

West Moreton System Information Pack

Rosewood to Macalister

Macalister to Miles

Version Information

Version 3.1: 13/10/2016

- 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
- Inserted Coal Dust information
- Updated Standards references
- Updated Line Diagrams
- Updated Climate Information
- Updated Track Grade
- Updated Network Control Regions & Singalling Centres
- Updated Safeworking Systems
- Updated Level Crossing Information
- Updated Noise Management System
- Miscellaneous Updates to Description of Railway
- Updated Reference Rolling Stock Outline drawing

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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.

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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 West Moreton system runs over 314 kms between Rosewood and Miles. The West Moreton system adjoins south-east Queensland in the east at Rosewood and the far-west section of the Western system in the west at Miles. Various branch lines of the Western system also run off the West Moreton system.

The system links rail services from Brisbane to the west and south west of the state and is a major artery to the Darling Downs (via the Toowoomba Range).

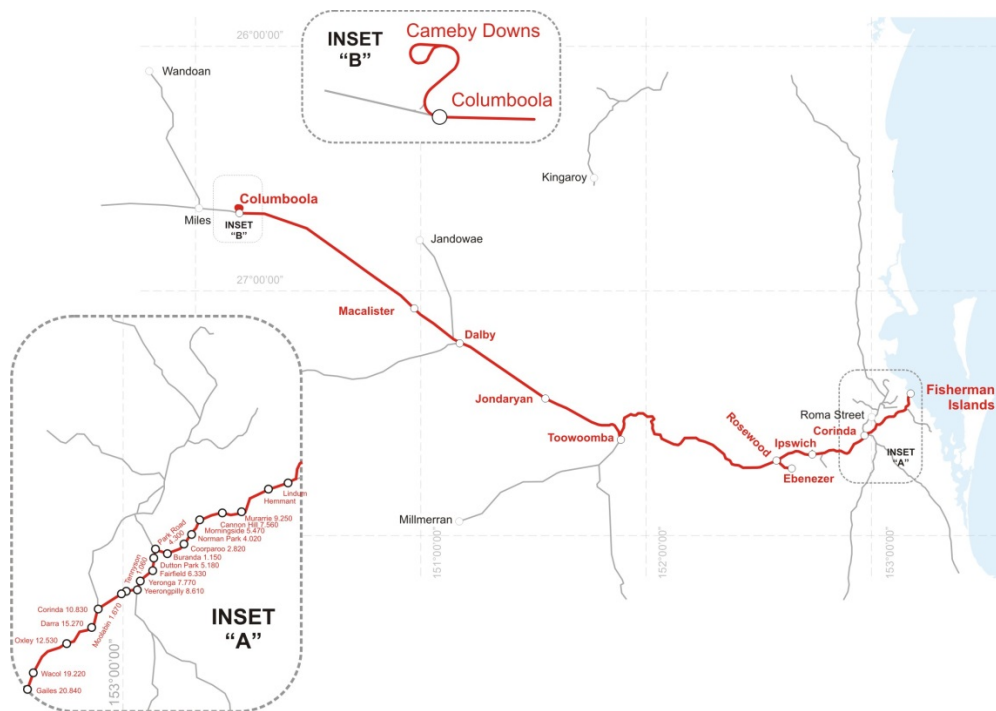
Historically the system catered for passenger, livestock, freight and agricultural products (e.g. grain and cotton) with the first section of railway line in Queensland, between Ipswich and Grandchester, opening in 1865.

Now, thermal coal is the predominant product originating from and hauled on the West Moreton system. Grain also originates from and is hauled on the system.

While coal carrying train services commenced in 1982 from mines located just west of Ipswich (Brisbane Metropolitan Region), railing of coal from the Wilkie Creek mine began in 1994, with Macalister as the loading point. Following the development of the New Acland mine, railings from Jondaryan commenced in 2002. The final Surat Basin mine utilising the West Moreton System, Cameby Downs, began operations in late 2010 with train services transporting coal from Columboola.

The West Moreton system is operated from the Brisbane control centre using two safe working systems - Remote Control Singalling (RCS) Rosewood to Willowburn and Direct Traffic Control (DTC) Willowburn to Miles.

Traffic to and from the Western and South Western systems, including the Westlander long distance passenger service, travels across the West Moreton system.



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 south/south-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.

The direct impact of cyclones on this System if any would be very minimal.

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.

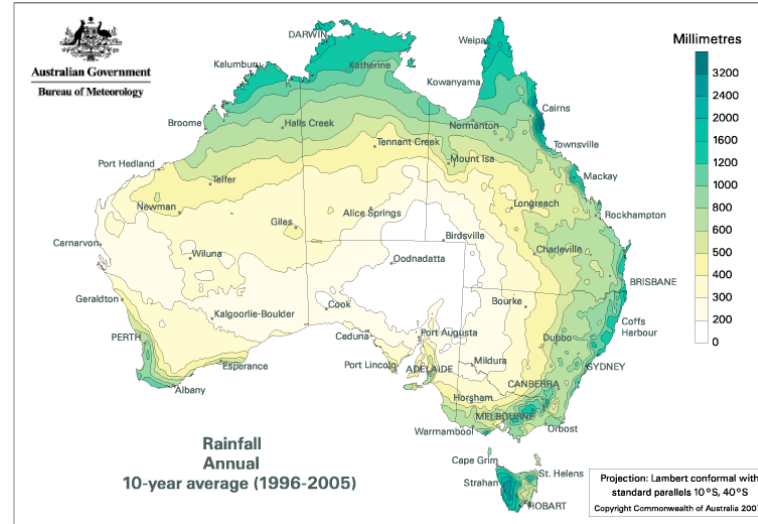
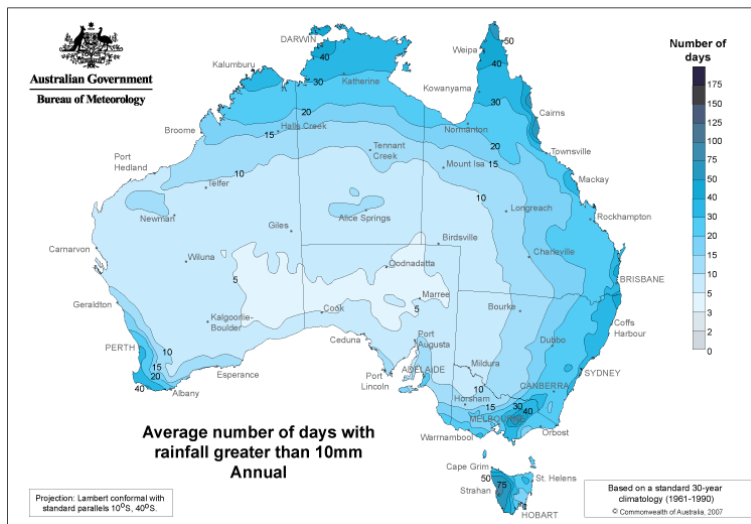
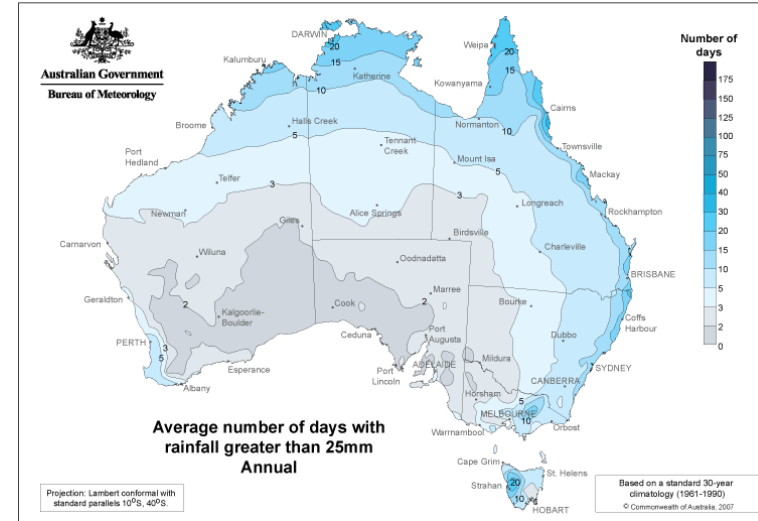
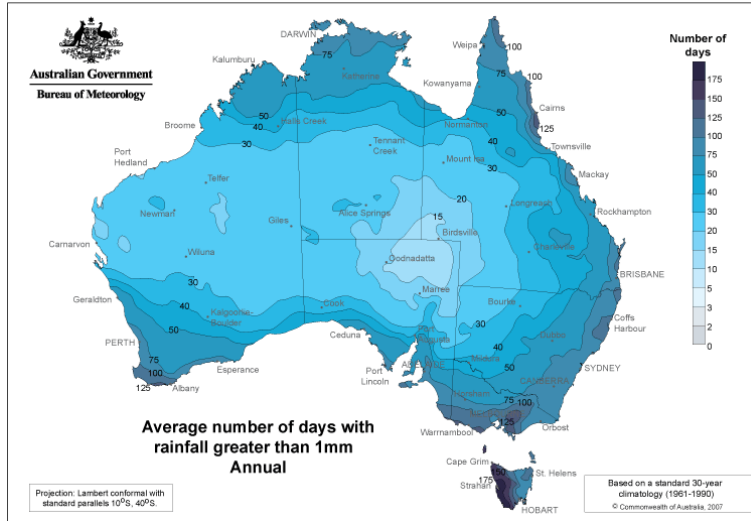
In the north, rain is mostly associated with monsoonal troughs.

The wet season in Queensland is predominantly from January to April when monthly rain falls of 400 mm or more can occur.

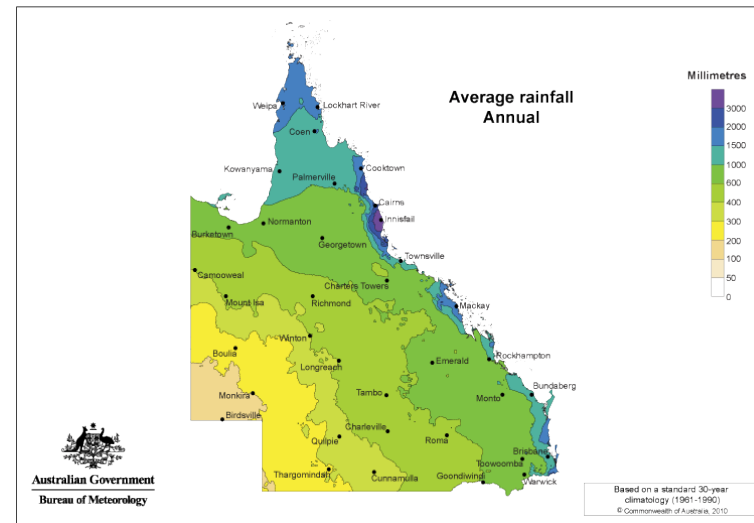
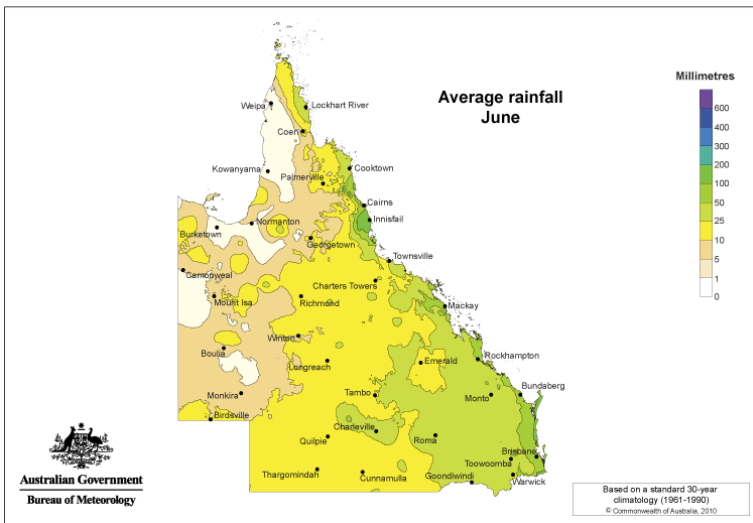
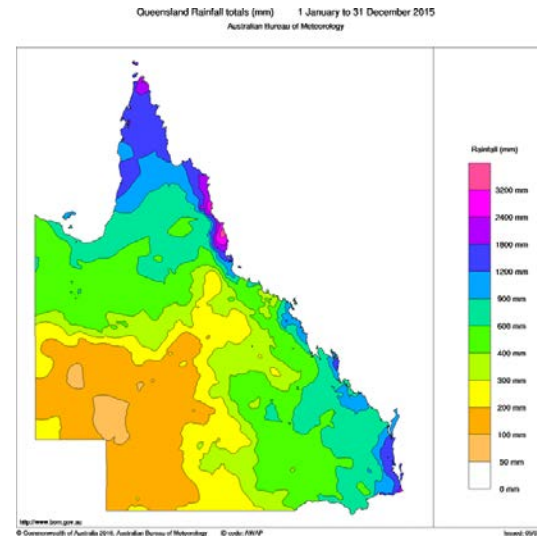
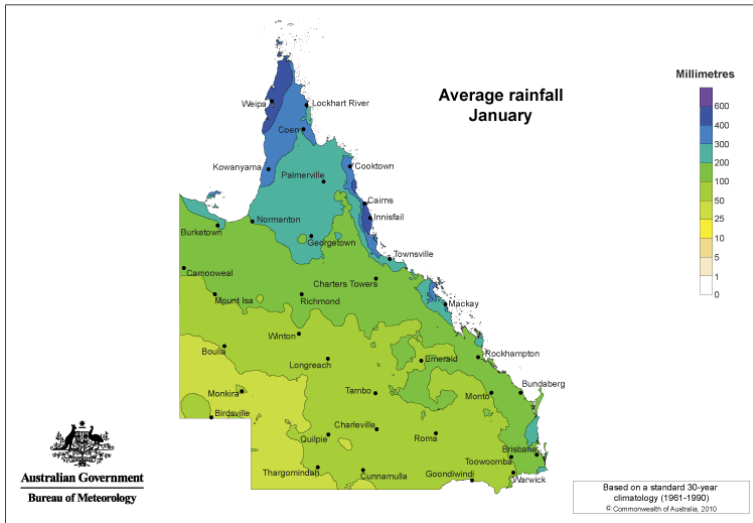
Flooding of low lying areas is likely to occur as an indirect result of cyclones and heavy coastal rains, when streams and rivers that rise near the coast flow inland. In these instances floodwaters can affect this System several weeks after the event.

This is an average figure and closure periods of greater duration are possible in any one year.

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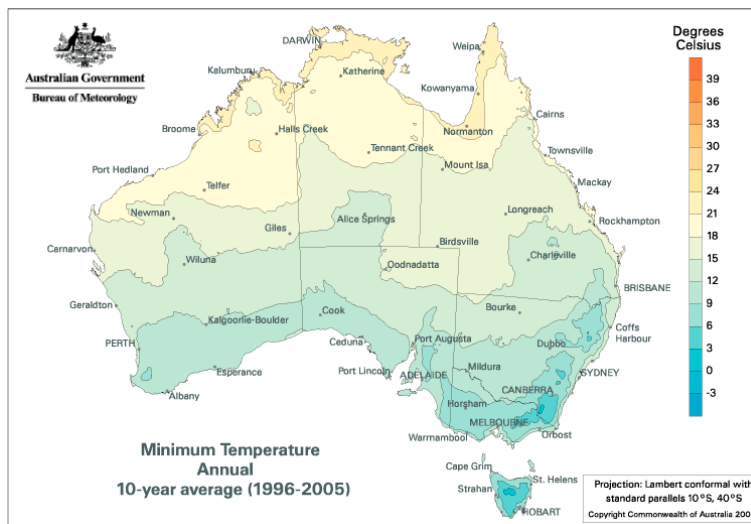
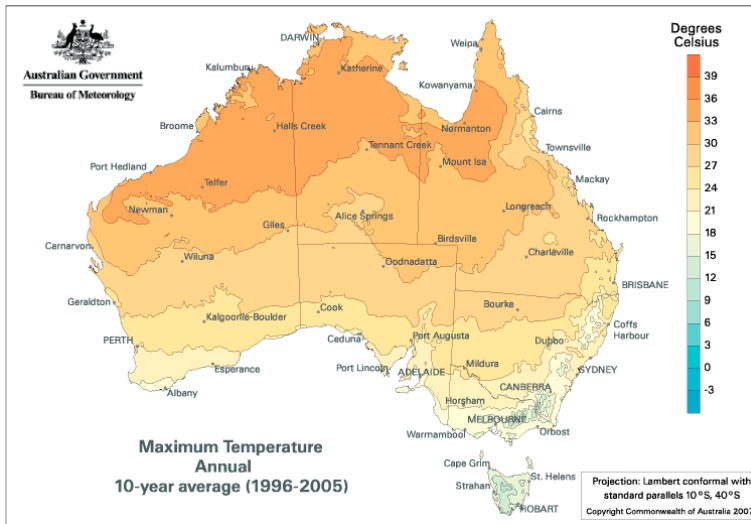
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Temperatures

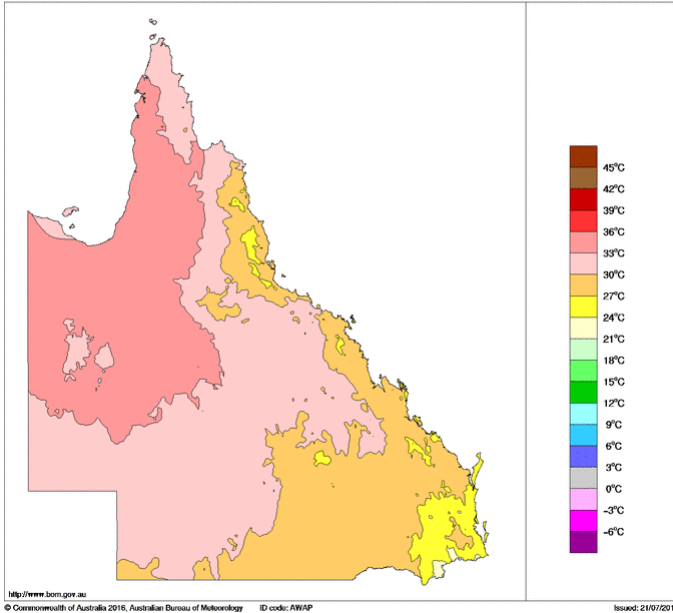
The average annual values of the daytime maximum of the hottest (January) and night-time minimum of the coldest (July) months are indicated on the climatic maps.

