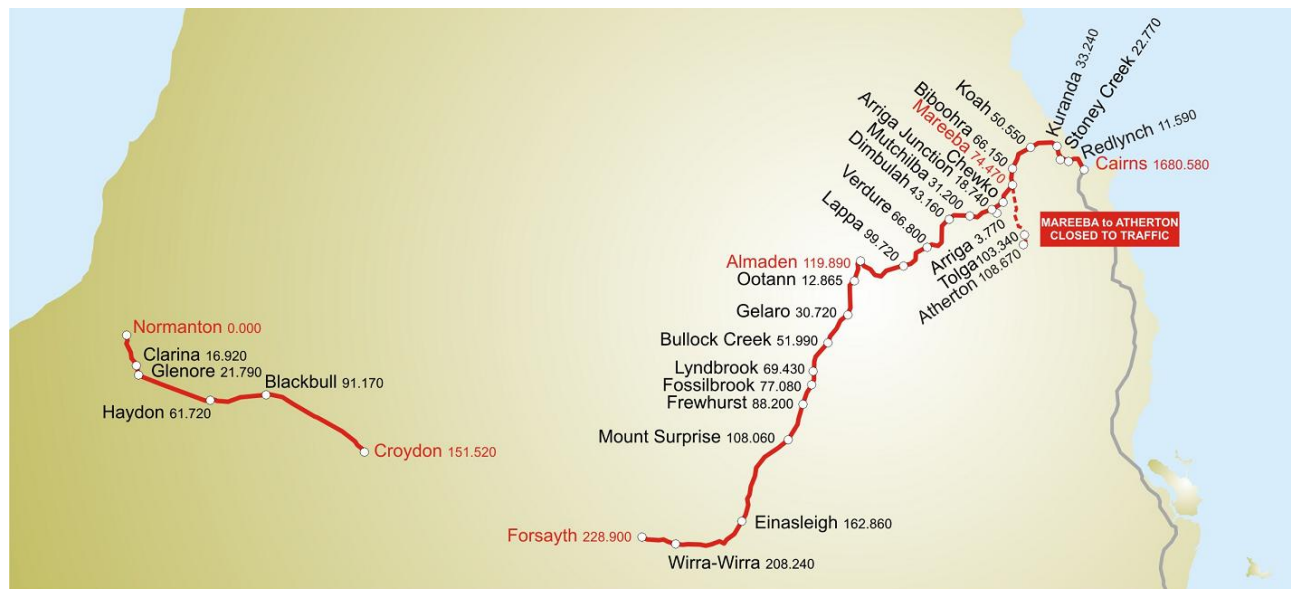
## General Information

The Tablelands System is located in Northern Queensland between the latitudes 16°49' S and 18°35' S and longitudes 141°04' E and 145°46' E, stretching from the Coral Sea to the Gulf of Carpentaria.

There are two distinct railways that comprise the Tablelands System.

The first system extends from Cairns on the eastern coast, inland to Forsyth and carries general freight and passenger services.

The second system extending from Normanton on the Gulf of Carpentaria, inland to Croydon and carries passengers catering for the tourist industry.



Descriptive distances within this document (unless otherwise stated) are based on physical kilometre posts in the field and are to be used only as location descriptors ie they do not compensate for equalities resulting from deviations. Access charges and performance statistics are generated using actual through distances derived from relevant Working Plan and Sections and reflected on Line Code Diagrams. Generally distances originate from the junction of the branch and commence at 0 km.

## General Climate - Queensland Wide

The system is situated in north/north-west Queensland and in a generally warm to hot temperature 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 its Internet Website: <http://www.bom.gov.au/climate>

### 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 rollingstock and machinery to operate on this rail system.

### Rainfall

The wettest places in Queensland are located on the tropical coast between Innisfail and Cairns.

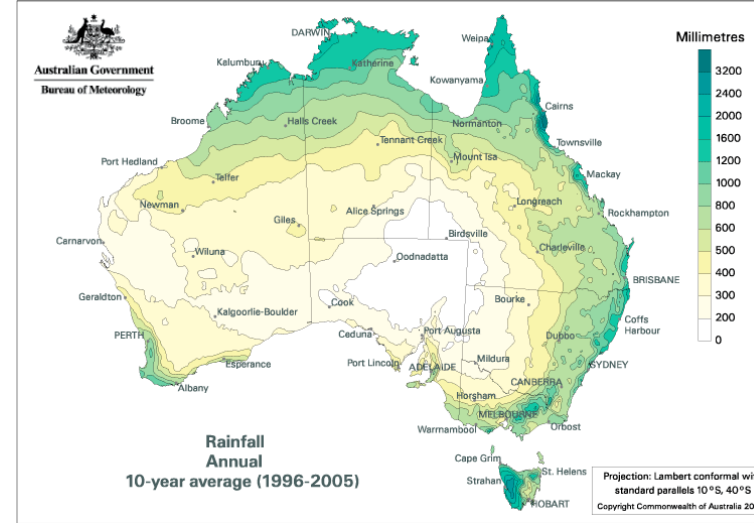
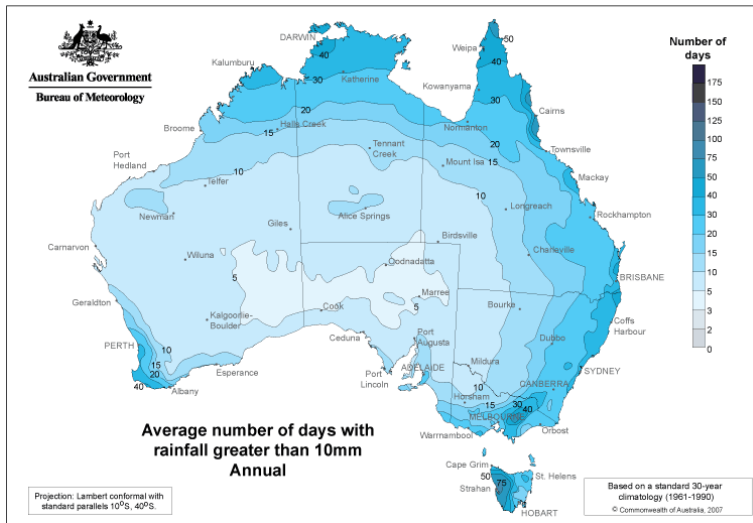
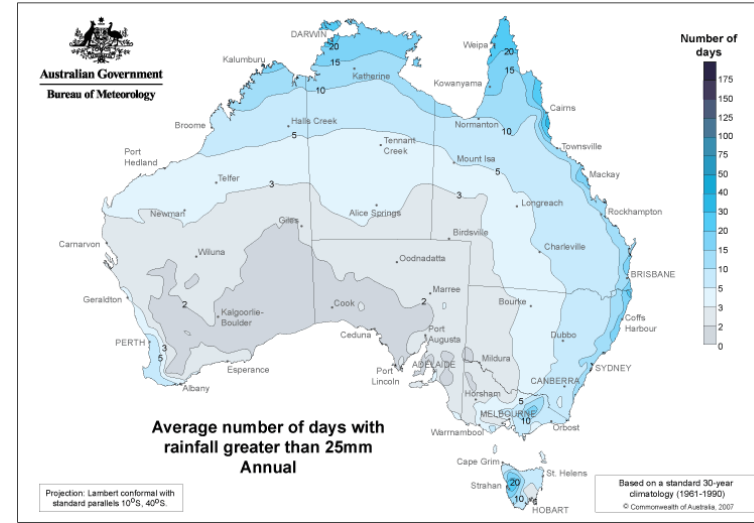
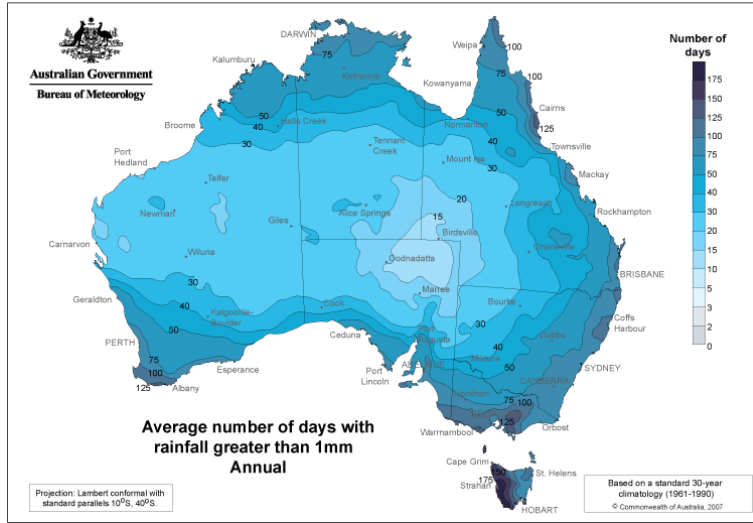
Highest rainfall occurs on the seaward side of the Great Divide.

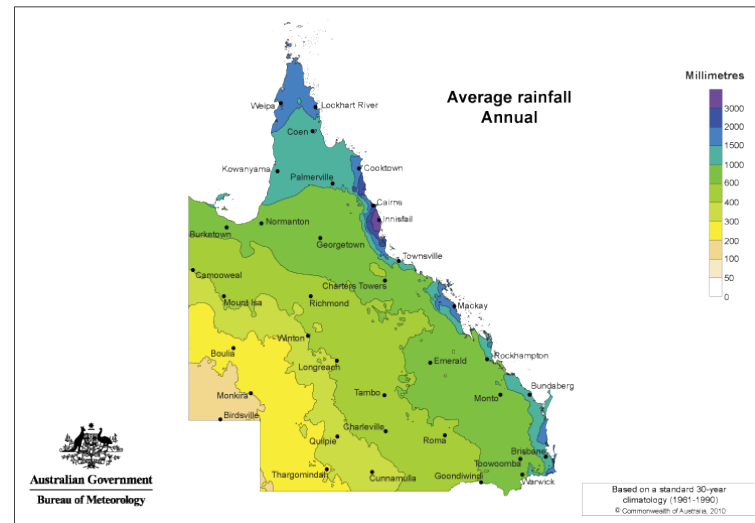
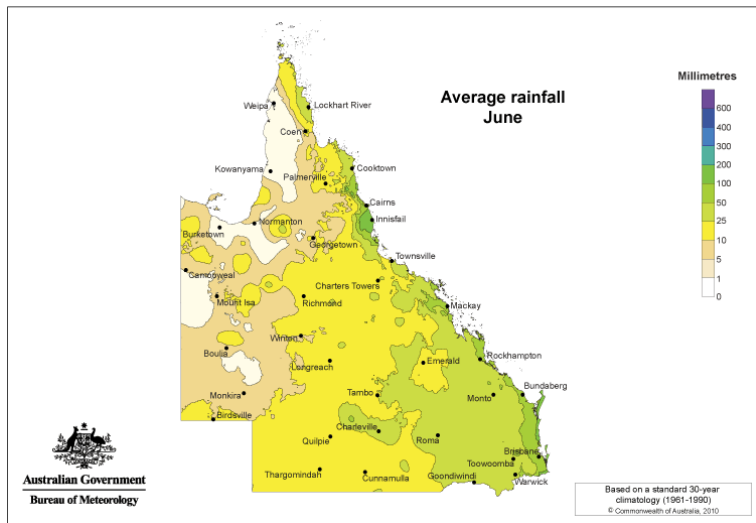
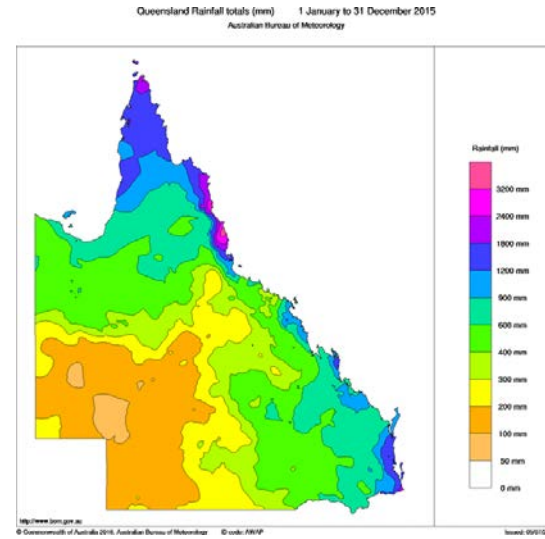
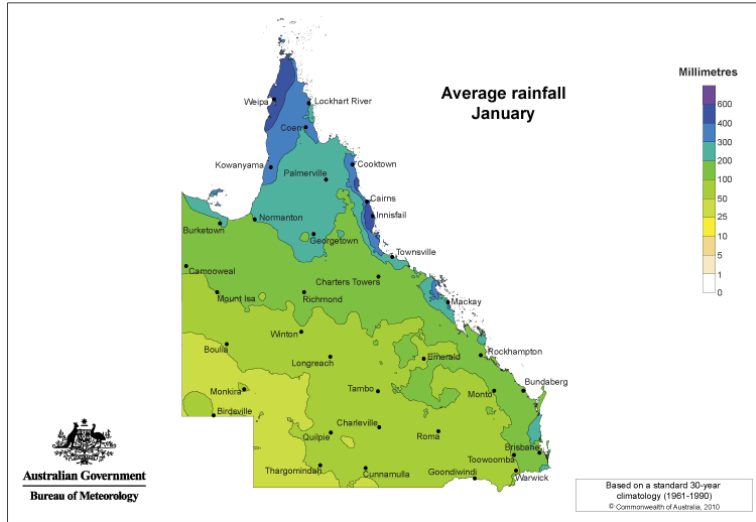
However, at times in summer the inland extension of low-level moist airflow, in combination with intense surface heating, produces significant thunderstorm activity. Rainfall is mostly confined to summer months in the northern tropics, where in excess of 90% of the annual total is recorded between November 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, and the Cairns to Forsyth Railway is closed on average for 3 days every year due to flooding, whilst the Normanton to Croydon Railway is closed on average for 6 days every year.



