

Network Information Book

Upper Hunter 3

Mangoola (inc) to Gulgong (exc)

OGW-30-19

Applicability

Hunter Valley

Publication Requirement

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Amendment Record

Amendment Version #	Date Reviewed	Clause	Description of Amendment
1.0	04 Aug 2016		First issue
1.1	17 Feb 2017	1.7, 1.10 & 2.10	Bylong Tunnel & maximum train length information updated. EOL information added for Coggans Creek and diagrams Kerrabee & Coggans Creek updated

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2.0	15 Jan 2018		Merriwa Road & Kenilworth Street level crossings at Denman updated. Diagram updates for Denman, Mangoola Coal & Moolarben. Safety interface agreement details added and diagram legend updated
2.1	26 Jul 2018	1.7, 1.5.2.1	Bylong Tunnel propelling trains information updated. Ulan Coal loop length added. Moolarben & Ulan coal loop diagrams updated.
2.2	4 Feb 2019	1.16	Lookout working restrictions added to new section 1.16 and diagrams. Mangoola and Kerrabee signal updates and speed sign corrections to diagrams.
2.3	11 Jul 2019	1.7, 1.8, 2.1.1, 2.4 & 2.8	Bylong no3 tunnel information updated. Murrumbo private level crossing details updated in section 1.8 and diagram. Mangoola Roxburgh Road residential area signs details added. Yarrawa – Sandy Hollow speed changes updated on diagram
2.4	8 Jan 2020	1.7, 1.17, 2.5, 2.8.2, 2.9.2	Bylong no3 tunnel headway restriction information updated. Sandy Hollow, Kerrabee & Coggan Creek diagrams updated with speed sign changes. Sandy Hollow loop length updated in section 2.5. Drawing legend updated in section 1.17.
2.5	7 Jan 2021	1.8, 2.8	Private level crossing at 374.925km removed from level crossings table and Murrumbo diagram. Sandy Hollow & Kerrabee diagrams updated.
2.6	20 Sep 2021	1.8, 1.17, 2.5 2.12	Level crossings table and drawing legend updated. Sandy Hollow text and diagram updated. Wilpinjong crossing Ulan Wollar Road West updated. Usage note added to all diagrams.
2.7	1 Sep 2022	1.1, 2.3, 2.5, 2.16	Board Extent & Sandy Hollow updated. Denman & Ulan Coal diagrams updated.
2.8	9 Mar 2023	1.8, 2.1, 2.5, 2.7, 2.11 2.12	Level Crossings table, Mangoola, Sandy Hollow, Kerrabee, Wollar & Wilpinjong diagrams updated
2.9	9 Jan 2024	1.8, 1.10, 2.1.1, 2.4, 2.11, 2.14	Level Crossings table and Maximum Train Length updated. Bells Lane Mangoola text updated. Rosemount Rd Yarrawa text updated. Mogo Rd Wollar text updated. Yarrawa, Sandy Hollow, Wollar & Moolarben Coal diagrams updated.

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1 General Information

1.1 Board Extent

Mangoola inclusive signal MA1 (303.302km) to Gulgong exclusive signal GG5 (459.792km).

This area is controlled by Upper Hunter 3 Network Controller, Network Control Centre North (NCCN).

Contact Numbers:

Phone: (02) 4902 7905

Train Transit Manager: (02) 4902 9410

Emergency: (02) 4902 7965

1.2 Safe Working System

Rail Vehicle Detection (RVD)

Access to Denman, Sandy Hollow, Kerrabee and Coggan Creek Sidings is obtained by a release from Network Control Centre North.

1.3 Applicable Rules

The ARTC Network Rules and Procedures apply to the sections covered by this Information Book.

1.4 Adjacent Train Control Boards / Centres

ARTC Upper Hunter 1	(02) 4902 7910	Emergency	(02) 4902 7970
ARTC HV West	(02) 4902 7903	Emergency	(02) 4902 7963

1.5 Section Operating Equipment

Emergency Operating Locks (EOL) or Emergency Switch Machine Lock (ESML) for the manual operation of points are located in the Signalling Equipment Hut at each end of the loop or near points.

1.5.1 Motorised Point Machines

Some of the motorised points in this area are Swingnose points – EXTREME CAUTION must be exercised if points are being manually operated to ensure both parts of the turnout are wound, and to ensure that the whole route through the turnout is set correctly.

Please note if there are 4 keys in EOL box there are 4 sets of points to wind.

Mangoola	Murrumbo	Wilpinjong Mine
No 51 Points	No 51 Points	No 53 Points
No 52 Points	No 52 Points	
No 53 Points		
Yarrawa	Bylong	Wilpinjong Crossing Loop
No 51 Points	No 51 Points	No 51 Points
No 52 Points	No 53 points	No 52 Points
Baerami	Wollar	Moolarben
No 51 Points	No 51 Points	No 55 Points
No 52 Points	No 52 Points	

1.5.2 Emergency Keys for Level Crossings

All Emergency Keys are located at the ARTC Provisioning Centre Muswellbrook.

Emergency operation of the Level Crossing warning equipment:

Emergency switches are provided to isolate the warning equipment in the event of a failure. The 'Emergency Switch Box' is located on the Level Crossing Equipment Hut and is opened by the keys obtained from the ARTC Provisioning Centre at Muswellbrook. The Level Crossing warning equipment must be operated in accordance with ARTC Network Rule ANGE 218 'Type F Level Crossing Management', Procedures ANPR 715 'Protecting Type F Level Crossings' and ANPR 717 'Using Emergency Roadside Warning Equipment'.

Manual operation of Level Crossing warning equipment:

A manual operation switch is provided on the outside of the Level Crossing Equipment Hut. The manual operation switch is unlocked by SL key and provided for use by qualified workers in accordance with ARTC Network Rule ANGE 218 'Type F Level Crossing Management', Procedures ANPR 715 'Protecting Type F Level Crossings' and ANPR 717 'Using Emergency Roadside Warning Equipment'.

1.5.2.1 Interlockings and Sidings

Km	Interlocking or Siding	Sidings, Crossing Loop & Balloon Loop in Metres
304.381	Mangoola	1670 metres
306.965	Mangoola Coal Loop	3933 metres Loop Length
314.120	Denman	556 metres
316.900	Yarrawa	1660 metres
331.100	Sandy Hollow	1543 metres
330.729	Sandy Hollow siding	300 metres
342.373	Baerami	1660 metres
362.019	Kerrabee	1550 metres
362.019	Kerrabee Siding	299 metres
369.160	Murrumbo	1660 metres
384.100	Bylong	3780 metres
386.020	Bylong Siding	303 metres
396.800	Coggan Creek	1745 metres
397.240	Coggan Creek Siding	386 metres
409.805	Wollar	1670 metres
421.245	Wilpinjong	1660 metres
422.310	Wilpinjong Coal Loop	3300 metres Loop Length
435.000	Ulan	936 metres
432.105	Moolarben Coal Loop	3556 metres Loop Length
435.495	Ulan Coal Loop	3088 metres Loop Length

1.6 Tunnel Locations

Section / location	Name of Tunnel	Length of tunnel in metres	km from Sydney
Kerrabee – Murrumbo	Cox's Gap No. 1	761	366.468 – 367.229
Kerrabee – Murrumbo	Cox's Gap No. 2	410	368.335 – 368.745
Murrumbo - Bylong	Bylong No.3	1975	375.107 – 377.082
Coggan Creek – Wollar	Wollar Gap	376	408.894 – 409.270

1.7 Bylong Number 3 Tunnel

The following information relating to operations of trains traversing the Bylong (Ulan No. 3) Tunnel applies.

Air breathing apparatus for use in Bylong (Ulan No.3) tunnel

The breathing apparatus intended to be used for self-rescue purposes only as per Australian Standard 1715.2009 & 1716.2012

Control, supply and maintenance of breathing equipment is per operator's internal procedures.

- ☐ All people required to travel in the leading locomotive cabin of a train hauled by two or more diesel locomotives must:
 - before travelling through Bylong (Ulan No.3) tunnel, have written certification stating that they have been trained in the use of approved self-rescue air breathing apparatus
 - before departing either Muswellbrook or Gulgong, be in possession of an approved self-rescue air breathing apparatus.
- If sufficient air breathing equipment is not available, the Operator Representative must inform the Network Controller and make alternate arrangements for the train.
- ☐ All people (AK Car Crew) required to travel in the AK Car consist (Computer Car, Accommodation Car and Facilities Car) of a train hauled by diesel locomotives must:
 - before travelling through Bylong (Ulan No.3) tunnel, have written certification stating that they have been trained in the use of approved self-rescue air breathing apparatus
 - before departing either Muswellbrook or Gulgong, be in possession of an approved self-rescue air breathing apparatus.
- ☐ At all times when the breathing apparatus has been activated, close attention must be given to elapsed time to ensure that exit from the tunnel and personal safety can be achieved within the capabilities of the self-rescue air breathing apparatus.
- ☐ In normal circumstances on approaching Bylong tunnel, train crews must close all locomotive doors and windows
- ☐ Except in an emergency, employees must not give signals to the driver that would result in a train stopping with its locomotives inside the tunnel.

WARNING: On trains hauled by two or more diesel locomotives, under no circumstances are any persons permitted to travel in any cabin other than the leading locomotive cabin unless:

authorised by the approved Operator Representative

and equipped with and wearing approved breathing apparatus while in the tunnel.

Special instructions when a train hauled by two or more diesel locomotives stops in Ulan No. 3 tunnel

- ☐ If for any reason a train is stopped inside the tunnel, the driver must immediately sound 4 long blasts of the locomotive whistle in order to warn any persons in the tunnel that the train has stopped.

- ☐ The train crew must ascertain the reason for the stoppage and whether it is necessary for the train crew to exit the tunnel on foot.
- ☐ Each person in the locomotive cabin must start using the self-rescue air breathing apparatus if the period of standing exceeds 5 minutes or if there is a need to open any door or window.

However, if any door or window is already open in the cabin, the breathing apparatus must be used immediately.

- ☐ All persons must continue to wear the breathing apparatus until they are out of the tunnel.
- ☐ If the AK Car consist is stopped inside the tunnel, the AK Car Train Manager must communicate with train crew in determining the most appropriate portal to evacuate to after considering the prevailing wind direction, distance to the nearest portal and access limitations to the tunnel portals. Shut down all recording equipment to enable the generator system to be shutdown to limit further exhaust emissions. Inform other staff and passengers where the exit portal is located. Use emergency hand-held lighting to escort staff and passengers to the exit portal. Walk with staff and passengers towards the exit portal. Use able bodied staff and passengers to assist where practicable.

There are two UHF radios on the Cars which both have the Train Control and Train to Train frequencies installed on them. This allows direct communication with Train Control and/or the Locomotive drivers when and where two way radio communications is used. The AK Car also has UHF Train to Train radios located in the Operators Room in the Computer Car.

Train stopped by driver

- ☐ If the train is stopped under the driver's control, then normal restarting instructions must be followed and, if successful, the train can then proceed.

Train stopped by means outside the driver's control

- ☐ If the train is stopped by means outside the driver's control, the driver must assess the situation and attempt to restart, if applicable.

WARNING: If restarting is unsuccessful and work is required outside the cabin of the locomotive to fix the problem, this work must not be attempted.

Under these circumstances, attempts must be made to place an emergency call to Network Control, the train must be properly secured from within the cab and all persons must exit the tunnel using the self-rescue apparatus.

Securing trains in tunnel

- ☐ When securing the train, the driver must ensure that the automatic and independent air brakes along with the spring parking brake or handbrake in the leading locomotive are applied and the locomotives are shut down, before leaving the cabin.
- ☐ Once outside the tunnel and clear of fumes, if possible apply sufficient handbrakes and then re-establish communication with the Network Controller.

Bylong Propelling Procedure

This procedure may be used by Rail Traffic Crews as an alternative to evacuating from inside Bylong No. 3 tunnel on foot in the event of an Up direction train failing to lift its load in the forward direction.

Propelling Procedure

In exception to Network Rule ANSY 514 Special Proceed Authority, it will be permissible to propel an Up direction train to clear the Country End portal Bylong No. 3 Tunnel without a Special Proceed Authority being authorised and issued by the Network Controller.

In exception to Network Rule ANTR 424 Propelling Trains, it will be permissible to propel an Up direction train to clear the Country end portal Bylong No. 3 tunnel without a Qualified Worker directing the movement from the leading end.

In the event of a train not being able to lift the load in the forward direction, the Rail Traffic Crew must attempt to initiate an EMERGENCY CALL to Network Control advising they are not able to proceed and they will be propelling their train back clear of the Country End portal of Bylong No. 3 tunnel.

