Network Operating Guide

Part A: Route Operating Protocols

This document is uncontrolled unless stamped 'Controlled Document' in red ink.
This document is uncontrolled when copied or printed from an electronic version.

Document number RS-NOG-032 PART A
Revision A
Authorised by Scott MacGregor, General Manager Rail Safety
Date of Issue 1 August 2016

THIS DOCUMENT REPLACES FL-PRO-06-005 PART A WHICH IS NOW OBSOLETE AND HAS BEEN REMOVED FROM THE GWA SAFETY MANAGEMENT SYSTEM

This document is issued by Genesee and Wyoming Australia Pty Ltd

The master copy of this manual is maintained electronically on the GWA Intranet site. Hard copies will NOT be centrally produced or distributed.

Users who produce locally controlled hard copies of this manual should regularly check the issue status of the master on GWA Intranet site to ensure they are using the latest versions of these instructions, forms and procedures.

Amendments

Page Number	Issue Number	Date of Issue	Amendment Details
All	001	26.06.2016 (for 01.08.2016 release)	New document. Issued to replace FreightLink document FL-PRO-06-005 Part B which is now obsolete.
13, 14	002	01.07.2016 (for 01.08.2016 release)	Section 7.2 added - Maximum speed limits through block locations for movements over points set for the Crossing Loop and along any Crossing Loop altered from 25km/hr to 30 km/hr as per original arrangements. Section 7.3 Speed Limits through Block Locations – clarification provided re maximum speed for travel over Main Line points at locations south of Alice Springs.
11, 12	003	29.07.2016 (for 01.08.2016 release)	Minor changes to kilometre locations.

Table of Contents

1. Scope

This document is provided for personnel who are required to undertake or supervise rail safety work, including train operations, over the railway network from the Northgate Block Point, north of Tarcoola, to Berrimah.

This document which forms Part A of the Network Operating Guide for the Northgate BP to Berrimah Railway SHALL be read in conjunction with Part B Facilities En-route.

For the purposes of this document the following terms and meanings are to be used:

- Infrastructure Owner and Operational Access Manager
  Genesee and Wyoming Australia Pty Ltd (GWA);
- Operator of Railway Services
  Accredited operators of railway services, including (but not limited to) Genesee and Wyoming Australia, Great Southern Railway, Specialised Bulk Rail, etc;
- Infrastructure Maintainer
  Genesee and Wyoming Australia Pty Ltd (GWA);
- Rail Safety Regulator
  Duly authorised representatives of the Office of the National Rail Safety Regulator;
- Terminal Management
  GWA are responsible for the operational management of the Alice Springs and Berrimah terminals;

  Linfox are responsible for freight handling activities at the Tennant Creek and Katherine terminals.
- Network

  The railway and associated infrastructure from the Northgate Block Point (510.850 km) to Berrimah, exclusive of railway lines and associated infrastructure under the ownership and or control of Private Siding Owners and network owners other than GWA.

  The Northgate Block Point is the interface point of the Network with the Trans Australian Railway for which Australian Rail Track Corporation Ltd (ARTC) is the infrastructure owner and operational access manager.

2. Network Access

The railway line from the Northgate Block Point to Berrimah is part of the Defined Interstate Rail Network (DIRN), which is also referred to as the Australian Rail Network (ARN). Access to the network shall be carried out under the provisions of the Code of Practice for the Australian Rail Network, the GWA Addendum to the Code of Practice for the Australian Rail Network, GWA Network Operating Guide RS-NOG-032 Parts A and B and ARTC / GWA interface procedures relating to the management of train services at the Northgate Block Point (510.850 km).

Appropriate contractual arrangements and interface coordination plans must be in place before railway services can be operated on the Network.

GWA manages all movements that occur on the Network.

2.1 Accreditation of Operators

Operators shall arrange and receive accreditation from the appropriate Rail Safety Regulator for their intended operation before railway safety work on the network can commence.

2.2 Train Consist Information

Operators shall provide GWA with accurate train consist documentation as set out in clause 17.1, of Volume 3, Part 2, of the Code of Practice for the Australian Rail Network.

(a) Operators shall provide an effective means of accurately determining and reporting the lengths of trains (including locomotives).

(b) Operators shall ensure that the specified maximum length of trains shall not be exceeded at any time and shall make allowance for rollingstock that is to be attached en-route.

2.3 Train Dimensional Maxima

2.3.1 Train Length

(a) The length of the train shall not exceed 1800 metres unless prior authority has been granted in writing by GWA.

(b) A train that is detected to be in excess of 1800 metres long, without approval of GWA, shall not be permitted to enter or continue to operate on the network.

The train shall forgo train priority entitlement, and in addition, shall be reduced to standard length at the discretion and convenience of GWA.

2.3.2 Train Height and Width

Operators planning operation of trains on the network shall ensure that systems are in place to ensure that trains conform to the following:

Maximum Height *(from top of rail)*	**Maximum Width** *(from track centreline)*
6300mm	1600mm
Between 6301mm and 6500mm	1250mm

Subject to the above exception, structure and static rollingstock outlines shall comply with Outline F as detailed in the RISSB Standard AS 7507 Railway Rolling Stock – Outlines.

A conditional speed limit of 20 km/hour applies to any loading higher than 6300 mm through the Tarcooninya Overpass (971.000 km approximately).

GWA may approve the operation of trains which are out of gauge and do not conform to the above dimensions, subject to a written application by the Operator, for operation of such services, being registered with GWA.

- Before entry of the train service to the network
- Before Out of Gauge loading is attached to trains

Such registration of any application shall be carried out at least one business day prior to the anticipated operation of the train service over the network.

GWA may choose to not approve an out of gauge application, where such approval would impact on the transit performance of other trains on the network.

2.3.3 Train Mass

The gross trailing mass of trains is limited only by the hauling capacity of the locomotives working the train and the overall permissible length of the train, as referred to in clause 2.3.1 above.

It is the responsibility of each Operator to ensure that their trains are operated within the hauling capacity of locomotives allocated and that trains may achieve sectional running times as stipulated from time to time.

Axle loads of 23.0 tonnes/axle shall not be exceeded without the prior approval of GWA (refer document GW-WI-03-013, Management of Overloaded Wagons).

3. Safeworking Arrangements

3.1 Safeworking Management

GWA will, from the organisation's Dry Creek Operations Centre, Adelaide, or other site of its choosing, manage Safeworking over the network utilising the Train Order Working system of safeworking.

3.2 Safeworking Rules and Procedures

(a) The principle safeworking document for the operation of train services over the route shall be the Code of Practice for the Australian Rail Network (ARN), Issue 2, Volume 3, Parts 1 and 2, (CoP ARN).

(b) The principle document supporting the CoP DIRN shall be the GWA Addendum to the CoP (ARN) OP-COP-001.

(c) This document i.e. Section A of the Network Operating Guide and an additional document i.e. Section B of the Network Operating Guide shall provide supporting instructions, conditions and information for the operation of trains over the network.

(d) All personnel who are required to undertake or supervise rail safety work (as defined in the applicable rail safety legislation) over the network, irrespective of their employ, shall undertake training and be assessed as being competent relevant to the duties performed.

(e) Each Operator shall ensure that personnel employed by them who are required to undertake or supervise rail safety work over the network have access to these documents.

3.3 Safeworking Equipment

(a) GWA shall make keys available for the purpose of access to locks used to secure safeworking equipment such as points, derails, level crossing switches etc.

(b) These keys shall be made available to Operators and Infrastructure Maintainers at their cost in the quantities required by them. The issuing of such keys to employees and /or contractors shall be controlled by the Operator or Infrastructure Maintainer in accordance with procedures defined by the Infrastructure Owner.

(c) The provision of safeworking communications (including those used for the activation of motorised self-restoring points) shall be the responsibility of the Operator who shall also be responsible for ensuring that their rollingstock is presented to the Network with such equipment in operable condition.

(d) The provision of signalling equipment, including motorised self-restoring points shall be the responsibility of GWA who shall also be responsible for ensuring that their equipment is in operable condition.

(e) The provision of safeworking forms shall be the responsibility of the Operator who shall also be responsible for ensuring that their trains or equipment is presented to the Network carrying sufficient safeworking forms for the journey to be undertaken.

3.4 Safeworking Communications Equipment

3.4.1 Trains Services and Heavy Track Machines

As a minimum, the leading locomotive of freight and passenger trains and heavy track machines operated on the Network by Operators and Infrastructure Maintainers shall be provided with the following equipment.

(a) A primary high earth orbit satellite telephone.

(b) A secondary low earth orbit satellite telephone.

(c) A fixed UHF transceiver capable of operation between 403MHz and 470MHz, particularly 450.050MHz and of DTMF operation on 418.250 MHz (with a CTCSS frequency of 123 Hz).

(d) A portable hand held UHF transceiver (capable of operation on 450.050 MHz).

In addition, the following equipment should be provided:

(e) A Personal Locating Beacon (PLB).

Please note that for the purpose of this guide, heavy track machines shall mean any item of track maintenance equipment that cannot be readily taken off-track at any location without the aid of lifting equipment and requires TOA working.

3.4.2 Road Rail Vehicles, Light Track Machines and Light Vehicles Accessing the Corridor

As a minimum road-rail vehicles, light track machines and light vehicles operating on the Network by Operators and/or Infrastructure Maintainers shall be equipped with the following:

(a) Two forms of verbal communication equipment. This can include two of the following:

i. A mobile telephone that can be used within mobile telephone range
ii. A primary satellite telephone fixed to the vehicle
iii. A secondary satellite telephone that is portable

(b) A fixed UHF transceiver capable of operation between 403MHz and 470MHz, particularly 450.050MHz.

In addition, the following equipment should be provided:

(c) A portable hand held UHF transceiver capable of operation on the frequencies above.
(d) A Personal Locating Beacon (PLB).

Please note that for the purpose of this guide light track machines shall mean any item of track maintenance equipment that can be readily lifted off-track by two (2) men at any location without the aid of lifting equipment or a road rail vehicle working under TRI that can be easily removed at level crossings.

3.5 Issue of Train Timetable

GWA will provide timetables as required.

3.6 Train Running Information Notices

Notices of service details, where these deviate from the norm, or where specific instructions apply to the running of services shall be published in an electronic form. Such information shall be made available to operators and maintainers through GWA's Freight Management System (FMS) accessible via internet access.

(a) The status of Temporary Speed Restrictions shall be entered into FMS by the Infrastructure Maintainer.

(b) Notice of special train movements or of conditions affecting train movements, such as the presence of out of gauge loading, shall be published as necessary prior to the date on which such affected train service is to enter the network.

3.7 Rail Safety Workers

Operators and Infrastructure Maintainers shall establish systems to regularly ensure that rail safety workers engaged in such work on the network are:

- Competent to perform technical and communicative tasks on the Network;
- Physically fit to perform the tasks required of their duties.

3.7.1 Rail Safety Worker Safeworking Competence

Operators and Infrastructure Maintainers shall establish systems for the development, maintenance and verification of Rail Safety Worker competence.

Rail Safety Workers shall be qualified in the Code of Practice for the Defined Interstate Rail Network and the GWA Addendum to the Code of Practice for the Australian Rail Network.

Organisations shall maintain records of competency and provide them to GWA upon written request.

Rail Safety Workers shall produce identification and evidence of competency when requested, whilst performing rail safety duties.

3.7.2 Train Control Communications

Train Control functions are conducted by GWA Transport Control located at Dry Creek, Adelaide, South Australia.

Telephone contact for all operations between Northgate BP and Berrimah are conducted on:

Safeworking	(08) 8343 7711
Emergency (1)	**(08) 8262 5424**
Emergency (2)	**0419 819 136**
Facsimile	(08) 8343 7735

4. Time

Twenty Four (24) hour time shall be observed.

4.1 Time Zones

The network extends from the state of South Australia into the Northern Territory. Each shares the same time zone except during summer (October to April) when Daylight Savings time applies in South Australia only.

Operation of the network is run under the following time zones:

Track Section	Time Zone
Northgate BP to Alice Springs Yard	South Australian time
Alice Springs Yard to Berrimah	Northern Territory time

This means that North-bound trains enter Alice Springs on SA time and depart on NT time while South-bound trains enter Alice Springs on NT time and depart on SA time.

5. Deployment

Operators and Infrastructure Maintainers shall only deploy personnel who are:

- Competent to perform technical and communicative tasks on the Network;
- Physically fit to perform the tasks required of their duties.

(a) Operators and Infrastructure Maintainers shall establish systems to regularly ensure that rail safety workers engaged to take charge of the driving of trains or track machines on the network have been assessed as competent to do so.

(b) A robust program of route training and familiarisation shall be developed by Operators and Infrastructure Maintainers to ensure that a uniform standard of competency is achieved.

(c) Rail safety workers, especially those engaged in the operation of trains, shall be deployed in a manner that promotes the operation of services/equipment with a view to managing alertness and the effects of fatigue.

(d) Where rail safety workers are to be changed or rested en-route, the proposed timetable of crew changes or rest periods shall be communicated to GWA when the train is presented for entry to the network.

GWA shall advise of the location at which the crew changes or rest periods are to take place based on this information.

(e) The deployment of train crews comprising a single person shall be operationally transparent and shall have no negative effect on the running of that or other train services or operational requirements. Operators intending to employ Driver Only Operations on the Network shall be in possession of the appropriate accreditation from the relevant Regulator.

6. Block Locations

6.1 Block Locations by Line Kilometre

Block Locations are located on the line as follows:

Block Location Name	Line Kilometres		
	South YLB	Centre	North YLB
NORTHGATE BP		510.850	
555 QUARRY		554.801	
CARNES	565.318	566.500	567.581
GINA BP		600.000	
WIRRIDA	638.078	641.000	644.022
RANKIN DAM	667.578	670.380	673.180
MANGURI	703.200	706.500	709.500
POOTNOURA BP		767.000	
CADNEY PARK	829.400	830.500	831.658
MARLA	907.980	909.000	909.926
CHANDLER	955.343	956.500	957.398
MARRYAT	1020.491	1021.000	1021.910
KULGERA	1080.398	1081.500	1082.646
IMPADNA	1162.277	1163.500	1164.556
HUGH RIVER	1243.395	1244.500	1245.667
MEREENIE SIDING	1312.814	1313.000	1313.580
ROE CREEK	1317.300	1318.000	1319.538
ALICE SPRINGS	1325.400	1335.000	1338.600
1400 BP		1400.000	
1449 BP		1449.000	
1503 BP		1503.000	
ILLOQUARA	1561.250	1564.250	1567.200
1622 BP		1622.000	
1664 BP		1664.000	
1735 BP		1735.000	
TENNANT CREEK	1799.600	1802.500	1805.600
1849 BP		1849.000	
1900 BP		1900.000	
MUCKATY	1929.930	1932.000	1934.500
1952 BP		1952.000	
2004 BP		2004.000	
2058 BP		2058.000	
NEWCASTLE WATERS	2091.530	2094.500	2095.500
2147 BP		2147.000	
2222 BP		2222.000	
2268 BP		2268.000	
2343 BP		2343.000	
2388 BP		2388.000	
KATHERINE	2441.900	2446.500	2451.100
2495 BP		2495.000	
UNION REEF	2548.652	2554.000	2557.103
2606 BP		2606.000	
2662 BP		2662.000	
2713 BP		2713.000	
BERRIMAH	2740.100	2750.000	

6.2 Block Location Facilities

The following facilities are available at block locations along the route:

Block Location	Type	Loop Length (m)
NORTHGATE BP	Block Point	Nil
555 QUARRY	Block Point	Nil
GINA	Block Point	Nil
CARNES	Crossing Loop / Yard	1824
WIRRIDA	Crossing Loop / Yard	1830
	Balloon Loop	3768
RANKIN DAM	Goods Loop	1462
MANGURI	Crossing Loop/ Yard	1828
POOTNOURA BP	Block Point	Nil
CADNEY PARK	Crossing Loop / Yard	1826
MARLA	Crossing Loop / Yard	1503
CHANDLER	Crossing Loop / Yard	1785
MARRYAT	Crossing Loop / Yard	988
KULGERA	Crossing Loop / Yard	1815
IMPADNA	Crossing Loop / Yard	1839
HUGH RIVER	Crossing Loop / Yard	1839
MEREENIE SIDING	Yard	Nil
ROE CREEK	Crossing Loop / Yard	1800
ALICE SPRINGS	Terminal	Nil
1400 BP	Block Point	Nil
1449 BP	Block Point	Nil
1503 BP	Block Point	Nil
ILLOQUARA	Crossing Loop	1831
1622 BP	Block Point	Nil
1664 BP	Block Point	Nil
1735 BP	Block Point	Nil
TENNANT CREEK	Crossing Loop / Yard	1905
1849 BP	Block Point	Nil
1900 BP	Block Point	Nil
MUCKATY	Yard	Nil
1952 BP	Block Point	Nil
2004 BP	Block Point	Nil
2058 BP	Block Point	Nil
NEWCASTLE WATERS	Crossing Loop	1829
2147 BP	Block Point	Nil
2222 BP	Block Point	Nil
2268 BP	Block Point	Nil
2343 BP	Block Point	Nil
2388 BP	Block Point	Nil
KATHERINE	Crossing Loop / Yard	1827
2495 BP	Block Point	Nil
UNION REEF	Crossing Loop	1937
2606 BP	Block Point	Nil
2662 BP	Block Point	Nil
2713 BP	Block Point	Nil
BERRIMAH	Terminal	Nil

6.3 Block Location Management

(a) Access to the Main Line and Crossing Loop at Block Locations shall be managed in accordance with the procedures set out in the Code of Practice (DIRN) for the crossing of trains on Train Order Territory, clause 3.9, and the GWA Addendum to the Code of Practice (ARN) clause 13.

(b) Access to yard tracks other than the Main Line and Crossing Loop at the following block locations shall be managed in accordance with Yard Access protocol as set out in the GWA Addendum to the Code of Practice (ARN) Clause 7.

CARNES	KULGERA
WIRRIDA	IMPADNA
MANGURI	HUGH RIVER
CADNEY PARK	MEREENIE SIDING
MARLA	ROE CREEK
CHANDLER	TENNANT CREEK
MARRYAT	KATHERINE

(c) Access to private sidings at the following locations shall be managed in accordance with the relevant access agreements with GWA.

WIRRIDA BALLOON LOOP	MUCKATY
RANKIN DAM	

(d) Access to GWA Terminal Locations at Alice Springs and Berrimah shall be managed in accordance with the procedures established by the Terminal Manager for each particular Terminal. Please note that both of these Terminals are unattended at certain times during the day.

(e) Access into 555 Quarry may only take place with prior approval from ARTC.

7. Speed of Trains

The maximum speed at which a train may travel over the network from Northgate to Berrimah, is the lowest of any of the following speeds which may apply:

- The maximum permitted speed applicable for the network (115km/hr);
- The maximum permitted speed for the motive power unit;
- The maximum permitted speed for the rollingstock attached to the train;
- The maximum permitted speed applicable due to local permanent speed restrictions;

- The maximum permitted speed applicable due to local temporary speed restrictions;
- Any emergency speed restrictions.

7.1 Permanent Speed Restrictions

The maximum speed applicable for the Network under normal operating circumstances, excluding crossing loops and secondary tracks, as defined in Section 7.2, is 115 kilometres per hour. This is subject to trains meeting the requirements set out in Section 7 above.

All Permanent Speed Restrictions on the network are sign posted and listed in the Genesee & Wyoming Australia Freight Management System (FMS). Train Crews will receive all Permanent Speed Restrictions, along with any Temporary Speed Restrictions, in the daily Speed Restriction Listing as part of their normal information pack.

7.2 Speed Limits for Crossing and Passing Movements

On the Northgate to Berrimah railway, the train to take the Main Line during a crossing or passing movement shall not exceed a speed of 50 km/hr until both trains are confirmed as being complete and a roll by inspection has been conducted.