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).

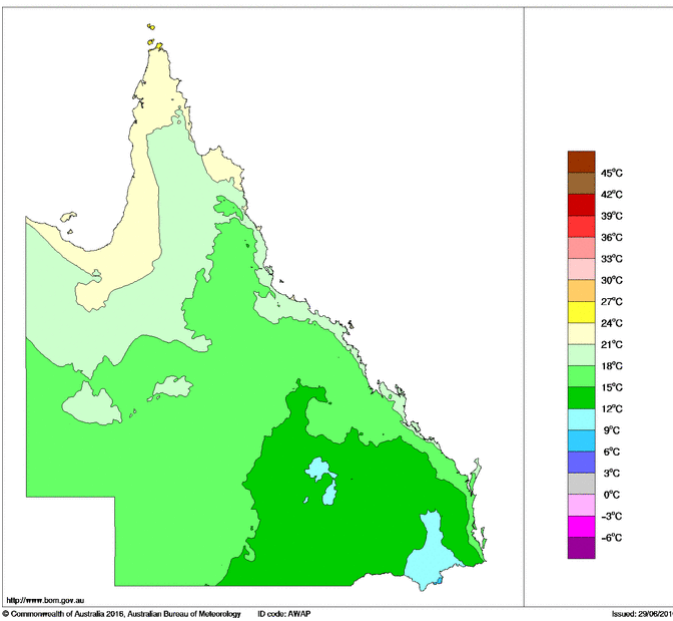


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Maximum Temperature (°C) 1 July 2015 to 30 June 2016
 Australian Bureau of Meteorology



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



Description of the Railway

The West Moreton Rail System is the oldest coal railway in Queensland with sections progressively being opened between 1865 and 1898, and the railway line has been used to transport passengers, agricultural products including livestock, grains and cotton, and coal over the years. The railway is of 15.75 TAL construction and passing loops accommodate up to 673m trains.

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

For rollingstock of different configuration, e.g. in respect of axle spacing and vehicle lengths, lesser axle loads and/or speed restrictions may be required before rollingstock may be authorised to operate.

Basic Track Configuration

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

Rosewood to Toowoomba (105.1 km)

Rosewood, in the Fassifern Valley forms the boundary between the Western and Metropolitan Systems as well as the termination station for Queensland Rail's electrified network. This double track system extends beyond Rosewood to Helidon at the base of the Great Dividing Range with the exception of the section between Grandchester and Yarongmulu which is single track over the Little Liverpool Range and incorporates two tunnels. An Overheight Container Detector and signal has been installed west of Rosewood (approx. 57 km) on the Up Track to identify those oversized containers that exceed the tunnel profiles

From Helidon the single track railway begins the 470m climb up the Great Dividing Range, passing through nine tunnels before cresting at Harlaxton. From Harlaxton the track descends to the Toowoomba CBD.

There are six crossing loops on this section namely Grandchester, Lockyer, Murphy's Creek, Holmes, Spring Bluff and Rangeview.

Track structure is predominantly 41 kg/m rail (LWR) on timber sleepers, with some 60 / 50 kg/m rail on concrete sleepers.

The maximum allowable axle load is 15.75 tal.

The maximum allowable speed is 80 km/h, with block trains restricted to a maximum speed of 60 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 49 (Yarongmalu).

Corridor		Rosewood to Toowoomba	
Line Section Code		889, 546, 547, 120	
System		Western	
No. of Tracks		2 (Rosewood-Grandchester), 1 (Grandchester - Yarongmalu), 2 (Yarongmalu - Helidon), 1 (Helidon - Toowoomba)	
Route Km		104.705	
Track Km		157.061	
Electrified		No	
Safeworking System		RCS	
Control Centre		5th Floor RC1	
Crossing Loops	No.	6	
	Location and Length	Grandchester (708pp), Lockyer (696pp), Murphy's Creek (704pp), Holmes Main (701pp), Holmes Loop (725pp), Spring Bluff (721pp), Rangeview Main (778pp), Rangeview Loop (789pp)	
Bridges	Timber	No. of Bridges	68
		No. of Spans	287
		Length (m)	1717.6
	Steel	No. of Bridges	6
		No. of Spans	24
		Length (m)	308.7
	Concrete	No. of Bridges	5
		No. of Spans	13
		Length (m)	174.03
Overbridges (No. of Bridges)			
		Timber	1
		Steel	0
		Concrete	2
Tunnels		Number	11
		Length (m)	1615.61
Curves (% of total track)	<80km/h		27
	<60km/h		19
Level Crossings	Public		21
	Occupation		11
	Fl. Lights		4
	Boom gte		9
Track Structure	Rail Mass		60/50/41kg
	Jointed		LWR
	Sleeper Type		T/S1in2, T/S1in4, 100% Steel, C
Maximum Allowable Axle Load		(tal)	15.75
Route Speed km/h	Pass		80
	Frt		80
	Block		80
		Max Container Height - (m)	2.65
Allowable Gross Tonnes p.a. ("000")			7,000

Existing minimum nominal horizontal curve radii are as follows :-
 running line 100 m

Fencing along this corridor complements adjacent land usage and will be maintained at its current standard.

Toowoomba to Dalby (83.2 km)

After leaving Toowoomba, the single track railway heads out onto the Darling Downs gradually dropping until reaching Dalby. Dalby is the junction station for the Glenmorgan and Bell (closed) branches with Tycanba to the west being the junction for the Jandowae Branch.

Oakey between Dalby and Toowoomba is the junction station for the Cecil Plains (closed) branch. There are nine crossing loops on this section namely Willowburn, Gowrie, Kingsthorpe, Oakey, Malu, Bowenville, Koomi, Blaxland and Dalby.

Track structure is 50 and 41 kg/m rail (LWR and short) on steel and timber sleepers at a rate of 1 steel in 4.

The maximum allowable axle load is 15.75 tal.

The maximum allowable speed is 80 km/h block trains restricted to a maximum speed of 60 km/h.

Corridor		Toowoomba to Dalby	
Line Section Code		711, 304, 353, 354	
System		Western	
No. of Tracks		1	
Route Km		83.86	
Track Km		83.86	
Electrified		No	
Safeworking System		RCS to Willowburn, then DTC	
Control Centre		5th Floor RC1	
Crossing Loops		No.	9
		Location and Length	Willowburn (870pp), Gowrie (692tp), Kingsthorpe (687tp), Oakey (690tp), Malu (700tp), Bowenville (698tp), Koomi (706tp), Blaxland (704tp), Dalby (681tp),
Bridges	Timber	No. of Bridges	22
		No. of Spans	88
		Length (m)	482.8
	Steel	No. of Bridges	4
		No. of Spans	13
		Length (m)	108.31
	Concrete	No. of Bridges	3
		No. of Spans	6
		Length (m)	77.37
Overbridges (No. of Bridges)		Timber	0
		Steel	0
		Concrete	0
Tunnels		Number	0
		Length (m)	0
Curves (% of total track)		<80km/h	5
		<60km/h	2
Level Crossings		Public	31
		Occupation	15

	Fl. Lights		10
	Boom gte		5
Track Structure	Rail Mass		50/41kg
	Jointed		LWR/B
	Sleeper Type		T/S1in2, T/S1in4, 4km 100% Steel
Maximum Allowable Axle Load		(tal)	15.75
Route Speed km/h	Pass		80
	Frnt		80
	Block		80
	Max Container Height - (m)		2.9
	Allowable Gross Tonnes p.a.("000")		4,500

The maximum grade (not compensated for horizontal alignment) that a westbound (Up) train will encounter is 1 in 142 whilst for an eastbound (Down) train the maximum grade is 1 in 88. Within Toowoomba yard the curved leg of the angle has a grade of 1 in 79 against the Down train with a radius of 100 m.

Existing minimum nominal horizontal curve radii are as follows :-
 running line 201 m

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

Dalby to Miles (126.1 km)

From Dalby, the single track railway heads in a north-westerly direction to Chinchilla then generally west to Miles. Miles being the junction station for the Wandoan branch. There are nine crossing loops on this section namely Tycanba, Baining, Macalister East, Macalister Coal Loop, Warra, Chinchilla, Rywung, Columboola and Miles.

Track structure is 41 kg/m rail (LWR) on steel and timber sleepers at a rate of 1 steel in 2 sleepers between Dalby and Macalister and at a rate of 1 steel in 3 sleepers between Macalister and Miles.

The maximum allowable axle load is 15.75 tal.

The maximum allowable speed is 80 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 201 m

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

Corridor	Dalby to Miles
Line Section Code	463, 355, 356, 563

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System		Western	
No. of Tracks		1	
Route Km		126.494	
Track Km		126.494	
Electrified		No	
Safeworking System		DTC	
Control Centre		5th Floor RC1	
Crossing Loops	No.	9	
	Location and Length	Tycanba (920), (Baining (528tp), Macalister East (699tp), Macalister Coal Loop (1405tp), Warra (539tp), Chinchilla (566tp), Rywung (525tp), Columboola (498tp), Miles (574tp)	
Bridges	Timber	No. of Bridges	51
		No. of Spans	402
		Length (m)	2101.8
	Steel	No. of Bridges	0
		No. of Spans	8
		Length (m)	83.5
	Concrete	No. of Bridges	0
		No. of Spans	0
		Length (m)	0
Overbridges (No. of Bridges)		Timber	0
		Steel	0
		Concrete	0
Tunnels		Number	0
		Length (m)	0
Curves (% of total track)	<80km/h		0.4
	<60km/h		0.1
Level Crossings	Public		48
	Occupation		13
	Fl. Lights		6
	Boom gte		0
Track Structure	Rail Mass		41 kg
	Jointed		LWR
	Sleeper Type		T/S1in2, 6km of 100% Steel (Dalby - Macalister), T/S1in2, T/S1in3 (Macalister - Miles)
Maximum Allowable Axle Load		(tal)	15.75
Route Speed km/h	Pass		80
	Frnt		80
	Block		80
Max Container Height - (m)			2.9
Allowable Gross Tonnes p.a. ("000")			4,000

Description of the Track

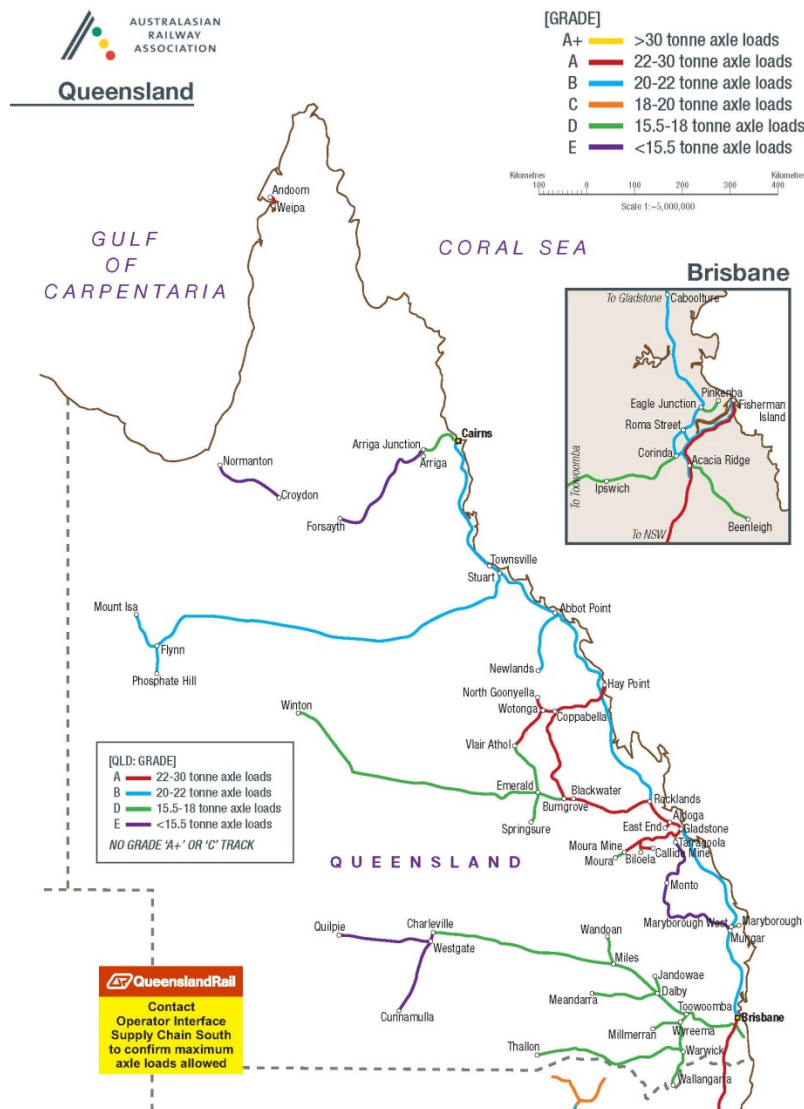
The track on this system is a mix of 47 kg/m, 41 kg/m, 30 kg/m and 20 kg/m rail with the associated sleeper types namely steel and timber on crushed rock and sand ballast. The steel sleepers generally are installed at a rate of 1 in 4 sleepers. The rails are a combination of short, short welded (SWR) and long welded (LWR) all bolted.

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

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.

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

Axle Counters

The only axle counters on this System are between Rosewood and Toowoomba.

Overheight Container Detector

An Overheight Container Detector set to detect oversized containers is installed on the Up Track at approximately 57 km. The associated signal to advise train crews of an oversized container present in the train consist is located at Grandchester.

Weighbridges

There is one weighbridge on this System, located at Macalister beyond the loadout. This loadout is non-trade certified and used as an overload detector.