If the Rail Traffic Crew is unable to initiate contact with the Network Controller, the Up direction train may be propelled clear of the Country end portal of Bylong No. 3 tunnel without the Network Controller authorising the movement. The Rail Traffic Crew must continue to attempt to contact the Network Controller (whilst propelling) and once clear of the tunnel not move their train until contact is made and appropriate Authority is obtained for any further movements.

The train is to propel under the Drivers control to no further than the nominated "Propelling" location sign, located at 377.200km.

WARNING: *No Work on Track methods are permitted between Bylong BG4 / BG6 signals and Murrumbo MO10 signal whilst an UP direction train is within the Bylong to Murrumbo section.*

Propelling Limit Sign



NOTE: *Rail Traffic Crews are not to proceed past the Propelling Limit Sign until the appropriate Authority is obtained and authorised by Network Controller.*

Additional signage has been installed at the passive private level crossing at 378.492km to provide advice to level crossing users.

Incidents involving the First Response Group

- When a report of a train becoming disabled or stowed in the tunnel is received from the train crew by the Network Controller, advice will be provided to the nominated Rail Operator Representative.

In all circumstances requiring the Operator First Response Group to attend a train in the Ulan No. 3 tunnel, the Operator First Response Co-ordinator at the site will assume total control of operations and will be responsible for directing workers to clear the train from the tunnel.

Trains travelling through Bylong (Ulan No.3) Tunnel

The Phoenix Train Control System is configured to provide for a minimum time interval of 16 minutes between trains hauled by no more than three (3) operating diesel locomotives on the front travelling through the Bylong tunnel.

EXCEPTION: *CPH/620/402 Rail Motors,
Empty diesel hauled passenger trains,
Locomotive hauled AK Car with/without passengers or
Locomotive hauled Freight trains not fitted with air conditioning or air
conditioning damper switches
MUST not follow a proceeding train "With more than Three (3) Operating
Head-End Locomotives" through No3 tunnel for a period of thirty (30)
minutes.*

Should any train transverse the tunnel with more than three (3) Operating locomotives, the next train must be held for a period of Thirty (30) minutes before being allowed to enter Bylong No3 Tunnel.

The Network Controller at the NCCN will be responsible for managing the restrictions of headway times listed above by placing blocks on protecting signals for Bylong No3 Tunnel at Bylong or Murrumbo until the additional time has elapsed.

Hi-Rail / Track Vehicle Journey:

Personnel must wait 60 minutes after passage of last train before travelling through No. 3 Tunnel.

Work within the Tunnel:

Personnel undertaking work within the tunnel must complete an appropriate risk assessment for the works conducted within the tunnel and implement any identified controls prior to entry.

1.8 Level Crossings

ALCAM ID is the number allocated from the Australian Level Crossing Assessment Model used by rail and road managers across Australia. It's a national database for assessing risk which is overseen by a National Committee and supported by the Rail Industry Safety Standards Board (RISSB).

ALCAM ID	Cerberus ID	Road Name	Line Segment	KM	Traffic Type	Access	Control Type
3964		Muswellbrook Lxing	Bengalla Jct - Sandy Hollow Jct	301.243	Road	Private	Stop Signs
4428		Muswellbrook Lxing	Bengalla Jct - Sandy Hollow Jct	302.033	Road	Private	Stop Signs
1281		Roxburgh Road	Bengalla Jct - Sandy Hollow Jct	303.367	Road	Public	Stop Signs
3965		Muswellbrook Lxing	Bengalla Jct - Sandy Hollow Jct	303.991	Road	Private	Stop Signs
3966		Mangoola Lxing	Bengalla Jct - Sandy Hollow Jct	304.487	Road	Private	Stop Signs
1282	592	Mangoola Road Mangoola	Bengalla Jct - Sandy Hollow Jct	306.491	Road	Public	Half Boom Flashing Lights - (duplicated)
3967		Mangoola Lxing	Bengalla Jct - Sandy Hollow Jct	307.750	Road	Private	
1283	613	Bells Lane Mangoola	Bengalla Jct - Sandy Hollow Jct	308.744	Road	Public	Half Boom Flashing Lights
1284	612	Mangoola Road Denman	Bengalla Jct - Sandy Hollow Jct	310.637	Road	Public	Half Boom Flashing Lights
1285	594	Merriwa Road / Golden Highway Denman	Bengalla Jct - Sandy Hollow Jct	312.245	Road	Public	Half Boom Flashing Lights
1286	590	Kenilworth Street Denman	Bengalla Jct - Sandy Hollow Jct	313.460	Road	Public	Half Boom Flashing Lights
1287	595	Ogilvie Street Yarrawa	Bengalla Jct - Sandy Hollow Jct	314.441	Road	Public	Primary Flashing Lights
1288	593	Rosemount Road Yarrawa	Bengalla Jct - Sandy Hollow Jct	315.250	Road	Public	Primary Flashing Lights
3969		Yarrawa Lxing	Bengalla Jct - Sandy Hollow Jct	316.944	Road	Private	
3970		Yarrawa Lxing	Bengalla Jct - Sandy Hollow Jct	317.995	Road	Private	
3971		Yarrawa Lxing	Bengalla Jct - Sandy Hollow Jct	319.043	Road	Private	
1289	591	Public Road Yarrawa	Bengalla Jct - Sandy Hollow Jct	321.857	Road	Public	Half Boom Flashing Lights

ALCAM ID	Cerberus ID	Road Name	Line Segment	KM	Traffic Type	Access	Control Type
3972		Yarrawa Lxing	Bengalla Jct - Sandy Hollow Jct	323.389	Road	Private	
1812		Yarrawa Lxing	Bengalla Jct - Sandy Hollow Jct	325.009	Road	Public	Stop Signs
3973		Yarrawa Lxing	Bengalla Jct - Sandy Hollow Jct	326.877	Road	Private	
3974		Sandy Hollow Lxing	Bengalla Jct - Sandy Hollow Jct	327.320	Road	Private	Stop Signs
3975		Sandy Hollow Lxing	Bengalla Jct - Sandy Hollow Jct	329.587	Road	Private	Stop Signs
1290	596	Rylstone Road Sandy Hollow	Bengalla Jct - Sandy Hollow Jct	331.252	Road	Public	Primary Flashing Lights
1291		Goulburn Drive Sandy Hollow	Bengalla Jct - Sandy Hollow Jct	331.922	Road	Public	Stop Signs
1292		Goulburn Drive Sandy Hollow	Sandy Hollow - Ulan Colliery Jct	332.654	Road	Public	Stop Signs
3977		Sandy Hollow Lxing	Sandy Hollow - Ulan Colliery Jct	332.852	Road	Private	
3978		Sandy Hollow Lxing	Sandy Hollow - Ulan Colliery Jct	335.858	Road	Private	
3979		Sandy Hollow Lxing	Sandy Hollow - Ulan Colliery Jct	337.623	Road	Private	
3980		Baerami Lxing	Sandy Hollow - Ulan Colliery Jct	338.260	Road	Private	
4369		Baerami Lxing (Barclays)	Sandy Hollow - Ulan Colliery Jct	340.003	Road		
3981		Baerami Lxing	Sandy Hollow - Ulan Colliery Jct	340.497	Road	Private	
4417		Baerami Lxing (Whalans)	Sandy Hollow - Ulan Colliery Jct	340.940	Road		
1293		Baerami Lxing	Sandy Hollow - Ulan Colliery Jct	343.807	Road	Public	Stop Signs
3982		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	346.942	Road	Private	
3983		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	349.176	Road	Private	
3984		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	351.469	Road	Private	
3985		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	351.941	Road	Private	
3986		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	352.730	Road	Private	

ALCAM ID	Cerberus ID	Road Name	Line Segment	KM	Traffic Type	Access	Control Type
3987		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	352.970	Road	Private	
3988		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	354.807	Road	Private	
3989		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	356.120	Road	Private	
3990		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	356.983	Road	Private	
3991		Sandy Hollow - Ulan Colliery Jct	Sandy Hollow - Ulan Colliery Jct	357.017	Road	Private	
3992		Widdin Lxing	Sandy Hollow - Ulan Colliery Jct	359.283	Road	Private	
3993		Kerrabee Lxing	Sandy Hollow - Ulan Colliery Jct	360.361	Road	Private	
3994		Kerrabee Lxing	Sandy Hollow - Ulan Colliery Jct	361.386	Road	Private	
1294		Public Road Kerrabee	Sandy Hollow - Ulan Colliery Jct	362.828	Road	Public	Stop Signs
3995		Kerrabee Lxing	Sandy Hollow - Ulan Colliery Jct	364.722	Road	Private	
3997		Kerrabee Lxing	Sandy Hollow - Ulan Colliery Jct	371.301	Road	Private	
3999		Kerrabee Lxing	Sandy Hollow - Ulan Colliery Jct	378.492	Road	Private	
4000		Kerrabee Lxing	Sandy Hollow - Ulan Colliery Jct	379.208	Road	Private	
4371		Bylong Take Off	Kerrabee-Coggan Creek	381.771	Road	ARTC	
4001		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	381.816	Road	Private	
4343	611	Upper Bylong Service Road Lxing	Sandy Hollow - Ulan Colliery Jct	384.410	Road	Private	Half Boom Flashing Lights
1295	597	Bylong Road MR208 Lxing	Sandy Hollow - Ulan Colliery Jct	388.050	Road	Public	Primary Flashing Lights
4003		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	389.210	Road	Private	
4004		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	390.275	Road	Private	
4005		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	390.845	Road	Private	
4007		Coggan Creek	Sandy Hollow -	391.997	Road	Private	

ALCAM ID	Cerberus ID	Road Name	Line Segment	KM	Traffic Type	Access	Control Type
		Lxing	Ulan Colliery Jct				
4372		Coggan Creek Take Off	Kerrabee-Coggan Creek	392.000	Road	ARTC	
4008		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	392.885	Road	Private	
4009		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	394.444	Road	Private	
4010		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	395.325	Road	Private	
1813	610	Public Road Coggan Creek	Sandy Hollow - Ulan Colliery Jct	395.924	Road	Public	Primary Flashing Lights
4013		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	399.591	Road	Private	
1296		Wollar Road Coggan Creek	Sandy Hollow - Ulan Colliery Jct	401.033	Road	Public	Stop Signs
4015		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	401.756	Road	Private	
4016		Coggan Creek Lxing	Sandy Hollow - Ulan Colliery Jct	407.621	Road	Private	
4017		Wollar Lxing	Sandy Hollow - Ulan Colliery Jct	413.335	Road	Private	
4019		Wollar Lxing	Sandy Hollow - Ulan Colliery Jct	414.371	Road	Private	
1297	567	Mogo Road Wollar	Sandy Hollow - Ulan Colliery Jct	415.115	Road	Public	Half Boom Flashing Lights
4020		Wollar	Sandy Hollow - Ulan Colliery Jct	416.312	Road	Private	No Control
1298		Wollar Lxing	Sandy Hollow - Ulan Colliery Jct	417.340	Road	Public	Stop Signs
4021		Wilpinjong Lxing	Sandy Hollow - Ulan Colliery Jct	417.926	Road	Private	
4022		Wilpinjong Lxing	Sandy Hollow - Ulan Colliery Jct	419.293	Road	Private	
1300	568	Ulan Wollar Road Wilpinjong	Sandy Hollow - Ulan Colliery Jct	420.062	Road	Public	Half Boom Flashing Lights
1301	557	Ulan Wollar Road West Wilpinjong	Sandy Hollow - Ulan Colliery Jct	423.744	Road	Public	Half Boom Flashing Lights
4023		Wilpinjong Lxing	Sandy Hollow - Ulan Colliery Jct	424.327	Road	Private	
1302		Wilpinjong Lxing	Sandy Hollow - Ulan Colliery Jct	425.213	Road	Public	Stop Signs

ALCAM ID	Cerberus ID	Road Name	Line Segment	KM	Traffic Type	Access	Control Type
4024		Wilpinjong Lxing	Sandy Hollow - Ulan Colliery Jct	425.811	Road	Private	
4025		Wilpinjong Lxing	Sandy Hollow - Ulan Colliery Jct	426.525	Road	Private	
4026		Wilpinjong Lxing	Sandy Hollow - Ulan Colliery Jct	427.972	Road	Private	
4027		Wilpinjong Lxing	Sandy Hollow - Ulan Colliery Jct	428.804	Road	Private	
4028		Ulan Lxing	Sandy Hollow - Ulan Colliery Jct	430.202	Road	Private	
4029		Ulan Lxing	Sandy Hollow - Ulan Colliery Jct	431.401	Road	Private	
4031		Ulan Lxing	Sandy Hollow - Ulan Colliery Jct	433.170	Road	Private	
1303		Ulan Lxing	Sandy Hollow - Ulan Colliery Jct	433.696	Road	Private	Stop Signs
1815	598	Ulan Colliery Road Ulan	Sandy Hollow - Ulan Colliery Jct	437.970	Road	Public	Primary Flashing Lights
1304	599	Ulan Road Ulan	Ulan Colliery Jct - Gulgong	438.832	Road	Public	Primary Flashing Lights
4033		Ulan Lxing	Ulan Colliery Jct - Gulgong	439.639	Road	Private	
1305		Ulan Lxing	Ulan Colliery Jct - Gulgong	440.540	Road	Public	Stop Signs
4034		Toole Road	Ulan Colliery Jct - Gulgong	441.416	Road	Private	
4035		Ulan Lxing	Ulan Colliery Jct - Gulgong	442.206	Road	Private	
4036		Ulan Lxing	Ulan Colliery Jct - Gulgong	444.965	Road	Private	
4037		Cope State Forest Crossing Ulan	Ulan Colliery Jct - Gulgong	446.369	Road	Private	
1306		Springwood Park Road Ulan	Ulan Colliery Jct - Gulgong	448.373	Road	Public	Stop Signs
4038		Ulan Lxing	Ulan Colliery Jct - Gulgong	449.610	Road	Private	

1.9 Maximum Permitted Speeds and Permanent Speed Restrictions

Refer the Route Access Standard - Heavy Haul Network Section Pages H3 for all speed information.