7.3 Speed Limits through Block Locations

Unless a lower speed has been stipulated, the speed of all movements at Block Locations shall not exceed:

At locations **North** of Alice Springs with colour light indicators and Rankin Dam. In the straight direction over Main Line facing and trailing points, when the point stand indication displays the proper indication that the points are correctly set and locked and a green light indication is displayed.	**115km/hr**
At locations **South** of Alice Springs with colour light indicators (Carnes, Wirrida and Manguri only). In the straight direction over Main Line facing and trailing points, when the colour light indicator displays a green light (all points are correctly set and locked). Train crews shall confirm that the facing and trailing points are correctly set and maintain this speed until the entire train has passed over the trailing points at which time they may accelerate to normal speed.	**70km/hr**
At locations **South** of Alice Springs with point-stand indicators. In the straight direction over Main Line facing and trailing points, when the point stand indicator displays the proper indication (all points are correctly set). Train crews shall confirm that the facing and trailing points are correctly set and maintain this speed until the entire train has passed over the trailing points at which time they may accelerate to normal speed.	**70km/hr**
Over Main Line facing points set for the Crossing Loop	**30km/hr**
Over crossing loop points set for Crossing Loop	**30km/hr**
Along any Crossing Loop	**30km/hr**
Over main line or Crossing Loop points set for Goods Loop or other track	**15km/hr**
On goods Loop or other track	**15km/hr**

7.4 Conditional Speed Limits

Speed limits are imposed on trains and track machines/equipment under certain conditions where the height and width of the train may impinge on certain structures or for any other safety consideration.

The following conditional speed restrictions apply:

- 19 tonne axle limit at 115 km/hr
- 21 tonne axle limit at 110 km/hr
- 23 tonne axle limit at 80 km/hr

In addition the following conditional speed restriction shall apply:

From (km)	To (km)	Train Condition	Maximum Speed
970.900	971.000	Height above 6300 mm	20 km/h

8. Level Crossings

There are two types of traffic control provided at level crossings

- Active protection – flashing lights and gongs, with or without boom gates;
- Passive protection – STOP or Give Way signs;

Crossings are also divided according to their legal status being either;

- Public Roads;
- Occupational crossings - provided for the use of adjacent property owners.

8.1 Occupational Level Crossings

Occupational Crossings have been created where the railway has divided parcels of land to allow controlled points at which the occupier may cross the railway or in a few cases to allow access to facilities for the owners of utility services.

The use of Occupational Crossings to the North of Alice Springs is subject to conditions defined by the Australasia Railway (Occupational Crossing) Protocol, including users requiring permission to cross the railway with large vehicles and for livestock movements.

8.2 Passive Level Crossing Protection

The majority of level crossings, both public and occupational are on roads carrying low to medium traffic volumes and have only Passive Protection devices installed to control road users. Public road crossings have advance warning and crossing signs complying with AS1742.7, while occupational crossings generally have signs erected at the crossing.

8.3 Active Level Crossing Protection

Active level crossing protection is provided at crossings where traffic density or local conditions demand a greater level of protection. The crossing signals are activated by the presence of trains on a section of electrically circuited track or axle counter track with flashing lights, gongs and boom gates where fitted to operate during the approach of trains and while the train is passing through the crossing.

8.4 Operation of Active Level Crossing Protection Equipment

The operation of active level crossing equipment on the network is achieved automatically by the completion of a track circuit or axle counter detection by the presence of rolling stock on the track approaching a level crossing. (Note road/rail vehicles and other light track maintenance machines are insulated and will not operate level crossing equipment on electrically circuited track but will activate axle counter crossings).

In Alice Springs, the crossings at both ends of the terminal (Larapinta Drive & Lovegrove Drive) are activated by track circuits for all movements into the yard but require activation by push button switch for movements departing the yard. The level crossing protection equipment is self-cancelling once the rollingstock has cleared the roadway.

Level crossings south of Alice Springs have fixed length track circuits designed to give the required approach ring time for the highest permitted train speed. For slower trains the crossings shall ring for a longer time as the train approaches.

North of Alice Springs most level crossings are controlled by a Grade Crossing Predictor (GCP) which detects the speed of the approaching train and calculates when to activate to give all trains a consistent approach warning time irrespective of the approach speed. To aid correct operation, train drivers are required to maintain a constant speed from the time the train enters the track circuit until the lead locomotive clears the level crossing.

8.5 Failure of Active Level Crossing Equipment

Train crews are required to report any failure or abnormal operation of active level crossing equipment to Transport Control.

(a) White Strobe Light

All active level crossings except those within the Alice Springs Town area are equipped with a white strobe light to give greater conspicuity of operation to crews of approaching trains. Failure to observe the white strobe light may indicate the level crossing protection has failed and crews should initiate the following Emergency Actions:

- Initiate prolonged activation of the train audible warning device;
- Use all means available to bring the train to a stop prior to entering the crossing;
- Immediately report the circumstances to GWA Transport Control;
- Inspect the operation of the crossing warning devices;
- Manually protect the crossing;

- Proceed over the crossing in accordance with procedures contained in the GWA Addendum to the Code of Practice;
- Confirm circumstances and actions with GWA Transport Control.

(b) Blue Strobe Light

Most level crossings North of Alice Springs are also equipped with a blue strobe light on the control cubicle. This light indicates the healthy state of the solar charged battery power supply. If the blue strobe is not seen illuminated by the train crew this must be reported to GWA Transport Control for immediate attention by the signal maintainers.

Table of Level Crossing Locations

Route Chainage	Crossing Type	Comments	X-Coord	Y-Coord
			GPS Coordinates to GDA94	
511.370	OC		134.517	-30.689
514.400	OC		134.518	-30.662
521.017	OC		134.519	-30.602
522.517	1		134.52	-30.588
529.970	OC		134.521	-30.521
535.970	OC		134.523	-30.467
540.640	OC		134.525	-30.425
549.810	OC		134.53	-30.342
554.400	OC1	(access to ARTC 555km Quarry)	134.533	-30.301
557.400	OC		134.533	-30.274
560.892	OC		134.534	-30.242
563.890	OC		134.534	-30.215
567.505	OC1	(access to Carnes outstation)	134.534	-30.183
570.905	OC1	(access to kangaroo shooter's camp)	134.535	-30.152
576.840	1	to Commonwealth Hill & Challenger Mine	134.535	-30.099
583.290	OC		134.536	-30.04
590.390	OC		134.537	-29.976
598.205	1	to Commonwealth Hill	134.538	-29.906
605.060	OC		134.538	-29.844
609.574	OC		134.539	-29.803
616.593	OC1		134.539	-29.74
617.700	OC		134.54	-29.73
620.060	OC		134.54	-29.707
622.850	OC		134.54	-29.684
625.970	OC		134.54	-29.655
635.090	OC	Wirrida Emergency Airstrip Road	134.541	-29.573
639.230	OC		134.544	-29.536
646.889	OC		134.55	-29.467
655.995	OC		134.561	-29.385
658.190	OC		134.563	-29.366
658.615	OC		134.564	-29.362
666.300	OC		134.525	-29.303
671.200	OC		134.492	-29.269
676.110	1	(access to Lake Phillipson)	134.462	-29.235
687.863	OC		134.424	-29.135
693.420	OC		134.409	-29.086
696.500	OC		134.401	-29.059

Route Chainage	Crossing Type	Comments	X-Coord	Y-Coord
			GPS Coordinates to GDA94	
705.200	1	Coober Pedy - Mabel Creek Rd (Old Stuart Highway)	134.378	-28.984
707.927	1	to Mabel Creek	134.371	-28.96
711.970	OC		134.36	-28.925
715.530	OC1		134.347	-28.894
717.790	OC		134.336	-28.877
722.300	OC		134.323	-28.839
731.400	OC		134.322	-28.757
734.650	OC1	(dog fence crossing)	134.322	-28.728
741.800	OC		134.31	-28.664
751.768	OC		134.275	-28.581
758.760	OC		134.229	-28.534
761.100	OC		134.214	-28.517
767.973	OC		134.19	-28.458
771.530	1	Old Stuart Highway	134.181	-28.428
776.326	OC		134.172	-28.385
786.136	OC		134.154	-28.298
791.333	OC		134.145	-28.252
797.607	OC		134.134	-28.196
801.110	OC		134.127	-28.165
806.644	OC		134.117	-28.116
814.560	OC		134.097	-28.047
818.090	OC		134.089	-28.016
822.148	OC		134.084	-27.979
825.110	OC		134.077	-27.954
829.520	1	Cadney Park	134.059	-27.917
831.175	1	Cadney Park	134.052	-27.904
836.267	OC		134.034	-27.861
843.466	OC		134.013	-27.799
851.350	OC		133.979	-27.735
854.735	OC		133.952	-27.716
869.873	OC		133.86	-27.611
882.060	OC		133.788	-27.522
896.780	OC		133.698	-27.416
909.795	1	Marla Airport Road	133.625	-27.318
915.031	1	Mintabie Road	133.594	-27.279
920.280	1	to Mintabie	133.563	-27.241
936.607	1	to Mintabie	133.474	-27.118
944.845	OC		133.427	-27.056

Route Chainage	Crossing Type	Comments	X-Coord	Y-Coord
			GPS Coordinates to GDA94	
947.040	OC		133.413	-27.041
954.975	OC	(access to Indulkana community - back road)	133.371	-26.983
957.650	1	to Indulkana community	133.369	-26.959
971.000	4	Stuart Hwy Overpass		
976.936	1	Old Stuart Highway	133.339	-26.79
985.650	OC		133.367	-26.716
988.210	OC		133.383	-26.698
990.300	OC		133.399	-26.686
1000.800	OC		133.407	-26.597
1003.730	OC		133.404	-26.57
1007.130	OC		133.403	-26.539
1012.345	OC		133.407	-26.492
1015.720	OC		133.407	-26.462
1020.015	OC		133.407	-26.423
1022.434	OC1		133.407	-26.402
1023.902	OC		133.406	-26.388
1050.160	OC		133.397	-26.151
1056.898	OC		133.402	-26.091
1061.940	OC		133.406	-26.045
1067.150		**SA - NT Border**		
1077.526	OC		133.412	-25.905
1080.016	1	Finke Road	133.415	-25.883
1080.534	OC1	(Kulgera Station)	133.415	-25.878
1084.510	OC	(access to old Kulgera Quarry)	133.419	-25.842
1088.332	OC1	(access to Umbiara Station)	133.425	-25.808
1103.559	OC		133.443	-25.672
1108.650	OC		133.447	-25.626
1123.855	OC		133.473	-25.492
1143.808	OC		133.519	-25.316
1154.525	OC		133.534	-25.222
1159.700	OC		133.547	-25.177
1162.367	OC		133.563	-25.158
1168.580	1	Idracowra Station Access	133.615	-25.129
1177.025	OC		133.631	-25.06
1187.364	OC		133.637	-24.968
1203.965	OC		133.667	-24.835
1212.224	OC		133.68	-24.762
1221.168	OC		133.705	-24.687

Route Chainage	Crossing Type	Comments	X-Coord	Y-Coord
			GPS Coordinates to GDA94	
1241.980	OC		133.723	-24.5
1245.550	OC1	(access to Chamber's Pillar)	133.718	-24.468
1247.183	OC		133.715	-24.453
1249.600	1	Hugh River Stock Route to Maryvale Station	133.711	-24.432
1256.410	OC1	(access to John Holland bore settlement)	133.724	-24.373
1260.370	OC		133.725	-24.338
1272.848	OC		133.757	-24.23
1276.945	OC		133.765	-24.194
1278.675	OC		133.777	-24.183
1282.985	OC		133.789	-24.146
1292.620	OC		133.794	-24.059
1295.200	OC		133.798	-24.037
1303.985	OC		133.827	-23.962
1305.640	OC		133.834	-23.948
1309.260	OC		133.846	-23.918
1316.574	OC		133.839	-23.852
1321.353	OC1		133.853	-23.811
1322.942	2	Stuart Highway	133.861	-23.8
1325.700	1	Norris Bell Avenue	133.865	-23.775
1328.090	1	Karnte Road	133.869	-23.754
1329.250	3	Ilparpa Road	133.869	-23.744
1330.810	3	Commonage Road	133.863	-23.732
1332.000	P	Pedestrian Crossing	133.866	-23.722
1332.020	3	Bradshaw Drive	133.866	-23.722
1333.213	P	Pedestrian Crossing	133.871	-23.712
1333.900	3	Espie Street	133.874	-23.706
1334.500	3	Larapinta Drive	133.876	-23.701
1336.445	3	Lovegrove Drive	133.863	-23.690
1336.446	P	Pedestrian crossing to align with the Lovegrove Drive western footpath	133.863	-23.690
1341.553	P	Walking trail	133.851	-23.647
1344.088	OC1	Mountain Bike Track	133.866	-23.631
1346.823	OC2	Quarry Road	133.871	-23.608
1349.817	OC		133.868	-23.582
1351.668	4	Stuart Hwy, Road over rail grade separated crossing	133.873	-23.566
1358.855	OC1		133.855	-23.504
1363.743	OC1		133.842	-23.463
1367.703	OC1		133.831	-23.427
1380.454	OC		133.795	-23.317

Route Chainage	Crossing Type	Comments	X-Coord	Y-Coord
			GPS Coordinates to GDA94	
1384.918	1	Clareville Rd	133.783	-23.278
1388.643	OC		133.773	-23.246
1394.148	1	Yambah Access	133.761	-23.198
1406.343	OC		133.769	-23.088
1414.050	OC		133.774	-23.019
1419.316	2	Plenty Highway	133.783	-22.972
1445.373	OC		133.827	-22.740
1464.450	OC		133.860	-22.571
1480.712	OC		133.887	-22.426
1495.153	OC		133.912	-22.297
1507.648	1	Mount Skinner Access	133.933	-22.186
1529.054	OC		133.969	-21.996
1535.312	OC		133.989	-21.943
1556.395	OC		134.151	-21.842
1569.290	OC		134.199	-21.736
1576.062	OC		134.210	-21.679
1598.589	OC		134.242	-21.483
1631.567	1	Murray Downs Access	134.225	-21.188
1655.281	4	Stuart Hwy, Road over rail grade separated crossing	134.204	-20.974
1656.690	OC		134.204	-20.962
1675.211	OC1	Gas pipeline access road	134.204	-20.794
1678.405	OC		134.203	-20.765
1683.028	OC		134.203	-20.724
1694.948	OC		134.191	-20.619
1701.561	OC		134.197	-20.563
1714.130	OC		134.250	-20.476
1718.398	1	McLaren Creek	134.246	-20.437
1730.305	OC	McLaren Creek entrance	134.232	-20.330
1741.743	OC1	Telstra access road	134.200	-20.235
1760.883	OC		134.187	-20.062
1771.120	OC1	existing NT Gas access	134.180	-19.970
1776.262	OC		134.190	-19.926
1783.322	OC		134.187	-19.863
1790.825	OC1		134.182	-19.795
1792.646	OC1		134.181	-19.778
1795.543	OC		134.179	-19.750
1800.508	OC		134.176	-19.704
1801.550	1		134.175	-19.695

Route Chainage	Crossing Type	Comments	X-Coord	Y-Coord
			GPS Coordinates to GDA94	
1807.915	OC1	Access to Chariot Mine	134.143	-19.652
1809.082	OC1	Gas pipeline access	134.137	-19.643
1813.720	OC		134.114	-19.608
1821.240	OC1	Access to Ivanhoe Mine	134.070	-19.554
1830.881	OC1		134.015	-19.484
1836.602	2	Warrego Road	133.984	-19.442
1847.336	OC1		133.915	-19.374
1855.267	OC1		133.864	-19.323
1878.407	OC1		133.747	-19.154
1886.518	OC1		133.735	-19.081
1893.047	OC		133.725	-19.023
1923.631	OC		133.616	-18.768
1931.886	OC		133.583	-18.700
1945.081	OC		133.523	-18.596
1974.531	OC		133.411	-18.353
1983.057	OC		133.382	-18.281
1996.531	OC		133.335	-18.168
2017.081	OC		133.259	-17.997
2032.081	OC		133.212	-17.870
2045.081	OC		133.186	-17.755
2055.681	OC		133.164	-17.663
2070.531	OC		133.130	-17.532
2093.449	OC		133.064	-17.336
2109.539	OC		133.018	-17.197
2120.539	OC		132.986	-17.102
2132.746	OC		132.951	-16.997
2147.332	1	Murranji Stock Route	132.902	-16.876
2159.959	OC1		132.819	-16.794
2165.039	OC		132.795	-16.757
2166.056	2	Buchanan Highway	132.795	-16.748
2167.070	OC		132.794	-16.739
2175.070	OC		132.788	-16.667
2185.158	OC		132.816	-16.583
2195.570	OC		132.811	-16.489
2205.370	OC		132.810	-16.402
2214.670	OC		132.817	-16.320
2225.470	OC		132.825	-16.223
2226.270	OC		132.825	-16.216

Route Chainage	Crossing Type	Comments	X-Coord	Y-Coord
			GPS Coordinates to GDA94	
2232.300	OC		132.819	-16.162
2239.501	OC		132.824	-16.098
2247.576	OC		132.827	-16.026
2255.622	OC		132.808	-15.955
2260.670	OC		132.798	-15.911
2272.820	OC		132.781	-15.803
2282.686	OC		132.800	-15.718
2289.720	2	Western Creek Road	132.805	-15.654
2292.311	OC		132.798	-15.632
2300.078	OC		132.777	-15.565
2304.230	OC		132.774	-15.528
2312.533	OC		132.771	-15.453
2318.756	1	Gorrie Road	132.759	-15.398
2322.856	OC		132.758	-15.361
2328.570	OC		132.774	-15.315
2341.050	OC		132.760	-15.203
2344.144	OC		132.761	-15.175
2351.960	OC		132.769	-15.105
2360.403	OC		132.766	-15.029
2373.470	OC		132.737	-14.915
2385.770	OC		132.702	-14.809
2395.650	OC		132.614	-14.785
2397.560	OC		132.600	-14.775
2402.110	OC		132.564	-14.754
2407.970	OC		132.520	-14.723
2414.570	OC		132.470	-14.690
2419.356	OC		132.431	-14.668
2422.715	OC		132.406	-14.651
2424.895	OC		132.389	-14.640
2426.620	OC		132.376	-14.631
2434.284	OC		132.323	-14.585
2441.949	OC		132.275	-14.534
2446.120	OC	Katherine North End access	132.247	-14.508
2446.244	4	Victoria Hwy, Road over rail grade separated crossing	132.246	-14.507
2447.084	1	Novis Quarry Road	132.240	-14.502
2448.275	3	Shadforth Road	132.231	-14.496
2449.868	3	Florina Road ADX 122	132.220	-14.487
2459.123	4	Stuart Hwy, Road over rail grade separated crossing	132.200	-14.408

Route Chainage	Crossing Type	Comments	X-Coord	Y-Coord
			GPS Coordinates to GDA94	
2463.989	OC		132.172	-14.374
2473.064	OC		132.115	-14.315
2490.325	2	Edith Falls Access ADX 126	132.038	-14.185
2494.185	OC1	Public road. Jarwon Assn & Mt Todd mine	132.015	-14.158
2505.696	OC		131.976	-14.066
2510.240	OC		131.950	-14.037
2517.958	OC		131.919	-13.976
2534.896	OC2	Bonrook access	131.847	-13.842
2536.442	OC	Mango Farm access	131.843	-13.829
2537.169	1	Road to cemetery	131.842	-13.822
2538.572	3	Kakadu Highway	131.837	-13.811
2549.917	OC2	Ping Que Road, Union Reef Mine	131.778	-13.728
2555.094	OC	Union Reef North End Access	131.766	-13.683
2556.286	1	Burrundie to Francis Creek Road	131.767	-13.673
2561.841	OC1	Burrundie to Union Extended Mine	131.749	-13.628
2563.656	OC		131.738	-13.616
2573.821	1	Burrundie to Grove Hill Road	131.701	-13.537
2577.984	1	Burrundie to Grove Hill Road	131.670	-13.515
2590.396	OC		131.562	-13.481
2599.552	1	Ban Ban Springs Road	131.478	-13.471
2603.951	OC1	Brocks Creek Mine access	131.437	-13.469
2614.438	OC		131.352	-13.430
2621.025	OC		131.319	-13.406
2633.220	4	Stuart Hwy, Road over rail grade separated crossing	131.212	-13.340
2649.400	2	Dorat Road	131.111	-13.243
2649.680	P	Pedestrian crossing	131.108	-13.241
2650.390	P	Pedestrian crossing	131.270	-13.238
2650.755	2	Coach Road	131.101	-13.236
2657.270	P	Pedestrian crossing	131.101	-13.177
2661.486	OC1		131.105	-13.139
2663.131	OC		131.106	-13.124
2671.928	4	Crater Lake Road, Underpass. Rail over road	131.106	-13.048
2676.560	3	Batchelor Road	131.117	-13.008
2679.913	OC1	Woodcutters Mine entrance	131.116	-12.977
2682.057	OC1		131.118	-12.958
2691.522	1	Manton Dam recreation area	131.140	-12.877
2695.694	OC1	Access to PAWA facility	131.134	-12.841
2696.212	4	Manton Dam pumping station, Realigning road under Manton River bridge	131.133	-12.837

Route Chainage	Crossing Type	Comments	X-Coord	Y-Coord
			GPS Coordinates to GDA94	
2701.236	3	Leonino Road	131.111	-12.795
2706.441	2	Old Bynoe Road	131.098	-12.754
2707.831	2	Kentish Road	131.092	-12.743
2709.193	2	Livingston Road	131.089	-12.731
2711.575	2	Abattoir Road	131.085	-12.709
2713.848	OC		131.071	-12.695
2716.191	3	Cox Peninsula Road	131.057	-12.679
2717.250	3	Middle Arm Road No. 1	131.054	-12.670
2719.693	3	Middle Arm Road No. 2	131.039	-12.654
2723.081	3	Finn Road	131.009	-12.645
2727.944	OC1	Crossing for NT Gas & PAWA	130.994	-12.617
2731.697	3	Jenkins Road	130.969	-12.581
2732.394	3	Channel Island Road	130.968	-12.575
2735.584	OC1	Crossing for NT Gas, PAWA & DME	130.973	-12.547
2736.902	3	Boat ramp entrance	130.979	-12.537
2741.351	3	Catalina Road	130.956	-12.505
2744.501	3	Wishart Road No. 1	130.963	-12.479
2748.077	3	Wishart Road No. 2	130.942	-12.460
2749.173	OC1	PAWA	130.934	-12.462

Crossing Type Code	Description
P	Pedestrian crossing
OC	Occupation crossing
OC1	OC with greater public usage, Type 1 signage displayed
OC2	OC with greater public usage, protected by signs, gongs and flashing lights
Type 1	Protected by stop signs
Type 2	Protected by signs, gongs, and flashing lights
Type 3	Protected by signs, gongs, flashing lights and boom gates
Type 4	Road overpass

9. Road overpasses

The following road overpasses exist along the route:

Location (km)	Name	Clearance Infringement
970.950	Stuart Highway overpass	6500 mm (*)
1351.668	Stuart Highway overpass	Nil
1655.281	Stuart Highway overpass	Nil
2446.244	Victoria Highway overpass	Nil
2459.123	Stuart Highway overpass	Nil
2633.220	Stuart Highway overpass	Nil
2750.194	Berrimah Road overpass	Nil

(*) Note: Trains with loading above 6300 mm must slow to 20 km/h – refer to Section 7.3 Conditional Speed Limits.