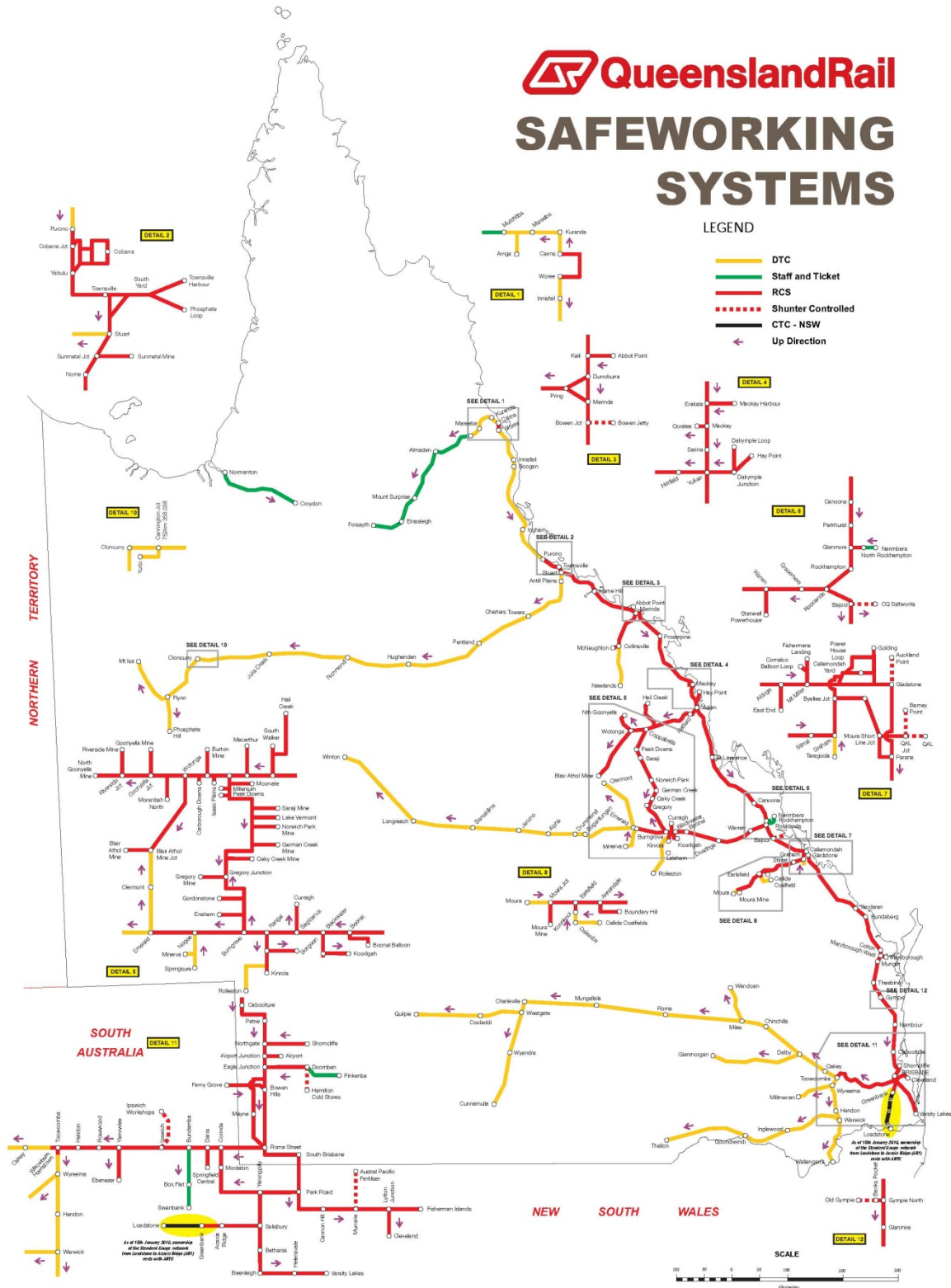
Operational Systems & Train Control

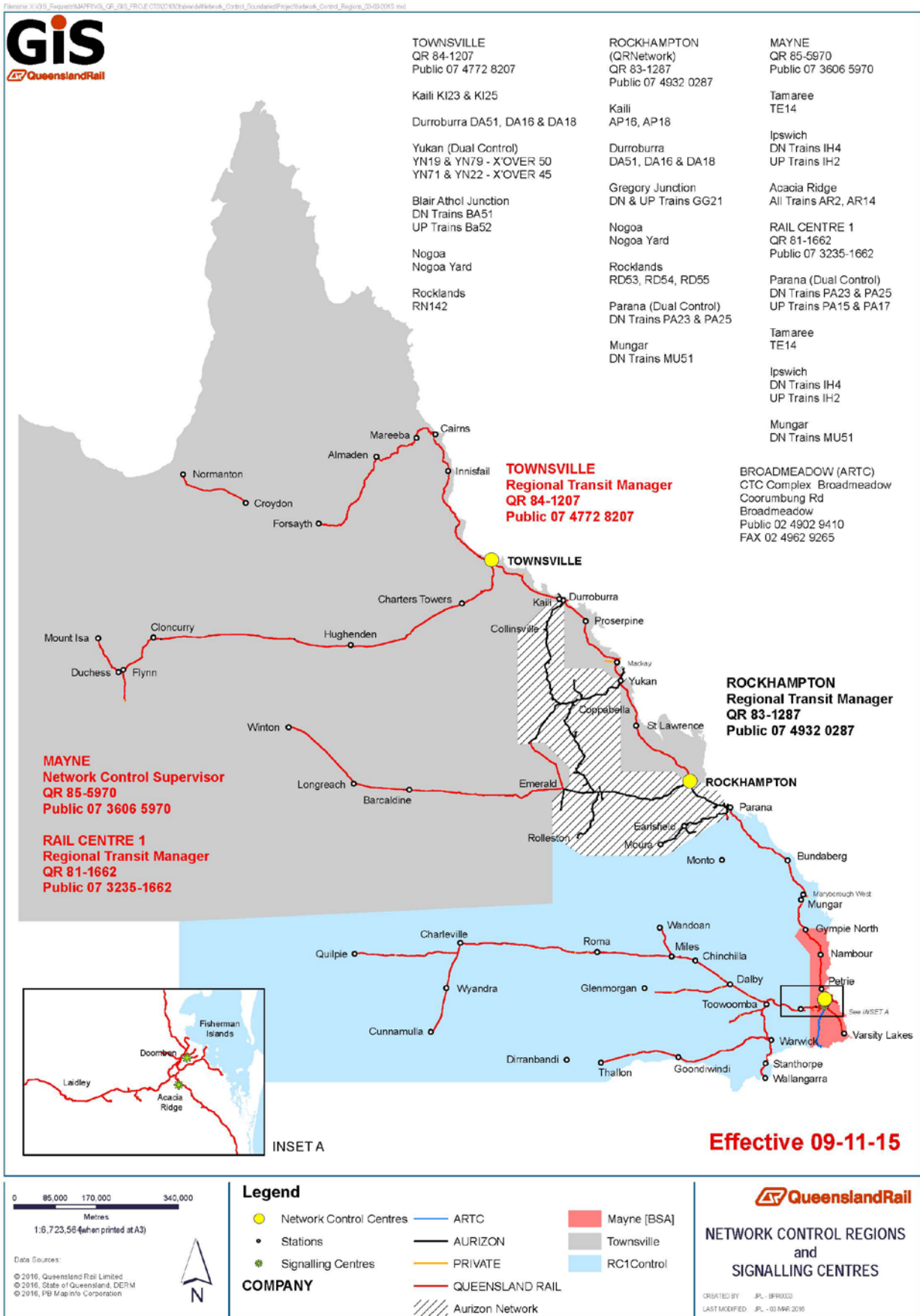
The West Moreton System is operated by Direct Traffic Control (DTC) with train movements controlled from Brisbane.

In addition, Automatic Train Protection (ATP) operates between Willowburn/Harristown and Ipswich.

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Queensland Rail SAFEWORING SYSTEMS





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 West Moreton System between Driver and Controller is via a UHF radio system (Train Control Radio - TCR) utilising a number of Queensland Rail 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”. Control phones are located at Staff Stations only.

Access to the Maintenance Supervisory Radio System (MSR) can be gained by using Queensland Rail telephone extensions depending on location or UHF radio system utilising Queensland Rail 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 Queensland Rail 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 **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", "Pass to Stop", "Start to Pass" and "Start to Stop" and vary depending on the characteristics of the trains.

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.

Incident Recovery Time and Management

Historically it is anticipated that on the Western 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.

:To enable quick response in case of emergency, latitudes and longitudes of passing loops where the general direction of the railway alters, are detailed below:

Location	Latitude	Longitude
Rosewood	27° 37' S	152° 35' E
Grandchester	27° 38' S	152° 28' E
Laidley	27° 38' S	152° 24' E
Gatton	27° 32' S	152° 16' E
Helidon	27° 32' S	152° 07' E
Toowoomba	27° 33' S	151° 57' E
Dalby	27° 10' S	151° 15' E
Chinchilla	26° 43' S	150° 37' E
Miles	26° 38' S	150° 11' E

Rail / Road Interfaces

Operators on the West Moreton System will encounter 338 Rail / Road Interfaces (see Appendix C for details) categorised as follows:-

Public (Active with Flashing Light/Boom Gate Protection)	-	46
Public (with Passive Protection - Signs)	-	138
Occupation (Private Access)	-	154

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 via 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.

Coal Dust

A coal dust management plan (CDMP) is being developed by the Queensland Resources Council (on behalf of the South-West Users Group—comprising regional coal miners, the rail network manager, rail haulage operator and coal terminal operator). More information is available on the Department of Environment and Heritage Protection website at:

<https://www.ehp.qld.gov.au/management/coal-dust/emissions.html>

Code of Practice for Railway 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.

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

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. As per the Operational Route Manual – "Comparison Train" length is calculated as the static train length plus 2% of the static train length then add 125mm per vehicle.

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)

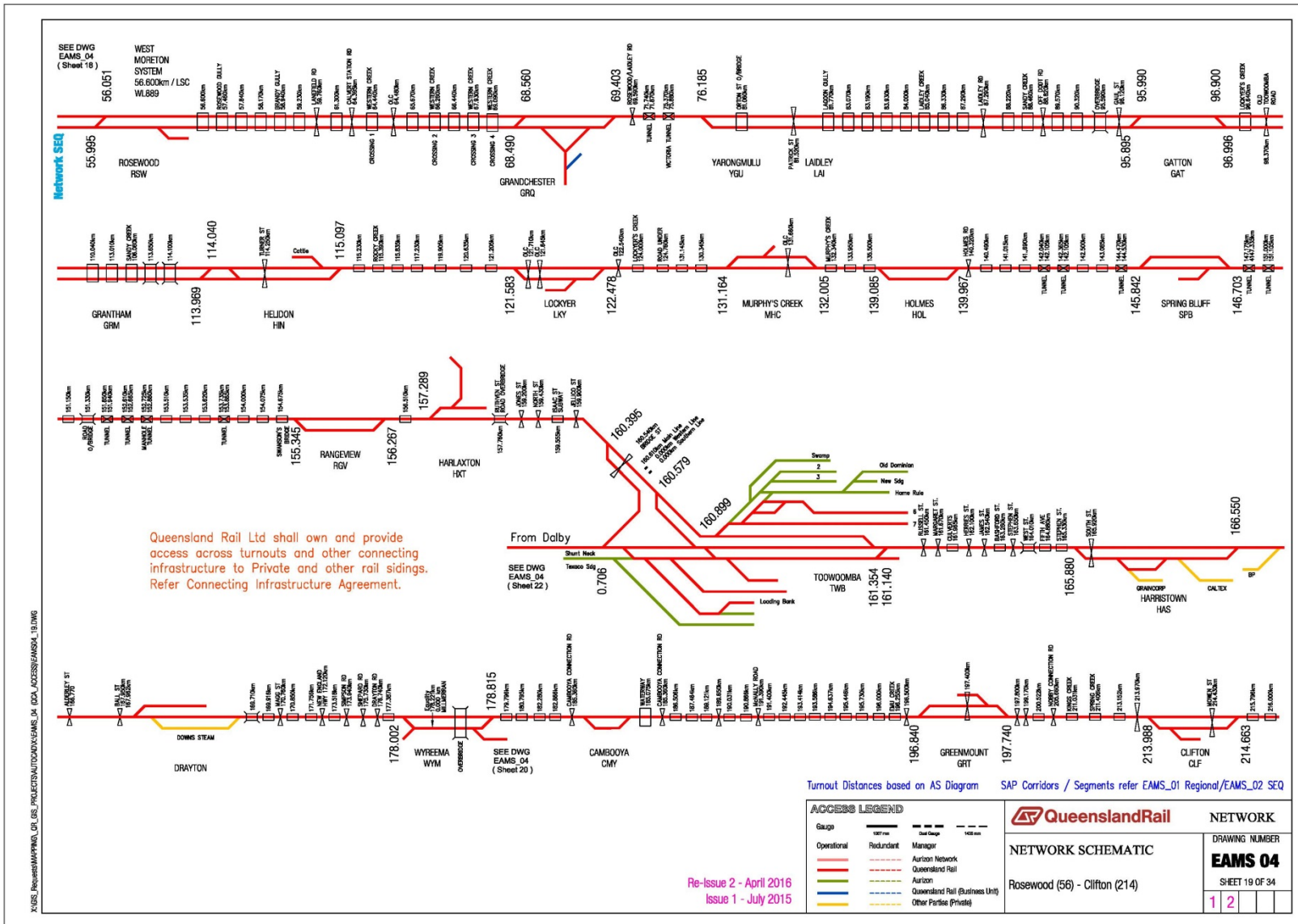
In track monitoring system to identify wheel flats.

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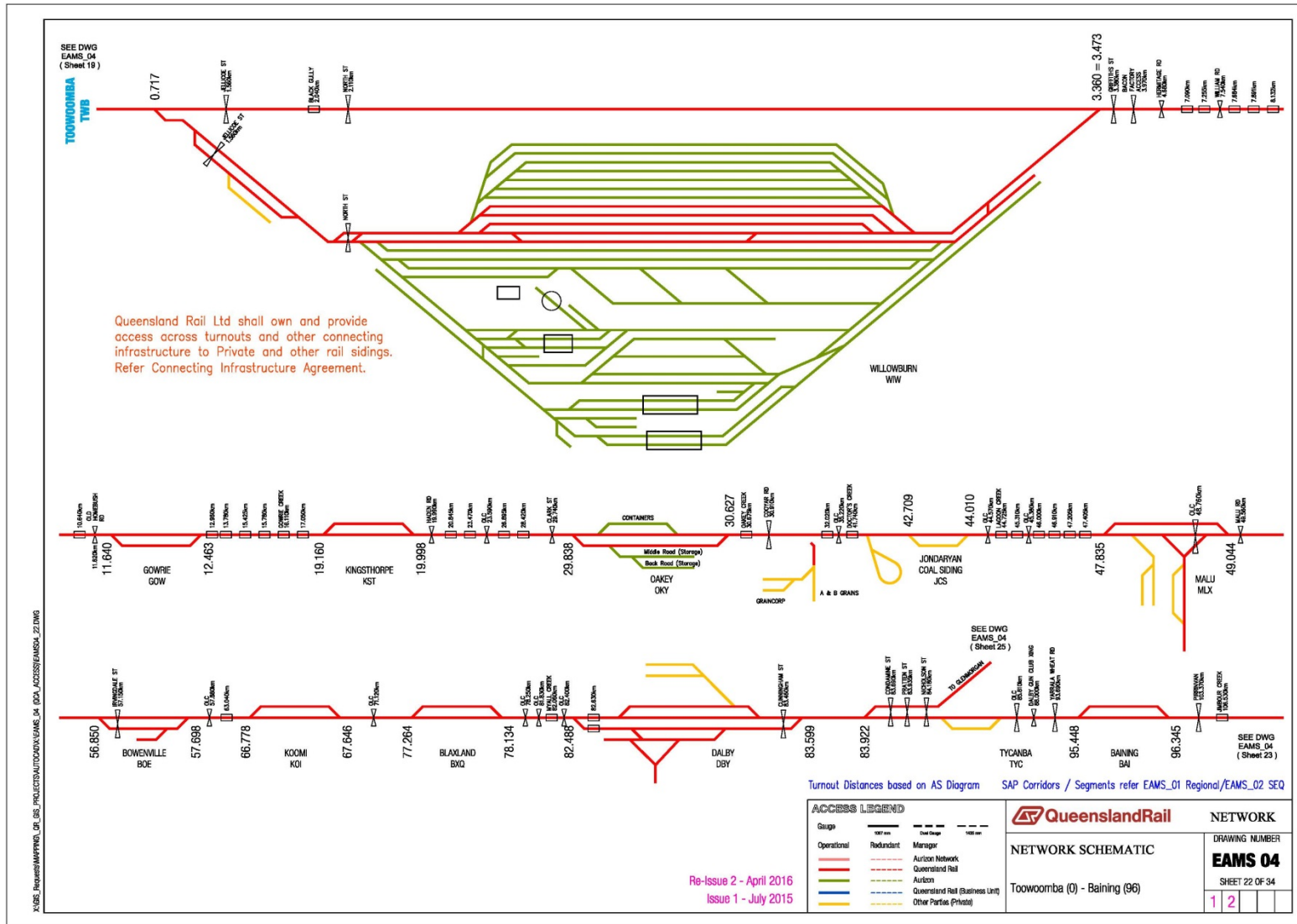
APPENDIX B

Schematic Layout

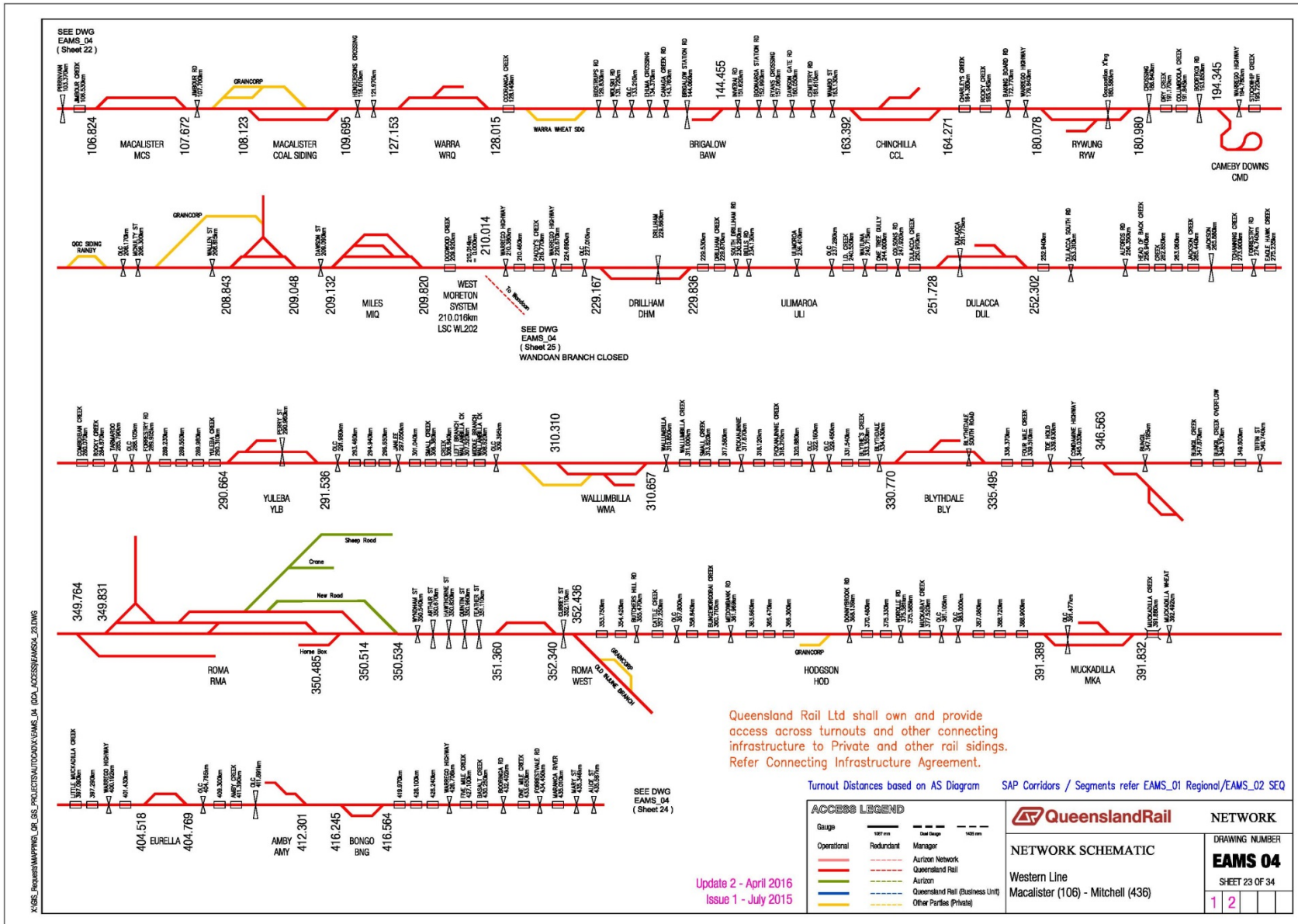
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ACCESS LEGEND

	Operational		Manager
	Redundant		Aurizon Network
	Aurizon Network		Queensland Rail
	Queensland Rail		Aurizon
	Queensland Rail (Business Unit)		Queensland Rail (Business Unit)
	Other Parties (Private)		Other Parties (Private)

Queensland Rail NETWORK

NETWORK SCHEMATIC

Western Line
 Macalister (106) - Mitchell (436)