1.10 Maximum Train Length

The maximum train length is 1545m.

1.11 Structure Clearances

Refer Route Access Standards for Rolling Stock Outlines.

1.12 Communications

The National Train Communications System (NTCS) is the Primary communications system for the ARTC controlled rail network and is mandatory for all operators to operate their locomotives using a NTCS ICE (In-Cabin Equipment) Unit as the primary communications device.

A standard ICE unit is installed with the following components

- Telstra NextG™ transceiver
- Iridium satellite transceiver
- UHF Radio
- GPS

The ICE unit primary communications is via the Telstra NextG™ and backup communications is provided via the Iridium Satellite network. The ICE unit will automatically call the appropriate Network Control Centre (Broadmeadow or Junee) based on GPS location when the routine and emergency buttons are pressed.

The UHF radio is used for the Local train Radio - Train to Train and train to track Side communications.

UHF Local Train Radio (LTR) frequency details

Channel Name WB

Frequency: 450.050 MHz (UHF),

Bandwidth: 12.5 KHz,

EIRP: 41W (remote/low density areas), 8.3W (medium & high density areas)

Tx CTCSS: 173.8 Hz

Rx CTCSS: NA

Selcall: disabled

Channel Name Mountain Radio (WB)

Frequency: 450.050 MHz (UHF),

Bandwidth: 12.5 KHz,

EIRP: 41W (remote/low density areas), 8.3W (medium & high density areas)

Tx CTCSS: 103.5 Hz

Rx CTCSS: NA

Selcall: disabled

Alternate Communication for this section is by mobile or satellite phones.

1.13 Wayside Equipment

Mangoola – Yarrawa	(HBD, HWD)	314.490 km
Bylong – Coggan Creek	(HBD, HWD, DED)	387.930 km
HBD – Hotbox Detector		
HWD – Hot Wheel Detector		
DED – Dragging Equipment Detector		

1.14 Ruling Gradients

Down	1 in 50
Up	1 in 80

1.15 Curve and Gradient Data

For all Curve and Gradient data, refer to the ARTC Internet.

https://extranet.artc.com.au/eng_network-config_cd.html

1.16 Lookout Working Hazardous Areas

The below list of locations are hazardous for Lookout Working and may require an additional Lookout or a higher level of protection to undertake work in these areas.

The Protection Officer is responsible for conducting a safety assessment and confirming that Lookout Working is suitable for the work to be performed at the location. This may require the use of an additional Lookout to ensure adequate minimum warning time to easily reach a Safe Place. If the safety assessment determines that Lookout Working is not suitable a higher level of protection must be applied.

Area	KM From	KM To	Line	Line Direction	Up/Down	Reason Unsuitable
Mangoola – Denman	310.000	311.000	Single Main	Bi-directional	Both	Tight curve
Denman – Yarrawa	313.000	316.000	Single Main	Bi-directional	Both	Denman township
Denman – Yarrawa	316.000	317.000	Single Main	Bi-directional	Both	Tight curves, cuttings, hills
Yarrawa – Sandy Hollow	317.000	330.500	Single Main	Bi-directional	Both	Tight curves, cuttings, hills
Yarrawa – Sandy Hollow	331.500	343.000	Single Main	Bi-directional	Both	Tight curves, creek, bridges, hills
Sandy Hollow – Murrumbo	344.000	382.500	Single Main	Bi-directional	Both	Tight curves, bridges, tunnels
Bylong – Coggan Creek	384.000	397.500	Single Main	Bi-directional	Both	No sighting distance
Coggan Creek – Wollar	399.000	412.000	Single Main	Bi-directional	Both	Track geometry
Wollar – Wilpinjong	413.000	419.000	Single Main	Bi-directional	Both	Tight curves
Wilpinjong – Ulan	421.000	426.000	Single Main	Bi-directional	Both	Tight curves
Wilpinjong – Ulan	426.000	427.000	Single Main	Bi-directional	Both	Vertical grade unsuitable
Wilpinjong – Ulan	427.000	431.000	Single Main	Bi-directional	Both	Tight curves
Wilpinjong – Ulan	432.000	436.500	Single Main	Bi-directional	Both	Tight curves

1.17 Drawing Legend

	Standard gauge track		Dual gauge track
	Advisory Sign or Location Sign		Speed sign
	Pedestrian Crossing		Passive Protection Level Crossing
	Active Protection Level Crossing – Flashing Lights		Active Protection Level Crossing – Lights and Boom
	Bridge or Overpass		Underpass
	River/Creek or Significant river bridge or Viaduct		Station or Platform
	Tunnel		Crossover
	Turnout		Catchpoint
	Derail		Points Operating Mechanism
	Point Indicator		Mechanical Frame
	Automatic Signals		Controlled Signals
	Dwarf Signals		Signal number reference
	Distant Signal		Repeater Signal
	Overheight Detectors		Wayside Equipment

2 Locations and Sections Information

2.1 Mangoola (MMO)

General Arrangements

Mangoola is a Rail Vehicle Detection location controlled by Network Control Centre North.

It is a consolidated location, incorporating Mangoola coal Loop.

Yard Limits MA1 to MA16 and MA30

Loop Length - 1670 metres

Operation of Points and Signals

The points and signals at Mangoola are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of Power-operated Points in an Emergency

Nos. 51 and 52 points are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

Private Siding Isolation

A private siding isolation switch is located at 306.965km to isolate Mangoola Coal Loop from the main line. The operation of the private siding isolation switch is detailed in the ARTC Interface Agreement.

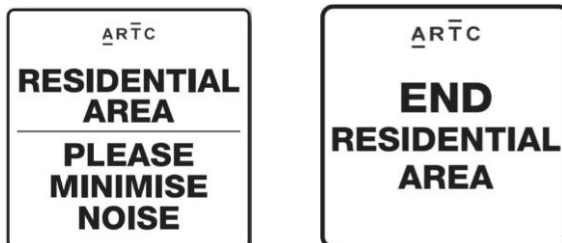
2.1.1 Level Crossings

Roxburgh Road Level Crossing

An advisory 'RESIDENTIAL AREA PLEASE MINIMISE NOISE' sign is placed at 302.490km for Down direction rail traffic movements.

An advisory 'END RESIDENTIAL AREA' sign is placed at 303.900km for Down direction rail traffic movements.

The signage is for the information of Rail Traffic Crews and Track Vehicle Operators.



Example of Residential Area signs

The signs are provided to identify residential areas and to identify where Rail Traffic Crews and Track Vehicle Operators may be able to minimise noise by:

- Using the train whistle only as required by the Network Rules and Procedures;
- Using the 'town' whistle where available;
- Minimising whistle duration proportionate to risk;
- Sounding the whistle away from noise sensitive locations (e.g. dwellings);
- Managing the train to avoid buff and draft (bunch and stretch); and
- Avoiding heavy dynamic braking.

These measures may be employed as appropriate and not compromise Network and public safety.

At times of delay, rail traffic crews should position locomotives away from residential dwellings.

Note: These measures do not alter Rail Traffic Crew and Track Vehicle Operator requirements to comply with ARTC Network Rules and Procedures.

Mangoola Road Level Crossings

Mangoola Road Level Crossing at 306.491km has automatically operated protection equipment and Type F flashing light highway signals, Half Boom Barriers and warning bells.

Mangoola Road Level Crossing Emergency Arrangements

In the event of Interlocking Failures, signals protecting the Mangoola Road Level Crossing will fail safe in the stop position. The Level Crossing lights and audible warning devices will become activated and the booms will descend. After a time period of 4 minutes, the Level Crossing warning equipment will de-activate and the booms rise to allow road and pedestrian traffic to proceed.

Under such circumstances, rail traffic crews will be required to activate the Level Crossing warning equipment before passing the protecting signals at stop.

The following steps describe the action required.

Up Home Signal MA10 Main Line

1. Press the push button on the signal and provided the operation is successful, a White Light will be displayed.
2. Ensure that the Level Crossing lights and audible warning devices have activated, the booms are lowered and the crossing track is clear of road and pedestrian traffic.
3. Proceed past the signal at stop in accordance with ARTC Network Rule ANSG 608 Passing signals at STOP.

Down Home Signal MA7 Main Line and Down Home Signal MA9 Loop Line

1. Press the push button on the signal and provided the operation is successful, a White Light will be displayed.
2. Ensure that the Level Crossing lights and audible warning devices have activated, the booms are lowered and the crossing track is clear of road and pedestrian traffic.
3. Proceed past the signal at stop in accordance with ARTC Network Rule ANSG 608 Passing signals at STOP. In event that the White Light does not illuminate after the above procedures have been compiled with, rail traffic crews must act in accordance with ARTC Network Rule ANGE 218 Type F Level Crossing Management.

Push Button Signs

The following Push Button Signs for Level Crossing are installed.

Type	KM	Track	Signal
Push Button Sign	306.215	Main Line	MA7
Push Button Sign	306.215	Loop Line	MA9
Push Button Sign	306.515	Main Line	MA10

Mangoola Road Level Crossing at 310.637km has Type F flashing lights, boom gate mechanisms, roadside flashing lights and audible warning devices.

Testing of Level Crossing Warning equipment:

The Level Crossing will be remotely monitored from the Network Control Centre North Broadmeadow by the 4Site Alarm Monitoring System.

Level crossing hut (on Muswellbrook side of crossing on the down side of line).

Manual Operation Switch, Test Switch box, and Emergency Switch box (located on the side of the level crossing hut).

Failure of the Cerberus monitoring equipment:

In the event of a failure of the Cerberus monitoring equipment a daily test must be implemented by the Signal Electrician Muswellbrook in accordance with ARTC Network Rule ANGE 218.

A 'Test' switch box is located on the outside of the Level Crossing Equipment Hut and is opened by the test key obtained from the ARTC Provisioning Centre at Muswellbrook.

Bells Lane Level Crossing 308.744km

Bells Lane Level Crossing at 308.744km has automatically operated protection equipment, Type F flashing light highway signals, half boom barriers and warning bells, activated by track circuits.