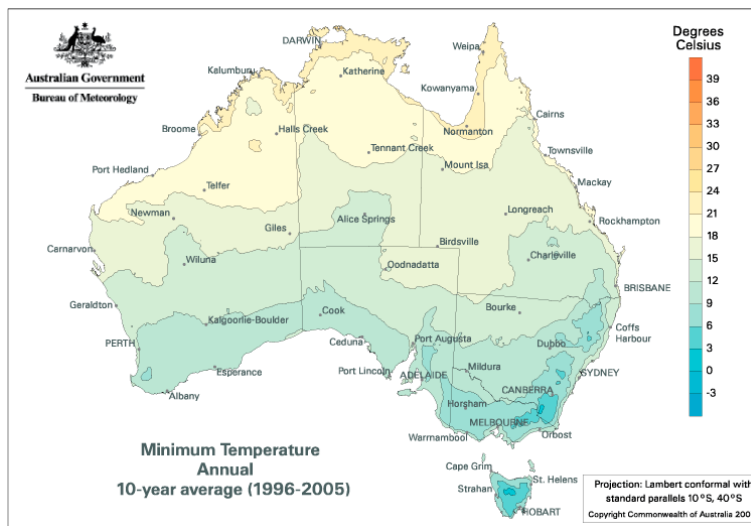
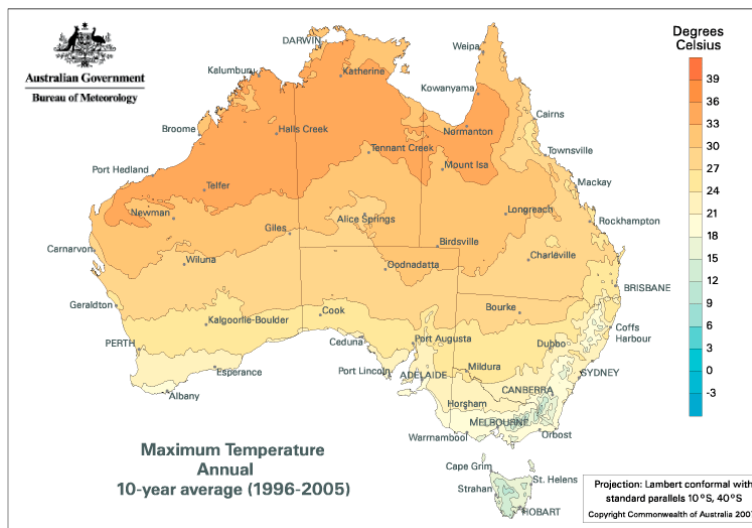




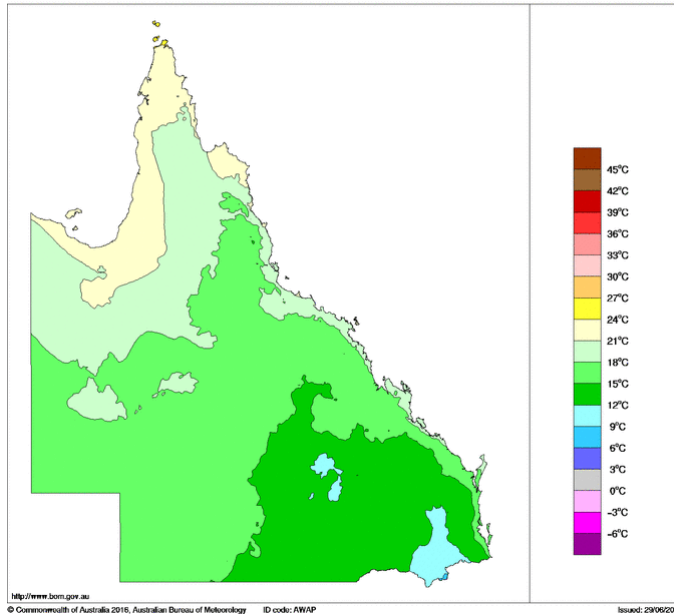
## Temperatures

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.

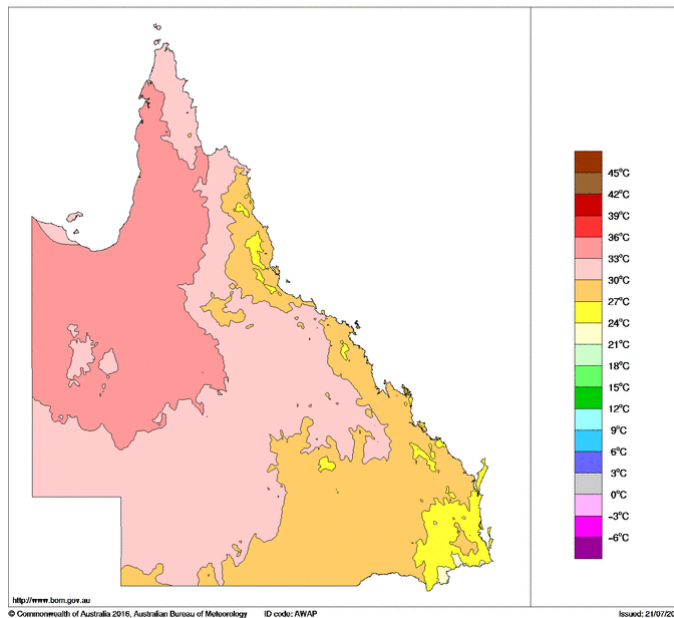
During the period of peak temperature, it may be an operational requirement that Line Speed be reduced to minimise the risk of incident (refer Operational Constraints).



Minimum Temperature (°C) 1 January to 31 December 2015  
 Australian Bureau of Meteorology



Maximum Temperature (°C) 1 July 2015 to 30 June 2016  
 Australian Bureau of Meteorology



## Description of the Railway

The track (1067 mm gauge) on the Tablelands System is mix of 47, 41 and nominal 31 and 20 kg/m rails on timber and some steel sleepers.

### Axle Loadings

Maximum axle loads used throughout this document have been determined by either the track configuration or the railway structures below rail. Railway structures were designed for axle loads, axle spacings and vehicle lengths that produce bending moments roughly equivalent to the moments for metric Cooper's loadings as follows :-

Maximum axle load	Metric Cooper's Loading
26 tal	M 220
20 tal	M 160
15.75 tal	M 130

With most of this System, the track and structures are rated at a lesser axle load capacity namely, 12.2 tal, 10.62 tal, 8,8 tal and Railmotor.

### Basic Track Configuration

Basic track configuration is detailed on **APPENDIX B - SCHEMATIC LAYOUTS**.

### Cairns to Kuranda

This railway consists of single track and heads north out of Cairns (elevation 3m above mean Sea Level) and traverses the coastal plain until it reaches Redlynch (elevation 10.4m) at the foot of the Lamb Range. The railway then climbs to Barron Falls (elevation 327.7m) a distance of approx. 19 km passing through 15 tunnels, all the time following the Barron Gorge. The run into Kuranda (elevation 329.5 m) is relatively flat. The line travels through the Wet Tropics Region requiring of operators, a greater awareness of environmental issues.

Activities within this Wet Tropics Region are subject to the "Wet Tropics World Heritage Protection and Management Act 1993" and should not proceed until the appropriate Licences/Permits/Approvals have been obtained.

Structures on the range may be heritage listed. An Over Height Container Detector is located at 8.6 km (refer Trackside Detection Equipment).

There are three passing loops on this section namely Redlynch, Stoney Creek and Kuranda.

Seismic monitoring of some geologically sensitive areas on the range is being trialled to identify incidents that may impact upon rail operations.

Track structure is 41 kg/m rail on timber and steel sleepers with nominal 30 kg/m rail in the mainline at Kuranda.

<b>Corridor</b>		Cairns to Kuranda	
<b>System</b>		Tablelands	
<b>No. of Tracks</b>		1	
<b>Route km</b>		33.357	
<b>Track km</b>		33.357	
<b>Electrified</b>		No	
<b>Safeworking System</b>		DTC	
<b>Control Centre</b>		Townsville	
<b>Crossing Loops</b>	<b>No.</b>	3	
	<b>Location and Length</b>	Redlynch (217 m), Stoney Creek (215 m), Kuranda (335 m)	
<b>Bridges</b>	<b>Timber</b>	Number	133
		Length (m)	789.7
	<b>Steel</b>	Number	69
		Length (m)	723
	<b>Concrete</b>	Number	4
		Length (m)	33
<b>Tunnels</b>	<b>Length (m)</b>	Number	15
		Length (m)	1745
<b>Curves (% of total track)</b>	<80 km/h	55	
	<60 km/h	45	
<b>Level Crossings</b>	<b>Public</b>	15	
	<b>Occupation</b>	4	
	<b>Flashing Lights</b>	7	
	<b>Boom Gates</b>	2	
<b>Track Structure</b>	<b>Rail Mass</b>	41 kg (Cairns-Freshwater), 60 AS/63 lb (Freshwater-Redlynch), 41 kg (Redlynch-Kuranda - (5 km 60 AS/63 lb)).	
	<b>Jointed</b>	LWR (Cairns-Redlynch), Bolted (Redlynch-Barron Falls), LWR (Barron Falls-Kuranda)	
	<b>Sleeper Type</b>	Cairns - Redlynch : 60% T/S 1in4, 40% Timber. Redlynch - 31.25 km : T/S 1in4 on open curves & straights, T/S 1in2 on check rail curves. 31.25 km - Kuranda : 100% Steel	
<b>Maximum Allowable Axle Load (tal)</b>		15.75	
<b>Route Speed km/h</b>	<b>Pass</b>	70	
	<b>Freight</b>	70	
	<b>Block</b>	70	
<b>Allowable Gross Tonnes p.a. ("000")</b>		2.65	
<b>Max Container Height - (m)</b>		1,500	

The maximum allowable axle load is 15.75 tonnes between Cairns and Redlynch. Beyond Redlynch the maximum allowable axle load is 15.75 tonnes for wagons and 12.2 tonnes for locomotives. The maximum speed for traffic between Cairns and Kuranda is 70 km/h, however the Kuranda Range is restricted to a maximum speed of 30 km/h.

The maximum grade (not compensated for horizontal alignment) that a westbound (Up) train will encounter is 1 in 48 whilst for an eastbound (Down) train the maximum grade is 1 in 50.

Existing minimum nominal horizontal curve radii are as follows :-

running line 80 m

Fencing along this corridor complements adjacent land usage and is at the following standard, poor (30 %), medium (50 %) and good (20 %). Fencing will be maintained at its current standard.

#### Description of the Track

The track on this system is a mix of nominal 60 kg/m, 53 kg/m, 50 kg/m, 47 kg/m, 41 kg/m and 31 kg/m rail and timber, steel and concrete sleepers on crushed rock ballast.