DRAWING NUMBER	
EAMS 04	
SHEET 23 OF 34	
1	2

Update 2 - April 2016
 Issue 1 - July 2015

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APPENDIX C

Rail/Road Interface Details

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Line	Line Code	KM	Road Name	Type	Vehicular Protection	Signs	Open Status
Cameby Downs	220	0.312	Stock Route	Occupation	Signs	X S	Open
Willowburn	304	1.1	Brook Street	Public Level	Flashing Lights		Open
Western Line	711	1.56	Jellicoe Street	Public Level	Half Boomgates		Open
Western Line	711	2.11	North Street	Public Level	Flashing Lights		Open
Western Line	711	3.38	Griffiths Street	Public Level	Half Boomgates		Open
Western Line	711	3.97	KR Bacon Factory Access Road	Occupation	Half Boomgates		Open
Western Line	711	4.277	KR Bacon Factory Access Road	Occupation	Half Boomgates		Open
Western Line	711	4.68	Hermitage Road	Public Level	Flashing Lights		Open
Western Line	711	5.85	Property Access Road	Occupation	Nil		Open
Western Line	711	7.54	Willims Road	Public Level	Signs	X S	Open
Western Line	711	11.62	Gowrie Junction Road	Public Level	Flashing Lights		Open
Western Line	711	19.844	Kingsthorpe Pedestrian Walkway	Pedestrian			Open
Western Line	711	19.99	Haden Road	Public Level	Flashing Lights	X	Open
Western Line	711	23.59	Kings Crossing	Public Level	Signs	X G	Open
Western Line	711	29.74	Clark Street	Public Level	Flashing Lights		Open
Western Line	354	30.185	Oakey Station Yard Pedestrian Access	Pedestrian			Open
Western Line	711	30.85	Warrego Highway (Bridge Street)	Public Level	Flashing Lights		Open
Western Line	711	30.91	Davidson Street (Cooyar Road)	Public Level	Flashing Lights		Open
Western Line	711	31.24	Oakey / Cooyar Road (Davidson Road)	Public Level	Signs	X G	Open
Western Line	353	31.67	Fitzpatrick Street	Public Level	Signs	X G	Open
Western Line	353	35.22	Devon Park Road	Public Level	Signs	X G	Open
Western Line	353	38.62	Dunkeld Access Road	Occupation	Signs	X S	Open

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Line	Line Code	KM	Road Name	Type	Vehicular Protection	Signs	Open Status
Western Line		353	40.98 Rainbow Valley Access Road	Occupation		Signs X	Open
Western Line		353	43.035 Acland Coal Loop Siding Access Road (East)	Occupation		Signs X G	Open
Western Line		353	43.745 Acland Coal Loop Siding Access Road (West)	Occupation		Signs X G	Open
Western Line		354	44.57 Jondaryan - Sabine Road	Public Level	Half Boomgates	X	Open
Western Line		354	44.85 Jondaryan Station Yard Pedestrian Access	Pedestrian			Open
Western Line		354	45.38 Stock Route Access Road	Public Level	Signs	X S	Open
Western Line		354	48.67 First Siding	Occupation	Nil		Open
Western Line		354	48.7 Malu Road	Public Level	Signs	X G	Open
Western Line		354	48.75 Private	Occupation	Signs	X T	Open
Western Line		354	48.76 Malu Quarry Access Road	Public Level	Signs	X S	Open
Western Line		354	48.762 Private	Occupation	Signs	X T	Open
Western Line		354	48.8 Malu Road	Public Level	Signs	X S	Open
Western Line		354	49.56 Malu Silo Road	Public Level	Signs	X S	Open
Western Line		354	57.15 Irvingdale Street	Public Level	Half Boomgates		Open
Western Line		354	57.88 Off Paynes Road	Public Level	Signs	X G	Open
Western Line		354	62.15 Irvingdale South Road	Public Level	Signs	X G	Open
Western Line		354	63.87	Occupation	Signs	X T	Open
Western Line		354	65.3	Occupation	Signs	X T	Open
Western Line		354	67.68 Farm Access Road	Occupation	Signs	X T	Open
Western Line		354	71.14 Kommamurra Road	Public Level	Signs	X G	Open
Western Line		354	78.25 Blaxland / Irvingdale Road	Public Level	Signs	X G	Open
Western Line		354	80.3	Occupation			Open

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Line	Line Code	KM	Road Name	Type	Vehicular Protection	Signs	Open Status
Western Line	354	81.17	Property Access Road	Occupation	Nil		Open
Western Line	354	81.83	Oakwood Street South	Public Level	Signs	X S	Open
Western Line	354	83.5	Cunningham Street	Public Level	Flashing Lights		Open
Western Line	354	83.69	Condamine Street	Public Level	Flashing Lights		Open
Western Line	463	83.933	Pratten Street Pedestrian Access	Pedestrian			Proposed
Western Line	463	84.18	Nicholson Street	Public Level	Half Boomgates		Open
Western Line	463	85.8	Dalby / Jandowae Road	Public Level	Flashing Lights		Open
Western Line	355	88	Dalby Gun Club Access Road	Public Level	Signs	X G	Open
Western Line	355	90.38	Property Access Road	Occupation	Signs	X S	Open
Western Line	355	93.69	Yaralla Wheat Road	Public Level	Signs	X G	Open
Western Line	355	96.21		Occupation	Nil		Open
Western Line	355	97.35	Property Access Road	Occupation	Signs	X S	Open
Western Line	355	99.23	Gradel Road	Public Level	Signs	X G	Open
Western Line	355	100.39		Occupation	Signs	X T	Open
Western Line	355	103.37	Pirrinuan / Apunyal Road	Public Level	Signs	X G	Open
Western Line	355	107.7	Macalister / Bell Road	Public Level	Signs	X S	Open
Western Line	355	108.97	Macalister Coal Load Out Access Road	Public Level	Signs	X S	Open
Western Line	356	111.59	Property Access Road	Occupation	Nil		Open
Western Line	356	113.1	Property Access Road	Occupation			Proposed
Western Line	356	114	Property Access Road	Occupation	Nil		Open

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Line	Line Code	KM	Road Name	Type	Vehicular Protection	Signs	Open Status
Western Line	356	116.01	Tully Road	Public Level	Signs	X S G	Open
Western Line	356	118.01	Property Access Road	Occupation	Nil		Open
Western Line	356	120.88	Bischof Crossing	Occupation	Signs	X T	Open
Western Line	356	121.97	Farm Access Road	Public Level	Signs	X G	Open
Western Line	356	127.74	Taylor Street	Public Level	Signs	X S	Open
Western Line	356	128.285	Kerrs Road	Public Level	Signs	X S	Open
Western Line	356	129.05	Property Access Road	Occupation	Nil		Open
Western Line	356	129.83	Bidstrups Road	Public Level	Signs	X S G	Open
Western Line	356	131.72	Wolskis Road	Public Level	Signs	X S G	Open
Western Line	356	134.37	Ehlma Boundary Road	Public Level	Signs	X S G	Open
Western Line	356	138.43	Jones Road	Public Level	Signs	X S	Open
Western Line	356	142.44	Valnagels Crossing	Public Level	Signs	X S	Open
Western Line	356	143.76	Canaga Creek Road	Public Level	Signs	X S	Open
Western Line	356	145.24	Brigalow School Access Road	Public Level	Signs	X G	Open
Western Line	356	147.1	Mc Adams Crossing	Public Level	Signs	X G	Open
Western Line	356	148.75	Oak Park Road	Public Level	Signs	X G	Open
Western Line	356	151.62	Boonarga-Inverai Road	Public Level	Signs	X S G	Open
Western Line	356	152.99	Boonarga Station Access	Public Level	Signs	X G	Open
Western Line	356	154.59	Hopelands Crossing	Public Level	Signs	X G	Open
Western Line	356	157.06	Ryans Crossing	Public Level	Signs	X S G	Open
Western Line	356	160.05	Dawson Gate Road	Public Level	Signs	X S G	Open
Western Line	356	161.61	Cemetery Road	Public Level	Signs	X G	Open
Western Line	356	162.07	Graincorp Pedestrian Walkway - Chinchilla	Pedestrian			Open

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Line	Line Code	KM	Road Name	Type	Vehicular Protection	Signs	Open Status
Western Line	356	163.13	Wambo Street (Warrego Highway)	Public Level	Flashing Lights		Open
Western Line	356	163.37	Pedestrian Access	Pedestrian			Open
Western Line	563	166.51	Chinchilla Golf Club Access Road	Occupation	Signs	X G T	Open
Western Line	563	167.29	Tandarra Road	Public Level	Signs	X S G	Open
Western Line	563	169.96	Clarkes Road	Occupation	Signs	X T	Open
Western Line	563	172.77	The Peak Road - (Baking Board Road)	Public Level	Signs	X S	Open
Western Line	563	177.43	May Park Road	Occupation	Nil		Open
Western Line	563	179.84	Warrego Highway	Public Level	Flashing Lights		Open
Western Line	563	180.58	Rywing Access Road	Public Level	Signs	X S	Open
Western Line	563	186.84	C Kerrs Road	Public Level	Signs	X S	Open
Western Line	563	193.85	Boort-Koi Road	Public Level	Signs	X S	Open
Western Line	563	194.78	Warrego Highway	Public Level	Half Boomgates		Open
Western Line	563	197.82	Warrego Hwy / Ryalls Road	Public Level	Signs	X G	Open
Western Line	563	200.543	Power Station Road	Public Level	Signs	X S	Open
Western Line	563	203.96	Hillview Access Road	Occupation	Signs	X S	Open
Western Line	563	208.17	Morgan Street	Public Level	Signs	X S	Open
Western Line	563	208.316	Mc Nulty Street (On Bulk Grains Siding)	Public Level	Signs	X G	Open
Western Line	563	208.681	Mc Nulty Street (On Shell Siding)	Public Level	Signs	X G	Open
Western Line	563	208.84	Wallen Street	Public Level	Signs	X S G	Open
Western Line	563	208.95	Mc Nulty Street	Public Level	Signs	X G	Open
Western Line	563	209.11	Dawson Street / Leichhardt Highway	Public Level	Flashing Lights		Open
Western Line	563	209.44	Miles Station Pedestrian Access	Pedestrian			Open

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Line	Line Code	KM	Road Name	Type	Vehicular Protection	Signs	Open Status
Main Line	889	59.76	Lane Road	Public Level	Signs	X S	Open
Main Line	889	64.3	Calvert Station Road	Public Level	Half Boomgates		Open
Main Line	889	64.48	Private Access Road	Occupation	Signs	X S	Open
Main Line	889	66.19	Property Access Road	Occupation	Signs	X S	Open
Main Line	889	66.75	Mackenzies Road	Occupation	Signs	X S	Open
Main Line	889	69.59	Rosewood / Laidley Road	Public Level	Flashing Lights		Open
Main Line	889	71.03	QR Maintenance	QR	Signs	X S	Open
Main Line	889	76.52	QR Maintenance Road	QR	Signs	X S	Open
Main Line	889	78.79	Yarongmulu QR Access Road	QR	Signs	X S	Open
Main Line	889	81.52	Patrick Street - Laidley Plainlands Road	Public Level	Half Boomgates		Open
Main Line	889	85.32		Occupation	Nil		Open
Main Line	889	86.17		Occupation	Nil		Open
Main Line	889	87.49	Laidley Road	Public Level	Half Boomgates		Open
Main Line	889	88.82	Dotd Road - Railway Street	Public Level	Signs	X S	Open
Main Line	889	92.78	Fitzgeralds Road Proposed Pedestrian Access	Pedestrian			Proposed
Main Line	889	96.12	Gaul Street	Public Level	Half Boomgates		Open
Main Line	889	98.37	Smithfield Road / Burgess Road (Old Toowoomba Road)	Public Level	Half Boomgates		Open
Main Line	889	104.59	Temporary Grantham Access Road	Occupation	Signs	X S	Open
Main Line	889	114.25	Turner Street - Arthur Street	Public Level	Half Boomgates	X	Open

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Line	Line Code	KM	Road Name	Type	Vehicular Protection	Signs	Open Status
Main Line	546	118.13	Property Access Road	Occupation	Signs	X S	Open
Main Line	546	121.645	Montgomery Road	Public Level	Flashing Lights		Open
Main Line	546	131.645	Murphys Creek Road (on Siding)	Public Level	Signs	X G	Open
Main Line	546	131.66	Murphys Creek Road - Dodts Road Connection	Public Level	Half Boomgates		Open
Main Line	546	140	QR Maintenance Road	QR	Signs	X T	Open
Main Line	546	146.035	QR Maintenance Access	QR	Signs	X S	Proposed
Main Line	546	146.21	Spring Bluff Station Pedestrian Access	Pedestrian	Nil		Open
Main Line	546	159.2	Jones Street	Public Level	Flashing Lights		Open
Main Line	546	159.43	North Street	Public Level	Flashing Lights		Open
Main Line	546	159.57	Isaac Street Pedestrian Access	Pedestrian			Proposed
Main Line	546	159.9	Jellicoe Street	Public Level	Half Boomgates		Open
Main Line	546	160.34	Cress Street Pedestrian Access	Pedestrian			Open
Main Line	546	160.56	Bridge Street	Public Level	Half Boomgates		Open

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APPENDIX D

Speed Boards

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Maximum Line Speed : 80kph

MAIN LINE

Increasing distance in Up direction

DISTANCE	FEATURE	UP	DN	COMMENTS
59.700				Lanefield
64.130		25L	80	Calvert
68.467				
68.607		80	25L	
69.220				Grandchester
69.556			50L,80	
69.633		60		
69.811			60	
69.990		40		
71.268			40	
71.333		30		
71.750				Tunnel
74.980			30	
75.040		40		
75.200				Victoria Tunnel
###	Due to unparallel alignments, each line considered separately to 80.730km			
	UP MAIN			
76.300		60B	40	Up and Down loaded block trains restricted to 60kph
76.390				Yarongmulu
76.509	Rail Greaser	60		
76.682				
77.414	Rail Greaser			
77.432		30		
77.870	DOWN MAIN	50		
79.795		70		
80.400		60		
80.630		70		
				Yarongmulu
76.390				
76.494	Rail Greaser			
76.700				
77.432			60	
77.850			30	
78.798			40	
79.500			60	
80.400			80	
###	Parallel alignment resumes (Up Main used as datum)			
81.070		60		
81.280		50		
81.291			60	
81.436			50	
81.470		60		
81.680				Laidley
81.961			60	
81.972		80		
87.433			80	
87.660				Forest Hill
88.238		80		
94.947		70		
95.885		50L		
95.907			80	
96.002		70	50L	
96.353			70	
96.410				Gatton
96.523		60		
96.793		80		
96.800			60	

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Maximum Line Speed : 80kph

MAIN LINE

Increasing distance in Up direction

DISTANCE	FEATURE	UP	DN	COMMENTS
96.885			60	
97.016		60	50R	
98.400			80	
102.320			80	
102.600		80		
102.641			60	
103.209			80	
103.220		60		
103.495		80		
103.501			60	
###	Due to unparallel alignments, each line considered separately to 106.000km			
	UP MAIN			
105.687		60		
105.890			Grantham	
105.990		80		
	DOWN MAIN			
105.650			80	
105.890			Grantham	
106.000			60	
###	Parallel alignment resumes (Up Main used as datum)			
113.952			80	
114.065		50,25R	25L	
114.520			Helidon	
114.964		25		
115.100		50		
115.110			50,25R	
115.341			50	
115.441		70		
115.925		80	70	
117.201		60B	60B	Up and Down loaded block trains restricted to 60kph
117.861		40	80	
118.018	Rail Greasers			
118.507		60	40	
119.759		40	60	
120.127		50	40	
121.544		25	50	
121.990			Lockyer	
122.006			25	
122.105		60,25		
122.495		25	60,25L	
122.580		40	25	
122.916		60	40	
123.567		40	60	
123.861			40	
124.578		40	50	
127.659		60	40	
129.227		80	60	
130.083		40		
130.084			80	
131.128		50,25R	40	
131.460			Murphy's Creek	
132.042		40	50,25L	
134.515		30	40	
134.877			30	
134.878		40		
135.931		30	40	
138.264		40	30	

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Maximum Line Speed : 80kph

MAIN LINE

Increasing distance in Up direction

DISTANCE	FEATURE	UP	DN	COMMENTS
139.127		25		
139.171	Rail Greaser		40	Holmes
139.320				
139.551			25	
139.589		30		
140.049		40	30,25L	
140.067				
140.410		30	40	
142.040	Start Tunnel			Tunnel No.1
142.105	End Tunnel			
142.365	Start Tunnel	20C		Tunnel No.2
142.445	End Tunnel			
144.172				Container trains restricted to 20kph through tunnels
144.293			30	
144.470	Start Tunnel			Tunnel No.3
144.530	End Tunnel		15C	
144.657				Container trains restricted to 15kph through tunnels
144.700		30		
145.823		25	30	Spring Bluff
146.170				
146.349		25,40	25,25	
146.717		40	40,25R	
147.175	Start Tunnel			Tunnel No.4
147.335	End Tunnel	30	40	
147.576				
150.753		20C		Container trains restricted to 20kph through tunnels
150.770			30	
151.000	Start Tunnel			Tunnel No.5
151.105	End Tunnel		15C	
151.553				Container trains restricted to 15kph through tunnels
151.571		20C		Container trains restricted to 20kph through tunnels
151.580				Ballard
151.850	Start Tunnel	30		Tunnel No.6
151.940	End Tunnel			
152.147				
152.148			15C	Container trains restricted to 15kph through tunnels
152.610	Start Tunnel			Tunnel No.7
152.665	End Tunnel	30,25R	30	
152.725	Start Tunnel			Tunnel No.8 (Manhole)
152.860	End Tunnel			
152.885				
153.735	Curve End, Start Tunnel			Tunnel No.9
153.885	End Tunnel			
155.157				
155.850				Rangeview
156.341		30	30,25L	
157.719		60		Harlaxton
157.790				
157.828			30	Toowoomba
159.155		40	60	
160.352			40	
160.360		25,15R		
160.912			25,25R	
161.118			25	
161.290				

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Maximum Line Speed : 80kph

WESTERN LINE

Increasing distance in Up direction

DISTANCE	FEATURE	UP	DN	COMMENTS
0.875			25	
1.741		60	40	Willowburn
2.242			60	
2.350		80		
2.962		60	80	
3.440				
3.818			60	
3.843		25		
4.295		40	25	
4.961			40	
5.938		40	50	
6.813		60	40	
7.510				Wetalla
8.400				Pengarry
9.291		80	60	
10.560			80	
10.658		60		
11.597		25	60	
11.930				Gowrie
12.486		80	25	
17.723			80	
17.820		60		
18.200			60	
18.310		80		
19.136		25	80	
19.750				Kingsthorpe
19.905		15,15		U15 adjacent to both roads
20.000		80	25	
29.728		25	80	
30.500				Oakey
30.922		80	25	
42.037		10R		
42.710		70,25R	80	
44.030		80	70,25L	
45.010				Jondaryan
48.181		25	80	
48.780				Malu
49.066		80	25	
56.580		70		
56.828		25	80	
57.240				Bowenville
57.718		80	25	
66.757		25	80	
67.270				Koomi
67.669		80	25	
77.370		25	80	
78.020				Blaxland
78.268		80	25	
82.560		25	80	
83.190				Dalby
83.341		15,15		
83.451		25,25 sts		
84.255		80	25	
85.210				Tycanba
86.139		80,25R		
95.424		25	80	