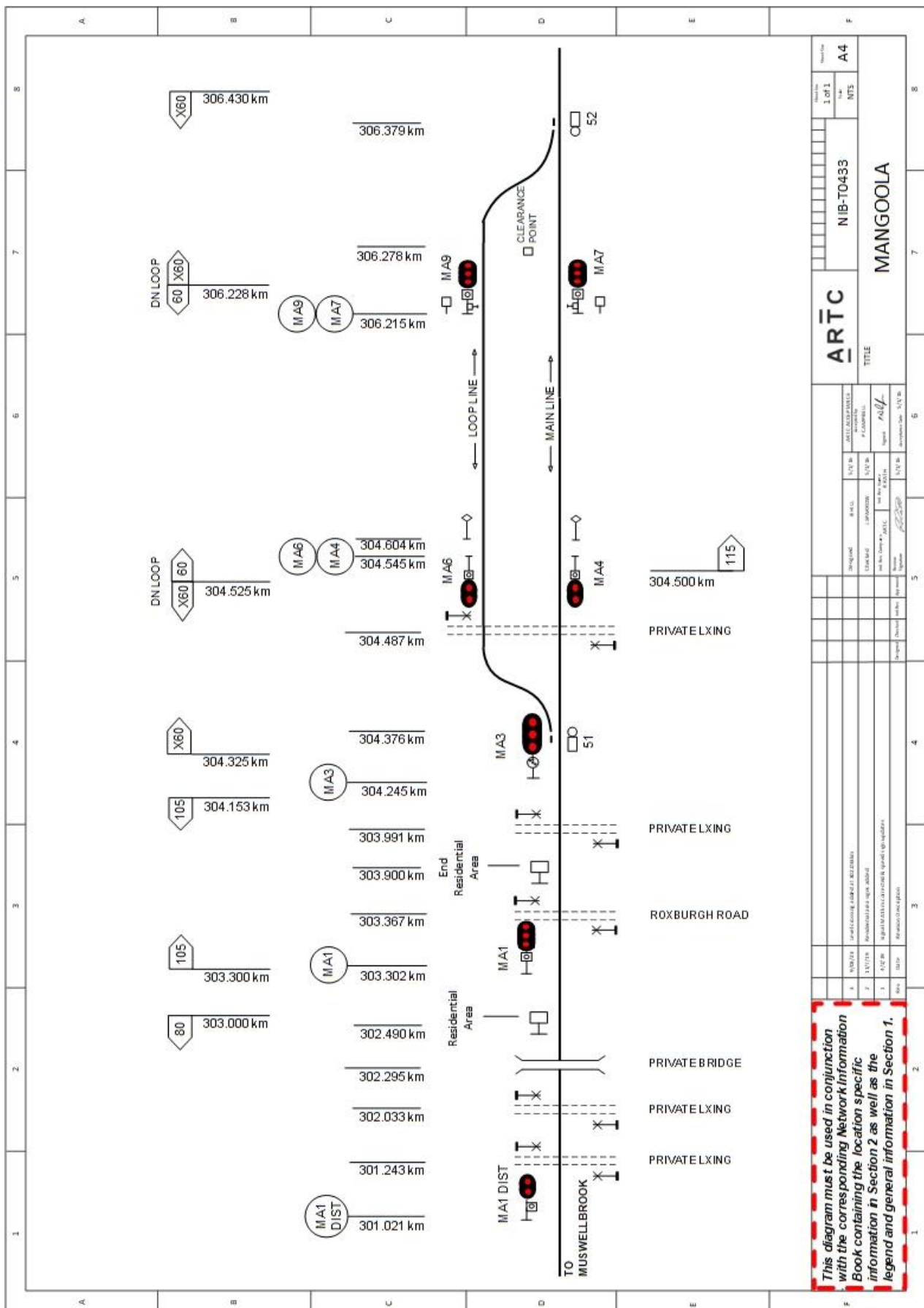
The level crossing warning equipment will be activated via Grade Crossing Predictor equipment and will be set to motion sense mode.

Operational Arrangements

For rail traffic travelling in both the up and down directions, the level crossing will activate approximately 10 seconds following occupation of the approach section, adjacent to the trackside level crossing approach warning signs. The level crossing will cease to operate when the train clears the level crossing.

Up direction rail traffic approaching MA16 signal at stop are required to come to a stand within 100 metres of MA16 signal. The level crossing will continue to operate for a period of 45 seconds following occupation of UAAT track circuit.

Clearing of MA16 signal whilst trains are held, will commence the level crossing operation. When the boom barriers have reached the horizontal position, MA16 signal will clear.



2.2 Mangoola Coal Loop (MMK)

General Arrangements

Mangoola Coal Loop is a Rail Vehicle Detection location controlled from Network Control Centre North.

Mangoola Coal Loop and Mangoola is a consolidated yard (see Mangoola yard limits)

Balloon Loop Length	3933 metres
CP to Bin	2212 metres
Bin to MA30	1721 metres
Coal Line, Standing Room between MA12 to MA29	1759 metres

Two trains can fit into coal loop, 1 after bin and 1 before bin.

Refer safety interface agreement IA1606 for further details.

Operation of Points and Signals

The points and signals at Mangoola Coal Loop are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of Power-operated Points in an Emergency

Nos. 53 and 54 points are electrically power-operated.

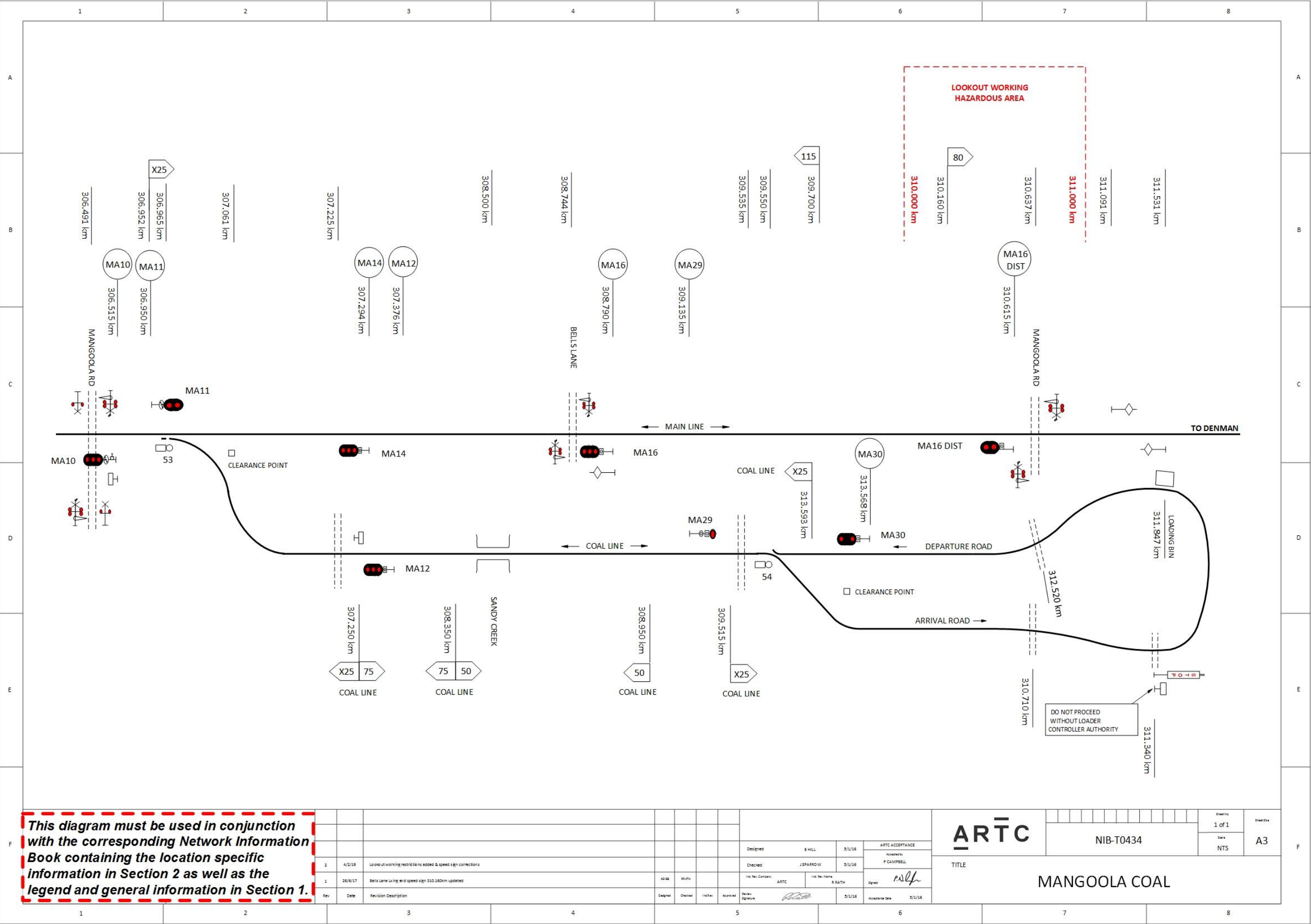
If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

Private Siding Isolation

A private siding isolation switch is located at 306.965km to isolate Mangoola Coal Loop from the main line.

Entry and exit to and from Mangoola Coal Loop will be via motorised crossovers and signal indications controlled by Network Control Centre North.



2.3 Denman (DNM)

General Arrangements

Denman is an intermediate siding located on the Down side of the main line between Mangoola and Yarrowa.

Access to Siding

Frame E is located on the Up side of the main line adjacent to the points and provides access to the Down loop siding.

Operated from a two lever Ground Frame “E” with a release (91) from the Network controller, Network Control Centre North.

Rail Traffic that has been “Locked Away” will require either a SPA or a Work on Track Authority to exit siding.

Merriwa Road (Golden Highway) Level Crossing

Merriwa Road level crossing at 312.245km is activated by axle counter track circuits.

Type F level crossing protection including roadside flashing lights, audible warning devices and booms are installed at Merriwa Road 312.245km. Trackside approach warning signs are located at 311.341km in the Down direction and 313.149km in the Up direction. Advanced warning lights are installed on both highway approaches.

NOTE: Road / Rail vehicles must not be placed on or off at the Merriwa Road level crossing.

Merriwa Road Level Crossing operation:

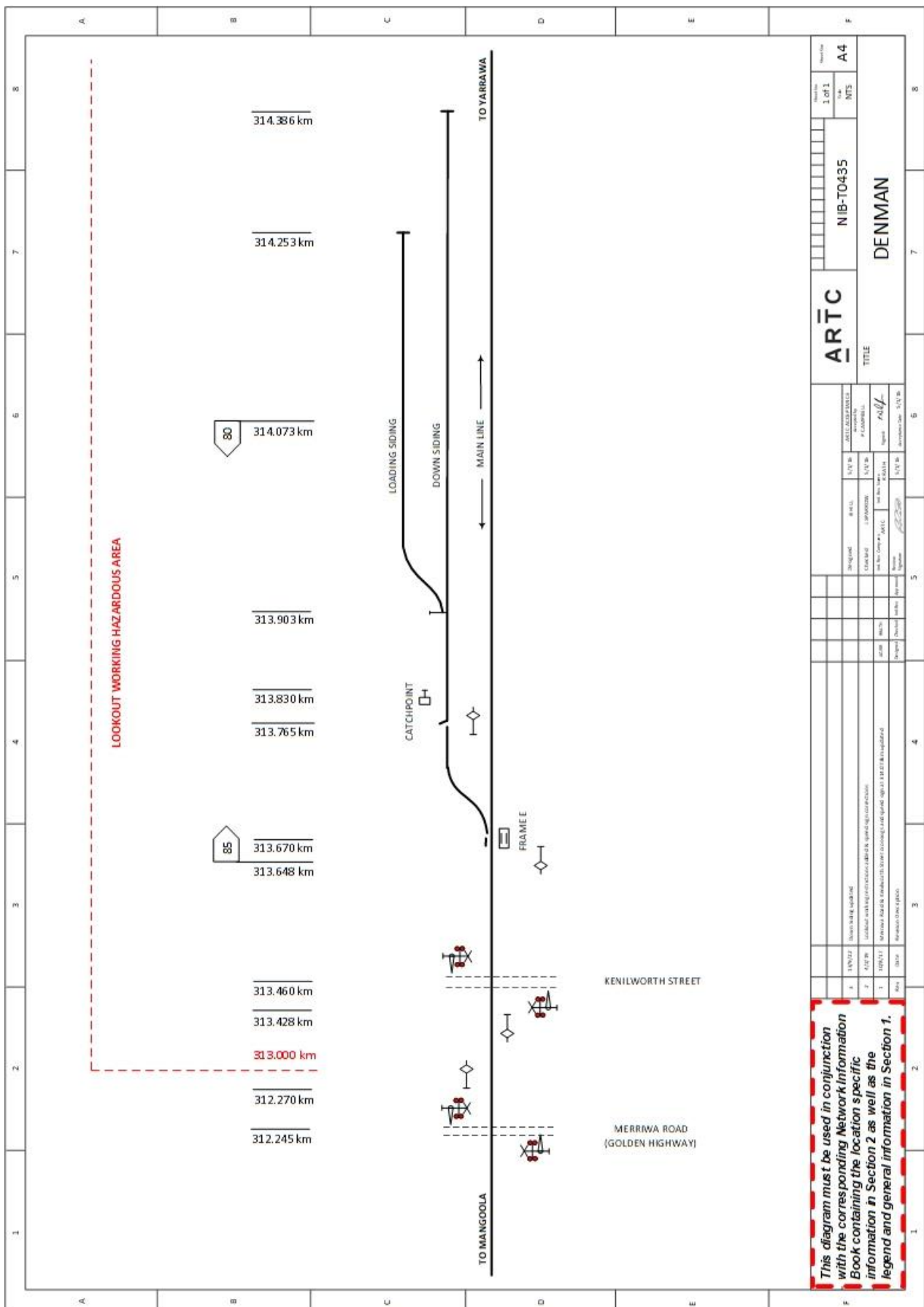
Merriwa Road Level Crossing and highway advanced warning lights are activated by axle counter track circuits. Axle counter track circuits will be displayed on the Phoenix train control system as additional text pieces. When an axle counter track is clear, the associated text piece will display steady white text. When an axle counter track circuit is occupied or in a failed condition the associated text piece will display steady red text. The “Merriwa Road” level crossing text on the Phoenix train control system will flash red when the crossing protection is activated.