10. Stream Flow Detectors

Stream flow Detectors (SFD's) have been installed at 6 river locations north of Katherine yard. Coloured LED indicators have been installed to notify train drivers of the river conditions at the following locations:

Location (km)	Indicator Name
2446.100	Katherine River South
2450.645	Katherine River North
2488.050	Edith River South
2493.272	Edith River North
2501.150	Fergusson River South
2508.010	Fergusson River North
2507.990	Cullen River South
2513.683	Cullen River North
2647.033	Adelaide River South
2652.374	Adelaide River North
2733.561	Elizabeth River South
2738.651	Elizabeth River North

The following details the coloured LED's and their meaning:

- Green LED Indicator – River level is well below the bridge girder and trains are to proceed at normal speed.
- Yellow LED Indicator– River level is at or above the bottom of the bridge girder or equipment has failed and trains are to proceed with caution.
- No Indicator (Black out) – Indicator has failed and trains are to proceed with caution until river level is proven and track integrity has been confirmed (Report failure to Transport Control).

Network Operating Guide
Part B: Facilities En-route

This document is uncontrolled unless stamped 'Controlled Document' in red ink.
This document is uncontrolled when copied or printed from an electronic version.

Document number RS-NOG-032 PART B
Revision A
Authorised by Scott MacGregor, General Manager Rail Safety
Date of Issue 1 August 2016

THIS DOCUMENT REPLACES FL-PRO-06-005 PART B WHICH IS NOW OBSOLETE AND HAS BEEN REMOVED FROM THE GWA SAFETY MANAGEMENT SYSTEM

This document is issued by Genesee and Wyoming Australia Pty Ltd

The master copy of this manual is maintained electronically on the GWA Intranet site. Hard copies will NOT be centrally produced or distributed.

Users who produce locally controlled hard copies of this manual should regularly check the issue status of the master on GWA Intranet site to ensure they are using the latest versions of these instructions, forms and procedures.

Amendments

Page Number	Issue Number	Date of Issue	Amendment Details
All	001	26.06.2016 (for 01.08.2016 release)	New document. Issued to replace FreightLink document FL-PRO-06-005 Part B which is now obsolete.
6, 10-23, 28, 34,	002	30.06.2016 (for 01.08.2016 release)	Process associated with operation of radio remote control of points (6.2) modified to remove requirement for operation at distance of 2500 metres. Minor corrections made to schematics and strip map (distance between Northgate BP and 555 Quarry.
8,13, 34-36	003	29.07.2016 (for 01.08.2016 release)	Minor corrections made to kilometre locations/distances for specific schematics and strip maps

Table of Contents

1. Scope

This document is provided for personnel who are required to undertake or supervise rail safety work over the railway network from Northgate Block Point, north of Tarcoola, to Berrimah, and provides specific information regarding the layout and operation of facilities en-route.

For the purposes of this document, the meaning of terms and definitions are as set out in the Network Operating Guide Part A. **Therefore, this document shall be read in conjunction with the Network Operating Guide Part A Route Operating Protocols.**

2. Safeworking

Genesee and Wyoming Australia (GWA) will, from the organisation's (SA) Dry Creek Operations Centre, Adelaide, or other site of its choosing, manage safeworking over the network utilising the Train Order Working system of safeworking. This shall be conducted in accordance with the regulations set out in the Code of Practice for the Defined Interstate Rail Network (CoP DIRN), Volume 3, Parts 1 and 2 and the GWA Addendum to the CoP OP-COP-001.

3. Safeworking Communications

Refer to Network Operating Guide RS-NOG-032 Part A, Section 3.4. Safeworking Communications Equipment for details of the equipment required for safeworking communications on the Network.

4. Speed Limits

Speed limits on the network are as set out in Network Operating Guide, Part A, Section 7 Speed of Trains.

5. Block Locations

Block locations and facilities are described in Network Operating Guide, Part A and Section 7 of this document.

6. Operation of Points

Motorised self-restoring Main Line to Crossing Loop points are provided at Carnes, Wirrida, Manguri, Illoquara, Tennant Creek, Newcastle Waters, Katherine and Union Reef.

The operation of these points is carried out by push button only at Carnes and Manguri. At Wirrida, Illoquara, Tennant Creek, Newcastle Waters, Katherine and Union Reef this can be achieved either by push button or radio remote control.

The operation of the self-restoring points at Muckaty is carried out by push button. The operation of the self-restoring points at Wirrida Balloon Loop is carried out by push button or radio remote control.

All of these points are provided with Colour Light Points Indicators as described in the GWA Addendum.

6.1 Push Button Points Operation

In order to operate points to either position using a push button enclosure:

(a) Stop the train short of the track circuited area either side of the points (Wirrida, Illoquara, Tennant Creek, Muckaty, Newcastle Waters, Union Reef and Katherine) or short of the proximity/axle counter switches (Carnes, and Manguri).

A white painted sleeper or Clearance Point indicator shows the extent of the track-circuited area at Wirrida, Illoquara, Tennant Creek, Muckaty, Newcastle Waters, Union Reef and Katherine.

(b) Open the push button enclosure door. This action will cause the Colour Light Points Indicator to display a red indication.

(c) At Wirrida, Illoquara, Tennant Creek, Newcastle Waters and Katherine:

(i) Observe the LED labelled 'TRACK OCCUPIED'. If the red LED is not illuminated the points may be operated.

(ii) Leave the enclosure door open and wait for completion of a 120 second run down period.

(iii) Observe the LED labelled 'POINTS RELEASED'. When the 120 second run down is complete this will display a green indication. A green 'POINTS RELEASED' display indicates that the points may be operated.

(iv) Depress either the 'NORMAL' or 'REVERSE' push button to operate the points to the required position.

(v) Close and lock the push button enclosure door.

Note: If the push button enclosure door is closed during the run down period the time is reset to zero, re-initiating a 120 run down period.

(d) At Carnes and Manguri:

(i) Observe the condition of the service light. If it is illuminated advise Transport Control.

(ii) Depress either the 'NORMAL' or 'REVERSE' push button to operate the points to the required position.

(iii) Leaving the enclosure door open, wait for completion of points motor operation.

(iv) Close and lock the push button enclosure door.

(e) At any of these locations:

(i) Inspect the points to ensure that they have been correctly set for the desired route.

(ii) Observe the correct setting of the Colour Light Points Indicator and points target indicator where provided and proceed accordingly.

6.2 Radio Remote Control Points Operation

In order to operate points to the reverse position using radio remote control at Wirrida, Rankin Dam, Illoquara, Tennant Creek, Newcastle Waters, Union Reef and Katherine.

Note: The window for operation of the radio remote control points at these locations is typically between seven and ten kilometres however it is preferable that train crew select a distance that will enable them to observe the indicator going to red and initiation of the rundown sequence. The change to red also gives the train crew acknowledgment that the DTMF code [refer to (b) below] has been received and accepted by the NEC receiver.

Regardless of the distance selected, train crews should not assume that the points have operated to the reverse position. Train crew must control the movement and be prepared to stop at the facing points unless the point indicator is displaying that the points are correctly set for the movement.

Operation of the radio remote control points is as follows:

(a) Ensure by use of the local radio that any rail traffic approaching the vicinity of the points are aware of their impending operation.

(b) At an appropriate distance select UHF 418.250MHz and enter the four digit DTMF points operating code. This action will initiate a 150 second run down period during which the colour light points indicator will display a red indication.

Note: The DTMF code is transmitted via the use of a keypad or other radio interface. The digit keys should be depressed for at least one second, with a pause of at least one second between the entry of each digit. All digits must be entered within eight seconds.

If the Colour Light Points Indicator does not display a red indication (indicating a response to the radio transmission) following the transmission of the DTMF code, a second attempt may be made – but only after waiting for 30 seconds.

(c) Approach the points at a speed at which the movement can be stopped short of the facing points.

(d) Observe the indication displayed by the Colour Light Points Indicator.

(e) Proceed in accordance with the indication displayed by the Colour Light Points Indicator.

Note: Should the push button enclosure door be opened following the transmission of a DTMF code, any command that has been received by the system will be cancelled and a new run down period will commence.

6.3 Failure of Points or Colour Light Points Indicator

In the event that the Colour Light Points Indicator continues to display a red or no indication following a radio DTMF transmission, or push button operation, the train crew shall:

(a) Stop or remain clear of the track-circuited area associated with the points.

(b) Advise GWA Transport Control of the circumstances.

(c) Inspect the points to ensure that no debris is preventing the required movement of the points blades. If any material is found to be preventing operation of the points safely remove this debris.

Note: Do not attempt to clear any debris from between the points blades by hand.

(d) Set the points to Hand Mode of operation and manually operate the points.

(e) Return the points to Motor Mode of operation.

(f) If the points are confirmed as set and locked and the Colour Light Points Indicator displays the correct indication the train crew shall:

(i) Proceed in accordance with the indication and Train Authority held.

(ii) Advise GWA Transport Control of the circumstances and action taken.

(g) If the points are confirmed as set and locked and the Colour Light Points Indicator fails to display the correct indication the train crew shall:

(i) Advise GWA Transport Control of the circumstances.

(ii) Observe the indication of the reflective points indicator.

(iii) Proceed as authorised by the Train Authority currently in effect.

(h) If the points cannot be set and locked in the Motor Mode of operation the train crew shall:

(i) Advise GWA Transport Control of the circumstances and obtain instructions.

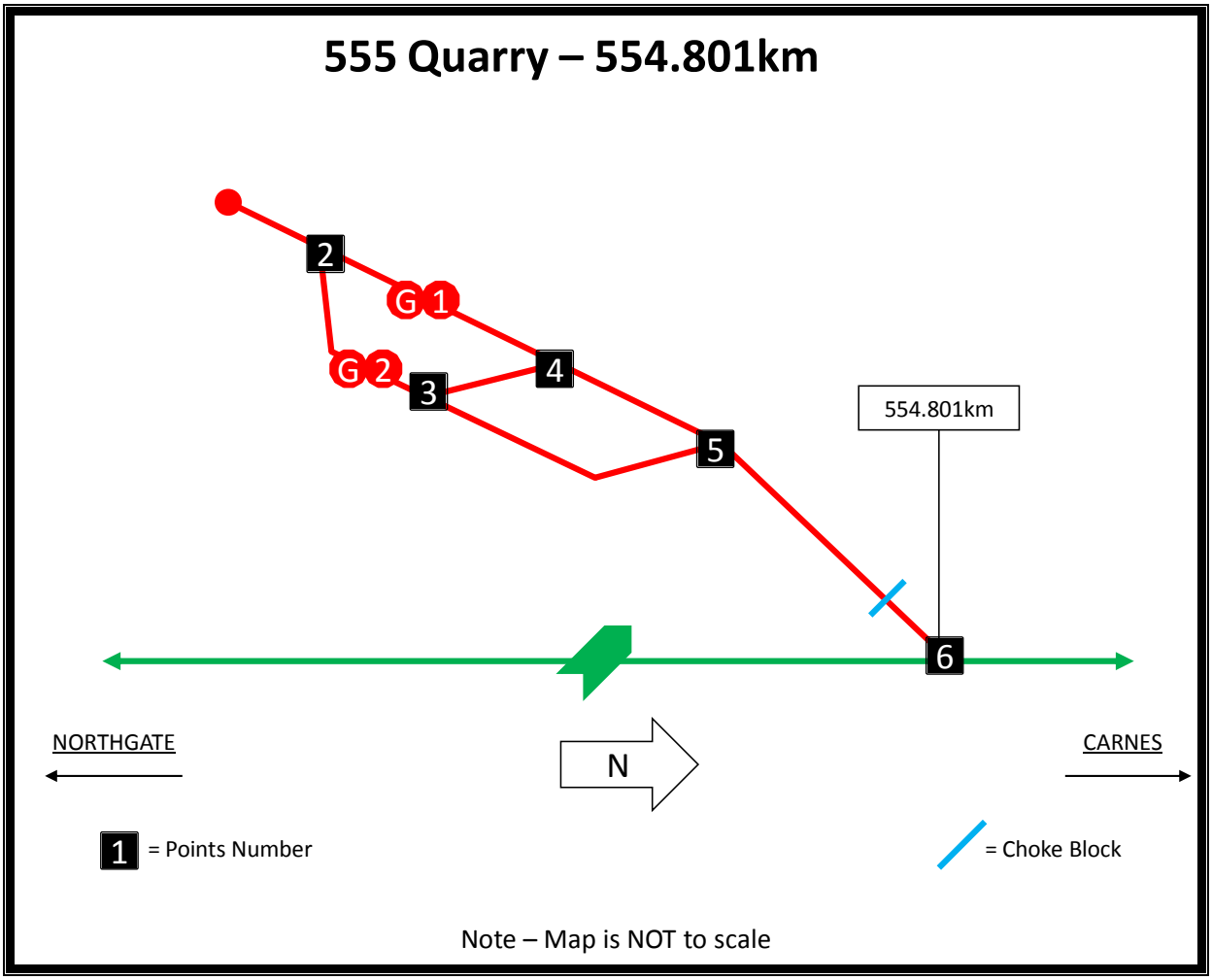
(ii) Place the points into the Hand Mode of operation, and set to the position directed by the GWA Transport Controller.

(iii) Clamp the points for the setting directed.

(iv) Proceed as authorised.

7. Facility Diagrams

7.1 555 Quarry



- Points

  All points are locked with points stands and are provided with reflective points targets.

- Running Line Protection

  Northern end of the goods siding - throw-over type derail.

- Special Instructions

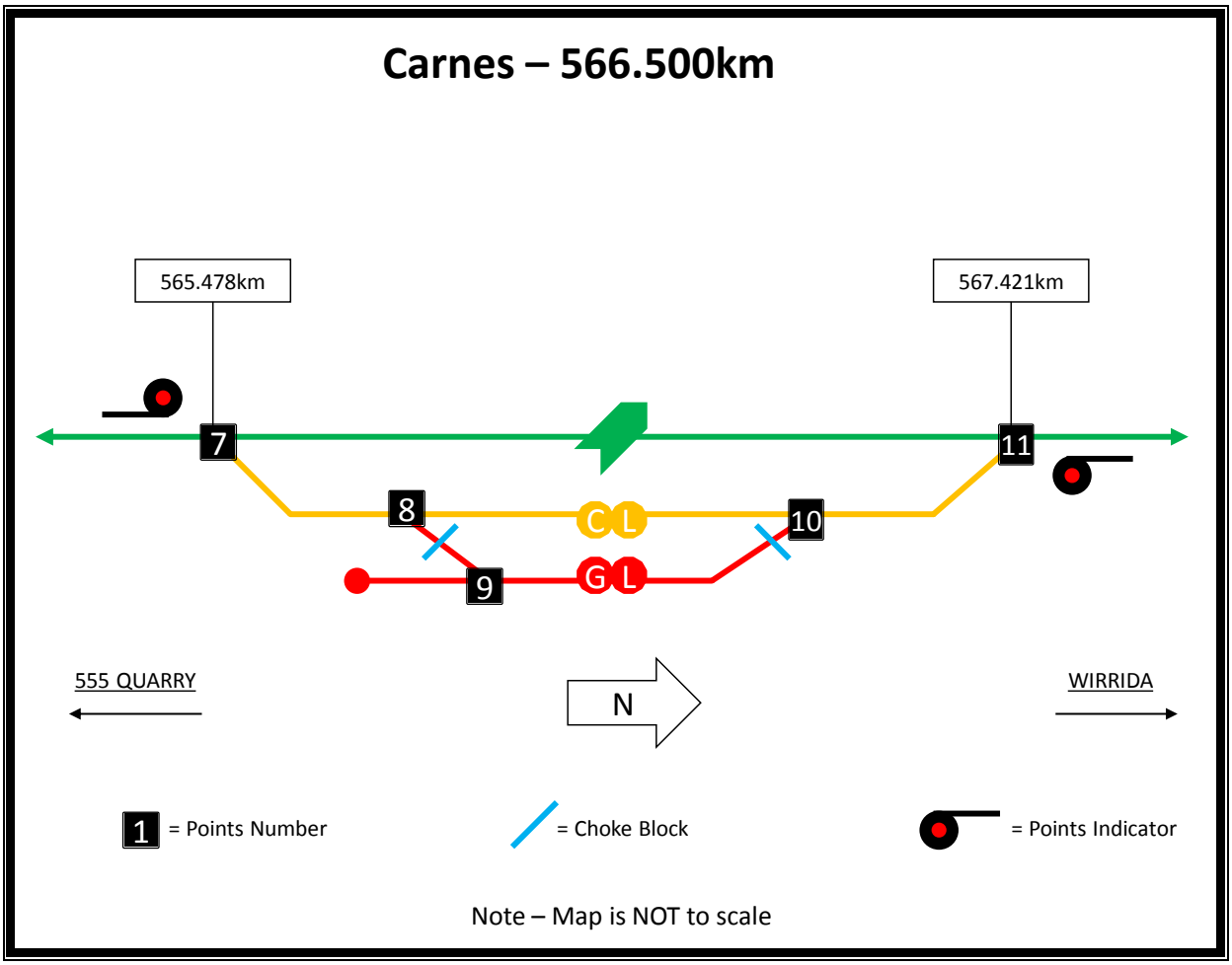
  555 Quarry is used for the loading of ballast consists. The tracks within the 555 Quarry are the property of the Australian Rail Track Corporation. Entry of trains or track machines into the siding may only take place with the prior approval of ARTC.

Southbound facing movements over number 6 points must proceed at no more than 70 km/h. This speed must be observed for the entire length of the train as it passes over the points.