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

1 in 12	25 km/h
1 in 16	50 km/h
1 in 25	80 km/h

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

Preliminary Track Data and Grade Diagrams for the following major route are included in Appendix E.

### Kuranda to Mareeba

After leaving Kuranda, the single track railway follows the Barron River to Koah then climbs westerly to Mareeba (elevation 404.5 m above mean Sea Level). There is one passing loop on this section at Koah.

Track structure is a mix of 47, 41 and nominal 30 kg/m rails on timber and steel sleepers at a rate of 1 steel in every 4 sleepers.

Corridor		Kuranda to Mareeba	
System		Tablelands	
No. of Tracks		1	
Route km		41.229	
Track km		41.229	
Electrified		No	
Safeworking System		DTC	
Control Centre		Townsville	
Crossing Loops	No.	1	
	Location and Length	Koah (415 m)	
Bridges	Timber	Number	141
		Length (m)	937.3
	Steel	Number	15
		Length (m)	378.9
	Concrete	Number	0
		Length (m)	0
Tunnels	Length (m)	Number	0
		Length (m)	0
Curves (% of total track)	<80 km/h	27	
	<60 km/h	12	
Level Crossings	Public	7	
	Occupation	10	
	Flashing Lights	1	
	Boom Gates	0	

<b>Track Structure</b>	<b>Rail Mass</b>	60R lb, 60AS lb, 31 kg, 41 kg, 47 kg
	<b>Jointed</b>	SWR/LWR (60R lb - 24 m Lengths), (31 kg - 12 & 24 m Lengths), (41 & 47 kg - 19 m (110m lengths))
	<b>Sleeper Type</b>	T/S 1 in 4
<b>Maximum Allowable Axle Load (tal)</b>		15.75
<b>Route Speed km/h</b>	<b>Pass</b>	70
	<b>Freight</b>	70
	<b>Block</b>	70
<b>Max Container Height - (m)</b>		2.65
<b>Allowable Gross Tonnes p.a. ("000")</b>		800

The maximum allowable axle load is 15.75 tonnes for wagons and 12.2 tonnes for locomotives.

The maximum speed for traffic is 70 km/h.

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

Existing minimum nominal horizontal curve radii are as follows:-

running line 120 m

Fencing along this corridor complements adjacent land usage and is at the following standard, poor or non-existent (80 %), medium (10 %) and good (10 %). Fencing will be maintained at its current standard.

### Mareeba to Almaden

From Mareeba, the single track railway heads in a south-westerly direction then climbs the Featherbed Range to Lappa (elevation 596.2 m above mean Sea Level) then drops down to Almaden (elevation 493.5 m).

Track structure is nominal 30 kg/m rail on timber sleepers.

The maximum allowable axle load for traffic between Mareeba and Arriga Junction is 15.75 tonnes for wagons and 12.2 tonnes for locomotives. West of Arriga Junction rail motor axle loads only are permitted. The maximum speed is 70 km/h from Mareeba to Arriga Junction, then 40 km/h to Almaden.

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

Existing minimum nominal horizontal curve radii are as follows :-

running line 100 m

Fencing along this corridor complements adjacent land usage and is at the following standard, poor or non-existent (60 %), medium (30 %) and good (10 %). Fencing will be maintained at its current standard.

<b>Corridor</b>		Mareeba to Almaden	
<b>System</b>		Tablelands	
<b>No. of Tracks</b>		1	
<b>Route km</b>		119.91	
<b>Track km</b>		119.91	
<b>Electrified</b>		No	
<b>Safeworking System</b>		Staff & Ticket	
<b>Control Centre</b>		Townsville	
<b>Crossing Loops</b>	<b>No.</b>	0	
	<b>Location and Length</b>	-	
<b>Bridges</b>	<b>Timber</b>	Number	309
		Length (m)	1910.6
	<b>Steel</b>	Number	13
		Length (m)	316.3
	<b>Concrete</b>	Number	0
		Length (m)	0
<b>Tunnels</b>	<b>Length (m)</b>	Number	0
		Length (m)	0
<b>Curves(% of total track)</b>	<80 km/h	30	
	<60 km/h	19	
<b>Level Crossings</b>	<b>Public</b>	23	
	<b>Occupation</b>	38	
	<b>Flashing Lights</b>	0	
	<b>Boom Gates</b>	0	
<b>Track Structure</b>	<b>Rail Mass</b>	30/31 kg	
	<b>Jointed</b>	B	
	<b>Sleeper Type</b>	T, T/S 1in4 (on a few curves as far as Arriga Junction)	
<b>Maximum Allowable Axle Load (tal)</b>		15.75/12.2/Railmotor	
<b>Route Speed km/h</b>	<b>Pass</b>	70/40	
	<b>Freight</b>	70/40	
	<b>Block</b>	70 to Arriga	
<b>Max Container Height - (m)</b>		2.65	
<b>Allowable Gross Tonnes p.a. ("000")</b>		400	

## Almaden to Forsayth

From Almaden, the single track railway heads south west through generally undulating country except for 16 km from Einasleigh where it climbs up and over the Newcastle Range and plateau (Wirra Wirra - elevation 659.6 m) before dropping down the Delaney Creek gorge to Forsayth (elevation 405.1 m).

Track structure is a mix of nominal 20 and 30 kg/m rails on predominantly timber sleepers. However some curves on this section have steel sleepers interspersed at 1 in 4.

The maximum allowable axle load is that of a railmotor with a maximum allowable line speed of 40 km/h to Mt Surprise and then 30 km/h beyond to Forsayth.

The maximum grade (not compensated for horizontal alignment) that a westbound (Up) train will encounter is 1 in 25 whilst for an eastbound (Down) train the maximum grade is 1 in 25.

Existing minimum nominal horizontal curve radii are as follows :-

running line 100 m

Corridor		Almaden to Forsayth	
System		Tablelands	
No. of Tracks		1	
Route km		229.22	
Track km		229.22	
Electrified		No	
Safeworking System		Staff & Ticket	
Control Centre		Townsville	
Crossing Loops	No.	1	
	Location and Length		
		Einasleigh (195 m)	
Bridges	Timber	Number	482
		Length (m)	2723.9
	Steel	Number	6
		Length (m)	51
	Concrete	Number	0
		Length (m)	0
Tunnels	Length (m)	Number	0
		Length (m)	0
Curves (% of total track)	<80 km/h	31	
	<60 km/h	19	
Level Crossings	Public	17	
	Occupation	4	
	Flashing Lights	0	
	Boom Gates	0	
Track Structure	Rail Mass	41.25 lb/30/31 kg	
	Jointed	B	



		<b>Sleeper Type</b>	T, T/S 1in4 (on the curves)
<b>Maximum Allowable Axle Load</b>		<b>(tal)</b>	5 (Railmotor)
<b>Route Speed km/h</b>	<b>Pass</b>		40/30
	<b>Freight</b>		30/25
	<b>Block</b>		0
		<b>Max Container Height - (m)</b>	2.65
<b>Allowable Gross Tonnes p.a.("000")</b>			50

Fencing along this corridor complements adjacent land usage and is at the following standard, poor or non-existent (80 %), medium (5 %) and good (15 %). Fencing will be maintained at its current standard.

### Normanton to Croydon

This stand-alone railway provides a railmotor service to the tourist industry in the Gulf territory of north Queensland and comprises single track heading west-north-west from Croydon to Normanton on the coast. There are no passing loops.

Track structure is nominal 20 kg/m on steel and timber sleepers. The predominant sleeper type being the original steel sleepers used during construction of the railway circa 1888. These steel sleepers were of hollow section, filled with clay, overcoming the need for ballast and were laid on the "surface formation" minimising the need for earthworks. Timber sleepers are used as replacements.

The maximum allowable axle load is 8.8 tal with a maximum allowable line speed of 40 km/h.

The maximum grade (not compensated for horizontal alignment) that an eastbound (Up) train will encounter is 1 in 66 whilst for a westbound (Down) train the maximum grade is 1 in 66, both grades occurring after leaving Croydon. Elsewhere on the railway, grades are relatively flat.

Existing minimum nominal horizontal curve radii are as follows :-  
 running line 400 m

<b>Corridor</b>		Normanton to Croydon	
<b>System</b>		Tablelands	
<b>No. of Tracks</b>		1	
<b>Route km</b>		152.58	
<b>Track km</b>		152.58	
<b>Electrified</b>		No	
<b>Safeworking System</b>		Local Operating Procedures	
<b>Control Centre</b>		Local	
<b>Crossing Loops</b>	<b>No.</b>	0	
	<b>Location and Length</b>		
<b>Bridges</b>	<b>Timber</b>	Number	10
		Length (m)	58.4
	<b>Steel</b>	Number	81
		Length (m)	509.6
<b>Concrete</b>	Number	0	

		Length (m)	0
Tunnels	Length (m)	Number	0
		Length (m)	0
Curves (% of total track)	<80 km/h		1
	<60 km/h		0
Level Crossings	Public		9
	Occupation		12
	Flashing Lights		0
	Boom Gates		0
Track Structure	Rail Mass		41.25 lb, 42 lb
	Jointed		B
	Sleeper Type		S, T (where the steel sleepers have corroded)
Maximum Allowable Axle Load		(tal)	8.8
Route Speed km/h	Pass		40
	Freight		0
	Block		0
	Max Container Height - (m)		2.65
Allowable Gross Tonnes p.a. ("000")			50

This corridor is fenced between Normanton and Blackbull.

## Description of the Track

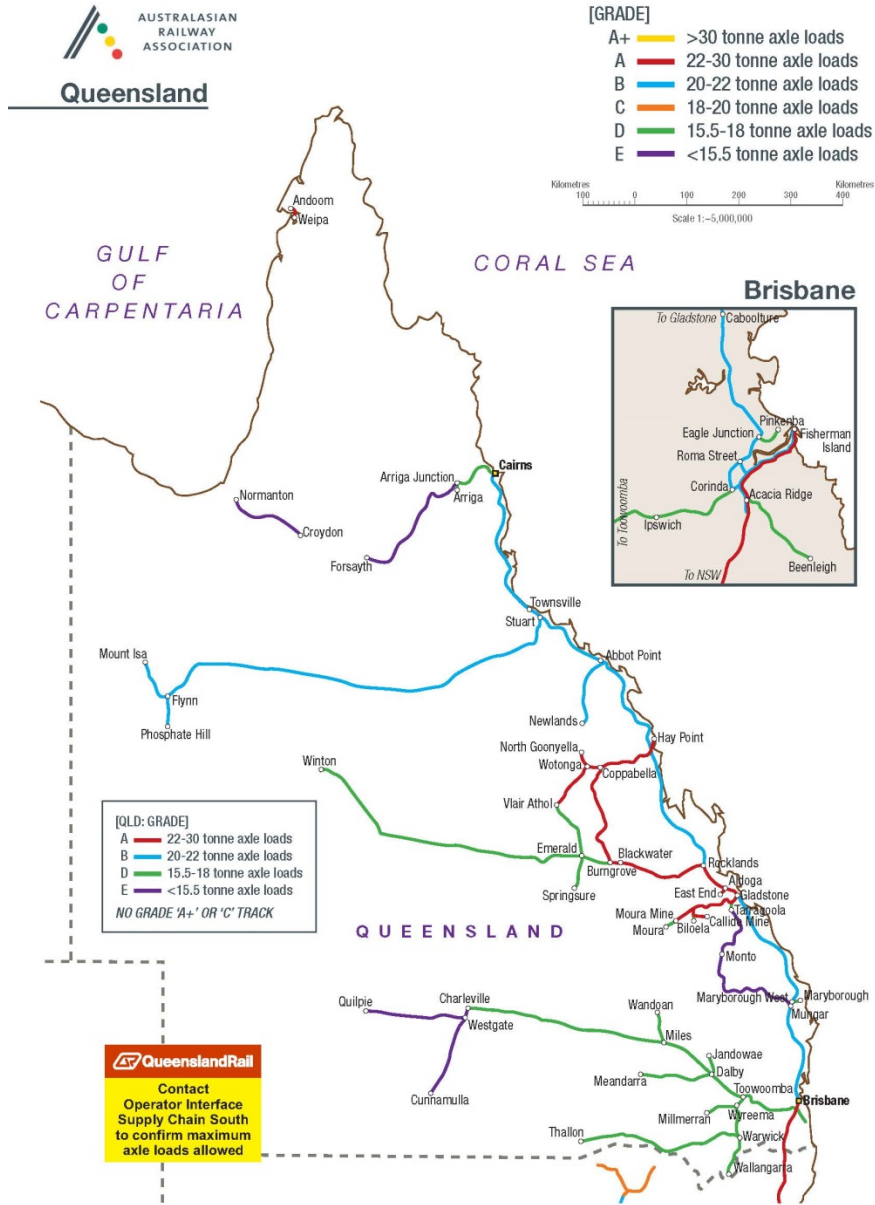
The track structure on this system is a mix of 47, 41 and nominal 31 and 20 kg/m rails on timber and steel sleepers with a variety of ballast materials including rock, gravel and sand. Steel sleepers are generally interspersed at 1 in 4 with the exception of Normanton to Croydon. The rails are a combination of short, short welded (SWR) and long welded (LWR) all bolted.