Merriwa Road Level Crossing Axle counter reset procedure:

- Network Controller recognises the axle counter track circuit as failed showing occupied on the Phoenix train control system. The Phoenix display will show the Microtrax track section over the level crossing as unoccupied.
- Network Controller contacts the rail traffic crew of the last train/ track vehicle through the section to verify that it is clear and complete
- When the last train/track vehicle is confirmed as clear and complete, the Network Controller requests an axle counter reset on the axle counter system in the Phoenix train control system
- If the reset is successful, the axle counter track circuit will indicate clear
- If the axle counter track circuit does not clear the Signals Maintenance Representative is required to attend the location and apply a pre-reset
- The Signals Maintenance Representative must confirm with the Network Controller that the axle counter track circuit is clear, axle counter is operational and applies a reset followed by a Network Controller reset.

Kenilworth Street Level Crossing

Type F level crossing protection including flashing lights, audible warning devices and boom gates are installed at Kenilworth Street 313.460km. Trackside approach warning signs are located at 312.667km in the Down direction, 314.265km in the Up direction and Frame E catchpoints.



2.4 Yarrawa (YAR)

2.4.1 General Arrangements

Yarrawa is a Rail Vehicle Detection location controlled by Network Control Centre North.

Yard Limits - YA3 to TA10

Loop Length – 1660 metres

Yarrawa crossing loop allows for simultaneous entry of rail traffic which means rail traffic is not required to time out at the home / starting signal to allow clearance of the opposing home signal. This is due to the extra length of the loop and the home / starting signals being located 300 metres from the clearance points of diverging main and loop lines.

When rail traffic is stopped at the home / starting signal, the rear of the train may extend beyond the opposing home / starting signal up to the clearance point. With the train being clear even though it is located beyond the opposing home / starting signal, signalling equipment will allow routes to be cleared for the adjacent line.

Operation of Points and Signals

The points and signals at Yarrawa are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of Power-operated Points in an Emergency

Nos. 51 and 52 points worked from the NCCN are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

2.4.2 Ogilvie Street Level Crossing

Type F flashing lights and bells are provided at Ogilvie Street level crossing at 314.441km.

The warning equipment is automatically controlled by track circuit for Up or Down trains on the main line, and manually controlled by operator's pushbutton units for trains shunting the Down loop siding or the storage and the loading sidings.

Operator's pushbutton units for the level crossing

Two operator's pushbuttons inscribed "Crossing start" and "Crossing cancel" are provided in a secured box on a post adjacent to frame B.

To operate the warning equipment, the Qualified Worker must:

- depress the "Crossing start" pushbutton for one second to cause the warning equipment to operate.
- and follow the instructions for shunting over level crossings
- before handsignalling the train over the crossing.

If the movement is not proceeded with, the warning indications must be cancelled by pressing the "Crossing cancel" pushbutton for one second.

The warning indications will be cancelled automatically when the rear of the train has cleared the level crossing.

The operator's pushbutton unit must be kept closed and secured by an SL lock when not in use.

2.4.3 Rosemount Road Level Crossing

Type F level crossing protection, including roadside flashing lights and audible warning devices, are provided at Rosemount Road at 315.250km.

Trackside approach warning signs are located at:

- 314.650km in the Down direction
- 315.903 km in the Up direction.

The Rosemount Road level crossing emergency and test keys are located at the ARTC Provisioning Centre at Muswellbrook.

NOTE: *Road / Rail vehicles must not be placed on or off track at Rosemount Road level crossing.*

Level Crossing Operation

Rosemount Road level crossing is activated by axle counter track circuits. Axle counter track circuits are displayed on the Phoenix Train Control System as additional text. When an axle counter track is clear, the associated text will display steady white text. When an axle counter track circuit is occupied or in a failed condition the associated text will display steady red text.

The Rosemount Road level crossing text on the Phoenix Train Control system will flash red when the level crossing warning equipment is activated.

Axle Counter Reset Procedure

- Network Controller identifies the axle counter track circuit as failed when showing occupied on the Phoenix Train Control system.

NOTE: *The Phoenix display will show the route band for track section over the level crossing as unoccupied.*

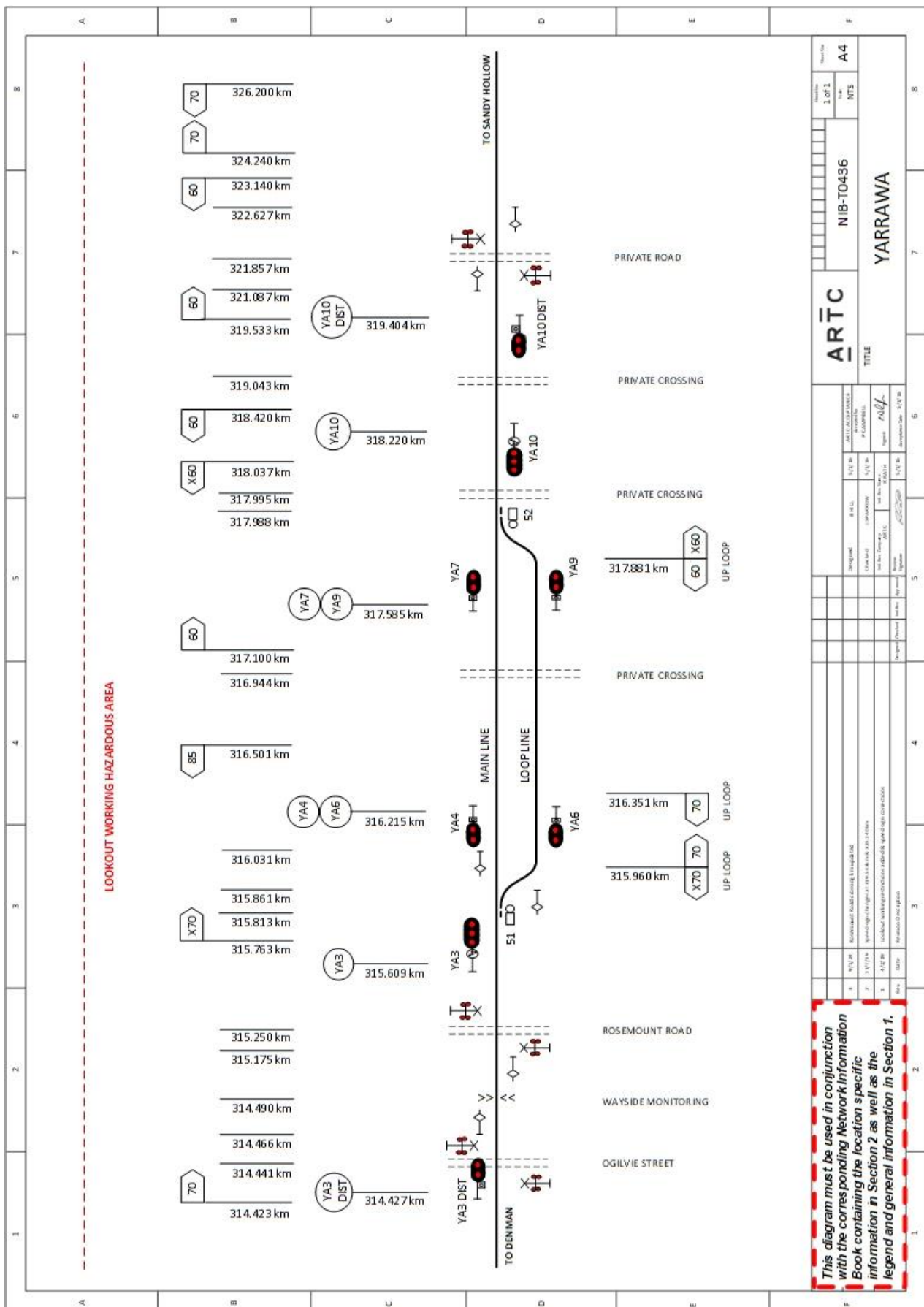
- Network Controller contacts the Rail Traffic Crew of the last rail traffic movement through the section to verify that it is clear and complete of the level crossing.
- When the last rail traffic movement is confirmed as clear and complete, the Network Controller requests an axle counter reset on the Rosemount Rd axle counter section of the Phoenix Train Control system.
- If the reset is successful, the axle counter track circuit will indicate clear with steady white text displayed on the Phoenix Train Control system.
- If the axle counter track circuit does not clear, the Network Controller must ask the Signals Maintenance Representative to attend the location and apply a pre-reset.
- On attending, the Signals Maintenance Representative must confirm to the Network Controller that the axle counter track circuits are clear of rail traffic and that the axle counter is operating correctly, and then apply a pre-reset, following this the Network Controller then initiates a reset.

Public Road Level Crossing

Type F level crossing protection including flashing lights, audible warning devices and boom gates are installed at Public Road 321.857km. Trackside approach warning signs are located at 321.087km in the Down direction and 322.627km in the Up direction.

Hot box detector / Hot Wheel Detector

A hot box detector is provided on the Sandy Hollow side of Ogilvie Street level crossing at 314.490km.



2.5 Sandy Hollow (SOL)

General Arrangements

Sandy Hollow is a Rail Vehicle Detection location controlled by Network Control Centre North

Yard Limits - SH3 to SH10

Loop Length – 1558 metres

Crossing Arrangements

In the event an overtaking or passing manoeuvre is required at Sandy Hollow and the overtaking/passing train is travelling in the Up direction, the Up Starter signals will be held at stop and cleared after the Up train has been proved to have come to a standstill.

This will be achieved through the Up starting signals (SH4 and SH6) being approached released. The Starting Signals will not clear until the continuing UP train has been proved at stop through the track circuit timeouts.

This is due to a Private level crossing on the City end of the location at 329.587km.

If Up train arrives first this arrangement does not apply, normal signalling applies.

Up trains are not to be held at SH10 signal for any circumstances except in case of emergency.

Holding trains at SH10 signal results in obstructing two level crossings at 331.992km and 332.654km, which blocks the only access points to the local community.

The Up service should be prioritised for entry into Sandy Hollow when crossing trains at this location.

Crossing of multiple services at one time is discouraged at Sandy Hollow.

Operation of Points and Signals

The points and signals at Sandy Hollow are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of power-operated points in an emergency

Nos. 51 and 52 points are operated from the NCCN and are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

Emergency Operation Lock (EOL) keys to allow the power-operated points to be manually operated, are located in the EOL cabinet, next to the points at either end of the loop.

Maintenance Siding

Siding Length 300 metres

Sandy Hollow Loop Maintenance Siding with catch points and facing points lock (FPL) at 330.729 km operated from a two lever Ground Frame "A" with a release (93) from the Network Controller, Network Control Centre North.