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Maximum Line Speed : 80kph

WESTERN LINE

Increasing distance in Up direction

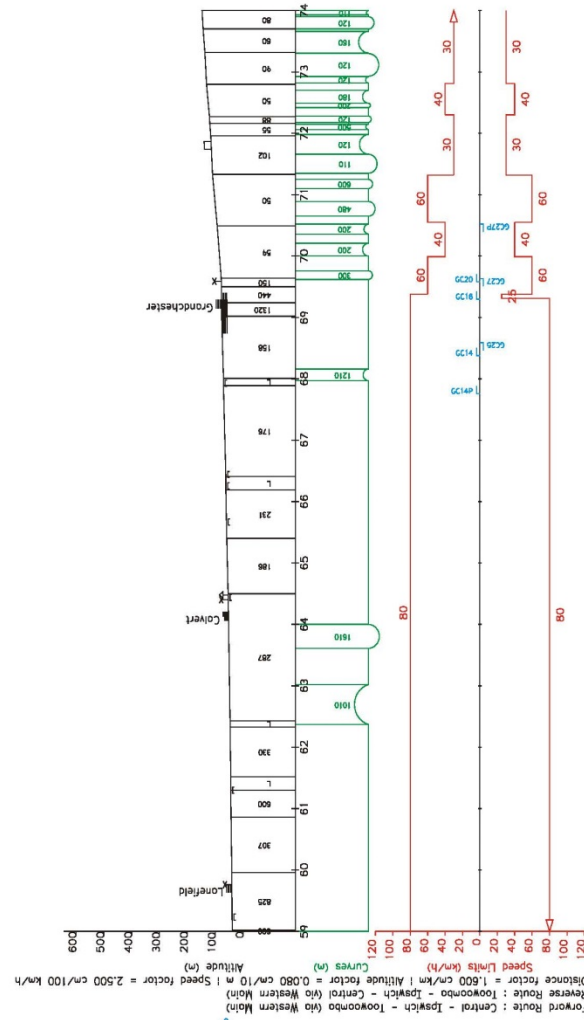
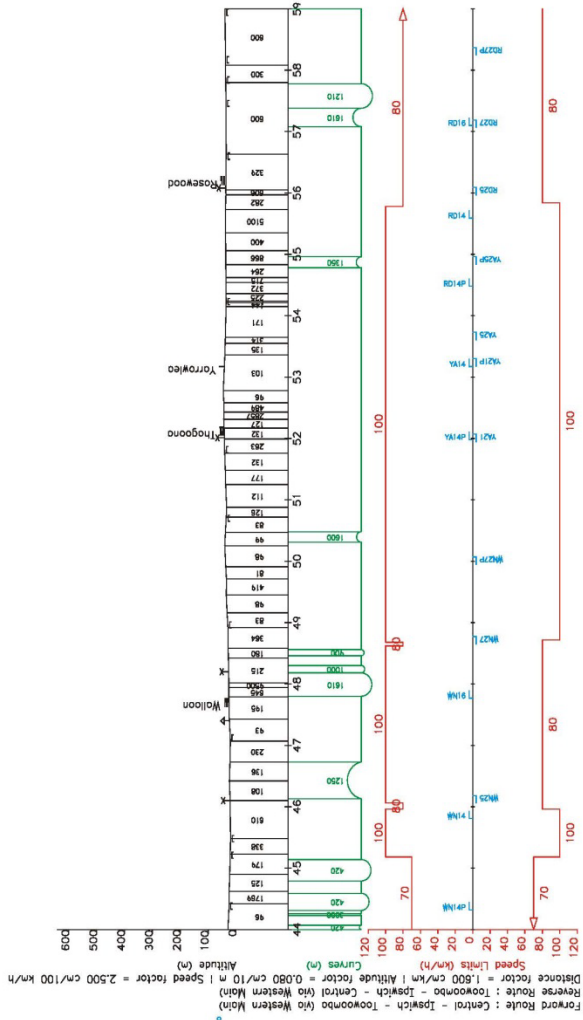
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95.790				Baining
96.365		80	25	
106.803		25	80	
107.530				Macalister
107.714		70	25	
108.883		5		On Coal Siding for weigher
108.929			5	On Coal Siding for weigher
109.717		80	70	
127.352		25	80	
127.890				Warra
128.201		80	25	
129.500				Warra Graincorp
144.110				Brigalow
160.490				Chinchilla Saleyards
161.263		40	80	
162.090				Chinchilla Graincorp
162.974		30	40	
163.669		25	25	
164.040				Chinchilla
164.250		40		
164.253			25	
164.465		60	40	
166.146		80	60	
172.750				Baking Board
180.058		25	80	
180.370				Rywung
180.755		80	25	
193.713		25	80	
194.030				Columboola
194.381		80	25	

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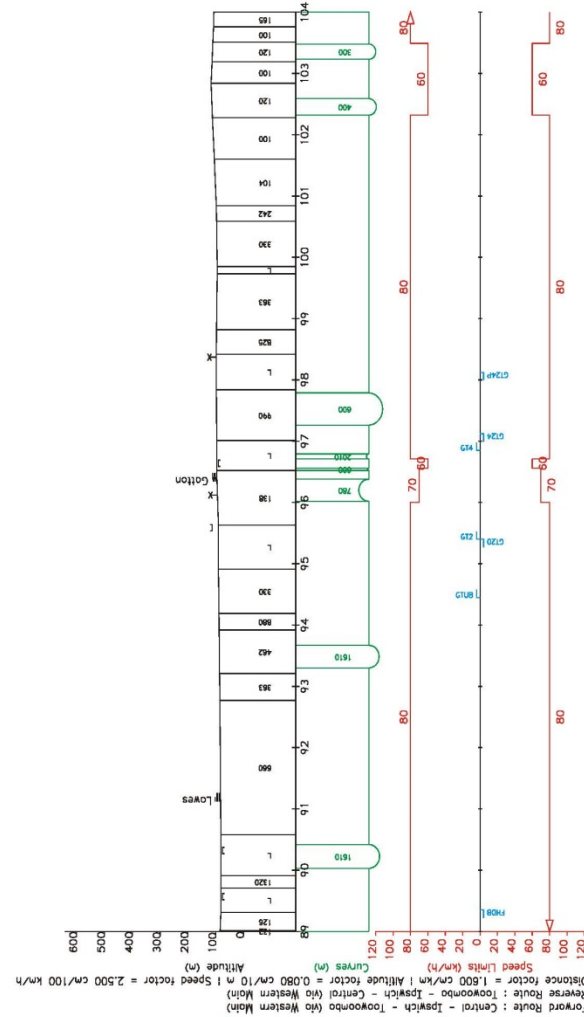
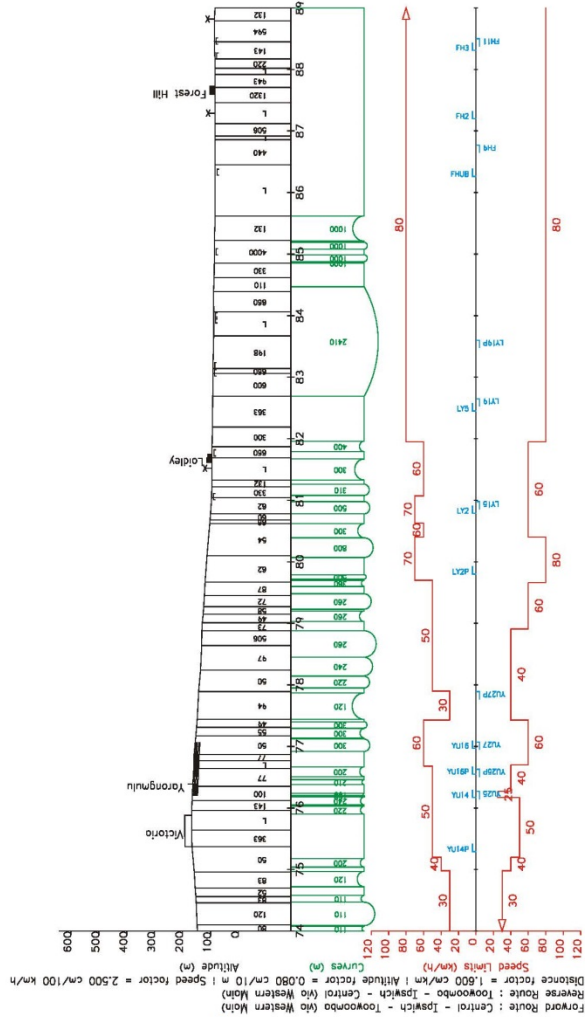
APPENDIX E