Throughout the Queensland Rail network, speeds through the curved leg of turnouts are governed by the angle of that turnout ie.

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

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

Preliminary Track Data and Grade Diagrams for the following major route are included in Appendix E.



## 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 Safety Management Standard **MD-10-143 Hot Weather Precautions for Track Stability**, namely :-

Air Temperature 38°C and above	-	On timber sleepers track, restrict trains to 60 km/h (#)
		On concrete sleepers track, restrict all trains to 120 km/h
Air Temperature 40°C and above	-	On timber sleepers track, restrict trains to 40 km/h (#)
		On concrete sleepers track, restrict all trains to 60 km/h

(#) 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 Queensland Rail 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.

## Trackside Detection Equipment

### Over Height Container Detector and Signals

Located at 8.6 km with associated two aspect Red/Green Signal at 9.9 km on the Cairns to Redlynch section, to detect containers over 2.65 m in height. Over height containers, once identified are detected at Redlynch.

## Weighbridges

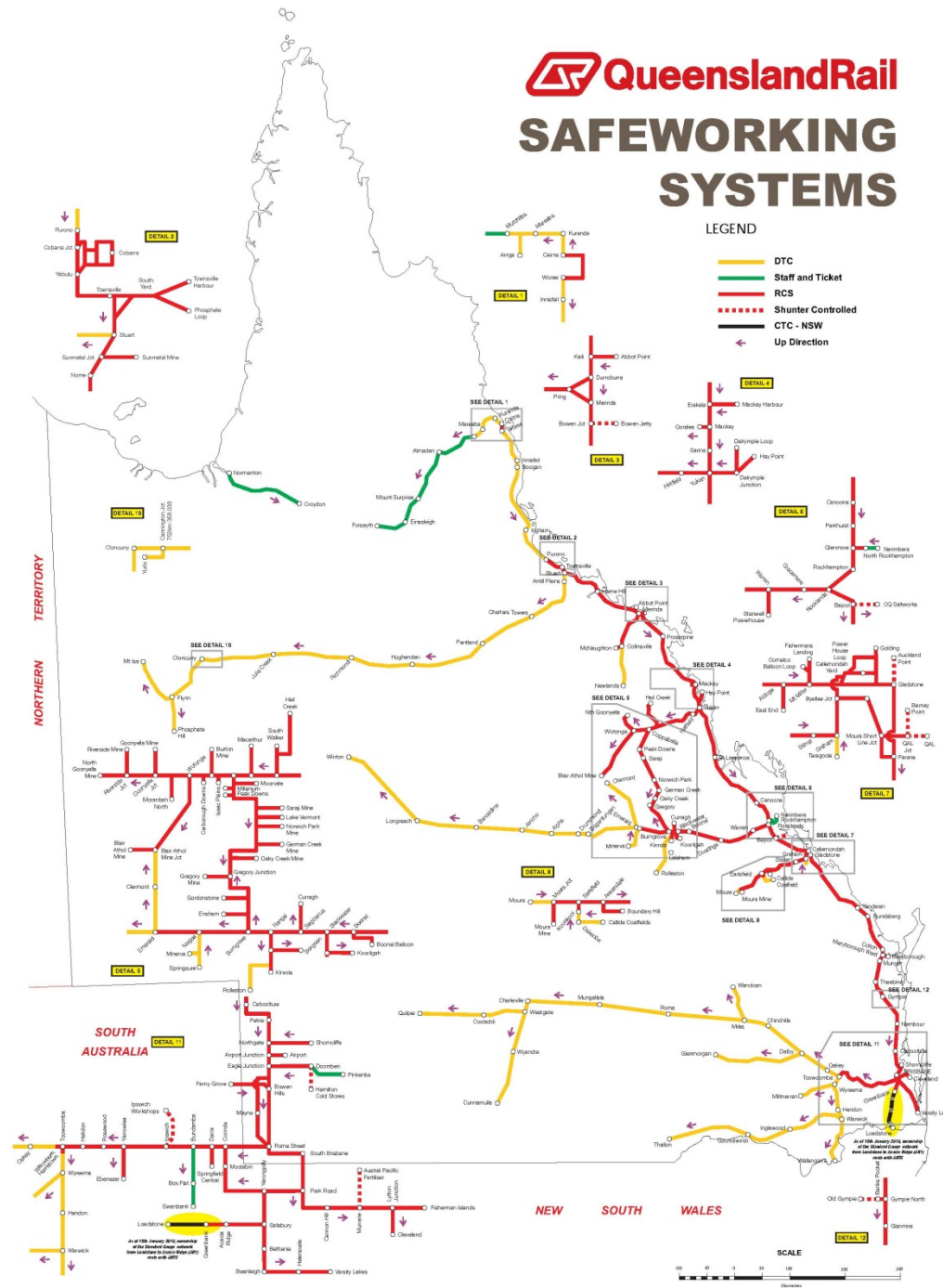
There are no weighbridges on this System as described herein.

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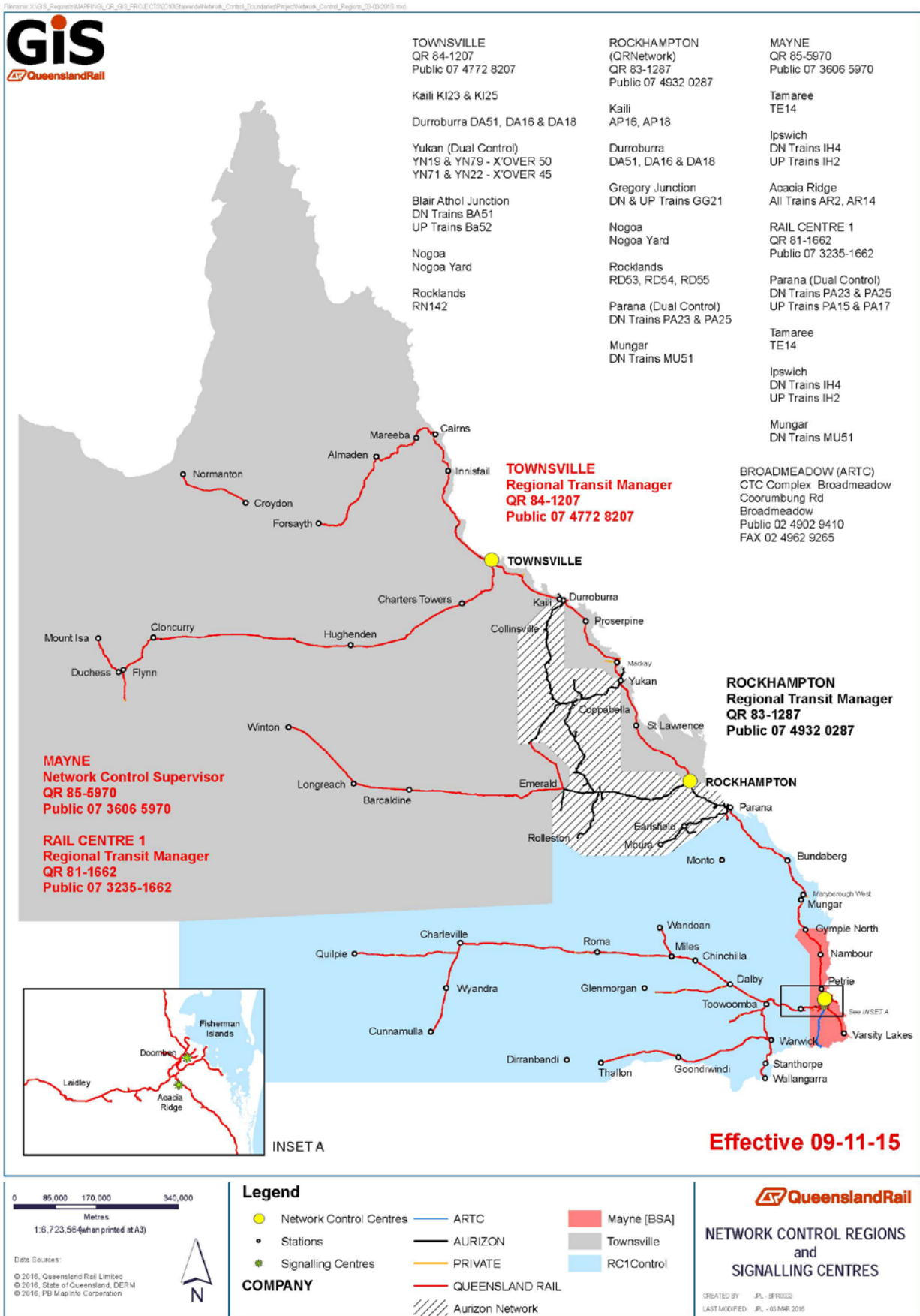
# Operational Systems & Train Control

The Tablelands System is operated by Direct Traffic Control (DTC) between Cairns and Mareeba and Staff and Ticket west of Mareeba with train movements controlled from Townsville.

Normanton to Croydon is operated by Staff and Ticket (Local operating procedures).



Safeworking\_QRNetwork  
 (Drawing Modified - December 14 - Ebenazer - RCS)



## Information Systems

ViziRail is the key software system designed as a tool for use in integrated scheduling, possession planning, monitoring and reporting on the Queensland Rail network.

Functionality includes modules:

- Train notices
- Actual train running (ATR)
- Incidents
- Train consists (Train Builder)
- Speed restrictions
- Rollingstock allocations
- Rollingstock maintenance
- Fresh turnouts
- Planning graphs
- Scheduling enhancements
- Possession enhancements
- OTIS (Operational to Information Systems) - which converts train steps to actual arrival and departure train information.

## Operational Constraints - Rollingstock

All new rollingstock requires to be accepted via the Rollingstock Authorisation Process, rollingstock which conforms with Drawing Nos. 2236 may operate in an unrestricted manner on main lines.

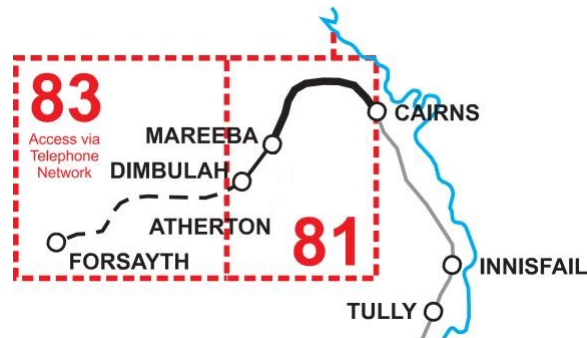
For rollingstock to conform with Drawing Nos. 2236 the static rollingstock profile must be within the diagram, refer **APPENDIX H - Rollingstock Gauges**. As well as the static component, dynamic effects need to be considered and these effects are contained within Rollingstock Interface Standards.

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

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

## Communications

Communications on the Tablelands System (Cairns to Forsayth) between Driver and Controller is via a UHF radio system (Train Control Radio - TCR) utilising Queensland Rail channels 81 (Vote group comprising channels 21, 22 and 23) and 83 (Vote group comprising channels 27, 28 and 29). The extent of network coverage for DTC Territory being Level 3 and for Staff and Ticket Territory being Level 4 as per Queensland Rail Standard MD-10-114 (refer APPENDIX A - Definitions). Control phones are located at Staff Stations only.