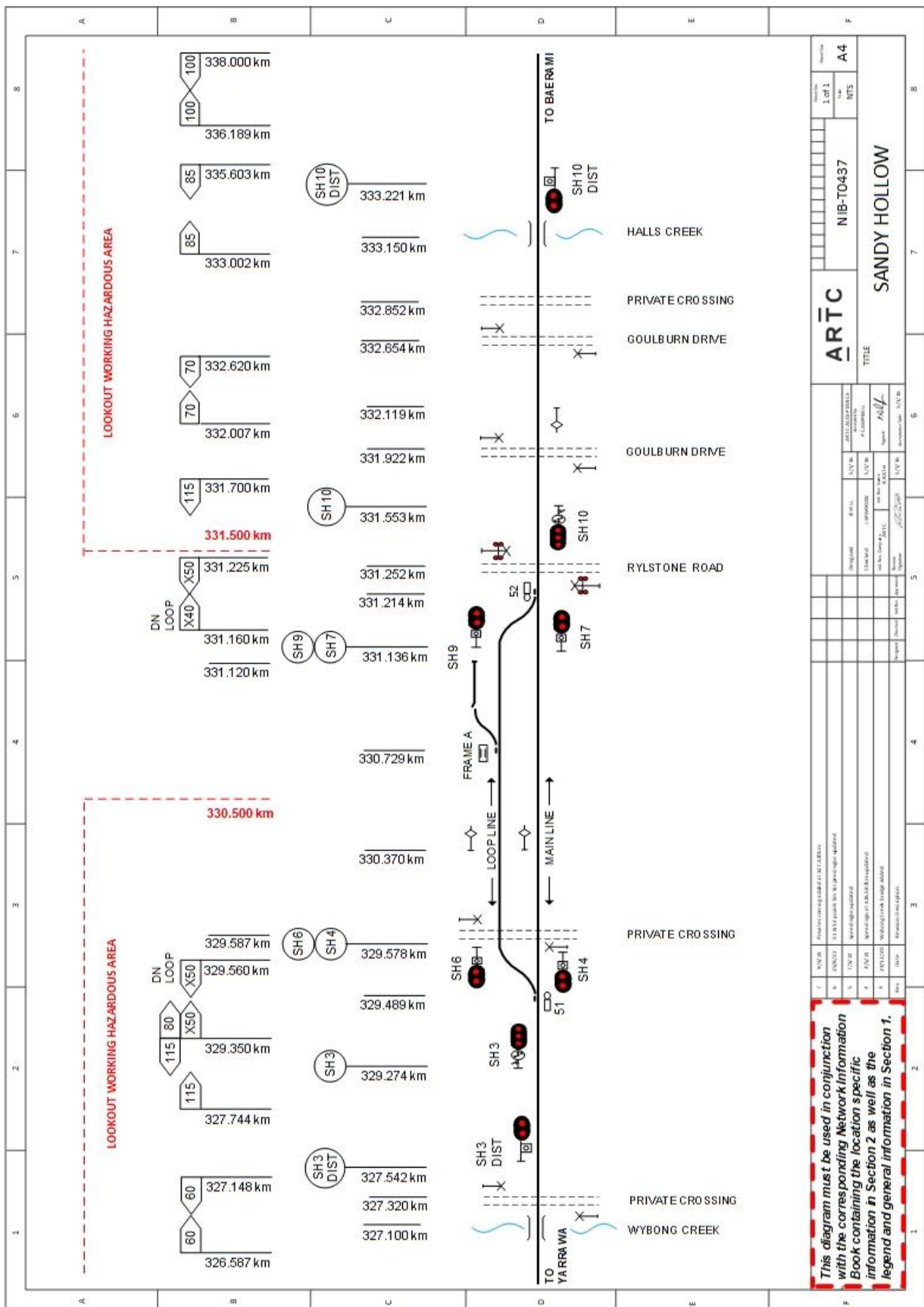
Catchpoint Signs

CATCH POINTS Adjacent to No 2A Catch Points 330.808km

Rylstone Road Level Crossing

Type F flashing light highway signals and a warning bell are provided at Rylstone Road level crossing at 331.252 km.

The warning equipment is automatically controlled by track circuit for Down and Up trains, subject to the clearance of the signals on each side of the crossing.



2.6 Baerami (BAE)

General Arrangements

Baerami is a Rail Vehicle Detection location controlled by Network Control Centre North.

Yard Limits BI3 TO BI10

Loop Length 1660 metres

Operation of Points and Signals

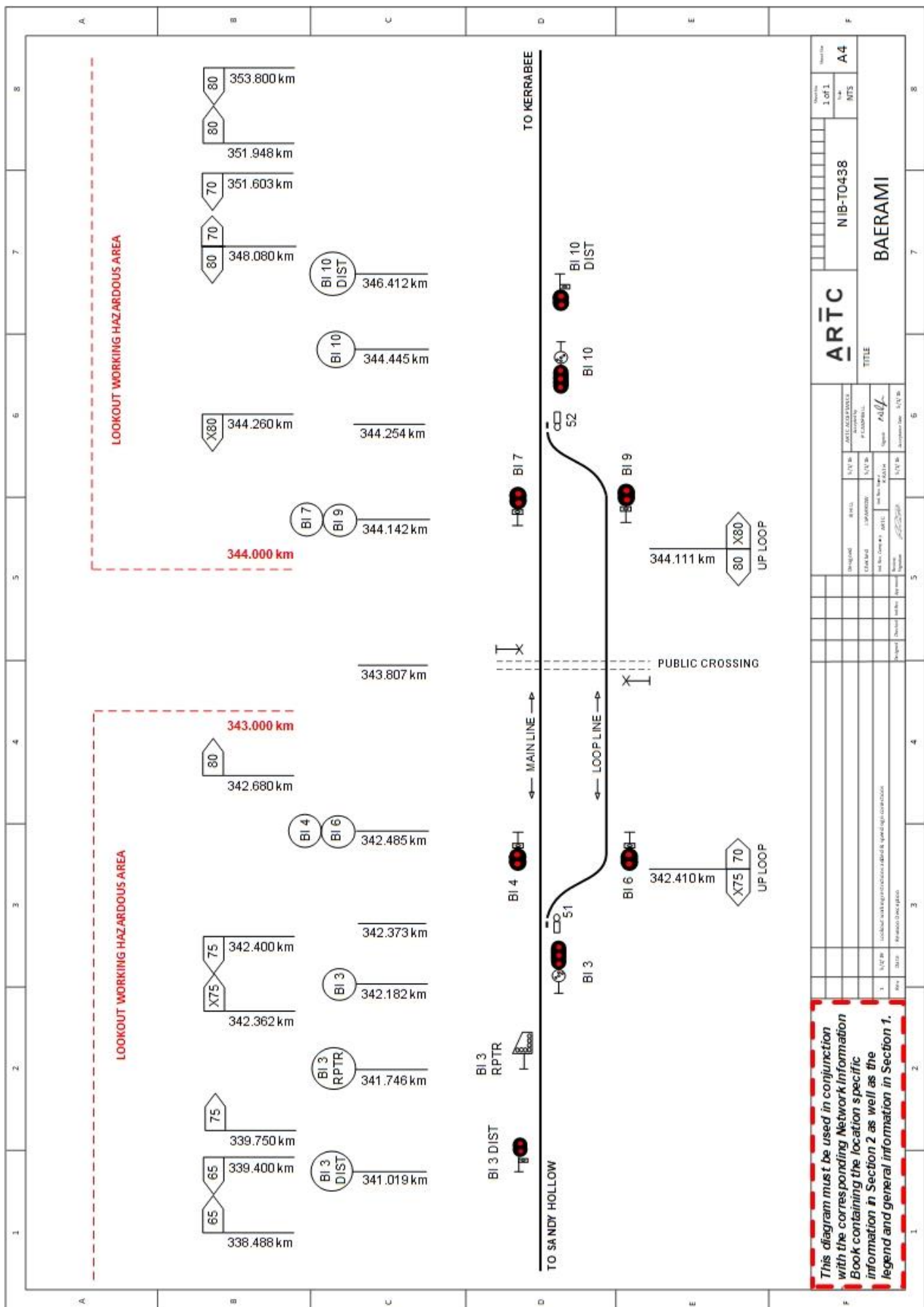
The points and signals at Baerami are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of Power-operated Points in an Emergency

Nos. 51 and 52 points worked from the NCCN are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.



2.7 Kerrabee (KRB)

General Arrangements

Kerrabee is a Rail Vehicle Detection location controlled from Network Control Centre North.

Yard Limits KE3 to KE10

Loop Length 1550 metres

Siding Length 299 metres

Operation of Points and Signals

The points and signals at Kerrabee are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of Power-operated Points in an Emergency

Nos. 51 and 52 points worked from the NCCN are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

Maintenance Siding Access

The point's control panel is located adjacent to 53A points on the Up CESS.

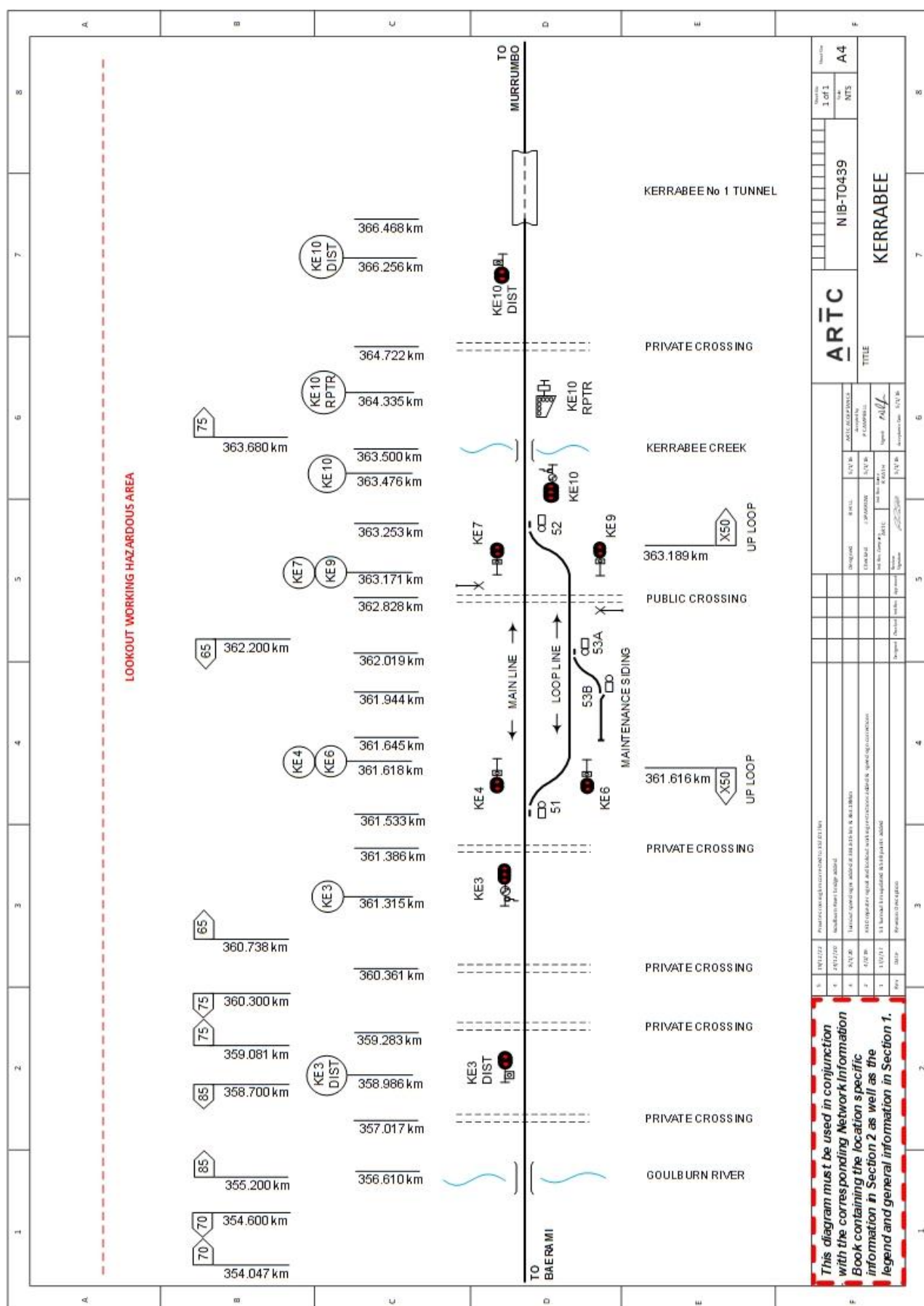
The push button control on the panel operates 53 points. To operate 53 points the Network Controller must provide the release (Release Number 95). Once the release has been given, the indication will illuminate showing that the points are free to operate.

Catch Point at 361.944km

Stop Sign at 361.645km

Siding Length 299 metres clear of catch point to stop sign.

Following use, the points must be returned to the normal position before the release can be returned to the Network Controller.



2.8 Murrumbo (MBM)

2.8.1 General Arrangements

Murrumbo is a Rail Vehicle Detection location controlled by Network Control Centre North.

Yard Limits MO3 to MO10

Loop Length 1660 metres

NOTE: Hi-Rail / Track Vehicle Journey - personnel must wait 60 minutes after passage of last train before travelling through Bylong No. 3 Tunnel.