Track Data & Grade Diagrams

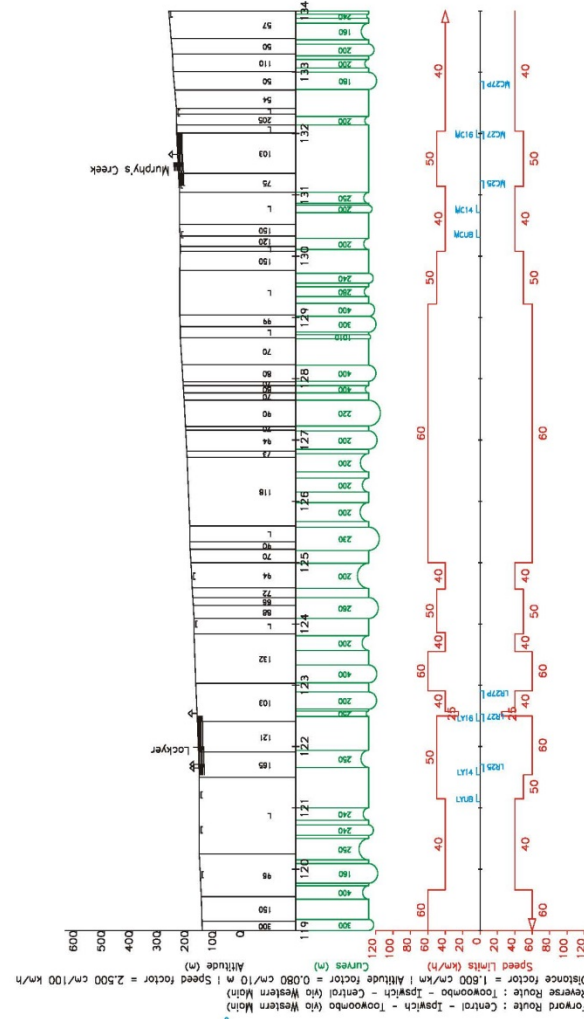
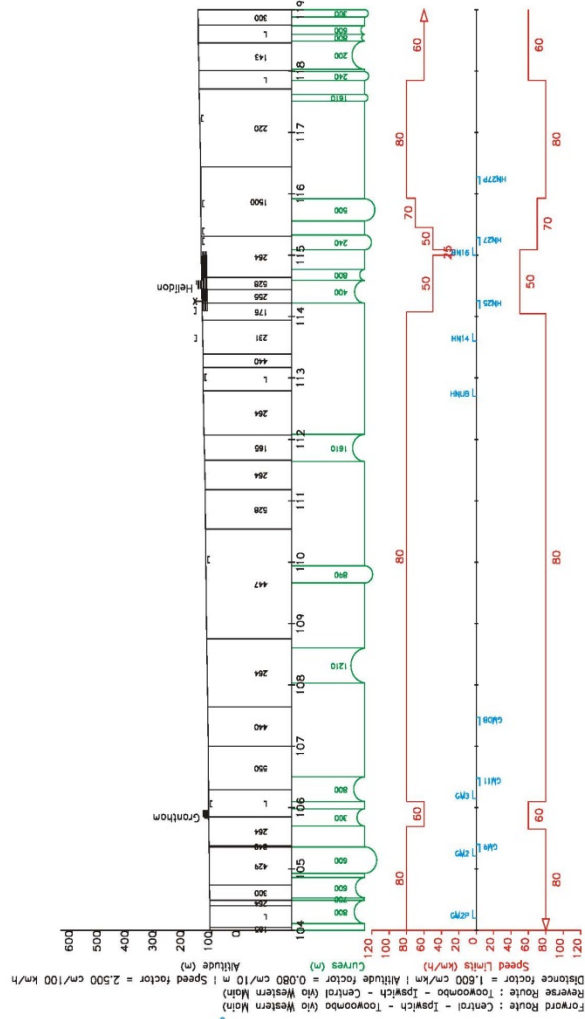
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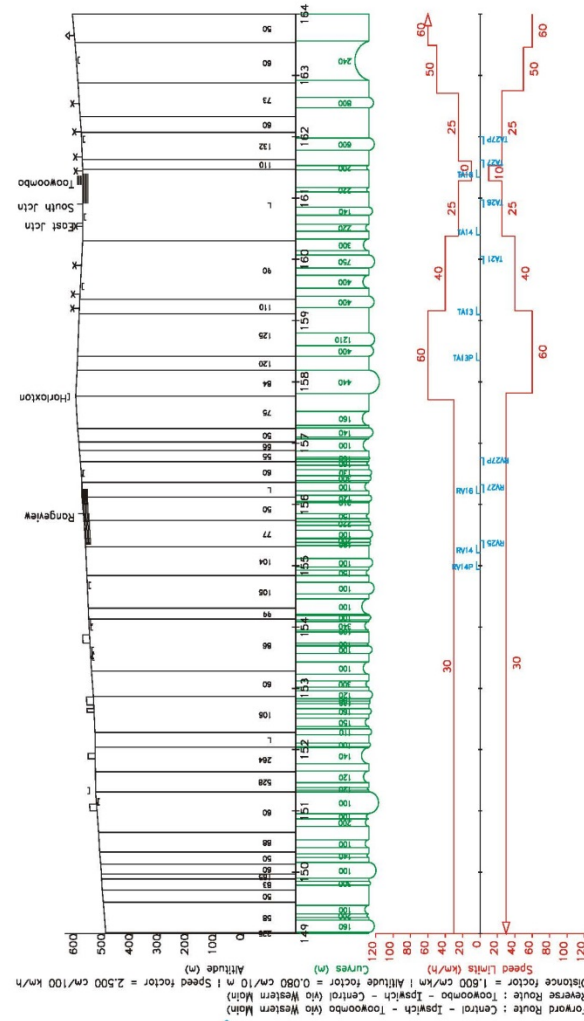
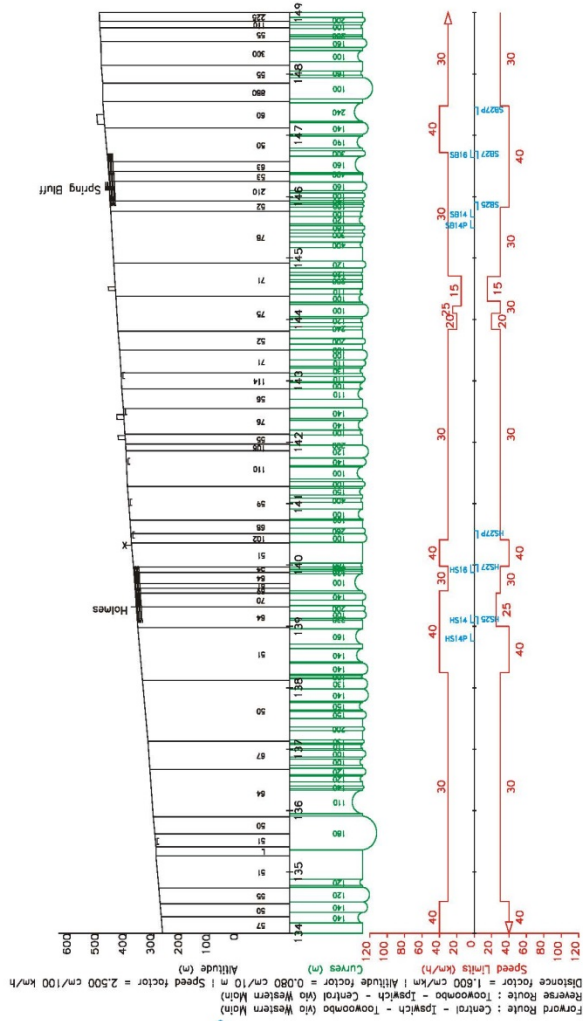
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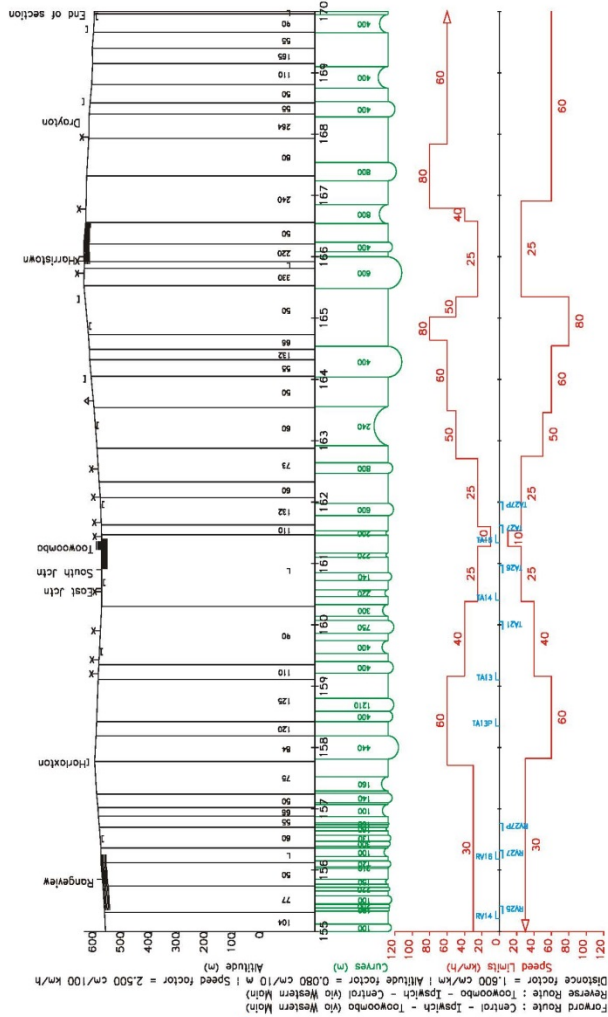
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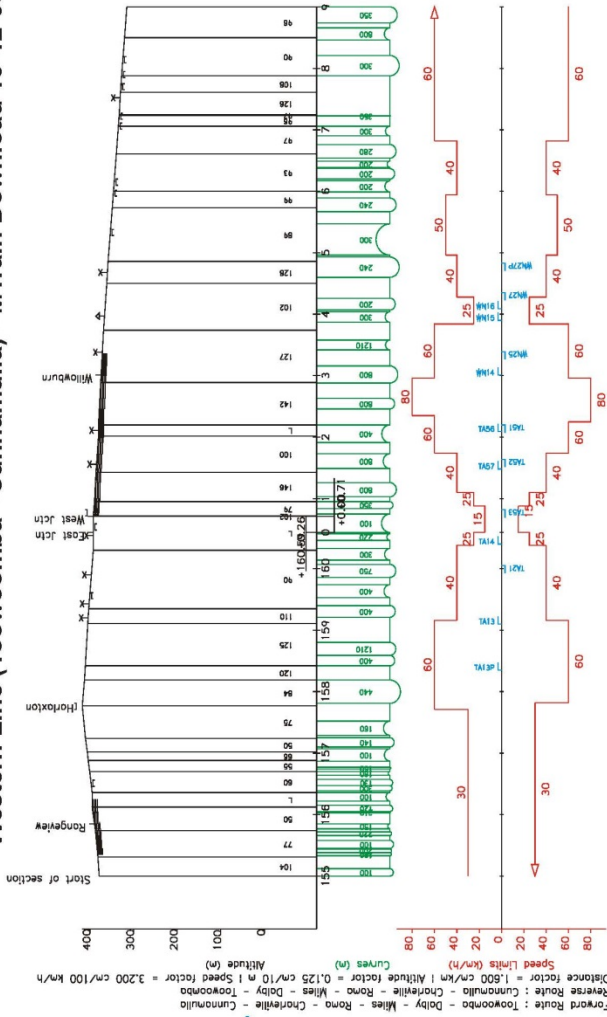
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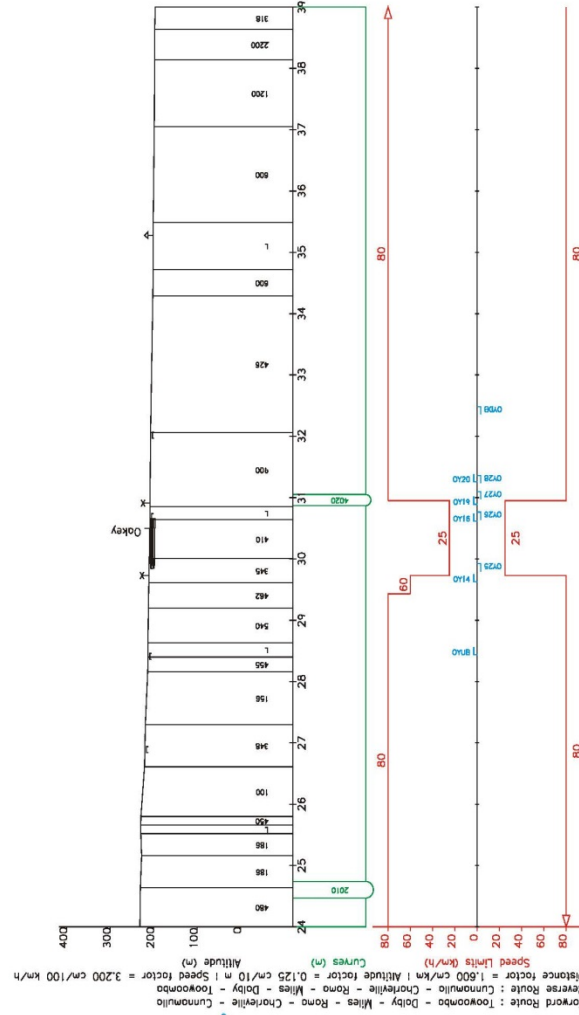
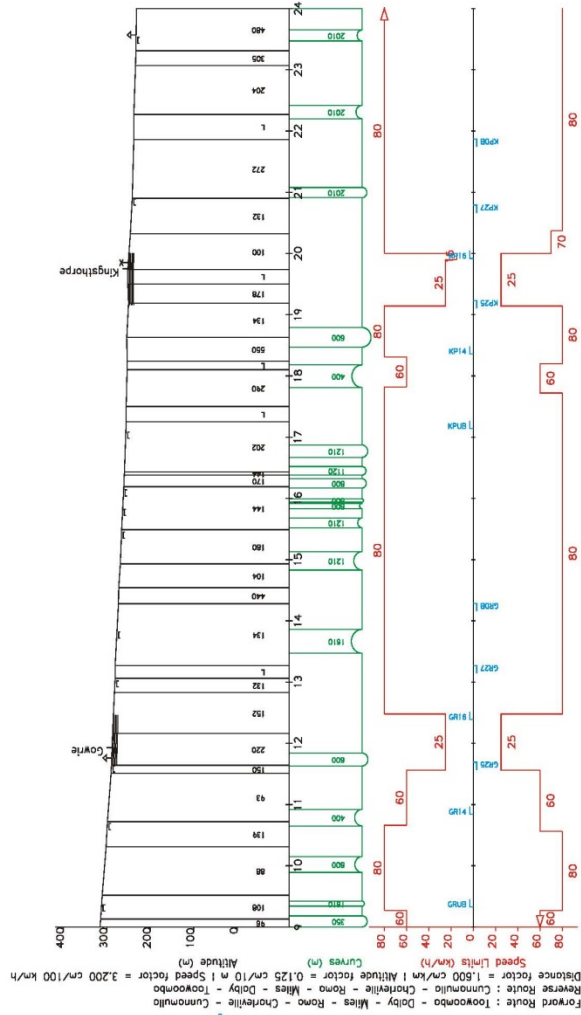
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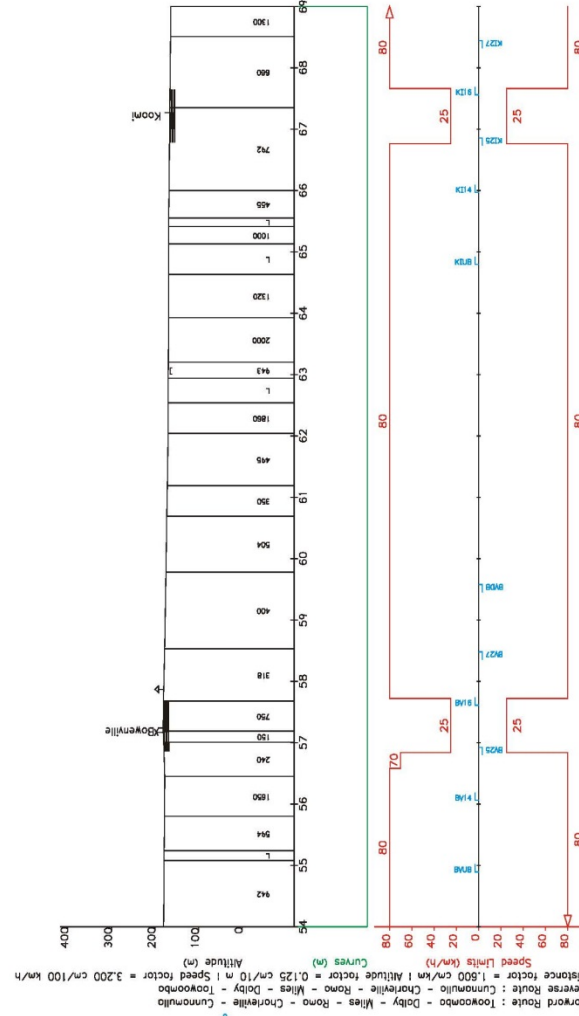
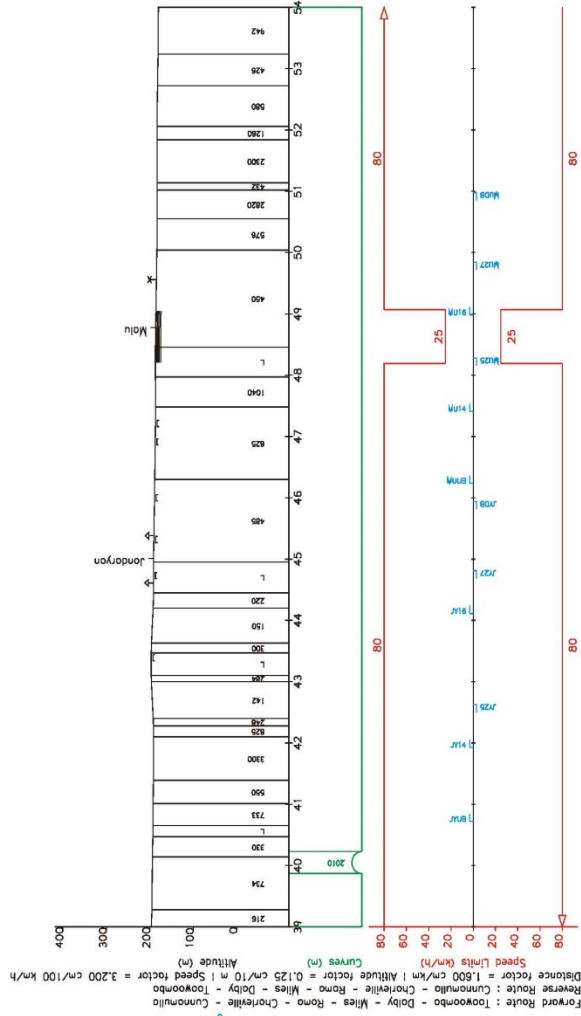
Western Line (Toowoomba - Cunnamulla) - MTrain Download 15-12-05