The frequency specifications for the train radio are :-

CHANNEL 81	Channel 21	TX 408.650 MHz	RX 418.100 MHz
	Channel 22	TX 408.675 MHz	RX 418.125 MHz
	Channel 23	TX 408.700 MHz	RX 418.150 MHz
CHANNEL 83	Channel 27	TX 409.250 MHz	RX 418.700 MHz
	Channel 28	TX 409.300 MHz	RX 418.750 MHz
	Channel 29	TX 409.350 MHz	RX 418.800 MHz

Access to the Maintenance Supervisory Radio System (MSR) can be gained by using the following Queensland Rail telephone extensions depending on location.

The UHF TCR between Mareeba and Forsayth is also accessible via a commercial telephone network.

In addition, all locomotives carry and all new locomotives to the System will be required to carry Wayside communication via Channel 1 (TX 411.375 MHz and RX 411.375 MHz which provides end to end, train to train and train to Track Gangs over a distance on average of 8 - 10 km. All train and maintenance radios utilise mobile to base subaudio of 162.2 Hz.

The Normanton to Croydon Railway being stand-alone, the Officer-In-Charge communicates with both Townsville Control and Maintenance Gangs via mobile satellite telephones.

Communications on board locomotives must conform to **Queensland Rail's Safety and Security Standard MD-10-86 - Mobile Voice Radio Communications Systems.**

## Sectional Running Times

The sectional running times, expressed as minutes, for various types of trains currently operating on the system are contained in **APPENDIX F.**

The sectional running times are "Pass to Pass" times for a running move and do not reflect acceleration and deceleration characteristics of trains.

Sectional running times are provided for two (2) types of locomotive-hauled trains - passenger and container (inter-modal).



Proposed train configurations would need to be confirmed by the relevant operator against the infrastructure constraints to determine if the sectional running times can be achieved. If the sectional running times cannot be achieved then different arrangements, including for access charges, may need to be negotiated as part of the access agreement negotiations.

Changes to the sectional running times for the system are also possible over time. Any changes would be confirmed as part of the access agreement negotiations.

Trains travelling south to Brisbane are travelling in the Up Direction whilst trains travelling north to Cairns are travelling in the Down Direction.

## Incident Recovery Time and Management

Historically it is anticipated that on the Tablelands System a minor incident could result in disruption to services for 6 hours and a major incident for 2 days.

Incident recovery is dependent on the nature, severity and location of each unique incident that may occur on this system.

The Normanton to Croydon Railway is prone to flooding for lengthy periods during the cyclone season.

To enable quick response in case of emergency, latitudes and longitudes of passing loops are detailed below:

Location	Latitude	Longitude
Cairns	16° 55' S	145° 46' E
Redlynch	16° 53' S	145° 41' E
Stoney Creek	16° 53' S	145° 39' E
Kuranda	16° 49' S	145° 38' E
Koah	16° 48' S	145° 30' E
Mareeba	16° 59' S	145° 25' E
Atherton	17° 16' S	145° 28' E
Dimbulah	17° 09' S	145° 06' E
Almaden	17° 20' S	144° 40' E
Lyndbrook	17° 50' S	144° 26' E
Mt Surprise	18° 08' S	144° 18' E
Einisleigh	18° 30' S	144° 05' E
Forsayth	18° 35' S	143° 36' E
Croydon	18° 12' S	142° 14' E
Blackbull	17° 57' S	141° 45' E
Glenore	17° 49' S	141° 07' E
Normanton	17° 40' S	141° 04' E

## Rail / Road Interfaces

Operators on the Tablelands System will encounter 159 Rail / Road Interfaces (see Appendix C for details) categorised as follows:-

Public (Active with Flashing Light/Boom Gate Protection)	-	14
Public (with Passive Protection - Signs)	-	76
Occupation (Private Access)	-	80

## 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.

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

### 1. Fixed Locations;

Queensland Rail 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;

Queensland Rail 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 by the Department within Queensland are available upon request from the Department. The Department of Environment and Heritage Protection contact details can be found via the web at

<https://www.ehp.qld.gov.au/>

## Environmental Noise

The Environmental Protection (Noise) Policy (EPP Noise) recognises a railway as a beneficial asset, which is necessary for the community's environmental, social and economic well-being. The Environmental Protection (Noise) Policy is available from the Office of the Queensland Parliamentary Council website at

<http://www.legislation.qld.gov.au/OQPChome.htm>

The EPP Noise nominates “planning levels” for railway noise which may be used as a guide in deciding a reasonable noise level for the activity. The EPP Noise 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. The long term planning levels are:

$L_{Aeq}$ (24 hour)	65dBA
$L_{Amax}$	87dBA

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.

## Noise Management

While noise from the operation of a railway is exempt from environmental nuisance provisions under the Queensland Environment Protection Act 1994, Queensland Rail strives to manage noise associated with both its rail operations and network wherever reasonable and practical.

As the rail manager, Queensland Rail works closely with customers regarding environmental issues, and provides feedback to Rail Operators to allow them to investigate and address as applicable, noise related issues that may be associated with their locomotives and wagons.

There are various sources of noise from a railway and to aid efficient and effective noise reduction, a range of noise management measures are utilised by Queensland Rail. These are detailed at:

<http://www.queenslandrail.com.au/inthecommunity/environment/noisemanagement>

## 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 Queensland Rail’s 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 rollingstock factors that promote wheel squeal, may result in squeal being produced. Rollingstock 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

Queensland Rail 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 Queensland Rail to take action where appropriate.

Where Queensland Rail receives complaints about noise from railway activities for which Queensland Rail may be responsible, Queensland Rail 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 Queensland Rail 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 Queensland Rail's 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, Queensland Rail.

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 Queensland Rail's Access Undertaking.

Queensland Rail 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.

## 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.

Crossing loops on the Tablelands System vary in length as listed below:

Redlynch	217 m
Stoney Creek	215 m
Kuranda	335 m
Koah	415 m
Einiasleigh	195 m

Crossing loop length is 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.

Variations of train length for a particular train configuration is possible and would need to be negotiated as part of access agreement negotiations.

Variations of train length for a particular train configuration are possible and would need to be negotiated as part of access agreement negotiations.

## Rollingstock Braking Rate

The signalling system and flashing light protection at rail / road interfaces has been designed to cater for the variety of trains that currently use this system.

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

## Future Infrastructure Improvements

No major infrastructure improvements identified

## Infrastructure Management and Access

**APPENDIX B - SCHEMATIC LAYOUT** is colour coded to indicate Management of Infrastructure and Access.

Third party access to non-Queensland Rail managed infrastructure is by commercial arrangement with the relevant party.

The initial point of contact for Queensland Rail managed below rail assets is:

General Manager Access Revenue

Level 9 | 305 Edward Street  
Brisbane Qld 4001  
Telephone 61 07 3072 1145  
Facsimile 61 07 3072 8248  
Email: [aarf@qr.com.au](mailto:aarf@qr.com.au)

## APPENDIX A

### Definitions (Statewide)

#### Access Agreement

Access Agreement means an agreement between Queensland Rail and an Access Holder for the provision of Access.

#### 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 Queensland Rail's declared services.

#### Accreditation

Accreditation in accordance with part 4, Chapter 6 of the Transport Infrastructure Act 1994 (Qld) 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 startup

#### 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.

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## **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.

## **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 Queensland Rail'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 Queensland Rail's Civil Engineering Publication #26 "Rail Stressing Manual".

## **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 Queensland Rail's Standard MD-10-113 "Direct Traffic Control Manual".

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

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



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

Part of the Queensland Rail 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.

### **Electric Train Staff**

A 'token' system of train working between Interlockings on single lines in non track- circuited areas, where release of a token is controlled by electrically connected and interlocked instruments.

### **EPP (Noise)**

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

### **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

### **Line Code**

Line Code, a unique alpha-numeric identifier applied to a section of track on Queensland Rail's 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.

### **LWR**

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

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## LSC

Line Section Code, a unique alpha-numeric identifier applied to a section of Queensland Rail's network.

## Master Train Plan (MTP)

Collectively, the scheduled times as advised by Queensland Rail from time to time for all Train Services operating on Queensland Rail'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.

## Ordinary Staff and Ticket Working

A token based system of safeworking where the movement of trains on bi-directional single lines is on possession of a staff token or ticket. Each section of single line has a unique token.

## Staff & Ticket

The Staff and Ticket System allows for the movement of trains over a bidirectional track.

The Staff and Ticket System operates (in accordance with Queensland Rail's Standard MD-10-114) on the principle of absolute block working, which provides that only one train will be authorised to be on any one section at any one time.

## Railway Operator

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

## 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.

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Railway Operators trains are expected to meet existing signalling standards to ensure track circuits and other signalling equipment operate safely and effectively - in particular Queensland Rail's Standard MD-10-76 "Principles for the Signalling of Trains" must be complied with.

### **Rollingstock Authorisation Process**

The process for determining and validating rollingstock compliance and registration as detailed in Queensland Rail's Standard MD-10-140 - Rollingstock Validation, Acceptance and Registration

### **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.

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

### **SN Speed Boards**

Speed Normal Boards are speed boards that place the onus on the Driver of a train to travel at speeds considered safe for that section of track being travelled over. These boards are gradually being phased out in accordance with Queensland Rail's Civil Standard MD-10-87 - SPEED BOARDS

### **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 rollingstock is registered under Queensland Rail's Standard MD-10-140 - Rollingstock Validation, Acceptance and Registration.

### **Train Length**

The total length in metres of a train including the locomotives. For the purposes of comparison with the length of crossing loops, an addition of 1% (1 metre for every 100 metres) shall be allowed to the calculated length of the train to allow for train stretching.

### **Unit Train**

A train composed entirely of the one class and one drawgear classification of rollingstock.

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### **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 Queensland Rail below-rail network.

ViziRail also supports the provision of all QCA and the Department of Transport and Main Roads 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.

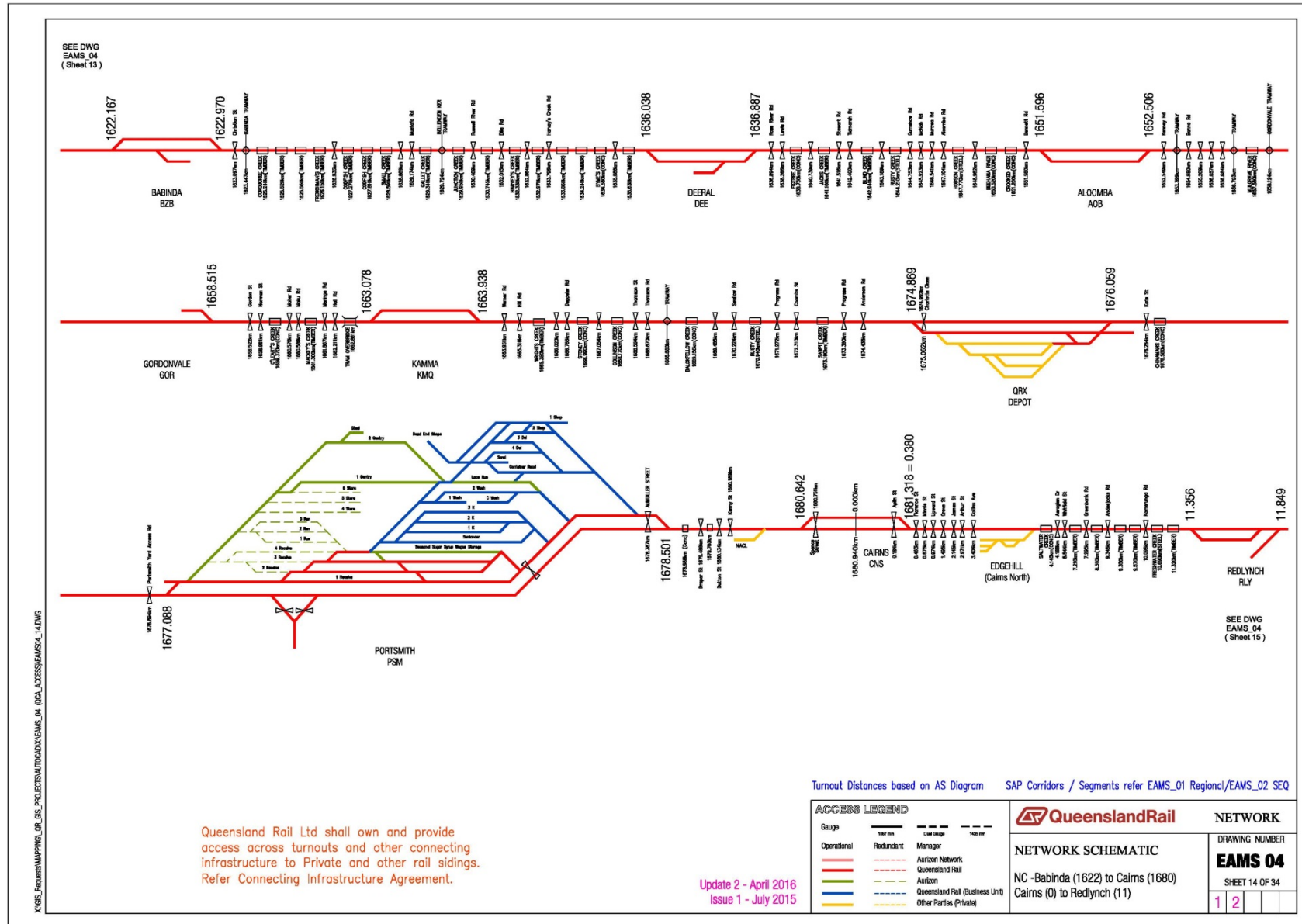
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## **APPENDIX B**