Operation of Points and Signals

The points and signals at Murrumbo are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of Power-operated Points in an Emergency

Nos. 51 and 52 points worked from the NCCN are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

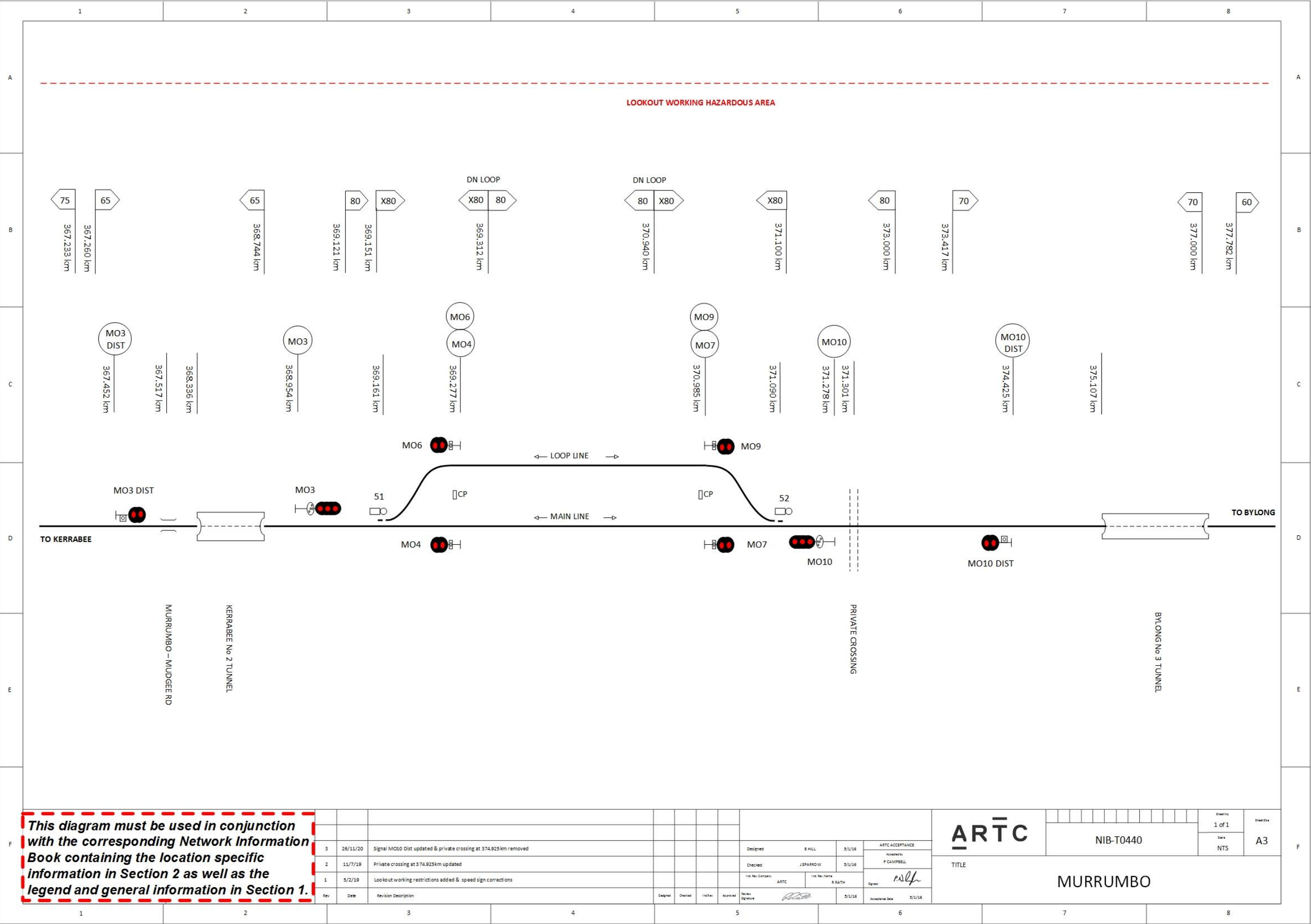
2.8.2 Train Operation Restrictions

Bylong number 3 tunnel: There is an impact on trains operations due to time restriction requirement of 16 minutes between train movements through the No. 3 tunnel to allow the tunnel to purge/ventilate.

A Phoenix signalling control is provided where MO7 & MO9 Down Home/Starting signals will not clear until 16 minutes after an Up directional train has passed MO10 Up distant signal or for following rail traffic movements from Murrumbo and Bylong to clear BG3 signal.

Should any train transverse the tunnel with more than three (3) Operating locomotives the next following train must be held for a period of Thirty (30) minutes before being allowed to enter Bylong No3 Tunnel.

The Network Controller at the NCCN will be responsible for managing the restrictions of headway times listed above by placing blocks on protecting signals for Bylong No3 Tunnel at Bylong or Murrumbo until the addition time has elapsed.



2.9 Bylong (BYL)

2.9.1 General Arrangements

Bylong is a Rail Vehicle Detection location controlled by Network Control Centre North.

Yard Limits BG3 to BG18

Loop Length 3780 metres

This enables two trains to stand in either the up direction or two trains in the down direction.

There is sufficient space to stand a maximum 1670 metres long train in all four positions without fouling the level crossing at 384.410km in the middle of the location.

Siding Length 303 metres from 52 catch points to Stop sign

Operation of Points and Signals

The points and signals at Bylong are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of Power-operated Points in an Emergency

Nos. 51 and 52 points worked from the NCCN are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

Active Controlled Level Crossing (384.410km)

Type F Level Crossing with roadside flashing lights, audible warning devices and half booms is provided at 384.410km for the Upper Bylong Service Road.

Testing of Level Crossing Warning Equipment

The Upper Bylong Service Road Level Crossing 384.410km will be remotely monitored from NCCN "4Site" system and daily tests carried out by the Cerberus Level Crossing Monitoring System.

Failure of the Cerberus Monitoring Equipment

In the event of a failure of the Cerberus monitoring equipment, a daily test must be conducted in accordance with ARTC Network Rule ANGE 218 Type F Level Crossing Management. A "Test Switch Box" is located on the outside of the Level Crossing Equipment Hut on the up side at 384.435km and is opened by the test key obtained from the ARTC Muswellbrook Provisioning Centre.

Emergency Operation of the Level Crossing warning equipment

Emergency switches are provided to isolate the warning equipment in the event of failure. The "Emergency Switch Box" is located on the outside of the Level Crossing Equipment Hut on the up side at 384.435km and is opened by the emergency keys obtained from the ARTC Muswellbrook Provisioning Centre. The warning equipment must be operated in accordance with ARTC Network Rule ANGE 218 Type F Level Crossing Management and Procedure ANPR 715 Protecting Type F Level Crossings.

Manual Operation of Level Crossing Warning Equipment

A manual operation switch is provided in a box secured by an SL Lock, located on the outside of the Level Crossing Equipment Hut on the up side at 384.435km. The manual operation switch is provided for use by Qualified Workers in accordance with ARTC Network Rule ANGE 218 Type F Level Crossing Management.

Failure of Signals Protecting the Level Crossing

In the event of failure of the signals protecting the active level crossing at 384.410km, or if rail traffic is authorised to pass the protecting signals in the STOP position, rail traffic crews will be required to activate the level crossing warning equipment by operating the push buttons provided on the protecting signals before passing the protecting signals in the STOP position. Advisory signs are located adjacent to the protecting signals stating "BEFORE PASSING SIGNAL AT STOP PRESS BUTTON TO ACTIVATE LEVEL CROSSING WARNING. BEFORE PASSING OVER LEVEL CROSSING ENSURE IT IS OPERATING."

Signals Protecting the Level Crossing

Signal	Km	Line
BG10	384.712	Main
BG7	384.100	Main
BG9	384.100	Loop
BG12	384.712	Loop

Operation of Push Buttons on Protecting Signals

1. Press the push button on the signal, and provided the operation is successful, a white light will be displayed.
2. Ensure that the level crossing roadside flashing lights and audible warning devices have activated and the crossing is clear of road and pedestrian traffic.
3. Proceed past the signal at stop in accordance with ARTC Network Rule ANSG 608 Passing signals at STOP

Note: Rail Traffic Crews must obtain the appropriate authority from the relevant Network Controller before passing signals at STOP.

In the event that the white light does not illuminate after completing the above procedures, rail traffic crews must act in accordance with ARTC Network Rule ANGE 218 Type F Level Crossing Management, Faulty level crossings.

Main Road 208 Level Crossing (388.050km)

Type F level crossing protection is provided at Main Rd 208 at 388.050km in the Bylong to Coggan Creek section. The Down direction strike in point and level crossing warning sign for the level crossing is located at 386.857km. The Up direction strike in point and level crossing warning sign is located at 389.210km.

2.9.2 Train Operation Restrictions

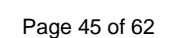
Bylong number 3 tunnel:

There is an impact on trains operations due to time restriction requirement of 16 minutes between train movements through No. 3 tunnel to allow tunnel to purge / ventilate.

A Phoenix signalling control is provided where BG6 & BG4 Up Home/Starting signals will not clear until 16 minutes after a Down directional train has passed BG3 Down Home signal or for following rail traffic movements to clear MO10 Up distant signal at Murrumbo.

Should any train transverse the tunnel with more than three (3) Operating locomotives the next following train must be held for a period of Thirty (30) minutes before being allowed to enter Bylong No3 Tunnel.

The Network Controller at the NCCN will be responsible for managing the restrictions of headway times listed above by placing blocks on protecting signals for Bylong No3 Tunnel at Bylong or Murrumbo until the addition time has elapsed.



2.10 Coggan Creek (CGC)

General Arrangements

Coggan Creek is a Rail Vehicle Detection controlled by Network Control Centre North.

Yard Limits CK3 to CK10

Loop Length 1745 metres

Siding Length 386 metres from catch point to Stop Sign

Up Starting Signals CK4 and CK6 will not clear until Bylong's BG18 is clear. This is to prevent trains standing at Bylong's BG18 signal and blocking Main Road level crossing.

Emergency Operator's Locks

51 points Down side 395.973km

52 points Down side 397.827km

Operation of Siding

Release switch for "F" frame is via 97 release controlled from NCCN.

Frame "F" is a 3 lever frame.

Active Level Crossing Protection at Private Road 395.924km

Type F level crossing equipment including flashing lights and bells is provided at Private Road 395.924km.

Coggan Creek Down home signal CK3 and Up home/starting signals CK4 (Main Line) and CK6 (Loop Line) are interlocked with the active control Private Rd level crossing at 395.924km.

Push Button and Signs

Type	KM	Signal
Push Button and Push Button Sign	395.762	CK3
Push Button and Push Button Sign	396.062	CK4
Push Button and Push Button Sign	396.062	CK6

Operational Arrangements

The level crossing will operate as normal when the home or home/starting signals are displaying a proceed indication.

Testing of the Level Crossing Warning Equipment

The Level Crossing facility will be remotely monitored from NCCN "4Site" system and daily tests carried out by the Cerberus Level Crossing Monitoring System.

A Test Switch Box is located on the outside of the Level Crossing Hut and is opened by the test key obtained from the Muswellbrook Provisioning Centre.

Emergency operation of the Level Crossing warning equipment

The Emergency Switch Box is located on the outside of the Level Crossing Hut and is opened by the key obtained from the Muswellbrook Provisioning Centre.

Private Rd Level Crossing Emergency Arrangements

In the event of interlocking failures, the signals protecting the Private Rd level crossing will fail safe in the STOP position. The level crossing flashing lights and audible warning devices will activate, after a time period of 4 minutes, the level crossing warning equipment will de-activate allowing road and pedestrian traffic to proceed.

Under these circumstances, rail traffic crews will be required to activate the level crossing warning equipment by operating the push buttons provided on the protecting signals before passing the protecting signals in the STOP position.

Note: Rail Traffic Crews must obtain the appropriate Authority before passing signals at STOP.

Operation of Push Buttons on Protecting Signals Down Home Signal CK3 Main Line

1. Press the push button on the signal and provided the operation is successful, a white light will be displayed.
2. Ensure that the level crossing flashing lights and audible warning devices have activated and the crossing is clear of road and pedestrian traffic.
3. Proceed past the signal at stop in accordance with ARTC Network Rule ANSG 608 Passing signals at STOP.

Up home/starting signal CK4 Main Line and up home/ starting signal CK6 Loop Line

1. Press the push button on the signal and provided the operation is successful, a white light will be displayed.
2. Ensure that the level crossing flashing lights and audible warning devices have activated and the crossing is clear of road and pedestrian traffic.
3. Proceed past the signal at stop in accordance with ARTC Network Rule ANSG 608 Passing signals at STOP.

In the event that the white light does not illuminate after completing the above procedures, rail traffic crews must act in accordance with ARTC Network Rule ANGE 218 Type F Level Crossing Management, Faulty level crossings.