555 Quarry is not utilised for regular crossing or passing movements, although under arrangement, trains which have been stabled or are undergoing loading may be locked in clear of running lines allowing other train movements to pass through on the Main Line.

Such trains shall not enter onto the Main Line from the 555 Quarry, without a Train Authority having been issued authorising occupancy of the section involved.

7.2 Carnes



- Points

  Main line points are motor operated and are provided with Colour Light points indicators.

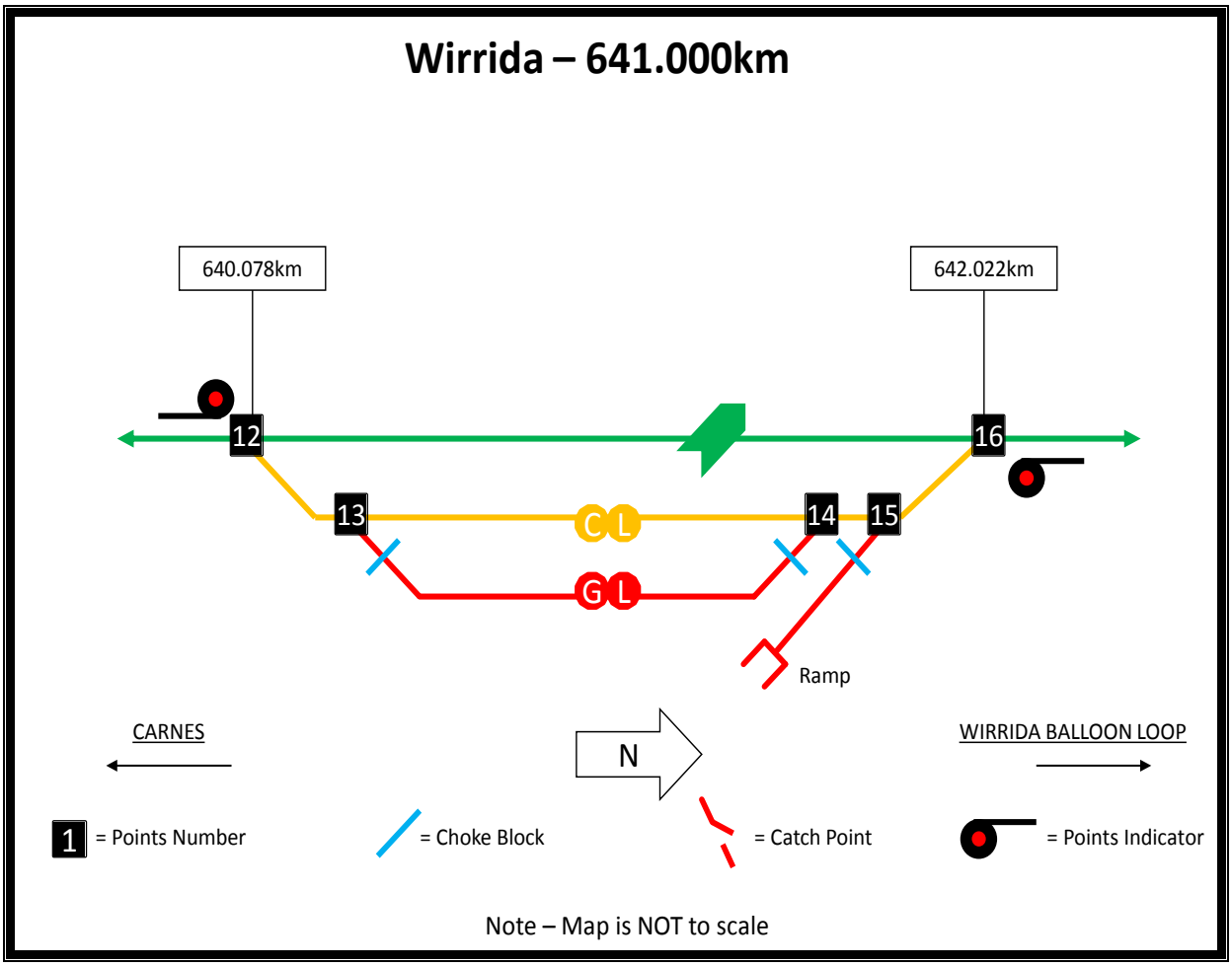
  Points on the crossing loop are locked with points stands and are provided with reflective points targets.
  Points from goods loop to spur are operated by spring lever.

- Running Line Protection
  Both ends of the goods loop - throw-over Choke Block type derail.

- Standing Room

Crossing Loop	1824 metres
Goods loop	381 metres
Spur	121 metres

7.3 Wirrida



- Points

  The Main line points are motor operated and are provided with Colour Light points indicators.

  Points on the crossing loop are locked with points stands and are provided with reflective points targets.

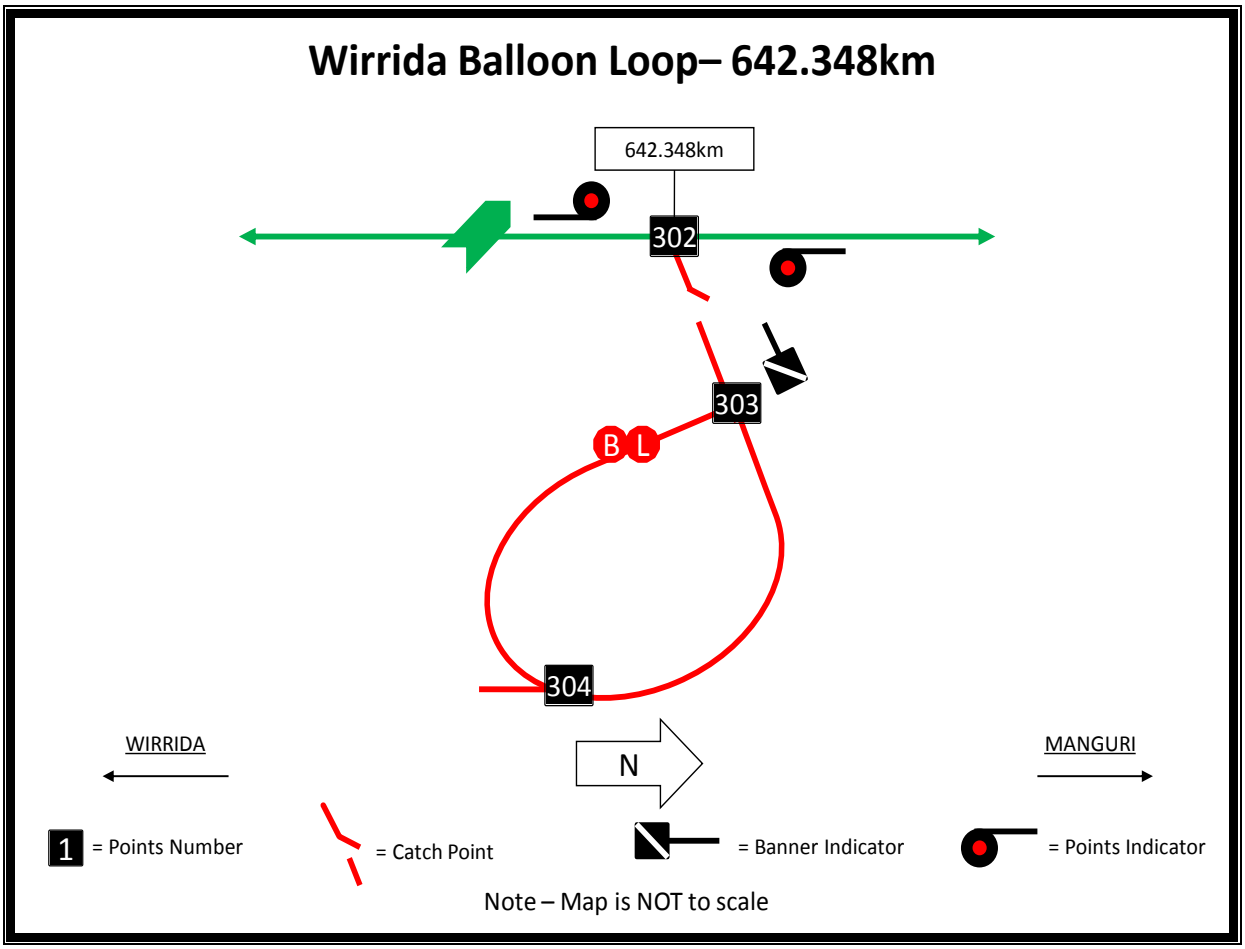
  Points from goods loop to spur are operated by spring lever.

- Running Line Protection
  Both ends of the goods loop and spur - throw-over Choke Block type derail.

- Standing Room

Crossing Loop	1830 metres
Goods loop	1560 metres
Spur	196 metres

7.4 Wirrida Balloon Loop



- Points

  The Main line points are motor operated and are provided with Colour Light points indicators.

  Points on the balloon loop are locked with points stands and are provided with reflective points targets. Points are also self-restoring and set for the diverge.

  Points from the balloon loop to spur are operated by spring lever.

- Running Line Protection

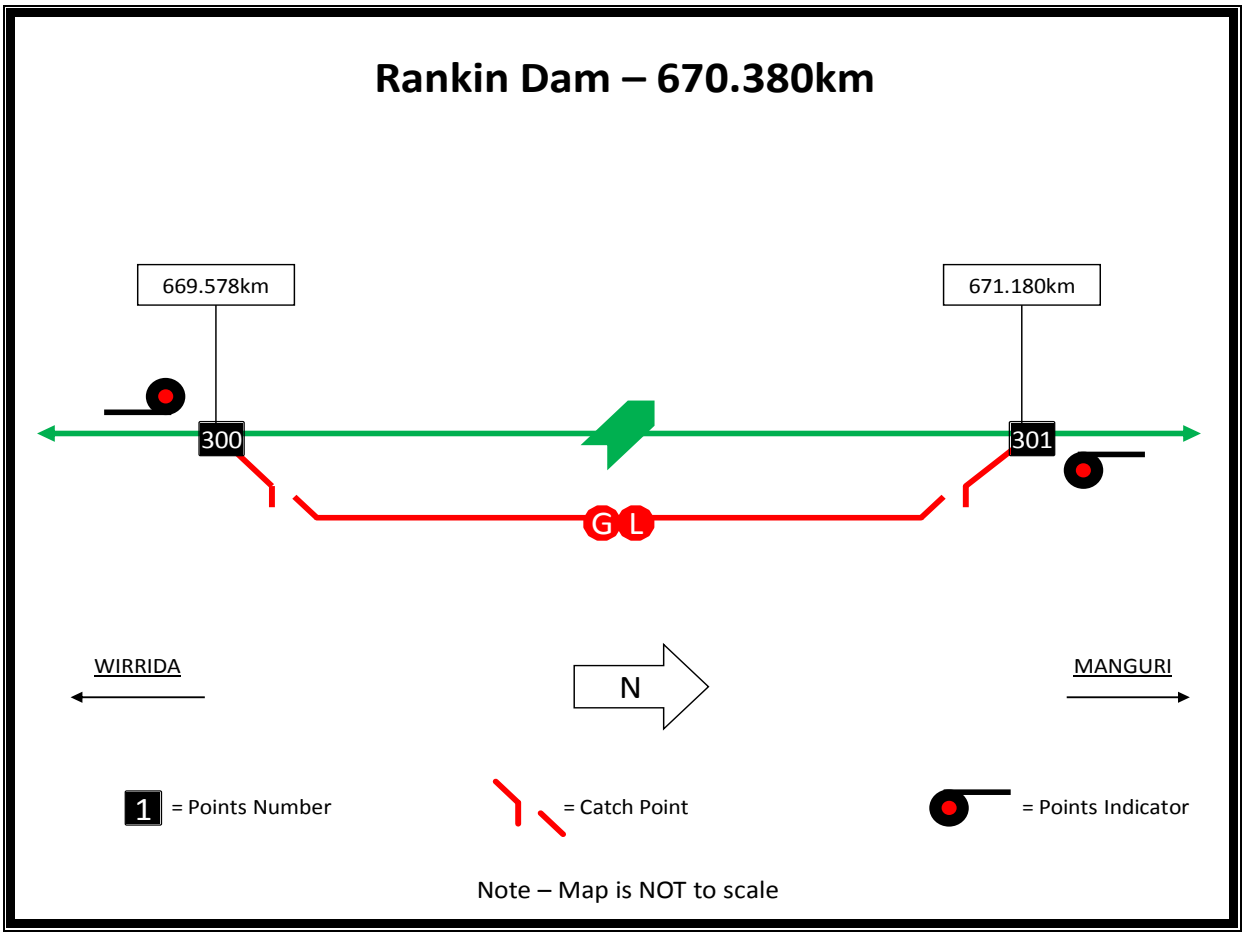
  Single end of the Balloon Loop – Catch Point type derail.

- Standing Room

Balloon Loop	3768 metres
Spur	107 metres

Note: Wirrida Balloon Loop is located within Wirrida Yard Limit Boards.

7.5 Rankin Dam



- Points

  The Main line points are motor operated and are provided with Colour Light points indicators.

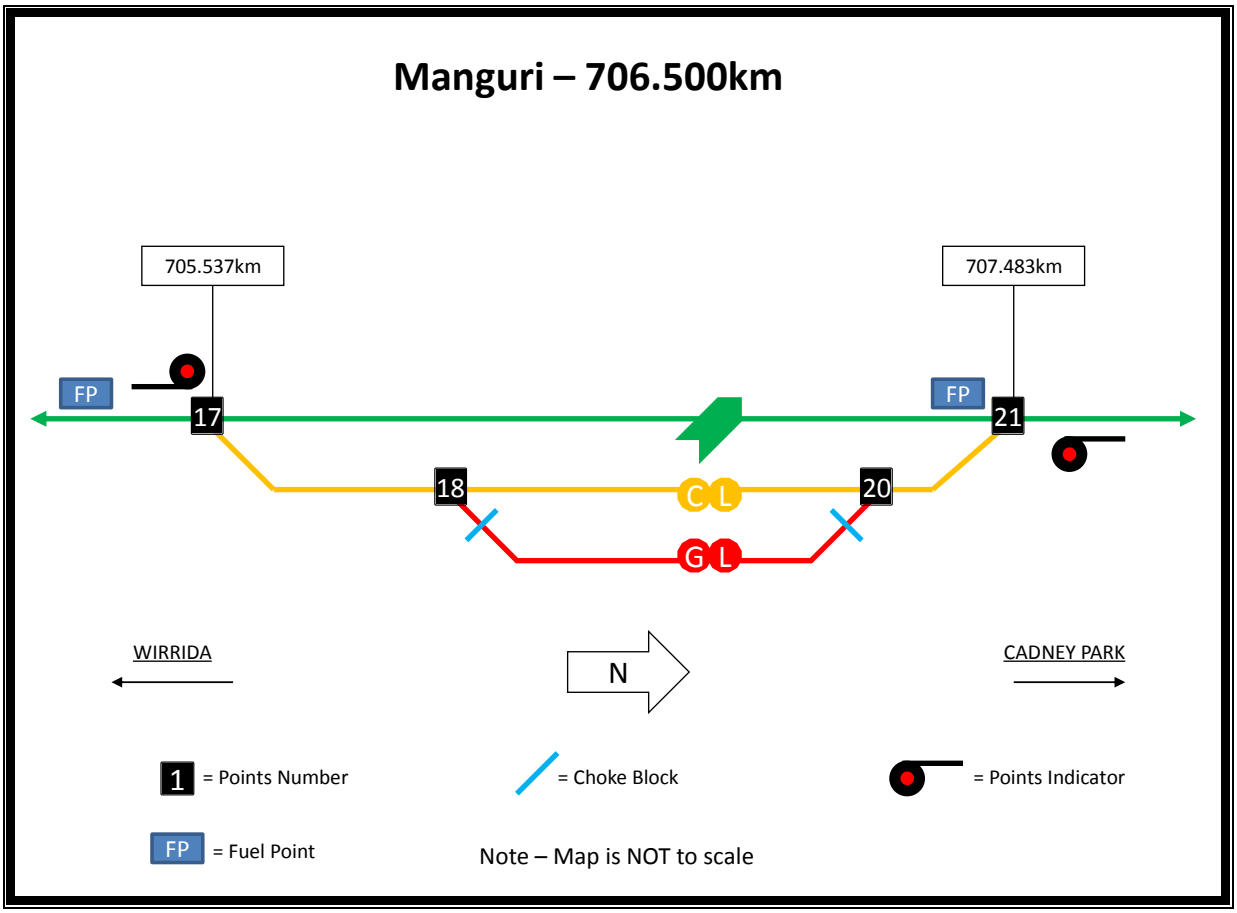
  Points on the goods loop are locked with points stands and are provided with reflective points targets.

- Running Line Protection
  Both ends of the goods loop – Catch Point type derail.

- Standing Room

Goods Loop	1462 metres

7.6 Manguri



- Points

  Main line points are motor operated and are provided with Colour Light points indicators.

  Points on the crossing loop are locked with points stands and are provided with reflective points targets.

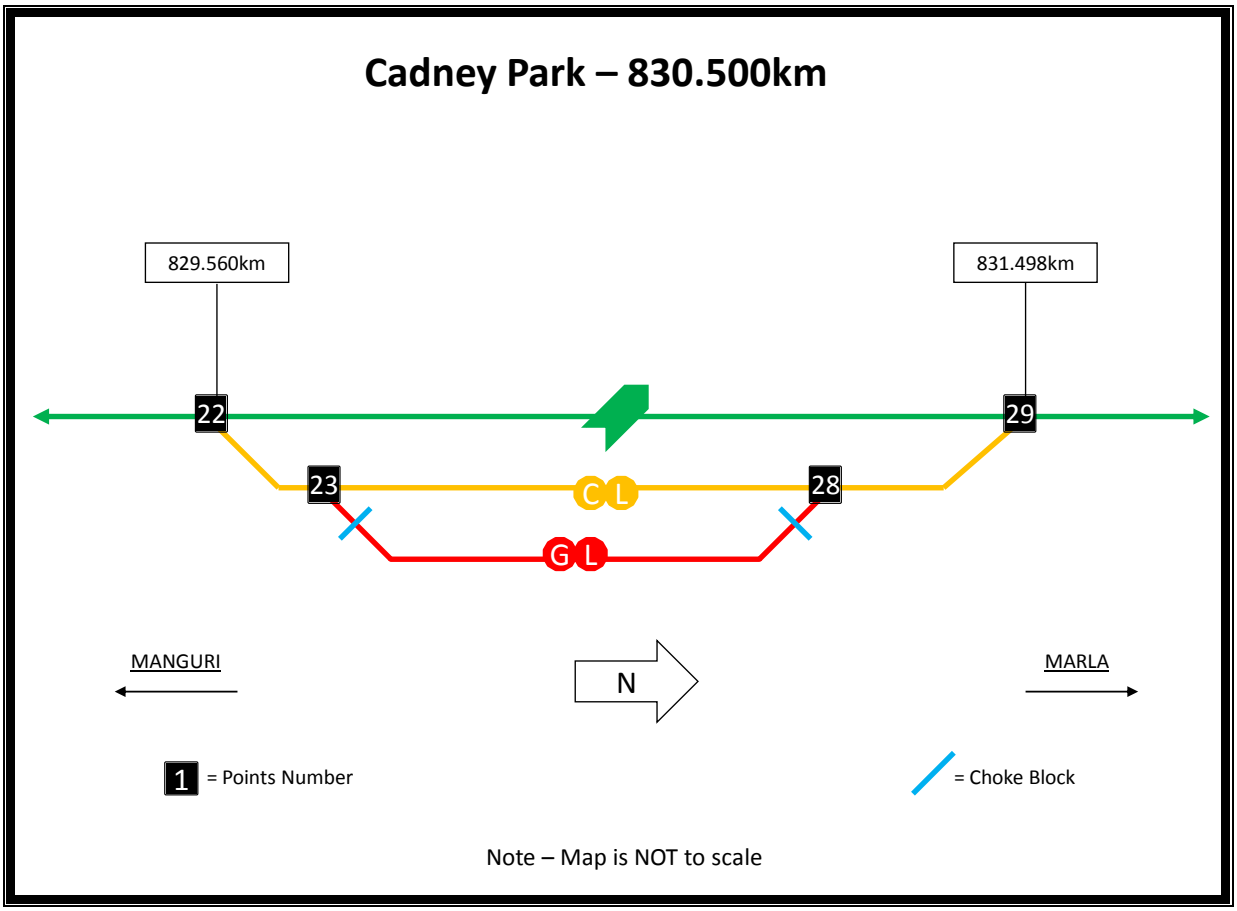
- Running Line Protection

  Both ends of the goods loop - throw-over Choke Block type derail.