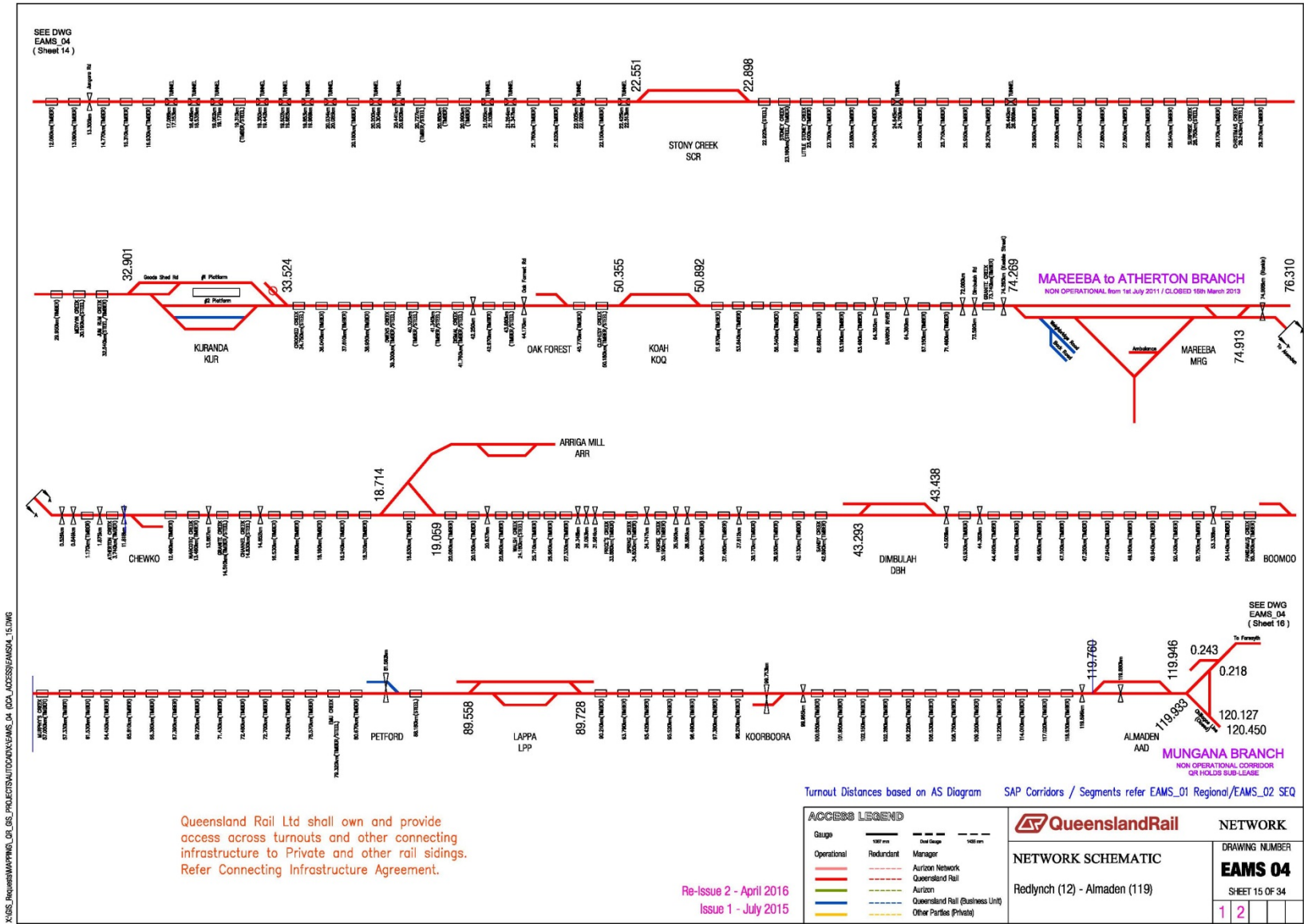
### Schematic Layout

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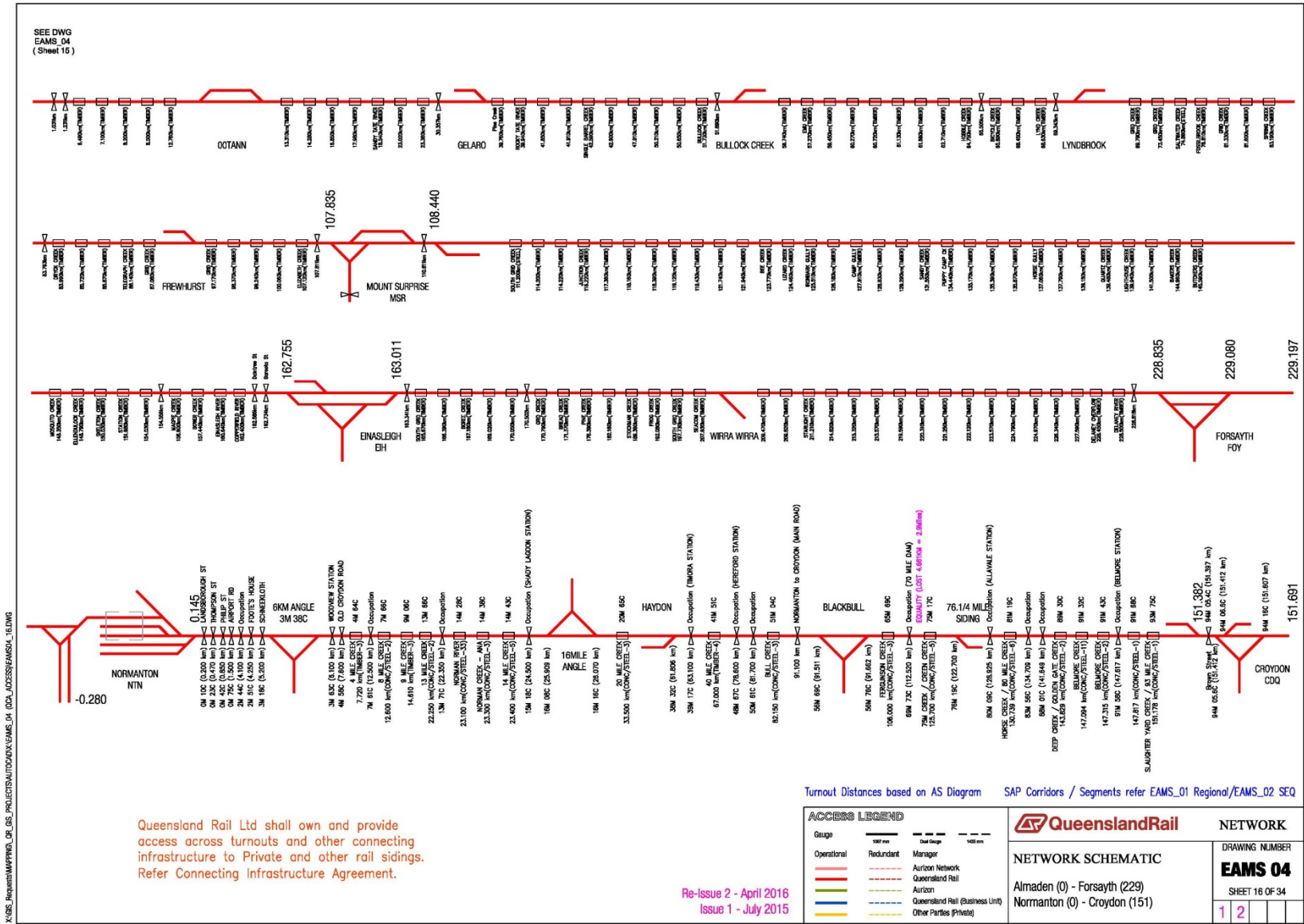


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## APPENDIX C

### Rail/Road Interface Details

		CROSSINGS BY LINE AND KILOMETRAGE					
SURVEY SECTION		Description of Signage Types					
G	Giveway	PWB	Pedestrian Warning	T	Triangle		
N	New Signage Type	S	Stop	U	Unknown		
O	Other	SC	School Crossing	X	Crossbuck		
Line Section Code	Km	Road Name	Type	Vehicular Protection	Signs	Open Status	Responsible Authority
<b>CAIRNS RAILWAY</b>							
697	0.21	APLIN STREET	Public Level	Boomgates		Open	MRD
697	0.46	FLORENCE STREET	Public Level	Boomgates	PWB	Open	MRD
697	0.73	MINNIE STREET	Public Level	Signs	X S	Open	LGA
697	0.98	UPWARD STREET	Public Level	Signs	X S	Open	LGA
697	1.5	GROVE STREET	Public Level	Signs	X S	Open	LGA
697	2.15	JAMES STREET	Public Level	Flashing Lights		Open	MRD
697	2.98	ARTHUR STREET	Public Level	Flashing Lights	PWB	Open	LGA
697	3.456	COLLINS AVENUE	Public Level	Flashing Lights		Open	LGA
697	4.275	AEROGLEN DRIVE	Public Level	Flashing Lights		Open	LGA
697	5.479	WHITFIELD STREET	Public Level	Flashing Lights		Open	LGA
697	7.3	GREENBANK ROAD	Public Level	Flashing Lights		Open	LGA
697	8.26		Occupation	Signs	X G	Open	PRI
697	9.35	ANDEE JACK'S ROAD	Public Level	Signs	X G	Open	MRD
697	10.1	LOWER FRESHWATER ROAD	Public Level	Signs	X T	Open	LGA
697	11.675	KAMERUNGA ROAD	Public Level	Flashing Lights	PWB	Open	MRD
697	12.8		Occupation			Open	
697	13.31	SHAWS RD	Public Level	Signs	X S	Open	LGA
697	15.14		Occupation			Open	
697	31.35		Occupation			Open	
698	42.25		Public Level	Signs	X G	Open	MRD
698	44.17	OAK FOREST ROAD	Public Level	Signs	X S	Open	MRD
698	45.37	McCORRY ROAD	Occupation	Signs	X G	Open	PRI
698	50.406	KOAH ROAD	Occupation	Signs	X G	Open	PRI
698	51.54	BRAY ROAD	Occupation	Signs	X G	Open	PRI
698	55.52		QR	Nil		Open	QR
698	55.8		Occupation	Signs	X T	Open	PRI
698	57.2		Occupation	Signs	X T	Open	PRI
698	60.45		QR	Nil		Open	QR
698	64.34		Public Level	Signs	X T	Open	LGA
698	65.18		Occupation	Signs	X T	Open	PRI
698	65.72		Occupation	Signs	X S	Open	PRI
698	66.18		Public Level	Signs	X T	Open	LGA
698	67.71		Occupation	Signs	X T	Open	PRI
698	72.08	Mt. MOLLOY HIGHWAY	Public Level	Signs	X T	Open	MRD
698	73.59	MAREEBA-DIMBULAH ROAD	Public Level	Flashing Lights	PWB	Open	MRD
698	74.26	KEEBLE STREET	Public Level	Signs	X S	Open	MRD