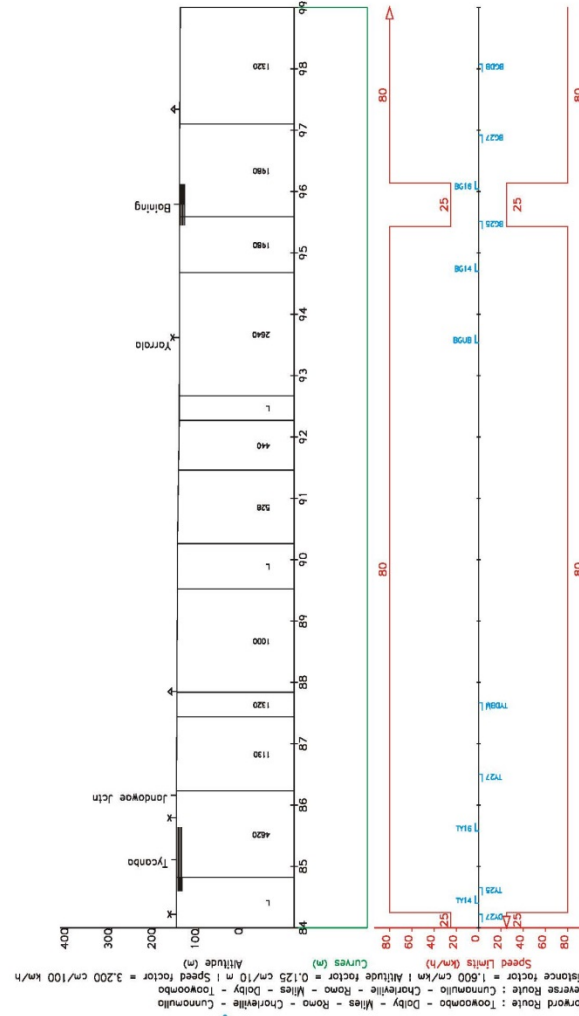
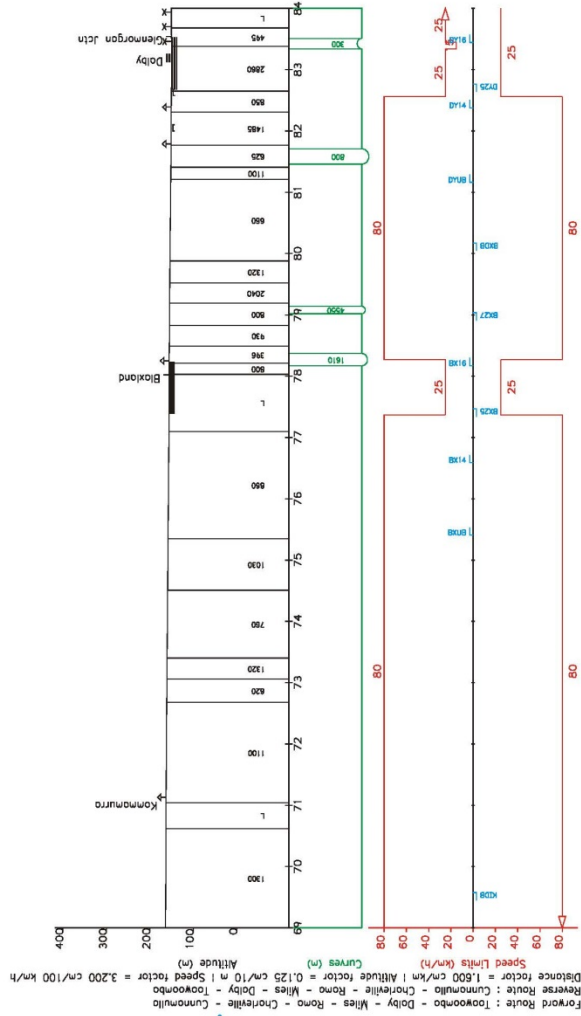
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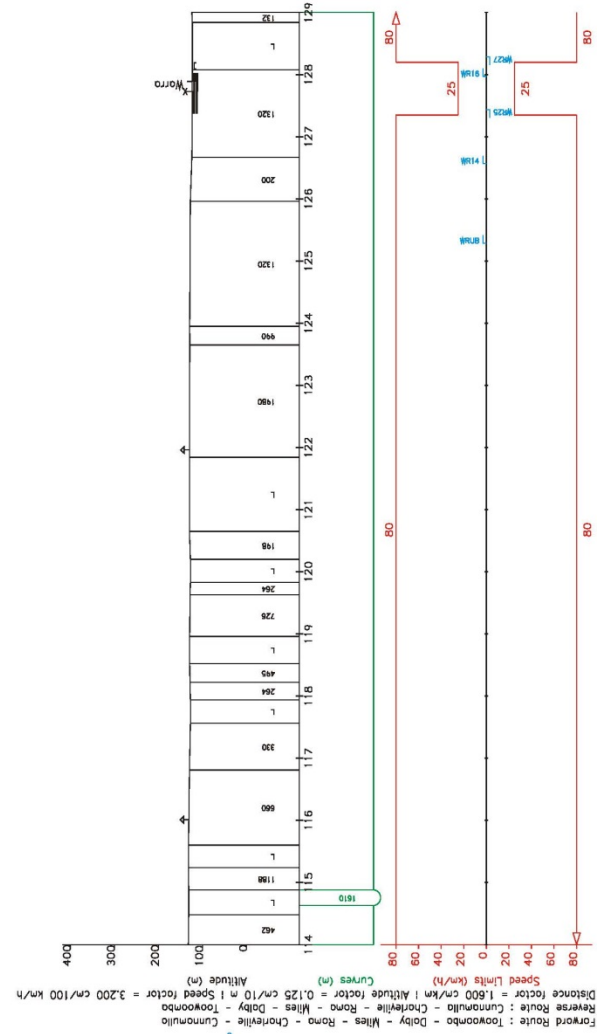
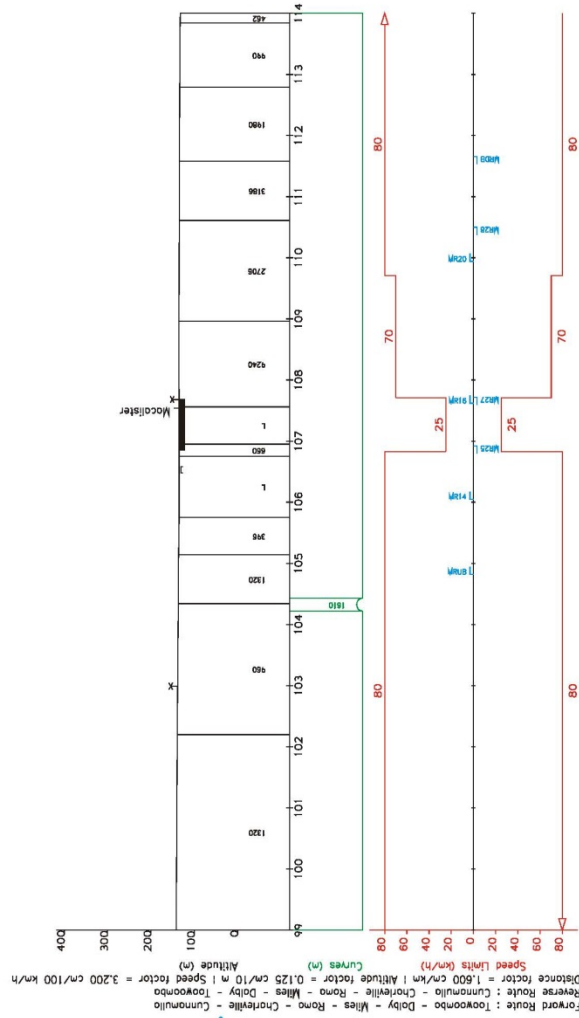
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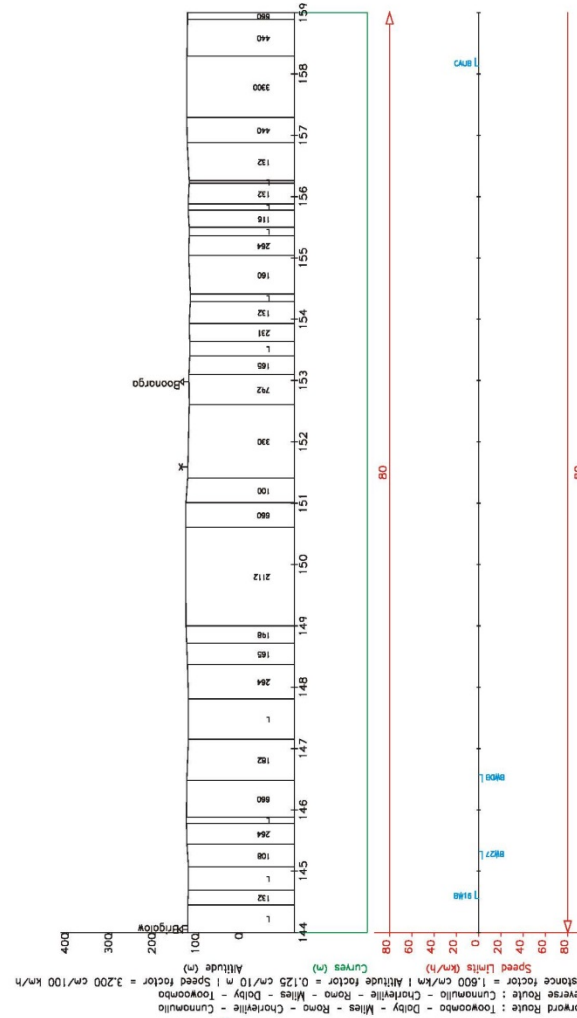
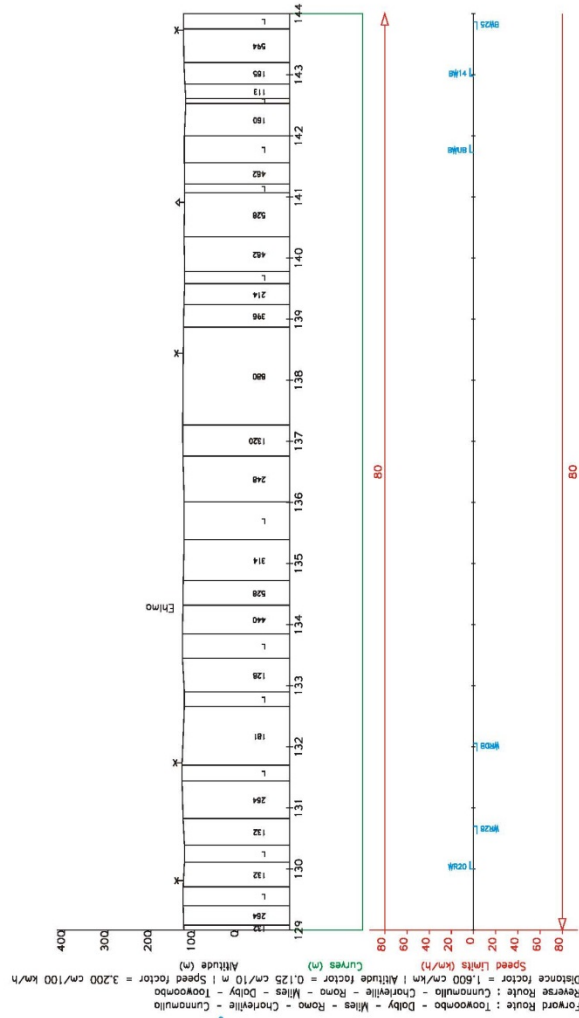
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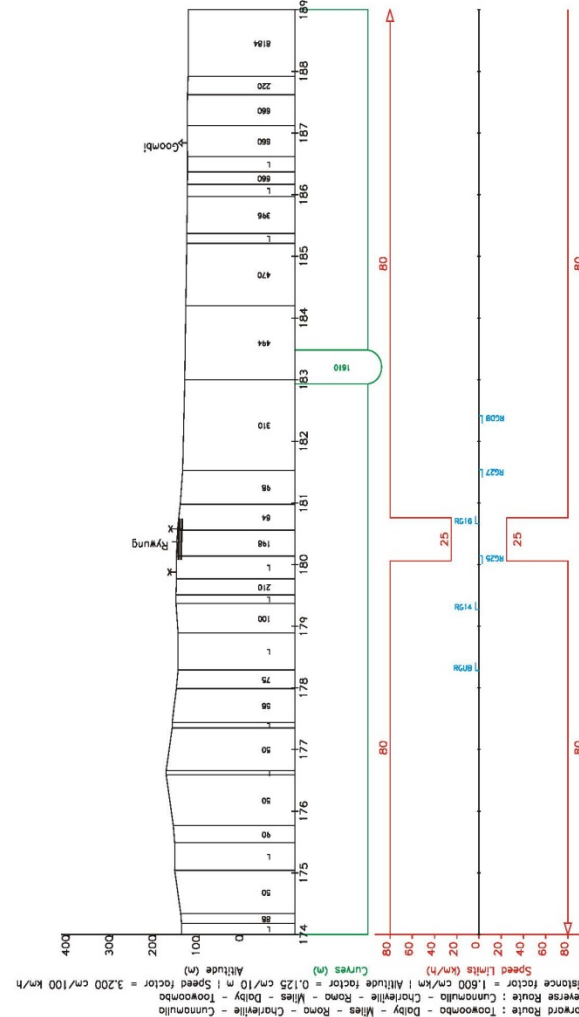
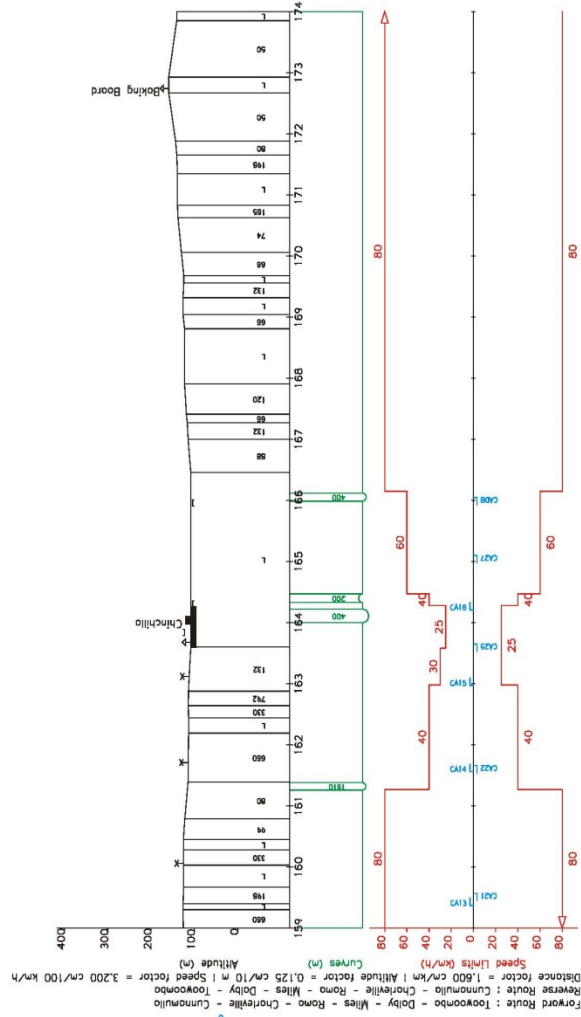
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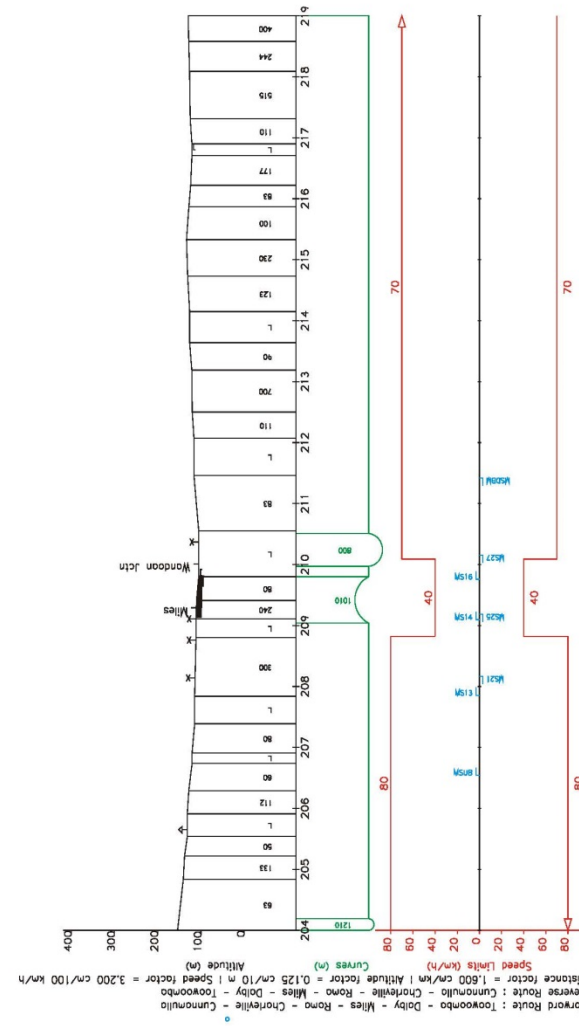
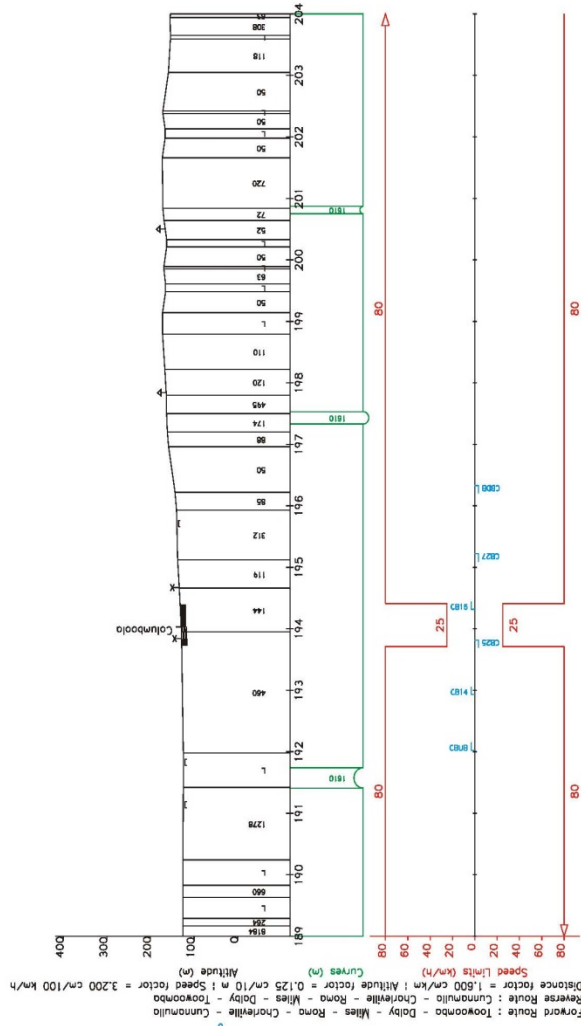
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APPENDIX F

Sectional Running Times

CONTROL		CATTLE		CATTLE	
		Cattle Trains on the Western Line Pass - Pass	Cattle Trains on the Western Line Pass - Stop	Cattle Trains on the Western Line Start - Pass	Cattle Trains on the Western Line Start - Stop
Brisbane West	Ebenezer to Yarrowlea				
Brisbane West	Helidon to Grantham	9	11	12	14
Brisbane West	Grantham to Gatton	9	11	12	14
Brisbane West	Gatton to Forest Hill	7	9	10	12
Brisbane West	Forest Hill to Laidley	5	7	8	10
Brisbane West	Laidley to Yarongmulu	17	19	20	22
Brisbane West	Yarongmulu to Grandchester	15	17	18	20
Brisbane West	Grandchester to Rosewood	11	13	14	16
Brisbane West	Helidon to Lockyer	12	14	15	17
Brisbane West	Lockyer to Murphys Creek	16	18	19	21
Brisbane West	Murphys Creek to Holmes	20	22	23	25
Brisbane West	Holmes to Spring Bluff	17	19	20	22
Brisbane West	Spring Bluff to Rangeview	22	24	25	27
Brisbane West	Rangeview to Harlaxton	4	6	7	9
Brisbane West	Harlaxton to Toowoomba	7	9	10	12
Brisbane West	Rosewood to Grandchester	12	14	15	17
Brisbane West	Grandchester to Yarongmulu	15	17	18	20
Brisbane West	Yarongmulu to Laidley	7	9	10	12
Brisbane West	Laidley to Forest Hill	5	7	8	10
Brisbane West	Forest Hill to Gatton	7	9	10	12
Brisbane West	Gatton to Grantham	9	11	12	14
Brisbane West	Grantham to Helidon	9	11	12	14
Brisbane West	Rosewood to Yarrowlea	3	4	4	5
Brisbane West	Toowoomba to Harlaxton	6	8	9	11
Brisbane West	Harlaxton to Rangeview	4	6	7	9
Brisbane West	Rangeview to Spring Bluff	21	23	24	26
Brisbane West	Spring Bluff to Holmes	16	18	19	21
Brisbane West	Holmes to Murphys Creek	20	22	23	25
Brisbane West	Murphys Creek to Lockyer	15	17	18	20
Brisbane West	Lockyer to Helidon	11	13	14	16
Brisbane West	Toowoomba to Toowoomba Marshalling Yard	5	5	5	5
Brisbane West	Toowoomba Marshalling Yard to Willowburn	5	5	5	5
Brisbane West	Toowoomba to Toowoomba Passenger Station	3	3	3	3
Brisbane West	Toowoomba Passenger Station to Harristown				
Brisbane West	Harristown to Wyreema				
Brisbane West	Willowburn to Toowoomba Marshalling Yard	10	10	10	10
Brisbane West	Toowoomba Marshalling Yard to Toowoomba	5	5	5	5
Brisbane West	Wulkaraka to Karrabin	2	3	3	4
Brisbane West	Karrabin to Walloon	5	6	6	7
Brisbane West	Walloon to Thagoona	4	5	5	6
Brisbane West	Thagoona to Yarrowlea	1	2	2	3
Brisbane West	Yarrowlea to Ebenezer				
Brisbane West	Yarrowlea to Rosewood	3	4	4	5
Brisbane West	Yarrowlea to Thagoona	1	2	2	3
Brisbane West	Thagoona to Walloon	4	5	5	6
Brisbane West	Walloon to Karrabin	5	6	6	7
Brisbane West	Karrabin to Wulkaraka	2	3	3	4

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West Moreton System
Information Pack

CONTROL		COAL	COAL	COAL	COAL	FRT_60	FRT_60	FRT_60	FRT_60
		Coal Trains	Coal Trains	Coal Trains	Coal Trains	60K Freight	60K Freight	60K Freight	60K Freight
		Pass - Pass	Pass - Stop	Start - Pass	Start - Stop	Pass - Pass	Pass - Stop	Start - Pass	Start - Stop
Brisbane Far West	Charleville to Arabella	26	28	29	31	26	28	29	31
Brisbane Far West	Arabella to Sommariva	20	22	23	25	20	22	23	25
Brisbane Far West	Sommariva to Angellala	34	36	37	39	34	36	37	39
Brisbane Far West	Angellala to Morven	28	30	31	33	28	30	31	33
Brisbane Far West	Morven to Dulbydilla	31	33	34	36	31	33	34	36
Brisbane Far West	Dulbydilla to Mungallala	21	23	24	26	21	23	24	26
Brisbane Far West	Charleville to Westgate					25	27	28	30
Brisbane Far West	Chinchilla to Rywung					20	22	23	25
Brisbane Far West	Rywung to Columboola					14	16	17	19
Brisbane Far West	Columboola to Miles					20	22	23	25
Brisbane Far West	Chinchilla to Brigalow	20	22	23	25	20	22	23	25
Brisbane Far West	Brigalow to Warra	18	20	21	23	18	20	21	23
Brisbane Far West	Warra to Macalister	19	21	22	24	19	21	22	24
Brisbane Far West	Macalister to Baining	15	17	15	17	14	16	17	19
Brisbane Far West	Baining to Tycanba	10	12	13	15	10	12	13	15
Brisbane Far West	Coongoola to Wyandra					71	73	74	76
Brisbane Far West	Cooladdi to Cheepie					70	72	73	75
Brisbane Far West	Cheepie to Coolbinga					65	67	68	70
Brisbane Far West	Coolbinga to Quilpie					55	57	58	60
Brisbane Far West	Cooladdi to Coothalla					50	52	53	55
Brisbane Far West	Coothalla to Wanko					25	27	28	30
Brisbane Far West	Wanko to Westgate					50	52	53	55
Brisbane Far West	Cunnamulla to Coongoola					75	77	78	80
Brisbane Far West	Coongoola - Offham					35	36	37	38
Brisbane Far West	OFF - WYR					36	37	37	38
Brisbane Far West	Dalby to Kupunn					27	29	30	32
Brisbane Far West	Kupunn to Kumbarilla					36	38	39	41
Brisbane Far West	Kumbarilla to Tara					60	62	63	65
Brisbane Far West	Tara to The Gums					45	47	48	50
Brisbane Far West	The Gums to Meandarra					45	47	48	50
Brisbane Far West	Meandarra to Glenmorgan					34	36	37	39
Brisbane Far West	Dalby to Blaxland	9	11	12	14	7	9	10	12
Brisbane Far West	Blaxland to Koomi	16	18	19	21	12	14	15	17
Brisbane Far West	Koomi to Bowenville	15	17	18	20	11	13	14	16
Brisbane Far West	Bowenville to Malu	12	14	15	17	10	12	13	15
Brisbane Far West	Malu to Jondaryan Coal Siding	5	7	8	10	4	6	7	9
Brisbane Far West	Jondaryan Coal Siding to Oakey	22	24	25	27	16	18	19	21
Brisbane Far West	Dalby to Tycanba	5	7	8	10	5	7	8	10
Brisbane Far West	Glenmorgan to Meandarra					35	37	38	40
Brisbane Far West	Meandarra to The Gums					48	50	51	53
Brisbane Far West	The Gums to Tara					48	50	51	53
Brisbane Far West	Tara to Kumbarilla					72	74	75	77
Brisbane Far West	Kumbarilla to Kupunn					40	42	43	45
Brisbane Far West	Kupunn to Dalby					30	32	33	35
Brisbane Far West	Baigin to Tycanba					62	64	65	67
Brisbane Far West	Miles to Columboola	20	22	23	25	20	22	23	25
Brisbane Far West	Columboola to Rywung	15	17	18	20	15	17	18	20
Brisbane Far West	Rywung to Chinchilla	20	22	23	25	20	22	23	25
Brisbane Far West	Miles to Drillham					25	27	28	30
Brisbane Far West	Drillham to Ullimaroo					10	12	13	15
Brisbane Far West	Ullimaroo to Dulacca					18	20	21	23
Brisbane Far West	Dulacca to Jackson					16	18	19	21
Brisbane Far West	Jackson to Yuleba					32	34	35	37
Brisbane Far West	Yuleba to Wallumbilla					22	24	25	27
Brisbane Far West	Wallumbilla to Blythdale					29	31	32	34
Brisbane Far West	Blythdale to Roma					26	28	29	31
Brisbane Far West	Miles to Kowguran					31	33	34	36
Brisbane Far West	Kowguran to Guluguba					41	43	44	46
Brisbane Far West	Guluguba to Wandoan					28	30	31	33
Brisbane Far West	Mungallala to Dulbydilla					22	24	25	27
Brisbane Far West	Dulbydilla to Morven					29	31	32	34
Brisbane Far West	Morven to Angellala					24	26	27	29
Brisbane Far West	Angellala to Sommariva					32	34	35	37
Brisbane Far West	Sommariva to Arabella					19	21	22	24
Brisbane Far West	Arabella to Charleville					25	27	28	30
Brisbane Far West	Mungallala to Amboola	25	27	28	30	25	27	28	30
Brisbane Far West	Amboola to Womalilla	13	15	16	18	13	15	16	18
Brisbane Far West	Womalilla to Mitchell	25	27	28	30	25	27	28	30
Brisbane Far West	Mitchell to Bongo	23	25	26	28	23	25	26	28
Brisbane Far West	Bongo to Amby	5	7	8	10	5	7	8	10
Brisbane Far West	Amby to Muckadilla	23	25	26	28	23	25	26	28
Brisbane Far West	Muckadilla to Hodgson	25	27	28	30	25	27	28	30
Brisbane Far West	Hodgson to Roma	25	27	28	30	25	27	28	30
Brisbane Far West	Oakey to Jondaryan Coal Siding	20	22	23	25	16	18	19	21
Brisbane Far West	Jondaryan Coal Siding to Malu	5	7	8	10	4	6	7	9
Brisbane Far West	Malu to Bowenville	13	15	16	18	10	12	13	15
Brisbane Far West	Bowenville to Koomi	13	15	16	18	12	14	15	17
Brisbane Far West	Koomi to Blaxland	15	17	18	20	12	14	15	17
Brisbane Far West	Blaxland to Dalby	9	11	12	14	8	10	11	13
Brisbane Far West	Oakey to Kingsthorpe	21	23	24	26	15	17	18	20