- Standing Room

Crossing Loop	1828 metres
Goods loop	912 metres

7.7 Cadney Park



- Points

  All main line and crossing loop points are locked with points stands and are provided with reflective points targets.

  All other points are operated by spring lever.

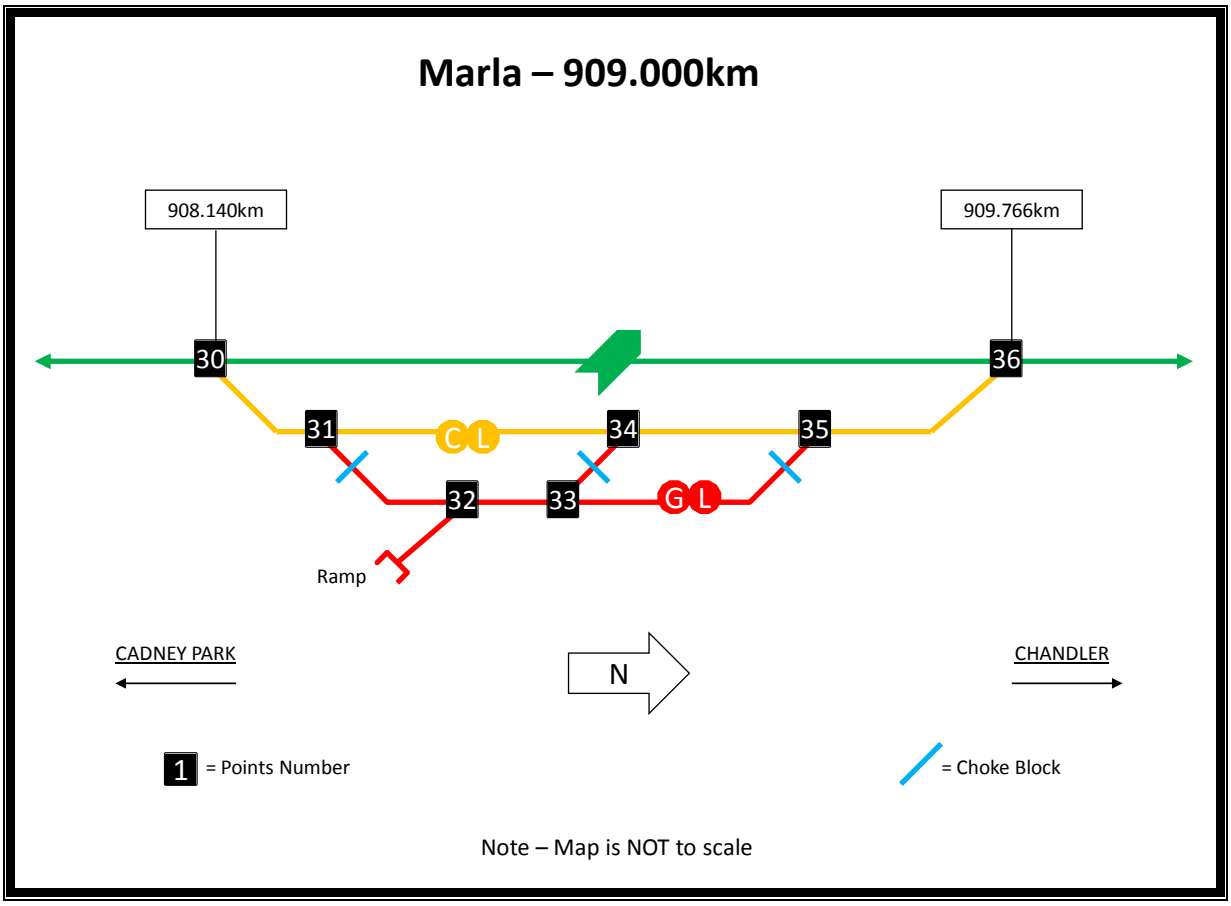
- Running Line Protection

  Both ends of the goods loop - throw-over Choke Block type derail.

- Standing Room

Crossing Loop	1826 metres
Goods loop	1016 metres
Spur	187 metres

7.8 Marla



- Points

  All main line and crossing loop points are locked with points stands and are provided with reflective points targets.

  All other points are operated by spring lever.

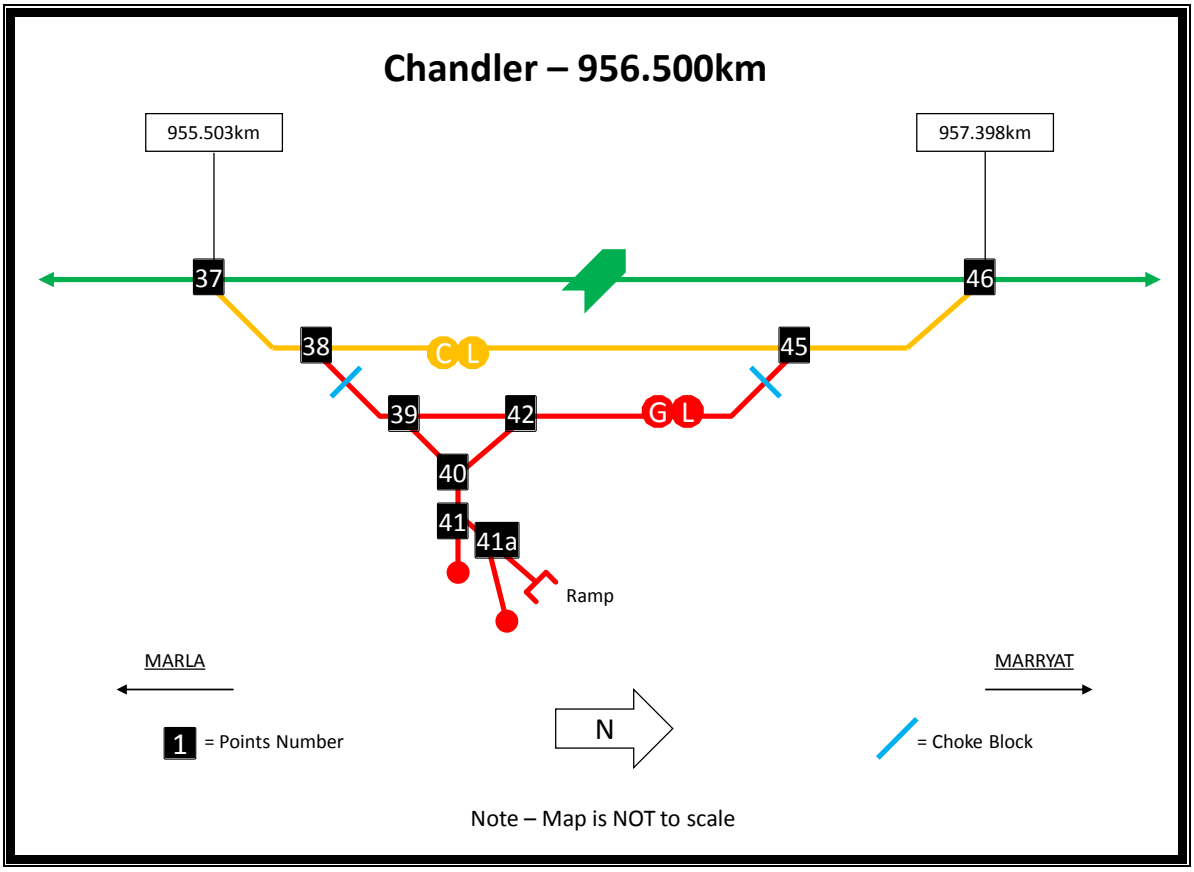
- Running Line Protection

  Both ends of the goods loop and middle cross-over - throw-over Choke Block type derail.

- Standing Room

Crossing Loop	1503 metres
Goods loop	1012 metres

7.9 Chandler



- Points

  All main line and crossing loop points are locked with points stands and are provided with reflective points targets.

  All other points are operated by spring lever.

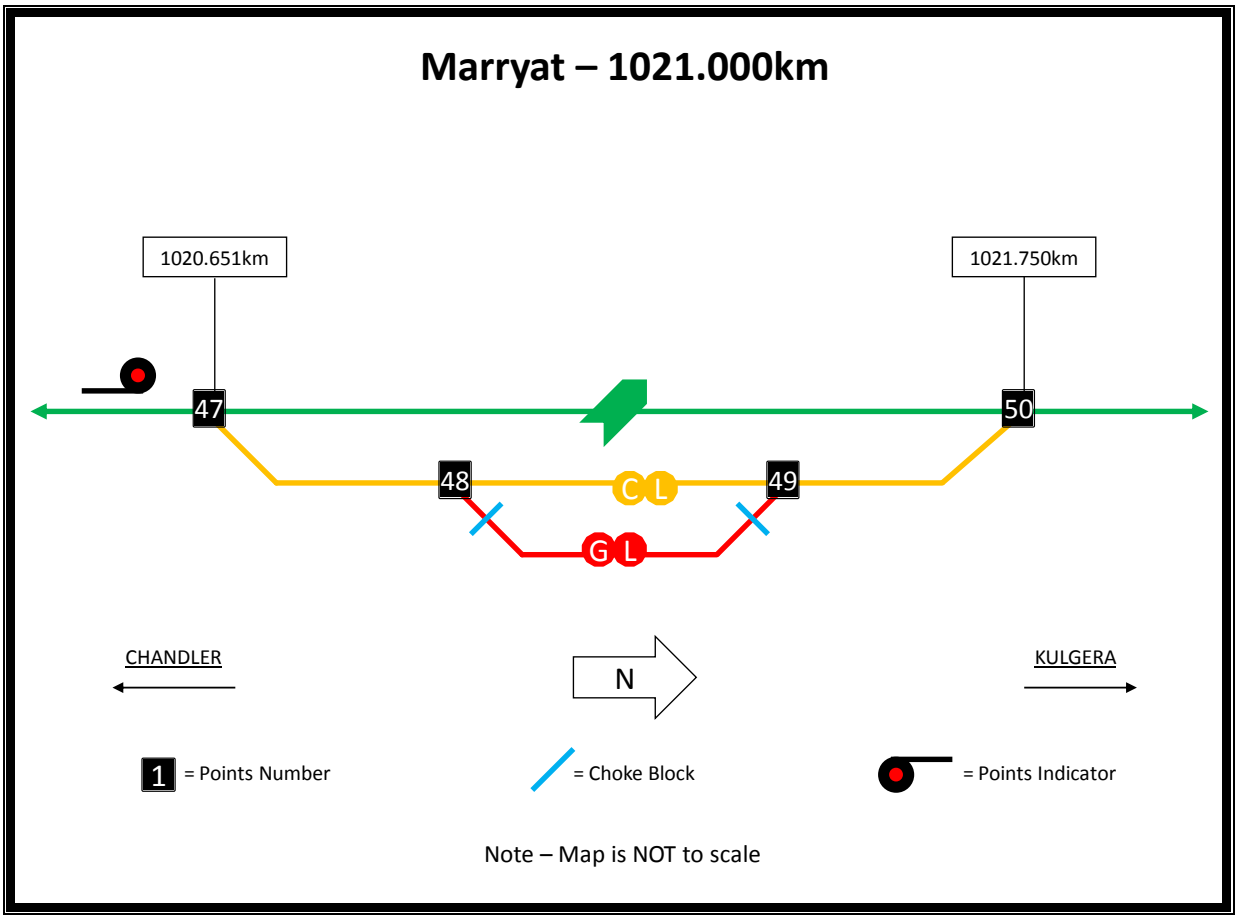
- Running Line Protection

  Both ends of the goods loop - throw-over type derail.

- Standing Room

Crossing Loop	1785 metres
Goods loop	1021 metres

7.10 Marryat



- Points

  All points are locked with points stands and are provided with reflective points targets.

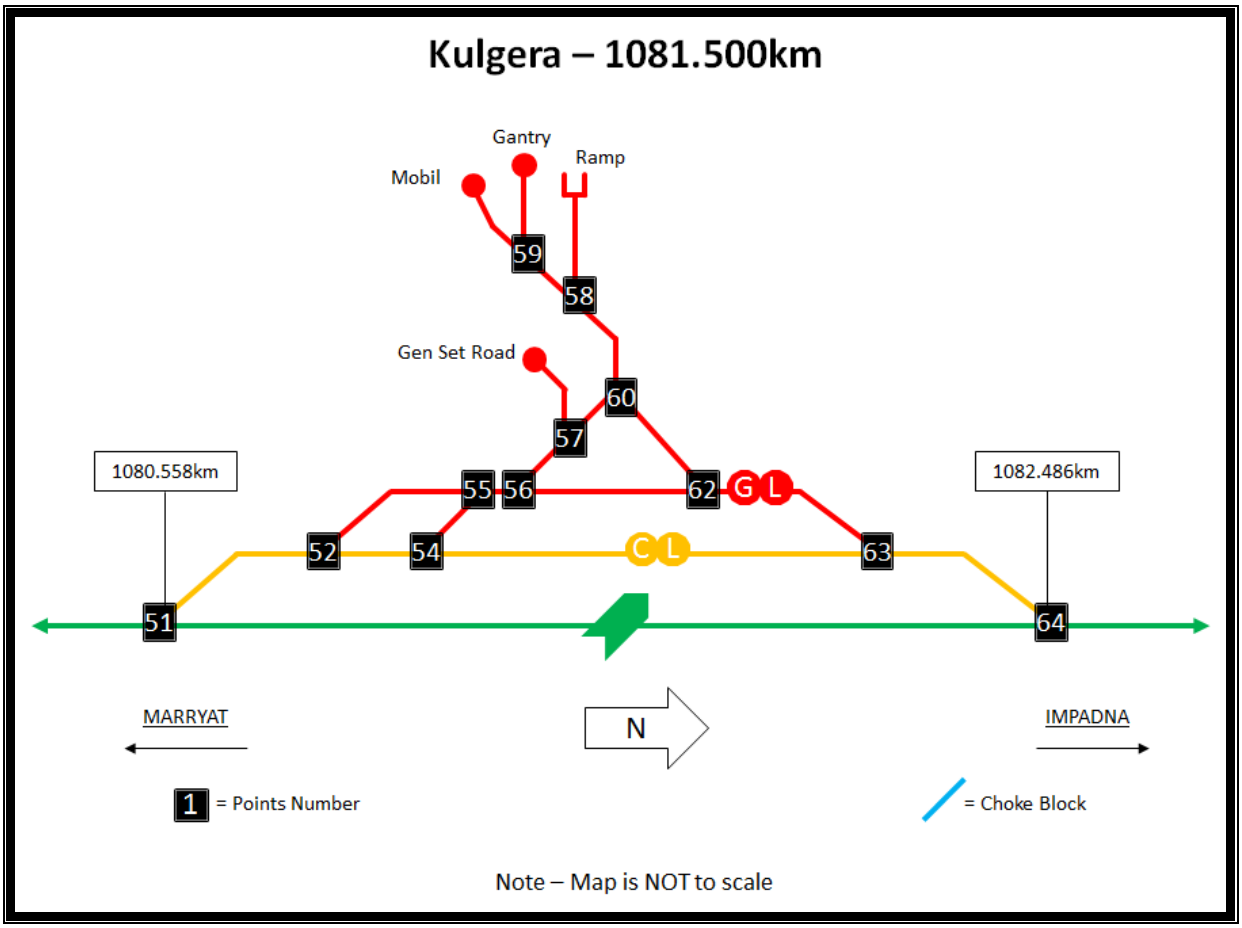
- Running Line Protection

  Both ends of the goods loop - throw-over Choke Block type derail.

- Standing Room

Crossing Loop	988 metres
Goods loop	390 metres

7.11 Kulgera



- Points

  All main line and crossing loop points are locked with points stands and are provided with reflective points targets.

- Running Line Protection

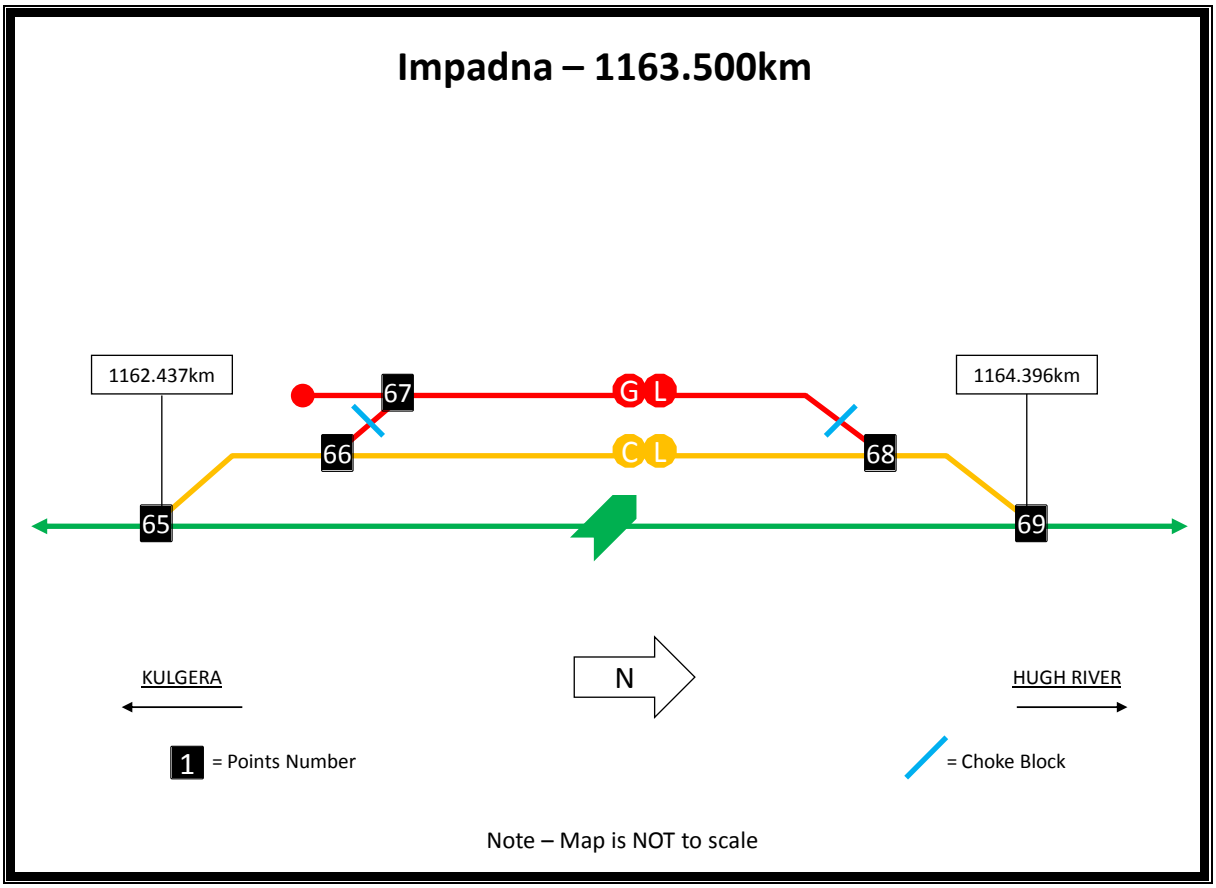
  Both ends of the goods loop and middle cross-over - throw-over Choke Block type derail.

- Triangle roads are no longer operational.

- Standing Room

Crossing Loop	1815 metres
Goods loop	997 metres

7.12 Impadna



- Points

  All main line and crossing loop points are locked with points stands and are provided with reflective points targets.