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699	74.994	RANKIN STREET	Public Level	Signs	X G	Open	MRD
699	75.77	BASALT STREET	Public Level	Signs	X G	Open	MRD
699	76.31	COSTIN STREET	Public Level	Signs	X G	Open	MRD
699	77.288	McIVER ROAD (RYE ROAD)	Public Level	Signs	X T	Open	MRD
699	78.397	MINES ROAD	Public Level	Signs	X T	Open	LGA
699	79.488		Occupation	Signs	X T	Open	PRI
699	81.057	GALLO ROAD	Public Level	Signs	X G	Open	MRD
699	83.225	KENNEDY HIGHWAY	Public Level	Flashing Lights		Open	MRD
699	84.45	KENNEDY HWY	Public Level	Flashing Lights	X S	Open	
699	84.703	TURKENGEE ROAD	Occupation	Signs	X T	Open	PRI
699	86.46	HENERY HANNAN DRIVE	Occupation	Signs	X T	Open	PRI
699	90.606	ORAN ROAD	Public Level	Signs	X T	Open	LGA
699	92.5	CARBEEN ROAD	Public Level	Signs	X T	Open	LGA
699	94.49		Occupation	Signs	X T	Open	PRI
699	94.55		Occupation	Signs	X T	Open	PRI
699	95.515	POULTRY FARM ACCESS ROAD	Occupation	Signs	X T	Open	PRI
699	96.664	KENNEDY HIGHWAY	Public Level	Flashing Lights		Open	MRD
699	98.062	FRASER ROAD (ROCCA ROAD)	Public Level	Signs	X T	Open	MRD
699	99.828		Occupation	Signs	X T	Open	PRI
699	101.165	MARANE ROAD	Public Level	Signs	X T	Open	LGA
699	102.276	RACE TRACK ROAD	Occupation	Signs	X T	Open	PRI
699	103.115	KENNEDY HIGHWAY	Public Level	Flashing Lights		Open	MRD
699	103.582	MAIN STREET	Public Level	Signs	X T	Open	MRD
699	104.578	BEAN TREE CREEK ROAD	Public Level	Signs	X G T	Open	LGA
699	105.95	MANTHEY ROAD	Public Level	Signs	X G	Open	LGA
699	107.71	GROVE STREET	Public Level	Signs	X S G	Open	MRD
699	108.174	KENNEDY HWY (GOLF LINKS ROAD)	Public Level	Signs	X T	Open	MRD

**NORMANTON RAILWAY**

704	0.2		Public Level			Open	
704	0.47		Public Level			Open	
704	0.85		Public Level			Open	
704	1.5		Public Level			Open	
704	4.1		Occupation			Open	
704	4.25		Occupation			Open	
704	5.2		Occupation			Open	
704	6.1		Public Level			Open	
704	7.6		Public Level			Open	
704	22.25		Occupation			Open	
704	24.5		Public Level			Open	
704	63.1		Public Level			Open	
704	78.6		Public Level			Open	
704	81.7		Occupation			Open	
704	91.1		Occupation			Open	
704	112.52		Occupation			Open	
704	128.915		Occupation			Open	
704	139.37		Occupation			Open	
704	143.17		Occupation			Open	
704	147.32		Occupation			Open	
704	151.42		Occupation			Open	

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## APPENDIX D

### Speed Boards

Location (km)	Down Train to Cairns	Up Train to Mareeba
<b>CAIRNS to MAREEBA</b>		
0.000 CAIRNS		
0.319	25	20
1.500	20	60
4.110	L25/60	60
6.575	60	50
6.820	50	60
7.770	60	50
8.400	50	70
8.870	70	60
9.190	60	70
9.940	70	25
10.182	25	60
10.422	60	
10.460		70
11.295	70	25
11.590		8
11.700		40
11.930	25	
12.495	40	60
12.940		40
14.100	40	30
16.000	30	30
16.770	30	25
16.900	25	30
18.020	30	30
20.306	30	25
20.406	25	30
22.530	30	25
22.770 STONEY CREEK		
22.890	25	10
23.330		30
23.390	10	
25.490	30	30
27.410	30	30
27.950	30	25
28.090	25	30
29.710	30	25

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Location (km)	Down Train to Cairns	Up Train to Mareeba
29.840	25	30
31.300	30	50
32.440		40
32.900	40	10
33.240	<b>KURANDA</b>	
33.450	10	60
34.030	60	
35.020	50	40
35.720	40	60
36.690	60	60
36.920	60	60
37.730	60	
38.890	60	40
38.990	40	60
39.490	60	60
39.850	60	40
40.340	40	50
41.300	50	40
41.510	40	60
41.740	60	60
42.270	60	30
42.510	30	60
42.860	60	60
43.450	60	60
43.500	60	60
44.560	60	60
44.710	60	40
45.110	40	30
45.290	30	40
46.860	40	60
47.430	60	50
47.870	50	40
48.010	40	60
49.130	60	60
49.660	60	50
50.105	50	60
50.350		L25
50.550	<b>KOAH</b>	
51.011	R25	
51.110	60	
51.440	60	60

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Location (km)	Down Train to Cairns	Up Train to Mareeba
51.780	60	50
51.910	50	60
52.960	60	60
53.500	60	50
53.730	50	60
54.500	60	50
54.630	50	50
56.010	50	60
58.700	60	60
59.300	60	40
59.550	40	60
60.100	60	60
65.976	60	L25/60
66.150	<b>BIBOOHRA</b>	
66.440	R25/60	60
74.200	60	25
74.470	<b>MAREEBA</b>	

### **MAREEBA to FORSAYTH**

Maximum speed allowable speed is 40 km/hr to Mt Surprise and 30 km/hr to Forsayth with speed boards erected where track geometry warrants reduction.

### **NORMANTON to CROYDON**

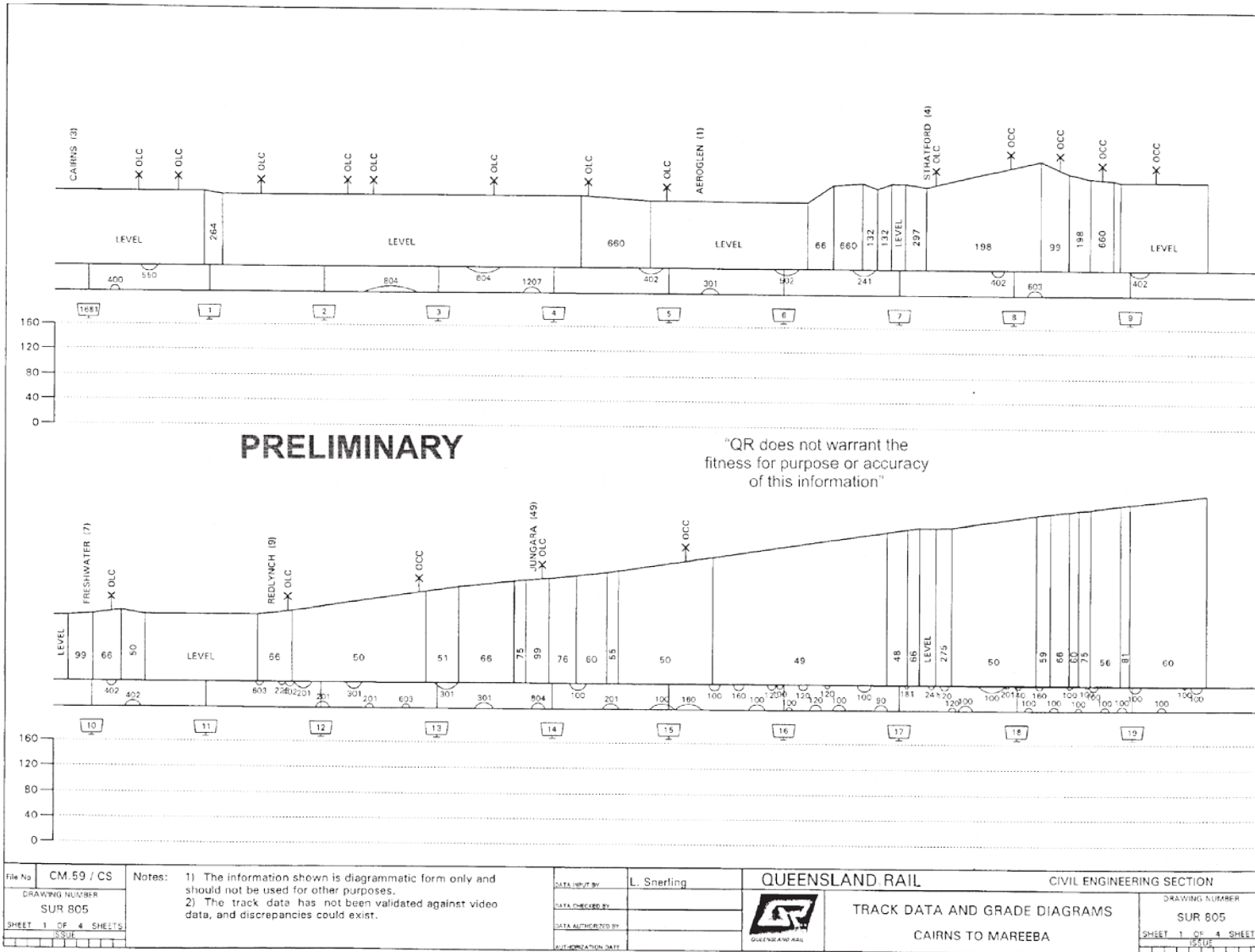
Maximum speed allowable speed is 40 km/hr with speed boards erected where track geometry warrants reduction.