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**West Moreton System
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Brisbane Far West	Kingsthorpe to Gowrie	16	18	19	21	13	15	16	18
Brisbane Far West	Gowrie to Willowburn	20	22	23	25	18	20	21	23
Brisbane Far West	Willowburn to Toowoomba	12	12	12	12	10	10	10	10
Brisbane Far West	Quilpie to Coolbinga					55	57	58	60
Brisbane Far West	Coolbinga to Cheepee					65	67	68	70
Brisbane Far West	Cheepee to Cooladdi					75	77	78	80
Brisbane Far West	Roma to Blythdale	25	27	28	30	25	27	28	30
Brisbane Far West	Blythdale to Wallumbilla	32	34	35	37	32	34	35	37
Brisbane Far West	Yuleba to Jackson	31	33	34	36	31	33	34	36
Brisbane Far West	Jackson to Dulacca	16	18	19	21	16	18	19	21
Brisbane Far West	Dulacca to Ullimaroo	22	24	25	27	22	24	25	27
Brisbane Far West	Ullimaroo to Drillham	7	9	10	12	7	9	10	12
Brisbane Far West	Drillham to Miles	27	29	30	32	27	29	30	32
Brisbane Far West	Roma to Hodgson					25	27	28	30
Brisbane Far West	Hodgson to Muckadilla					22	24	25	27
Brisbane Far West	Muckadilla to Amby					22	24	25	27
Brisbane Far West	Amby to Bongo					5	7	8	10
Brisbane Far West	Bongo to Mitchell					21	23	24	26
Brisbane Far West	Mitchell to Womalilla					27	29	30	32
Brisbane Far West	Womalilla to Amboola					15	17	18	20
Brisbane Far West	Amboola to Mungallala					24	26	27	29
Brisbane Far West	Toowoomba to Willowburn	10	10	10	10	10	10	10	10
Brisbane Far West	Willowburn to Gowrie	14	16	17	19	14	16	17	19
Brisbane Far West	Gowrie to Kingsthorpe	12	14	15	17	13	15	16	18
Brisbane Far West	Kingsthorpe to Oakey	17	19	20	22	12	14	15	17
Brisbane Far West	Tycanba to Baining	10	12	13	15	10	12	13	15
Brisbane Far West	Baining to Macalister		10		13	14	16	17	19
Brisbane Far West	Macalister to Warra					20	22	23	25
Brisbane Far West	Warra to Brigalow					17	19	20	22
Brisbane Far West	Brigalow to Chinchilla					21	23	24	26
Brisbane Far West	Tycanba to Dalby	5	7	8	10	5	7	8	10
Brisbane Far West	Tycanba to Baigin					62	64	65	67
Brisbane Far West	Baigin to Jandowae					34	36	37	39
Brisbane Far West	Wandoan to Guluguba					32	34	35	37
Brisbane Far West	Guluguba to Kowguran					41	43	44	46
Brisbane Far West	Kowguran to Miles					31	33	34	36
Brisbane Far West	Westgate to Charleville					25	27	28	30
Brisbane Far West	Westgate to Wanko					40	42	43	45
Brisbane Far West	Wanko to Coothalla					20	22	23	25
Brisbane Far West	Coothalla to Cooladdi					60	62	63	65
Brisbane Far West	Westgate to Yanna					45	47	48	50
Brisbane Far West	Yanna to Wyandra					45	47	48	50
Brisbane Far West	Wyandra to Coongoola					70	72	73	75
Brisbane Far West	Coongoola to Cunnamulla					75	77	78	80
Brisbane Far West	Wyandra to Yanna					46	48	49	51
Brisbane Far West	Yanna to Westgate					45	47	48	50
Brisbane West	Ebenezer to Yarrowlea	9	10	10	11	9	10	10	11
Brisbane West	Helidon to Grantham	11	13	14	16	9	11	12	14
Brisbane West	Grantham to Gatton	12	14	15	17	9	11	12	14
Brisbane West	Gatton to Forest Hill	9	11	12	14	7	9	10	12
Brisbane West	Forest Hill to Laidley	9	11	12	14	5	7	8	10
Brisbane West	Laidley to Yarongmulu	18	20	21	23	17	19	20	22
Brisbane West	Yarongmulu to Grandchester	22	24	25	27	15	17	18	20
Brisbane West	Grandchester to Rosewood	12	14	15	17	11	13	14	16
Brisbane West	Helidon to Lockyer	11	13	14	16	12	14	15	17
Brisbane West	Lockyer to Murphys Creek	16	18	19	21	16	18	19	21
Brisbane West	Murphys Creek to Holmes	20	22	23	25	20	22	23	25
Brisbane West	Holmes to Spring Bluff	17	19	20	22	17	19	20	22
Brisbane West	Spring Bluff to Rangeview	23	25	26	28	22	24	25	27
Brisbane West	Rangeview to Harlaxton	6	8	9	11	4	6	7	9
Brisbane West	Harlaxton to Toowoomba	9	11	12	14	7	9	10	12
Brisbane West	Rosewood to Grandchester	12	14	15	17	12	14	15	17
Brisbane West	Grandchester to Yarongmulu	17	19	20	22	15	17	18	20
Brisbane West	Yarongmulu to Laidley	9	11	12	14	7	9	10	12
Brisbane West	Laidley to Forest Hill	7	9	10	12	5	7	8	10
Brisbane West	Forest Hill to Gatton	10	12	13	15	7	9	10	12
Brisbane West	Gatton to Grantham	10	12	13	15	9	11	12	14
Brisbane West	Grantham to Helidon	13	15	16	18	9	11	12	14
Brisbane West	Rosewood to Yarrowlea	3	4	4	5	3	4	4	5
Brisbane West	Toowoomba to Harlaxton	15	17	18	20	6	8	9	11
Brisbane West	Harlaxton to Rangeview	10	12	13	15	4	6	7	9
Brisbane West	Rangeview to Spring Bluff	29	31	32	34	21	23	24	26
Brisbane West	Spring Bluff to Holmes	22	24	25	27	16	18	19	21
Brisbane West	Holmes to Murphys Creek	27	29	30	32	20	22	23	25
Brisbane West	Murphys Creek to Lockyer	17	19	20	22	15	17	18	20
Brisbane West	Lockyer to Helidon	14	16	17	19	11	13	14	16
Brisbane West	Toowoomba to Toowoomba Marshalling Yard	8	8	8	8	8	8	8	8
Brisbane West	Toowoomba Marshalling Yard to Willowburn	5	5	5	5	5	5	5	5
Brisbane West	Toowoomba to Toowoomba Passenger Station	3	3	3	3	3	3	3	3
Brisbane West	Toowoomba Passenger Station to Harristown					15	17	18	20
Brisbane West	Harristown to Wyreema					16	18	19	21

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Brisbane West	Willowburn to Toowoomba Marshalling Yard	8	8	8	8	8	8	8	8
Brisbane West	Toowoomba Marshalling Yard to Toowoomba	12	12	12	12	12	12	12	12
Brisbane West	Wulkuraka to Karrabin	2	3	3	4	2	3	3	4
Brisbane West	Karrabin to Walloon	5	6	6	7	5	6	6	7
Brisbane West	Walloon to Thagoona	5	6	6	7	5	6	6	7
Brisbane West	Thagoona to Yarrowlea	2	3	3	4	2	3	3	4
Brisbane West	Yarrowlea to Ebenezer	9	10	10	11	9	10	10	11
Brisbane West	Yarrowlea to Rosewood	3	4	4	5	3	4	4	5
Brisbane West	Yarrowlea to Thagoona	2	3	3	4	2	3	3	4
Brisbane West	Thagoona to Walloon	5	6	6	7	5	6	6	7
Brisbane West	Walloon to Karrabin	5	6	6	7	5	6	6	7
Brisbane West	Karrabin to Wulkuraka	2	3	3	4	2	3	3	4

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APPENDIX G

Altitudes

Metres above Mean Sea Level

Mayne	5
Central	13
Roma Street	19
Ipswich	19
Thomas Street	30
Wulkuraka	32
Karrabin	39
Walloon	33
Thagoona	48
Rosewood	44
Lanefield	48
Calvert	60
Grandchester	85
Yarongmulu	172
Laidley	103
Forest Hill	92
Lawes	91
Gatton	104
Grantham	118
Helidon	143
Lockyer	169
Murphy's Creek	243
Holmes	370
Spring Bluff	467
Ballard	541
Harlaxton	612
Toowoomba	586
Willowburn	565
Cranley	554
Wetalla	525
Pengarry	516
Gowrie	482
Kingsthorpe	445
Oakey	402
Jondaryan	385
Malu	380
Bowenville	375
Koomi	359
Kommamurra	356
Blaxland	349
Dalby	343
Yarrala	338
Baining	337
Apunyal	331
Macalister	329

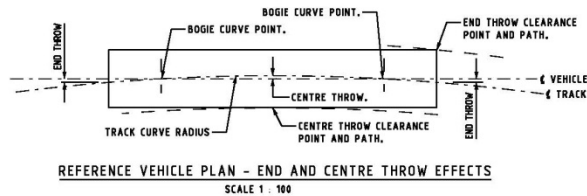
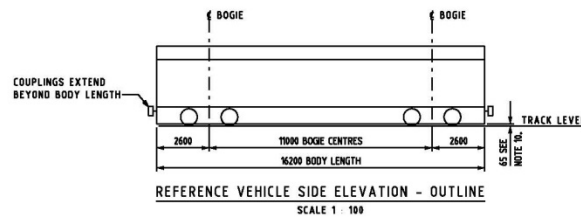
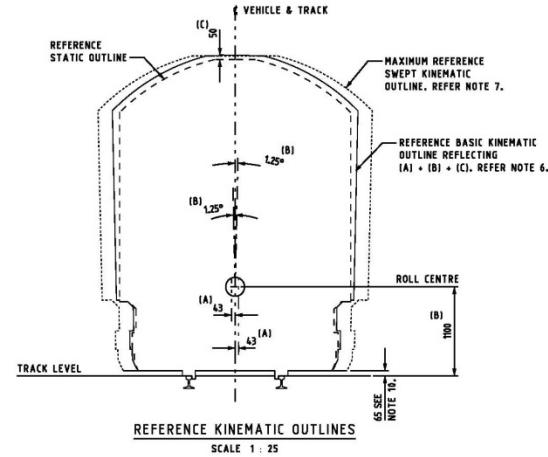
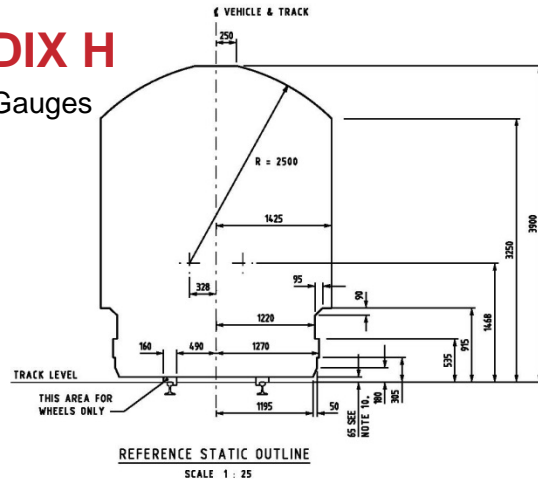
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Broadmead	325
Warra	317
Ehlma	320
Brigalow	319
Boonarga	315
Chinchilla	302
Baking Board	353
Rywung	345
Goombi	321
Columboola	322
Miles	303

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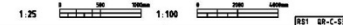
APPENDIX H

Rollingstock Gauges



NOTES:

- THE REFERENCE BASIC KINEMATIC OUTLINE AND REFERENCE SWEEP KINEMATIC OUTLINE ARE CALCULATED FROM THE REFERENCE STATIC OUTLINE USING THE DYNAMIC MOVEMENTS SPECIFIED IN NOTE 6 AND APPLYING THE METHODS DEFINED IN AS 7507 (PARTS 1 TO 4).
- ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS SHOWN OTHERWISE.
- A ROLLING STOCK OUTLINE CONSISTS OF THREE (3) PARTS:
 - THE STATIC OUTLINE;
 - THE BASIC KINEMATIC OUTLINE; AND
 - SWEEP KINEMATIC OUTLINE.
- A REFERENCE OUTLINE IS DEFINED AS AN OUTLINE ACCEPTED BY QUEENSLAND RAIL AS APPLICABLE TO A SPECIFIED ROUTE.
- THIS DRAWING DEFINES A REFERENCE STATIC OUTLINE AND THE FACTORS TO BE ADDED TO PRODUCE THE ASSOCIATED REFERENCE BASIC KINEMATIC OUTLINE & THE MAXIMUM REFERENCE SWEEP KINEMATIC OUTLINE.
- THE REFERENCE BASIC KINEMATIC OUTLINE IS DETERMINED BY APPLYING THE FOLLOWING DYNAMIC MOVEMENTS TO THE REFERENCE STATIC OUTLINE.
 - (A) LATERAL TRANSLATION $\pm 43\text{mm}$
 - (B) BODY ROLL $\pm 1.25^\circ$ ABOUT A ROLL CENTRE 1100mm ABOVE TRACK LEVEL ON THE VEHICLE CENTRELINE
 - (C) BOUNCE UPWARDS 50mm.
- THE MAXIMUM REFERENCE SWEEP KINEMATIC OUTLINE IS DETERMINED BY APPLYING THE CENTRE AND END THROW EFFECTS OF A 100m RADIUS HORIZONTAL TRACK CURVE TO THE REFERENCE BASIC KINEMATIC OUTLINE.
- ROLLING STOCK MUST COMPLY WITH ALL PARTS OF THE REFERENCE ROLLING STOCK OUTLINES.
 - WHEN EMPTY AND NEW CONDITION
 - WHEN FULLY LOADED AND WORN CONDITION
 - INCLUDING ALLOWANCE FOR CONSTRUCTION TOLERANCES.
- OTHER ROLLING STOCK PROPORTIONS (e.g. LENGTH, WIDTH, BOGIE SPACING) MAY BE AUTHORISED BY QUEENSLAND RAIL PROVIDED THAT THE ROLLING STOCK DOES NOT EXTEND BEYOND THE REFERENCE OUTLINES.
- 65mm VERTICAL SWEEP PATH HEIGHT FROM TRACK LEVEL TO UNDERSIDE OF THE STATIC AND KINEMATIC OUTLINES TO BE MAINTAINED FOR THE FULL LENGTH OF THE VEHICLE FOR ALL DYNAMIC MOVEMENTS AND ON VERTICAL TRACK CURVES.
- VERTICAL SWEEP PATH IS TO BE DETERMINED BASED ON A 525m RADIUS TRACK SUMMIT CURVE AND A 300m RADIUS TRACK SAG CURVE.
- COUPLINGS, HOSES ETC MAY EXTEND BEYOND THE BODY LENGTH PROVIDED THEY DO NOT EXCEED THE REFERENCE OUTLINES SWEEP PATHS.



FILE No	ALTERATIONS
12/8738	
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING	

NOTE:
 THIS DRAWING SUPERSEDES STD. DRG. No. 2236

DESIGNED	J.W.C.	AUG 12	APPROVED
DES CHK	G.W.	AUG 12	GRABHAM WALKER 12/08/12 MANAGER OPERATIONAL SERVICES DATE
DRAWN	G.J.V.	AUG 12	ISSUE AUTHORIZED
DRG CHK	J.W.C.	AUG 12	A. J. MATTHEWS 22/08/12 GENERAL MANAGER OF RAIL OPERATIONS DATE

Queensland Rail
 ACN 132 181 090

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Network - Civil Engineering
 INTERFACE STANDARD - WD-10-194
REFERENCE ROLLING STOCK OUTLINE
 RS1 - CLEARANCE CATEGORY 1

DRAWING NUMBER
QR-C-S3035
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