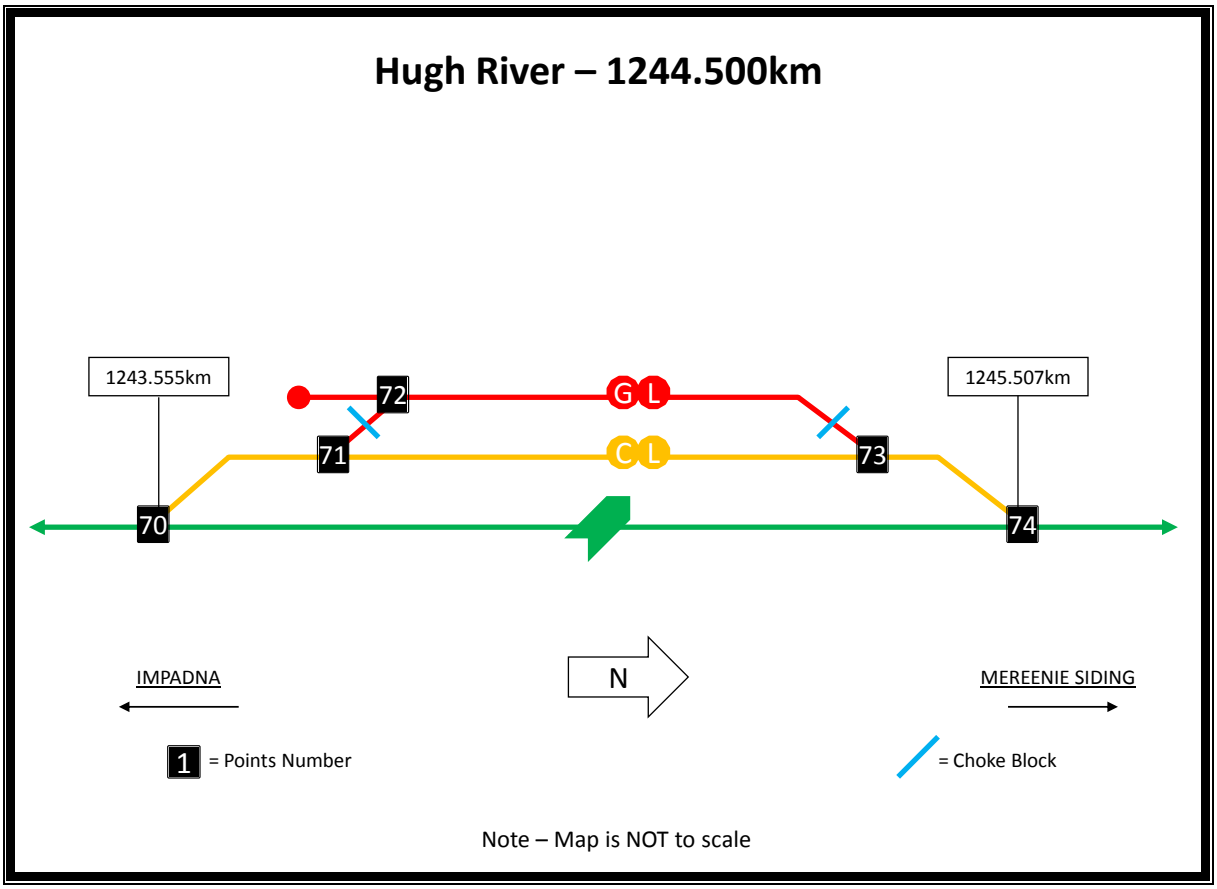
  Points from goods loop to spur are operated by spring lever.

- Running Line Protection
  Both ends of the goods loop - throw-over Choke Block type derail.

- Standing Room

Crossing Loop	1839 metres

7.13 Hugh River



- Points

  All main line and crossing loop points are locked with points stands and are provided with reflective points targets.

  Points from goods loop to spur are operated by spring lever.

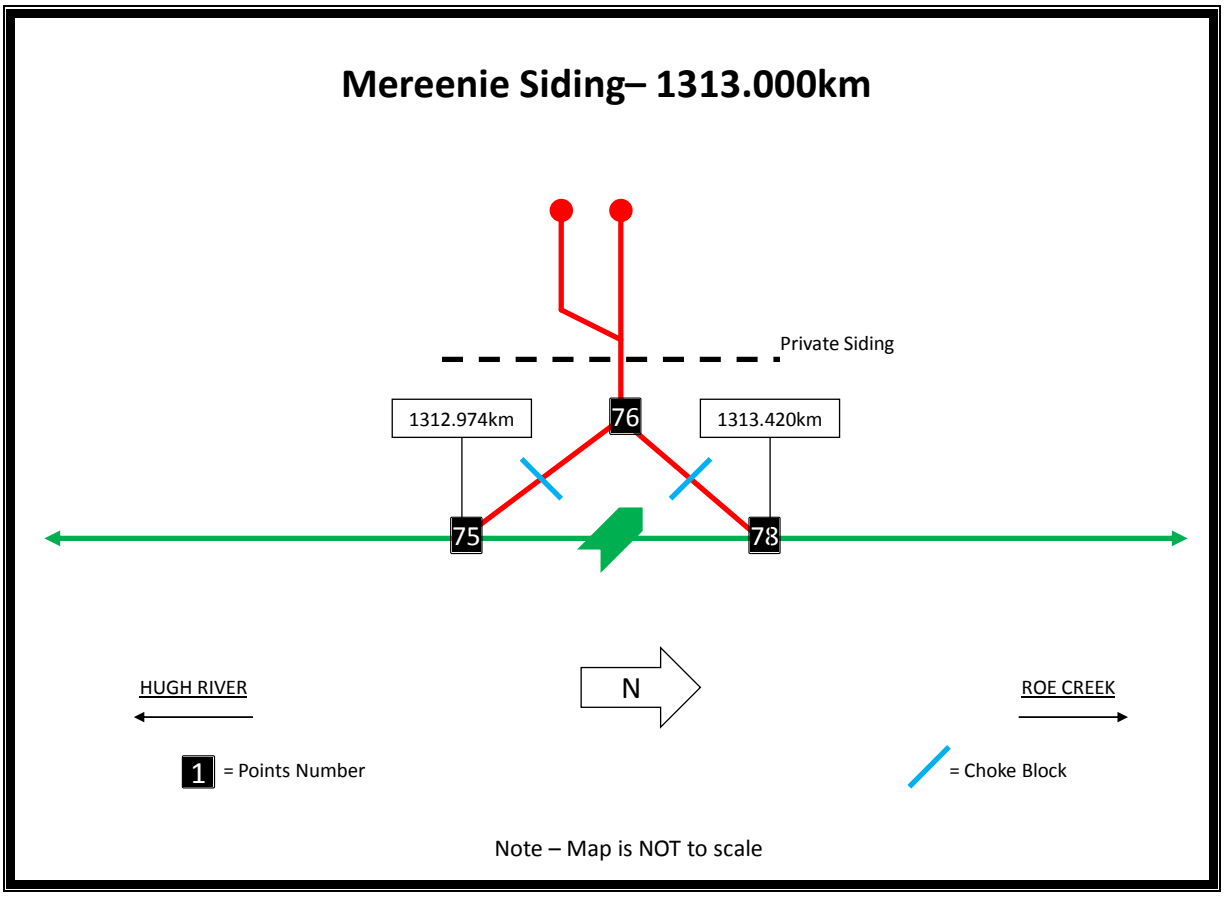
- Running Line Protection

  Both ends of the goods loop - throw-over Choke Block type derail.

- Standing Room

Crossing Loop	1839 metres
Goods loop	926 metres
Goods spur	121 metres

7.14 Mereenie Siding



- Points

  All points except #76 (spring lever) are locked with points stands and are provided with reflective points targets.

- Running Line Protection

  Both legs of the triangle throw-over Choke Block type derail.

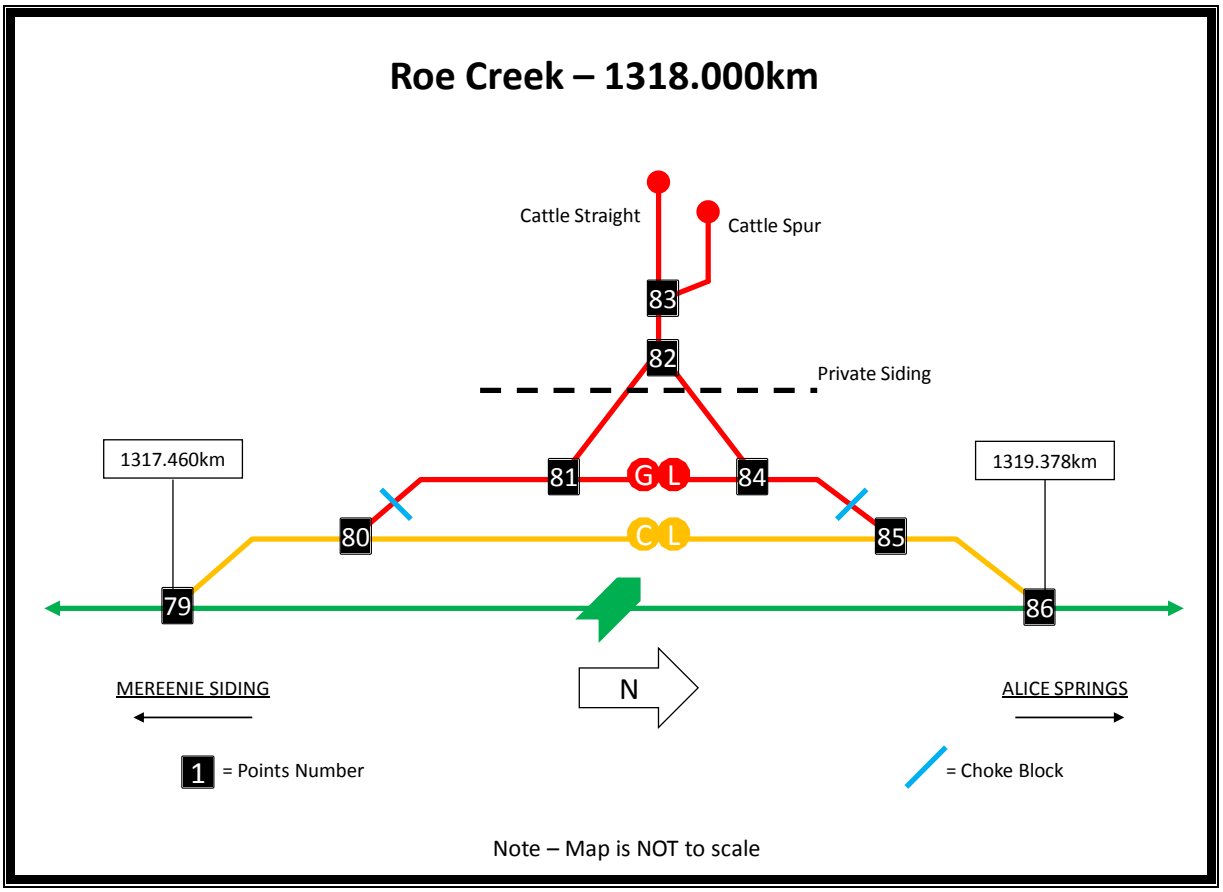
- Standing Room

Triangle North Leg	376 metres
Triangle South Leg	381 metres

- Special Instructions

  The tracks beyond the apex of the triangle are private sidings. No access to GWA.

7.15 Roe Creek



- Points

  All points are locked with points stands and are provided with reflective points targets.

- Running Line Protection

  Both ends of the goods loop - throw-over Choke Block type derail.

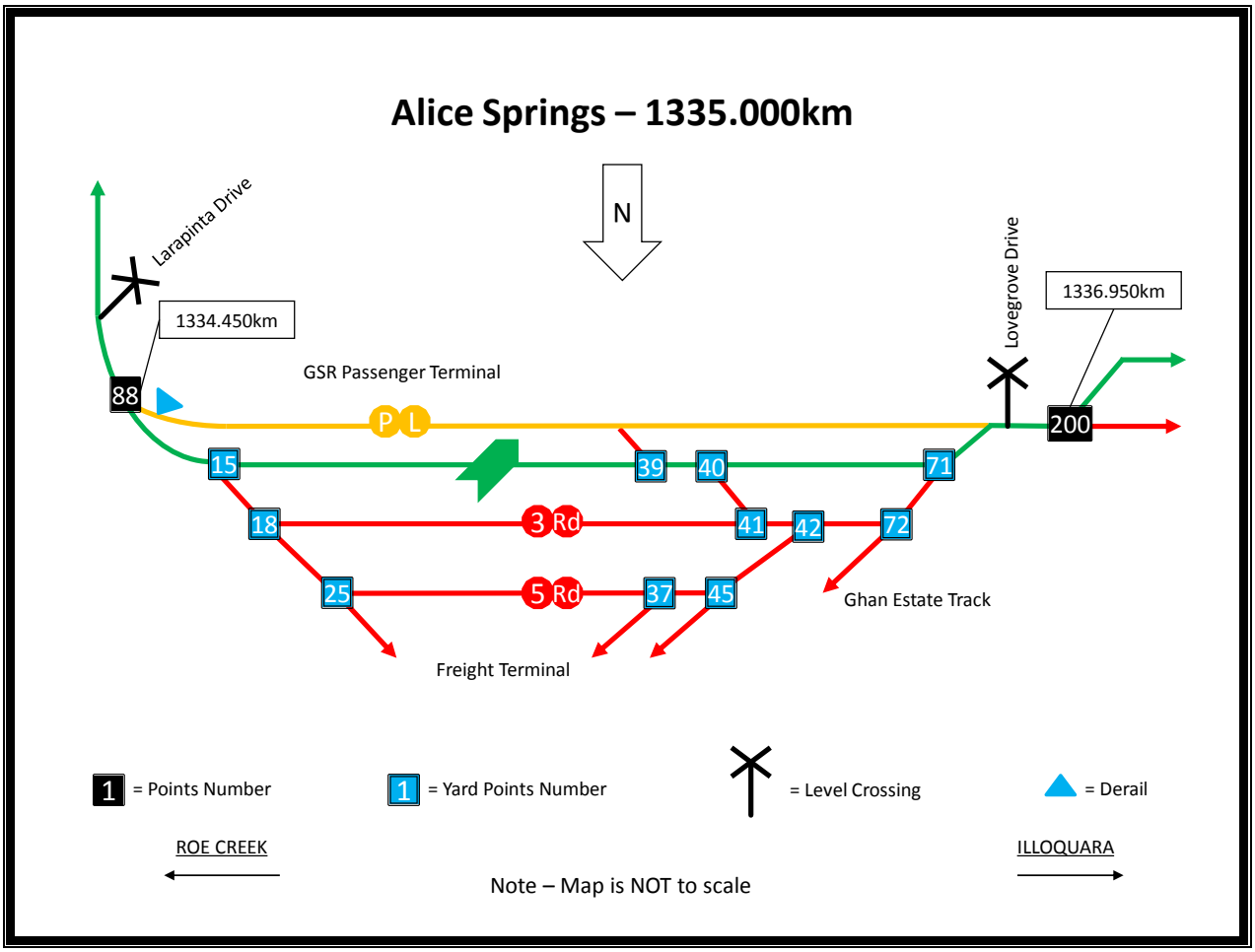
- Standing Room

Crossing Loop	1800 metres
Goods loop	800 metres

- Special Instructions

  The tracks beyond numbers 81 and 84 points are private sidings. No access to GWA.

7.16 Alice Springs



- Points

  All points are locked with points stands and reflective points targets.

- Main Line Protection

  Protected by locked points, derails and choke blocks.

- Standing Room

Mainline (“2 Road”)	1856 metres
3 Road	1342 metres
5 Road	626 metres

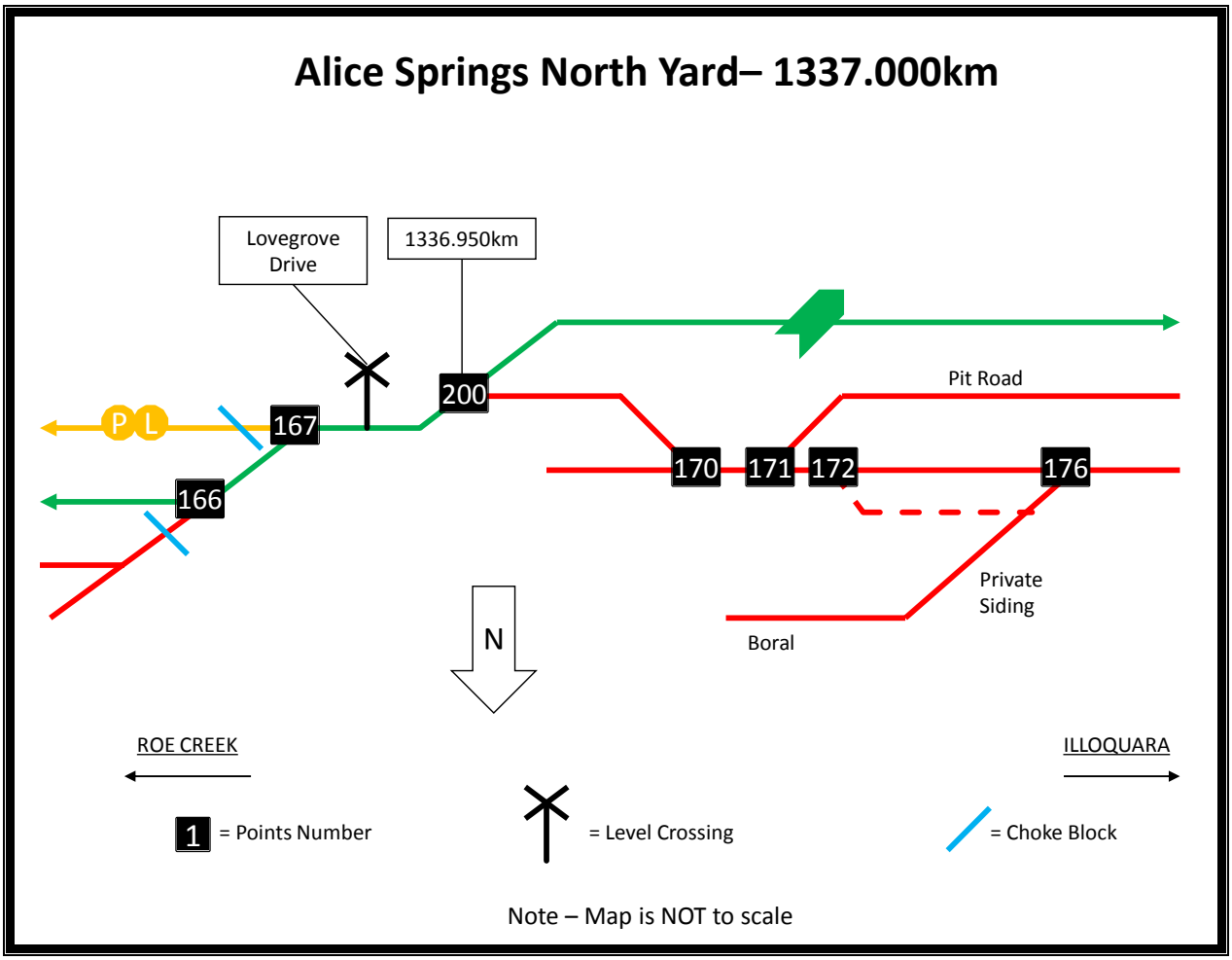
- Caution

  The level crossing signals at Larapinta Drive (1334.5km) and Lovegrove Drive (1337.00 km) are operated by push buttons for all movements departing Alice Springs. These devices will operate automatically for the arrival of trains into Alice Springs.