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## **APPENDIX E**

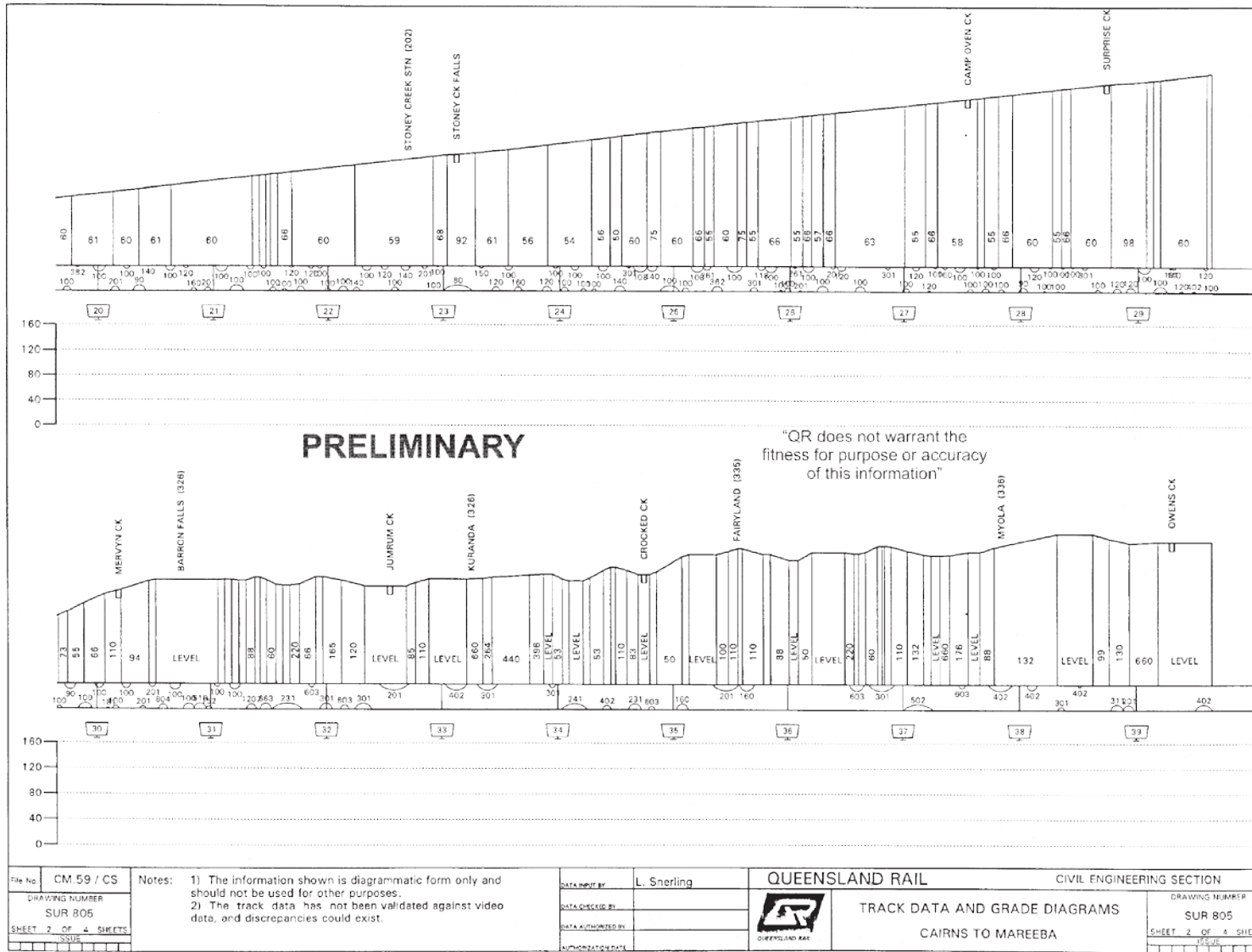
Track Data & Grade Diagrams


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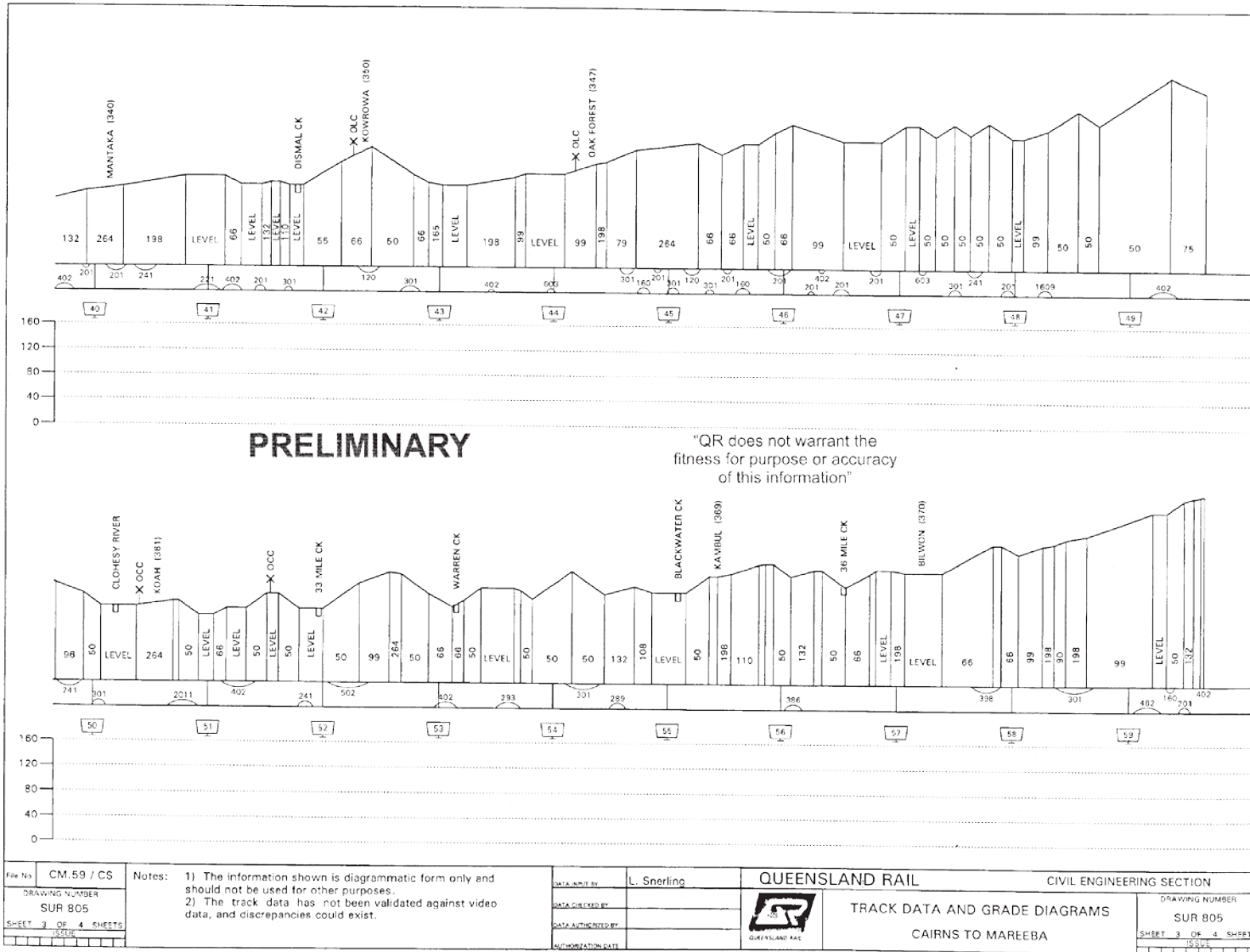


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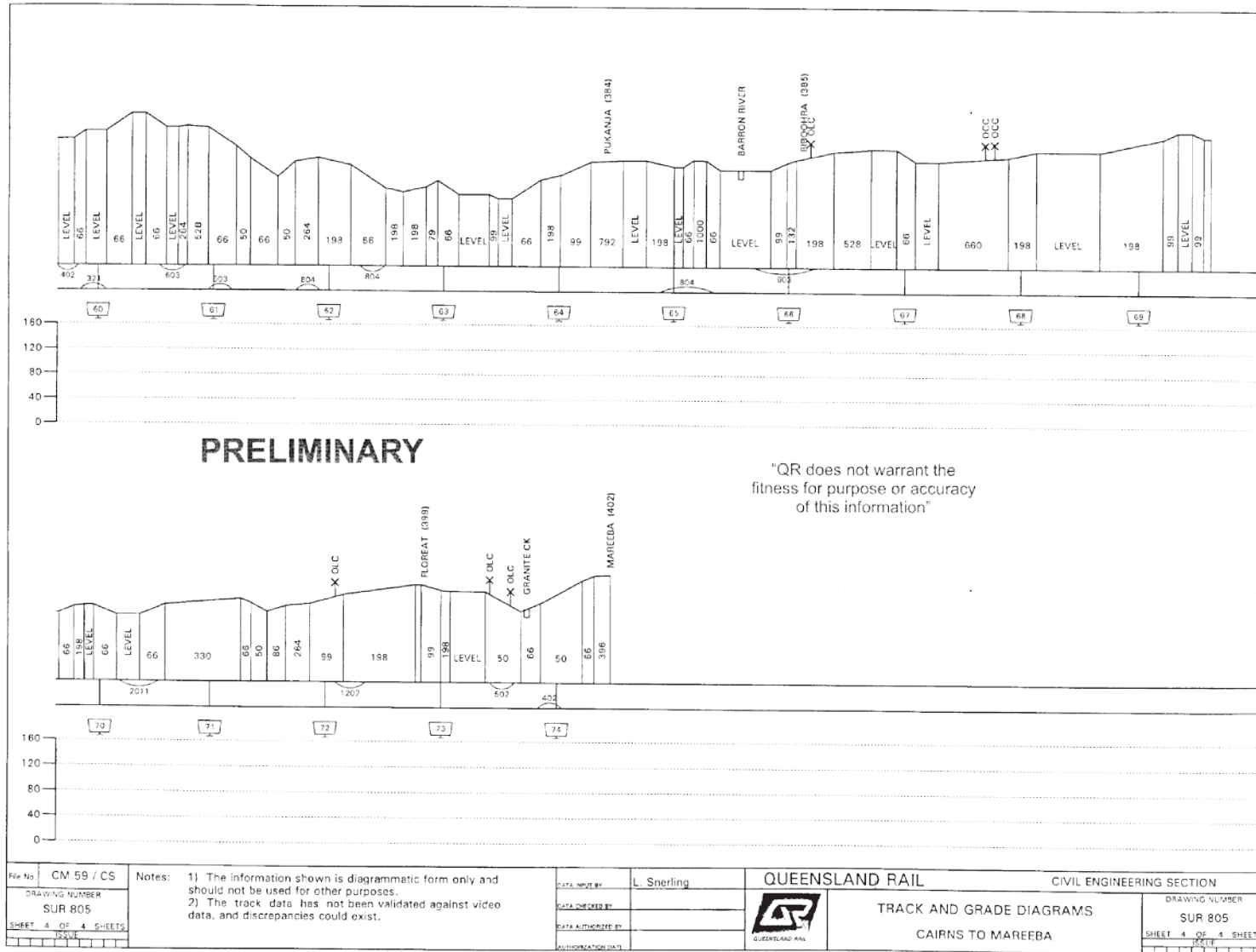


File No:	CM.59 / CS	Notes: 1) The information shown is diagrammatic form only and should not be used for other purposes. 2) The track data has not been validated against video data, and discrepancies could exist.	DATA INPUT BY:	L. Snerling	QUEENSLAND RAIL	CIVIL ENGINEERING SECTION
DRAWING NUMBER	SUR 805		DATA CHECKED BY:			TRACK DATA AND GRADE DIAGRAMS
SHEET 2 OF 4 SHEETS	ISSUE		DATA AUTHORIZED BY:		CAIRNS TO MAREEBA	SHEET 2 OF 4 SHEETS

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## APPENDIX F

### Sectional Running Times

The sectional running times listed below are for a standard trains. On the Tablelands System, standard trains are deemed typical of the freight trains currently operating on the system.

New trains or train configuration changes would need to be checked by the relevant operator against the infrastructure constraints to determine if these running times can be achieved.

From	To	FREIGHT								TRAVELTRAIN							
		UP				DOWN				UP				DOWN			
		P/P	P/S	S/P	S/S	P/P	P/S	S/P	S/S	P/P	P/S	S/P	S/S	P/P	P/S	S/P	S/S
Cairns	Edgehill	9	11	12	14	9	11	12	14	10	11	12	13	9	10	11	12
Edgehill	Freshwater	10	12	13	15	10	12	13	15	11	12	13	14	11	12	13	14
Freshwater	Redlynch	4	6	7	9	4	6	7	9	3	4	5	6	3	4	5	6
Redlynch	Stoney Creek	35	37	38	40	40	42	43	45	28	29	30	31	26	27	28	29
Stoney Creek	Barron Falls	22	24	25	27	30	32	33	35	25	26	27	28	23	24	25	26
Barron Falls	Kuranda	8	10	11	13	8	10	11	13	2	3	4	5	2	3	4	5
Kuranda	Koah	23	25	26	28	30	32	33	35	26	27	28	29	26	27	28	29
Koah	Biboohra	13	15	16	18	15	17	18	20	15	16	17	18	15	16	17	18
Biboohra	Mareeba	17	19	20	22	20	22	23	25	15	16	17	18	15	16	17	18
Mareeba	Arriga Junction	35	37	38	40	35	37	38	40	27	28	29	30	27	28	29	30
Arriga Junction	Dimbulah	50	52	53	55	45	47	48	50	30	31	32	33	30	31	32	33
Dimbulah	Verdue	44	46	47	49	44	46	47	49	40	41	42	43	40	41	42	43
Verdue	Lappa	61	63	64	66	61	63	64	66	40	41	42	43	40	41	42	43
Lappa	Almaden	65	67	68	70	70	72	73	75	62	63	64	65	60	61	62	63
Almaden	Gelaro									28	29	30	31	44	45	46	47
Gelaro	Bullock Creek									30	31	32	33	40	41	42	43
Bullock Creek	Lyndbrook									30	31	32	33	40	41	42	43
Lyndbrook	Frehurst									30	31	32	33	40	41	42	43
Frehurst	Mt Surprise									29	30	31	32	43	44	45	46
Mt Surprise	Einisleigh									162	163	164	165	102	103	104	105
Einisleigh	Forsayth									177	178	179	180	162	163	164	165

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## APPENDIX G

### Altitudes

Location	Altitude in metres
Cairns	3
Redlynch	10
Stoney Creek	205
Kuranda	329
Koah	363
Biboohra	391
Mareeba	404
Tabacum	501
Dimbulah	462
Verdure	480
Lappa	596
Almaden	493
Ootaan	445
Gelaro	514
Bullock Creek	447
Lyndbrook	436
Fossilbrook	460
Frewhurst	506
Mount Surprise	455
Einsaleigh	452
Wirra-Wirra	660
Forsayth	404
Tolga	750
Atherton	752
Normanton	12
Clarina	6
Glenore	8
Haydon	31
Blackbull	53
Croydon	112

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## APPENDIX H

### Rollingstock Gauges