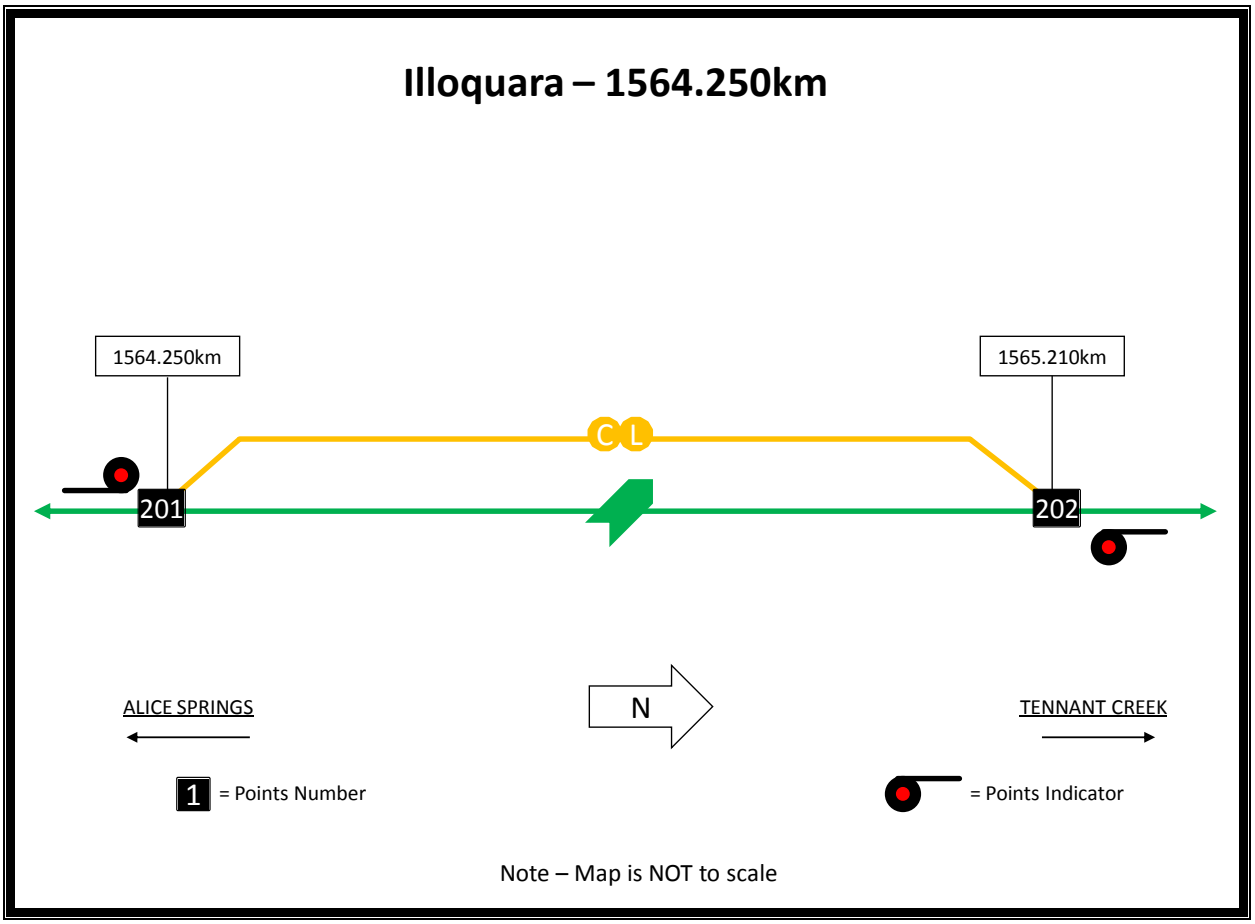
- Unattended Location

  Access to GWA Terminal Locations at Alice Springs and Berrimah shall be managed in accordance with the procedures established by the Terminal Manager for each particular Terminal. Please note that both of these Terminals are unattended at certain times during the day.

7.17 Alice Springs North Yard



7.18 Illoquara



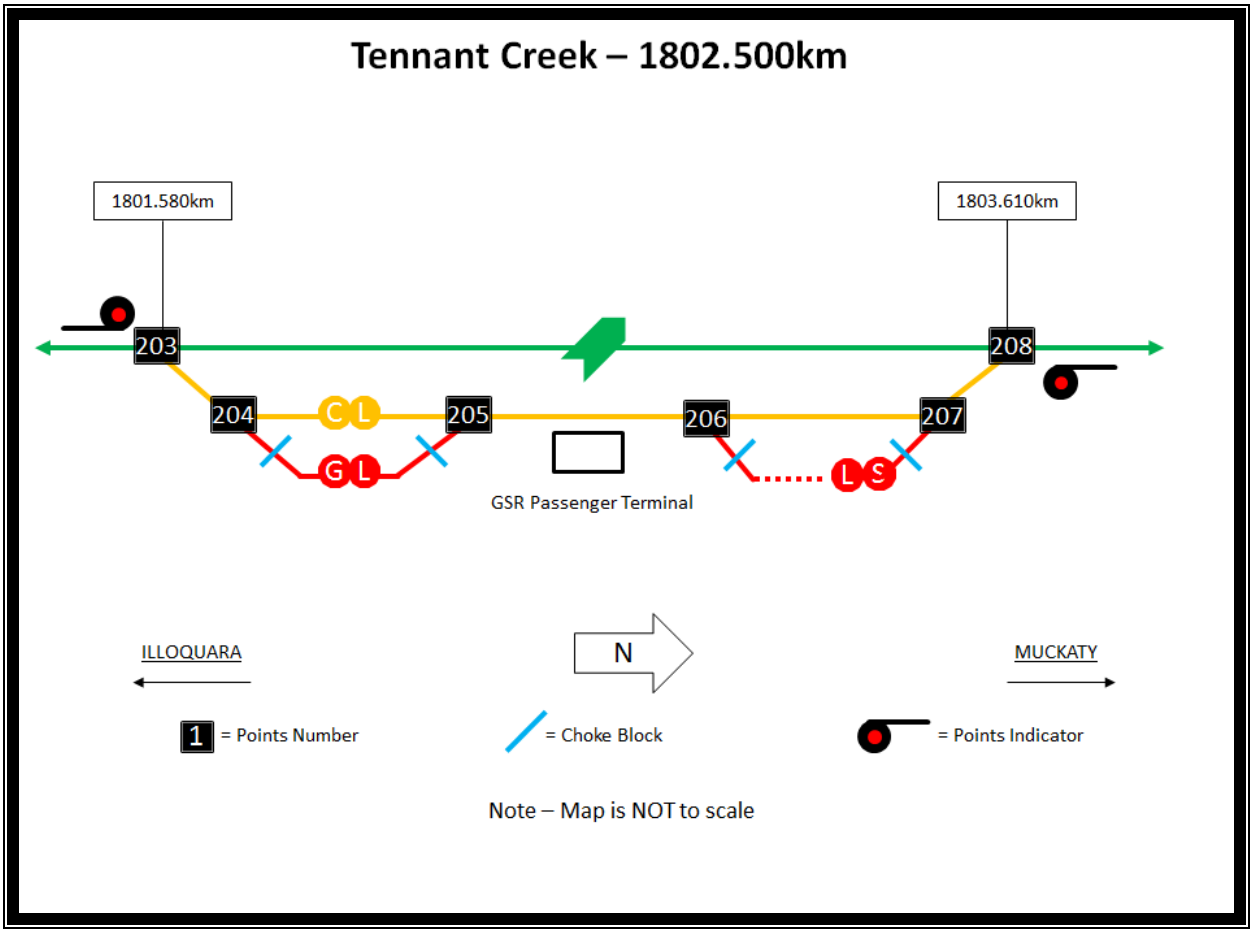
- Points

  Main line points are motor operated and are provided with Colour Light points indicators.

- Standing Room

Crossing Loop	1831 metres

7.19 Tennant Creek



- Points

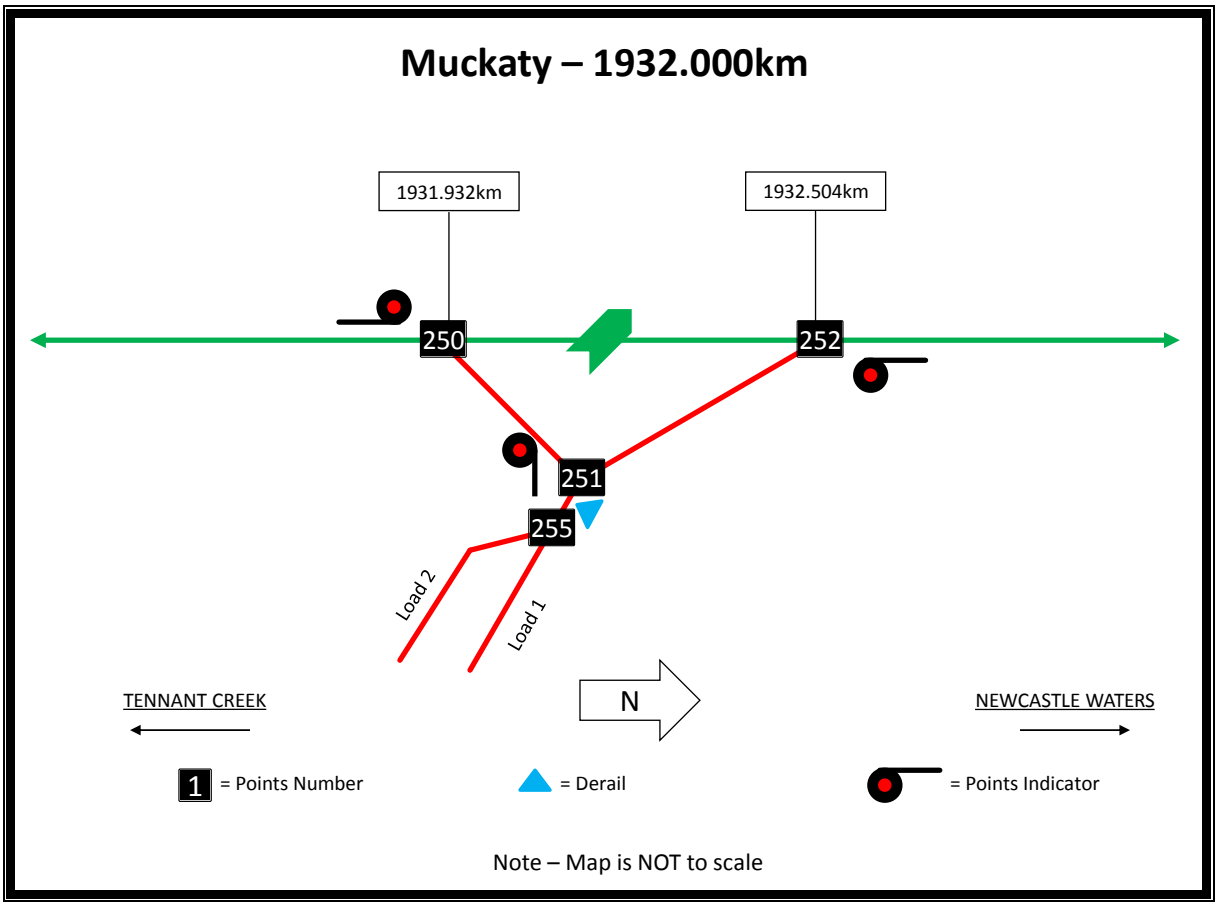
  Main line points are motor operated and are provided with Colour Light points indicators.

  All other points are operated by lockable hand-throw levers and are provided with reflective points targets.

- Standing Room

Crossing Loop	1905 metres
Goods loop	208 metres
Loco Shed Loop	398 metres

7.20 Muckaty



- Points

  Main line points are motor operated and are provided with Colour Light points indicators.

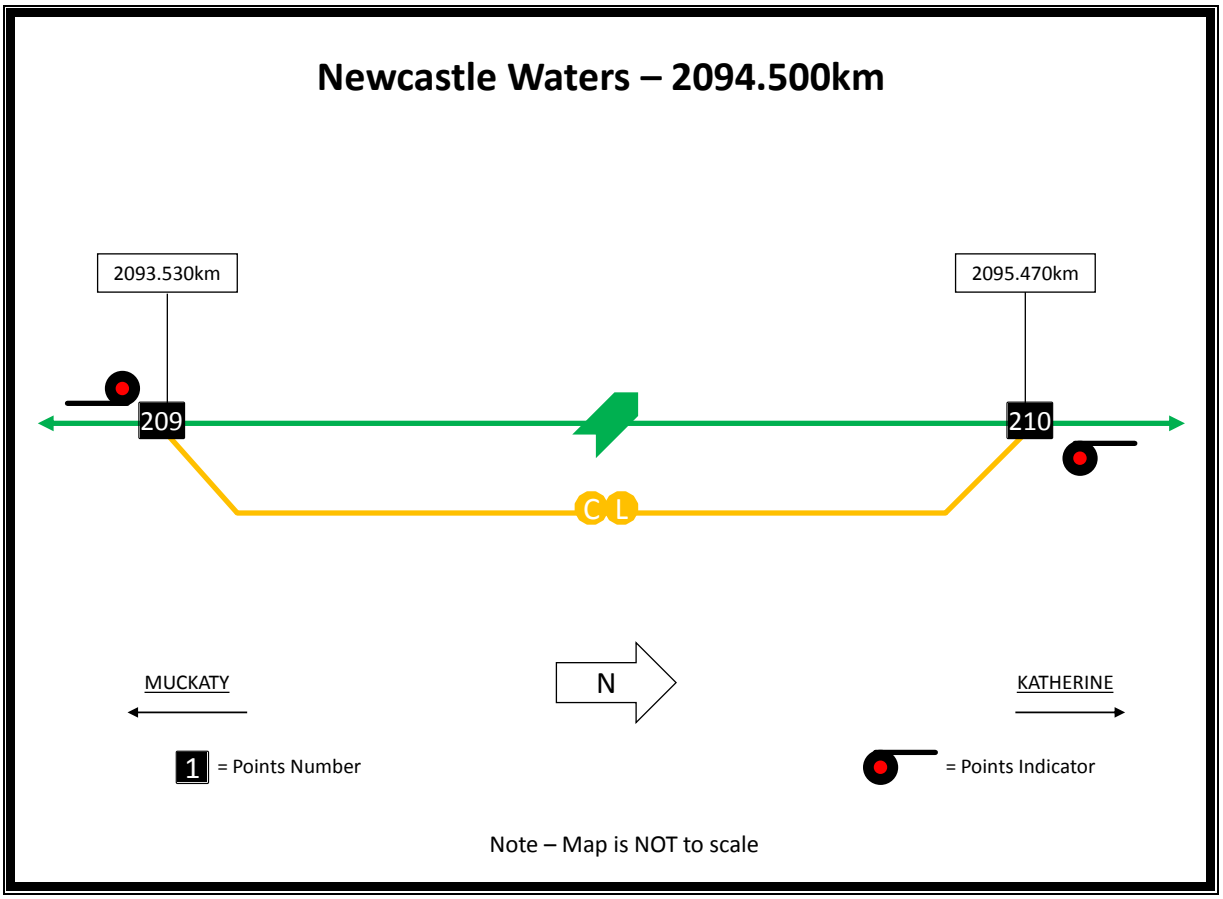
  Apex points have a Thornley trailable switch with normal to the North leg and switch enhancers focused to the north and south main line.

  Derail protection above apex points to be ON only when unattended rollingstock stabled on spur.

- Standing Room

Loading Spur 1	589 metres
Loading Spur 2	638 metres
North leg	396 metres
South Leg	288 metres

7.21 Newcastle Waters



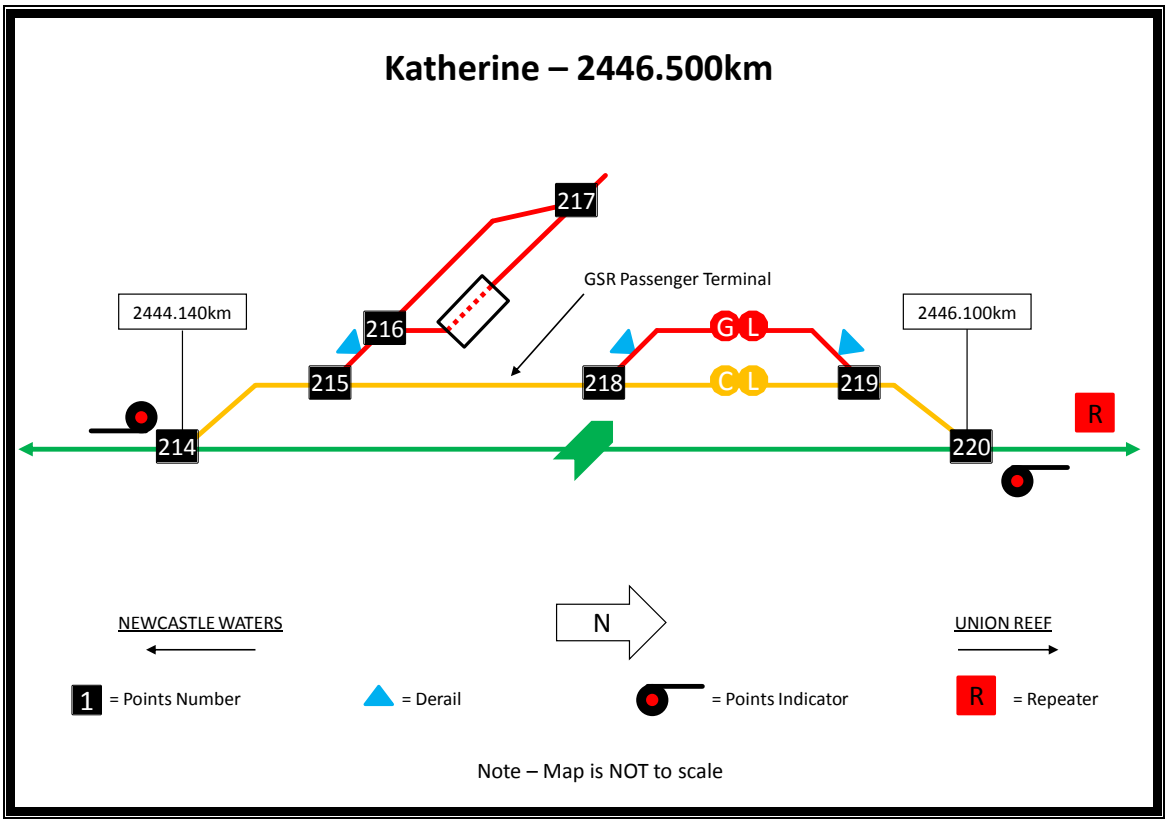
- Points

  Main line points are motor operated and are provided with Colour Light points indicators.

- Standing Room

Crossing Loop	1829 metres

7.22 Katherine



- Points

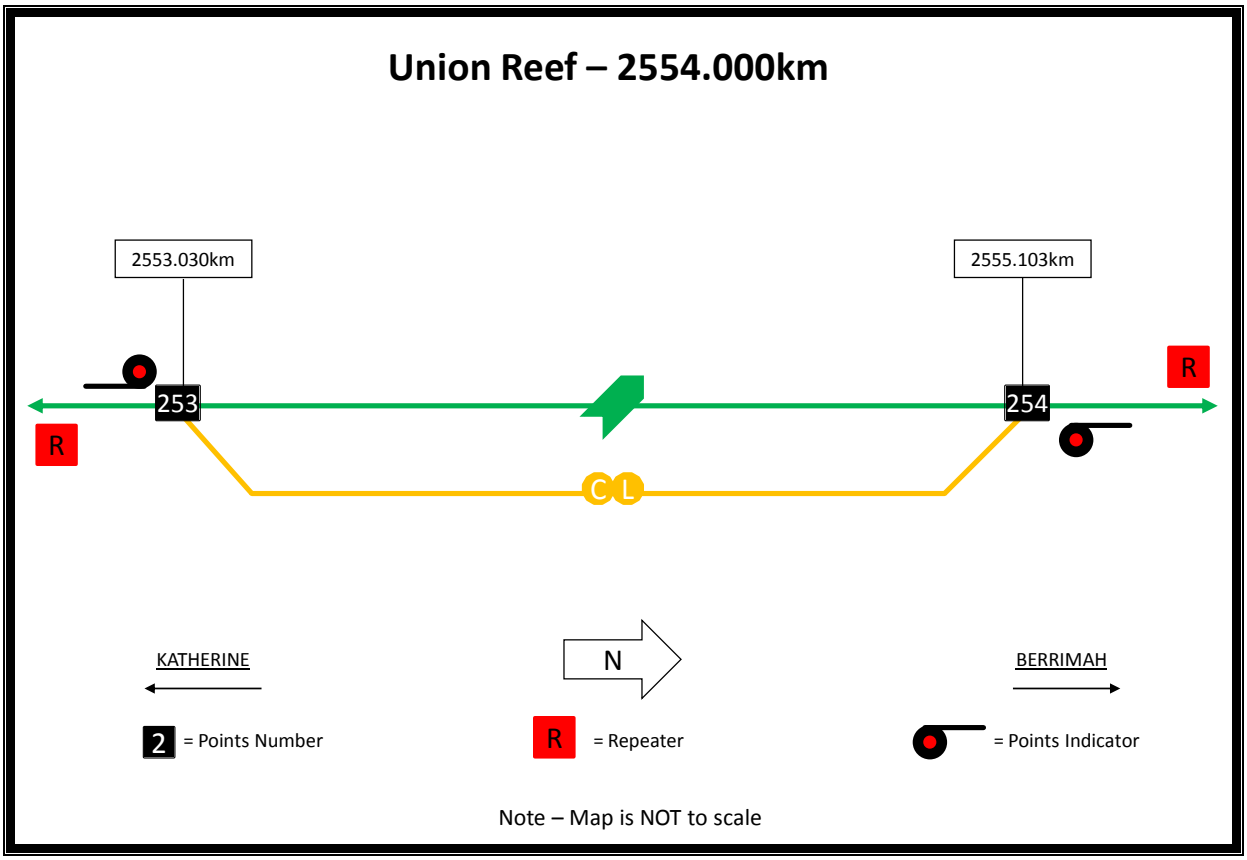
  Main line points are motor operated and are provided with Colour Light points indicators.

  All other points are operated by lockable hand-throw levers and are provided with reflective points targets.

- Standing Room

Crossing Loop	1827 metres
Loco depot loop	436 metres
Loco run around	197 metres
Goods Loop	543 metres

7.23 Union Reef



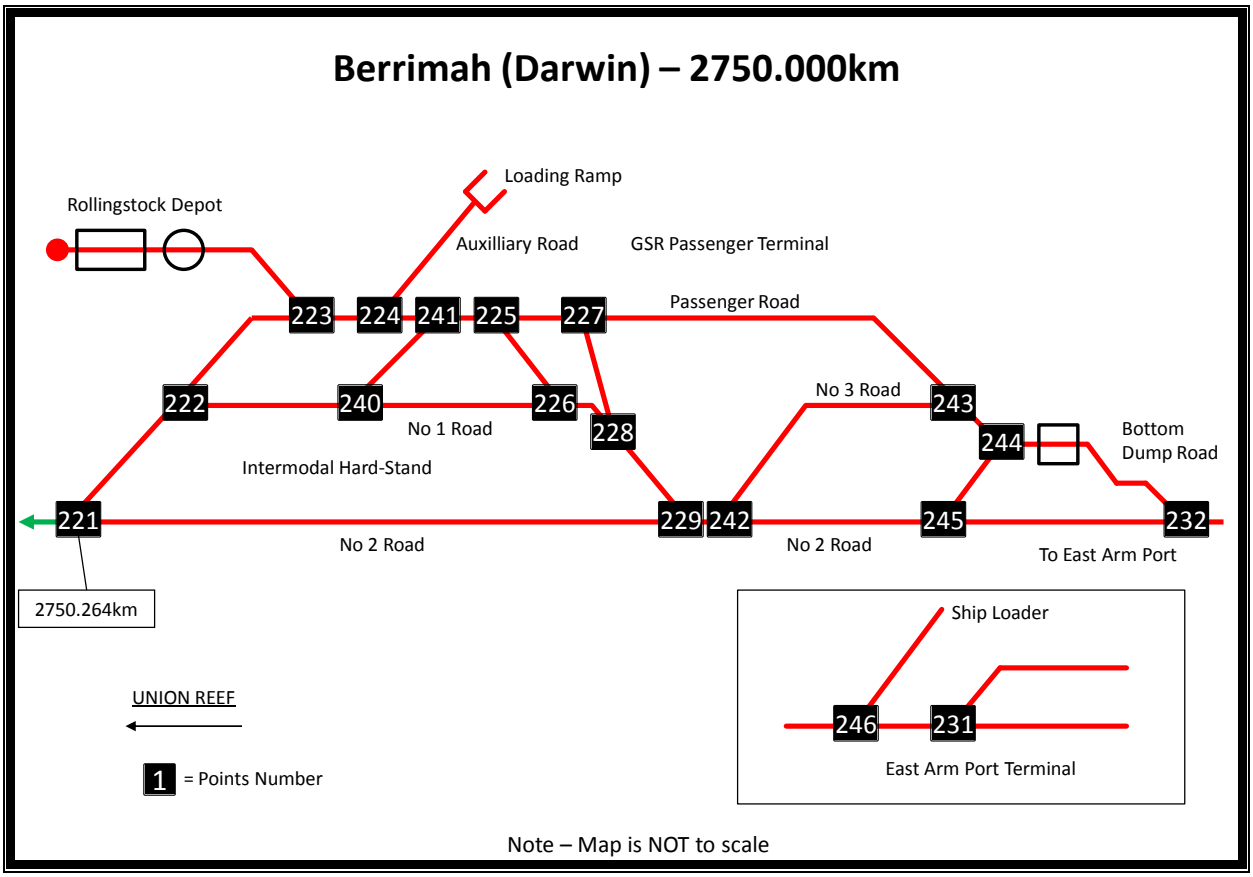
- Points

  Main line points are motor operated and are provided with Colour Light points indicators.

- Standing Room

Crossing Loop	1937 metres

7.24 Berrimah (Darwin)



- Points

  All points are operated by lockable hand-throw levers. Some are provided with reflective points targets.

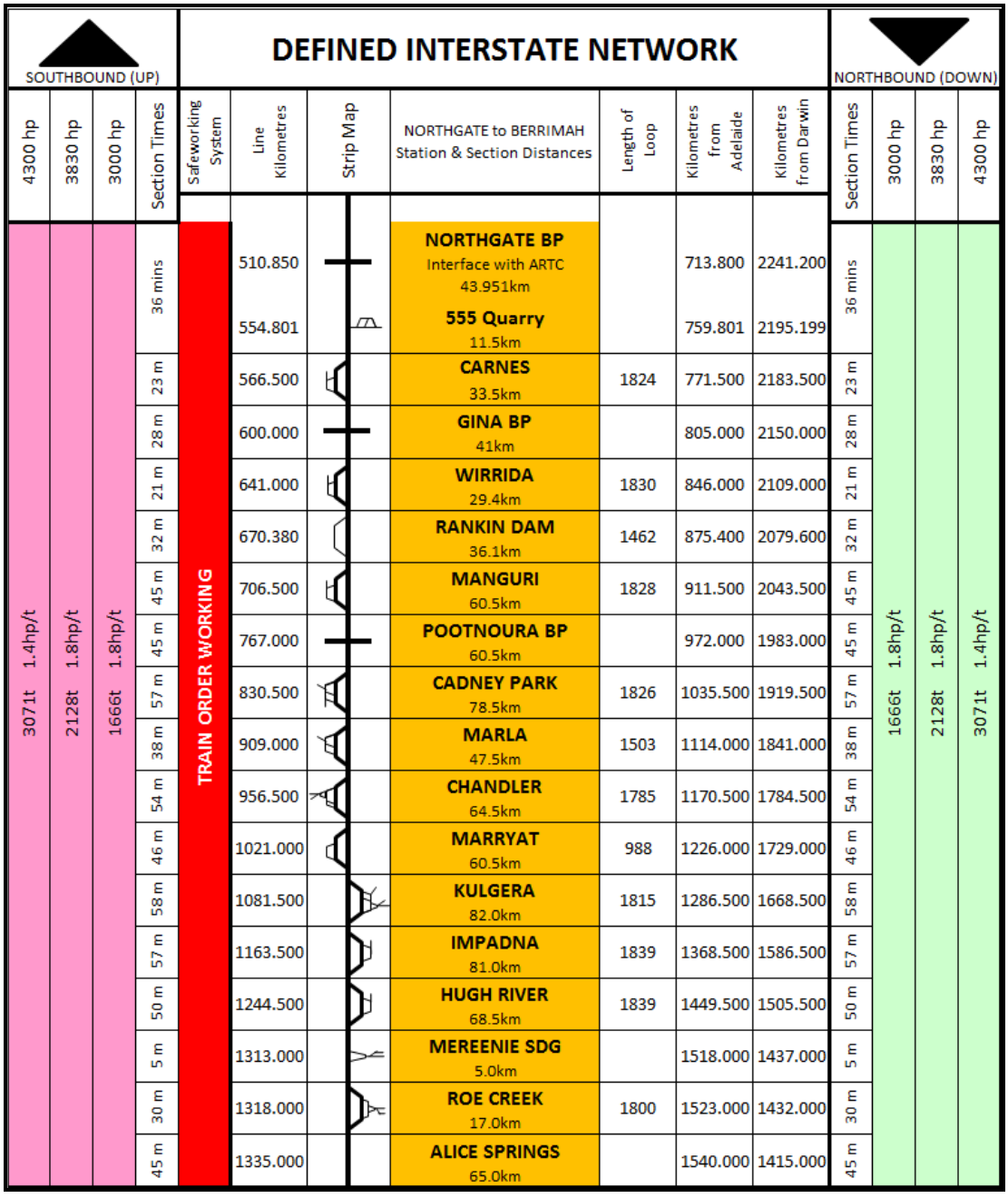
- Standing Room

No 1 Road	2187 metres
No 2 Road	2187 metres
Passenger road	1214 metres
No 3 Road	872 metres
Bottom dump road	529 metres
East Arm Terminal Spurs	210 metres

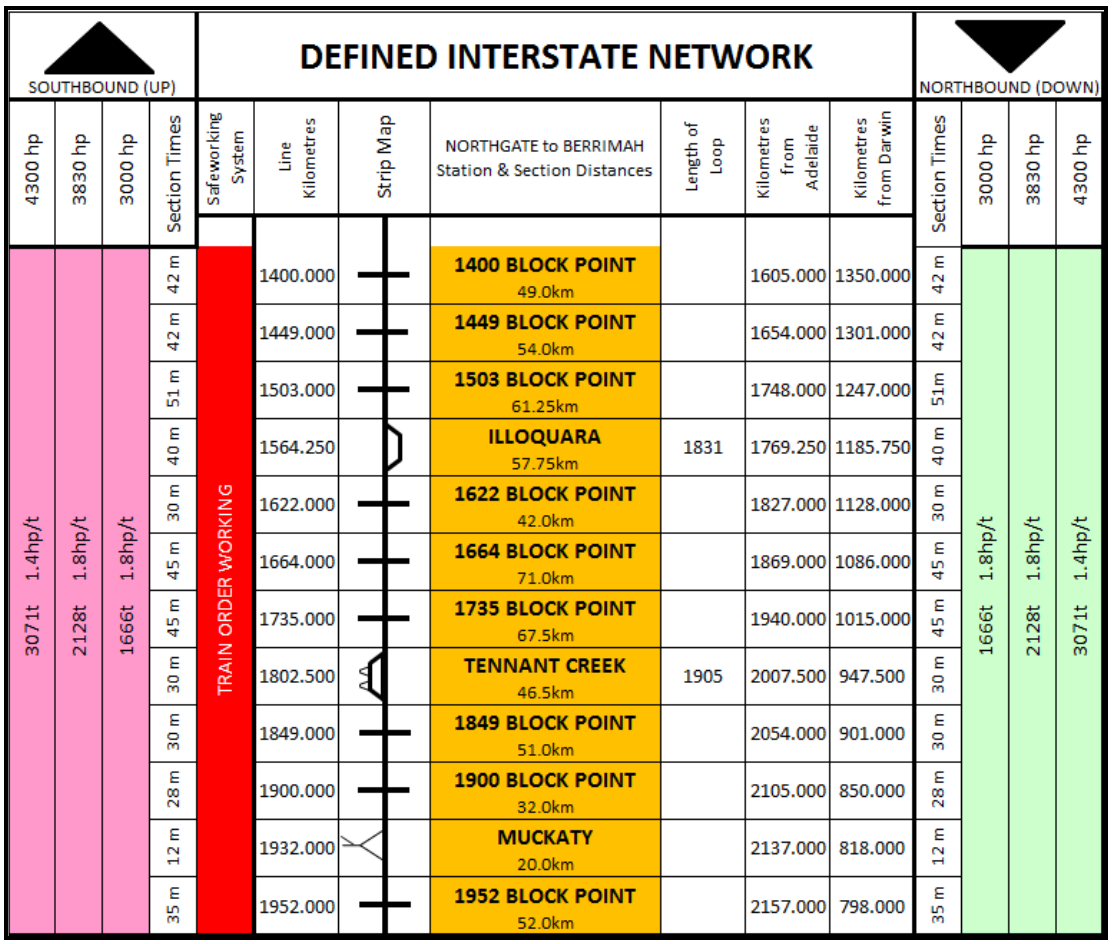
- Unattended Location

  Access to GWA Terminal Locations at Alice Springs and Berrimah shall be managed in accordance with the procedures established by the Terminal Manager for each particular Terminal. Please note that both of these Terminals are unattended at certain times during the day.

8. Strip Map – Tarcoola to Berrimah

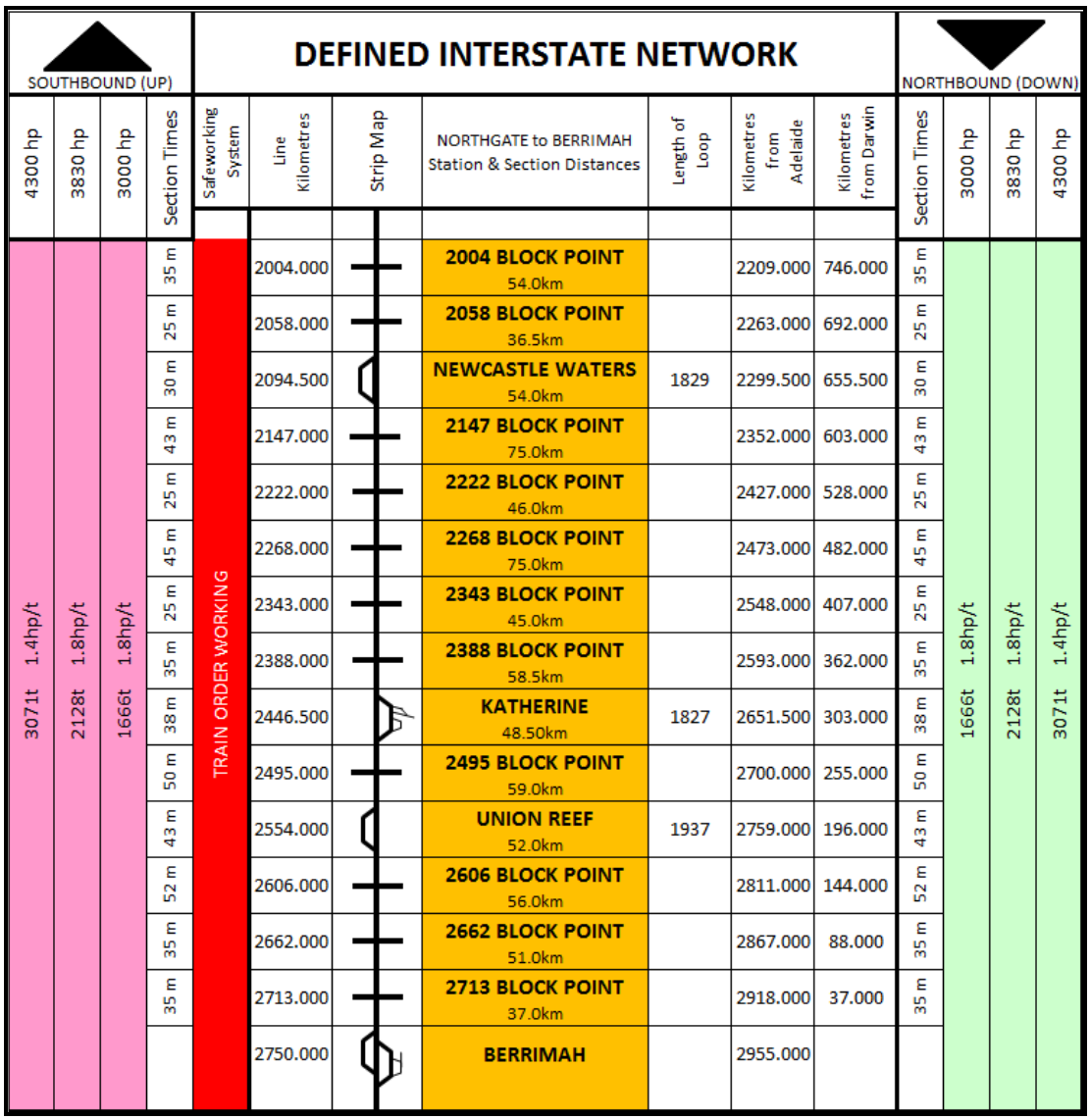


Note: Load details and sections times are INDICATIVE VALUES only.



SOUTHBOUND (UP)				DEFINED INTERSTATE NETWORK							NORTHBOUND (DOWN)			
4300 hp	3830 hp	3000 hp	Section Times	Safeworking System	Line Kilometres	Strip Map	NORTHGATE to BERRIMAH Station & Section Distances	Length of Loop	Kilometres from Adelaide	Kilometres from Darwin	Section Times	3000 hp	3830 hp	4300 hp
3071t 1.4hp/t	2128t 1.8hp/t	1666t 1.8hp/t	42 m	TRAIN ORDER WORKING	1400.000		**1400 BLOCK POINT** 49.0km		1605.000	1350.000	42 m	1666t 1.8hp/t	2128t 1.8hp/t	3071t 1.4hp/t
			42 m		1449.000		**1449 BLOCK POINT** 54.0km		1654.000	1301.000	42 m			
			51 m		1503.000		**1503 BLOCK POINT** 61.25km		1748.000	1247.000	51m			
			40 m		1564.250		**ILLOQUARA** 57.75km	1831	1769.250	1185.750	40 m			
			30 m		1622.000		**1622 BLOCK POINT** 42.0km		1827.000	1128.000	30 m			
			45 m		1664.000		**1664 BLOCK POINT** 71.0km		1869.000	1086.000	45 m			
			45 m		1735.000		**1735 BLOCK POINT** 67.5km		1940.000	1015.000	45 m			
			30 m		1802.500		**TENNANT CREEK** 46.5km	1905	2007.500	947.500	30 m			
			30 m		1849.000		**1849 BLOCK POINT** 51.0km		2054.000	901.000	30 m			
			28 m		1900.000		**1900 BLOCK POINT** 32.0km		2105.000	850.000	28 m			
			12 m		1932.000		**MUCKATY** 20.0km		2137.000	818.000	12 m			
			35 m		1952.000		**1952 BLOCK POINT** 52.0km		2157.000	798.000	35 m			

Note: Load details and sections times are INDICATIVE VALUES only.



SOUTHBOUND (UP)				DEFINED INTERSTATE NETWORK							NORTHBOUND (DOWN)			
4300 hp	3830 hp	3000 hp	Section Times	Safeworking System	Line Kilometres	Strip Map	NORTHGATE to BERRIMAH Station & Section Distances	Length of Loop	Kilometres from Adelaide	Kilometres from Darwin	Section Times	3000 hp	3830 hp	4300 hp
3071t 1.4hp/t	2128t 1.8hp/t	1666t 1.8hp/t	35 m	TRAIN ORDER WORKING	2004.000		**2004 BLOCK POINT** 54.0km		2209.000	746.000	35 m	1666t 1.8hp/t	2128t 1.8hp/t	3071t 1.4hp/t
			25 m		2058.000		**2058 BLOCK POINT** 36.5km		2263.000	692.000	25 m			
			30 m		2094.500		**NEWCASTLE WATERS** 54.0km	1829	2299.500	655.500	30 m			
			43 m		2147.000		**2147 BLOCK POINT** 75.0km		2352.000	603.000	43 m			
			25 m		2222.000		**2222 BLOCK POINT** 46.0km		2427.000	528.000	25 m			
			45 m		2268.000		**2268 BLOCK POINT** 75.0km		2473.000	482.000	45 m			
			25 m		2343.000		**2343 BLOCK POINT** 45.0km		2548.000	407.000	25 m			
			35 m		2388.000		**2388 BLOCK POINT** 58.5km		2593.000	362.000	35 m			
			38 m		2446.500		**KATHERINE** 48.50km	1827	2651.500	303.000	38 m			
			50 m		2495.000		**2495 BLOCK POINT** 59.0km		2700.000	255.000	50 m			
			43 m		2554.000		**UNION REEF** 52.0km	1937	2759.000	196.000	43 m			
			52 m		2606.000		**2606 BLOCK POINT** 56.0km		2811.000	144.000	52 m			
			35 m		2662.000		**2662 BLOCK POINT** 51.0km		2867.000	88.000	35 m			
			35 m		2713.000		**2713 BLOCK POINT** 37.0km		2918.000	37.000	35 m			
					2750.000		**BERRIMAH**		2955.000					

Note: Load details and sections times are INDICATIVE VALUES only.