2.11 Wollar (WLV)

General Arrangements

Wollar is a Rail Vehicle Detection location controlled by Network Control Centre North.

Yard Limits WR3 to WR14

Loop Length 1670 metres

Operation of Points and Signals

The points and signals at Wollar are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of Power-operated Points in an Emergency

Nos. 51 and 52 points worked from the NCCN are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

Mogo Road Level Crossing

Type F level crossing protection with flashing lights, audible warning devices and automatic boom gates is provided at Mogo Road 415.115km.

Trackside approach warning signs are located at 412.200km in the Down direction and 416.080km in the Up direction.

Instruction Boards are placed as follows:

At 413.520km an Instruction Board reading

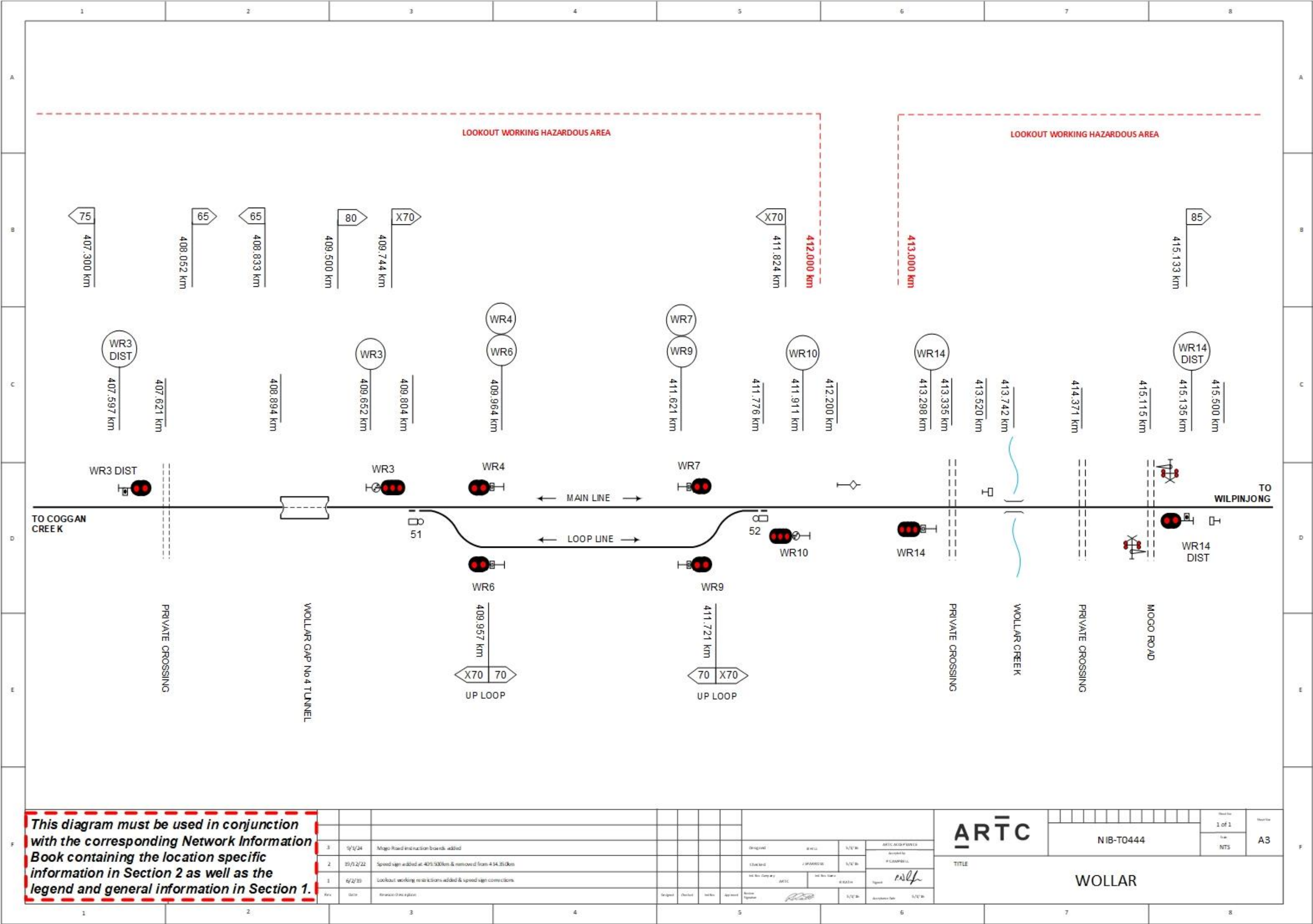
“CLEAR 1600M OF MOGO ROAD LEVEL CROSSING”.

This Instruction Board advises Rail Traffic Crews that, beyond this Instruction Board, Rail Traffic less than 1600m in length is clear of Mogo Road Level Crossing.

At 415.500km an Instruction Board reading

“RAIL TRAFFIC MUST CLEAR MOGO RD LEVEL CROSSING”.

This Instruction Board advises Rail Traffic Crews that Mogo Road Level Crossing is not to be blocked, wherever possible.



2.12 Wilpinjong (WIP)

General Arrangements

Wilpinjong is a Rail Vehicle Detection location controlled by Network Control Centre North.

It is a consolidated location incorporating Wilpinjong Coal Loop.

Yard Limits WG3 to WG14 and WG30

Crossing Loop Length 1660 metres

Operation of Points and Signals

The points and signals at Wilpinjong are power operated and controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operation of Power-operated Points in an Emergency

Nos. 51 and 52 points worked from the NCCN are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points should be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

Ulan Wollar Road Level Crossing

Type F level crossing protection with flashing lights, audible warning devices and automatic boom gates is provided at Ulan Wollar Road 420.062km. Trackside approach warning signs are located at 418.877km in the Down direction and 421.247km in the Up direction.

Emergency Arrangements

Push Buttons and Push Button Signs are located at

Down Home Signal WG3 Main Line	419.940km
Up Home / Starting Signal WG4 Main Line	420.415km
Up Home / Starting Signal WG6 Loop Line	420.415km

In the event of interlocking failures, signals protecting the Ulan-Wollar Road level crossing will fail safe in the stop position. The level crossing lights and audible warning devices will become activated and the booms will descend.

After a time period of 4 minutes, the level crossing will be de-activated and the booms rise to allow road and pedestrian traffic to proceed.

Under such circumstances, rail traffic crews will be required to activate the level crossing warning equipment before passing the protecting signals at stop. The following steps describe the action required.

Down Home Signal WG3 Main Line

1. Press the push button on the signal and provided the operation is successful, a White Light will be displayed.
2. Ensure that the level crossing lights and audible warning devices have activated, the booms are lowered and the crossing track is clear of road and pedestrian traffic.

3. Proceed past the signal at stop in accordance with ARTC Network Rule ANSG 608 Passing signals at STOP.

Up Home/ Starting Signal WG4 Main Line and WG6 Loop Line

1. Press the push button on the signal and provided the operation is successful, a White Light will be displayed.
2. Ensure that the level crossing lights and audible warning devices have activated, the booms are lowered and the crossing track is clear of road and pedestrian traffic.
3. Proceed past the signal at stop in accordance with ARTC Network Rule ANSG 608 Passing signals at STOP.

In event that the White Light does not illuminate after the above procedures have been compiled with, rail traffic crews must act in accordance with ARTC Network Rule ANGE 218 Type F Level Crossing Management.

Ulan Wollar Road West Level Crossing

Type F level crossing protection with flashing lights, audible warning devices and booms are provided at Ulan Wollar Road West 423.744km. Trackside approach predictor warning signs are located at 422.807km in the Down direction and 424.729km in the Up direction.

Testing of Level Crossing Warning Equipment

The level crossing will be remotely monitored through the Cerberus monitoring system from the Network Control Centre North.

A 'Test' switch box is located on the outside wall of Ulan Wollar Road West, Wilpinjong level crossing location hut and is opened by the test key obtained from the ARTC provisioning centre at Muswellbrook.

Failure of the Cerberus Monitoring Equipment

In the event of failure of the Cerberus monitoring equipment, a daily test must be implemented by the Signal Electrician Muswellbrook in accordance with ARTC Network Rule ANGE 218.

Emergency Operation of the Level Crossing Warning Equipment

Emergency switches are provided to isolate the warning equipment in the event of a failure. The 'Emergency Switch Box' is located on the outside wall of Ulan Wollar Road West, Wilpinjong level crossing location hut and is opened by the emergency keys obtained from the ARTC provisioning centre at Muswellbrook.

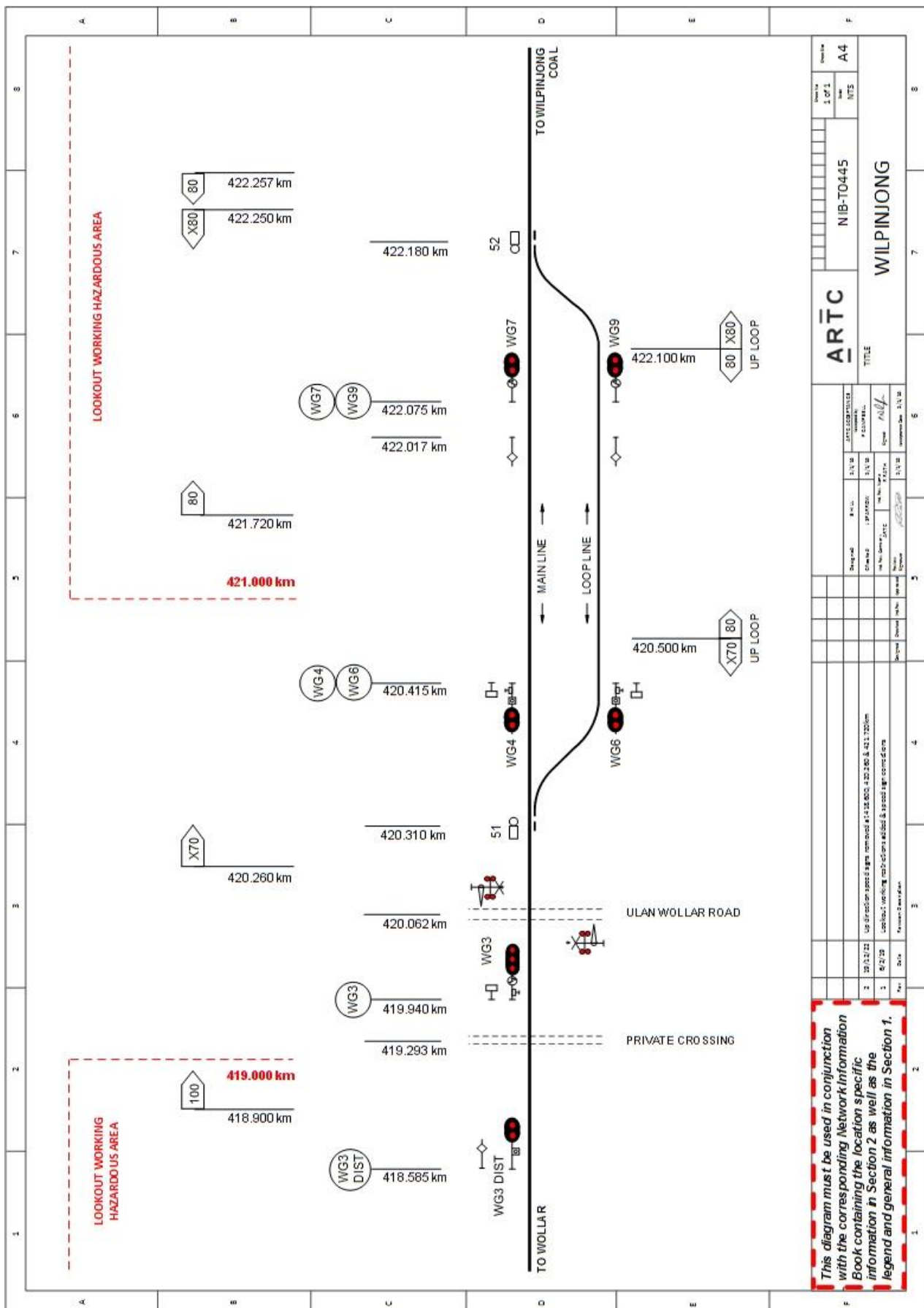
The level crossing warning equipment must be operated in accordance with ARTC Network Rule ANGE 218 'Type F Level Crossing Management' Procedures ANPR 715 'Protecting Type F Level Crossings' and ANPR 717 'Using Emergency Roadside Warning Equipment'.

In the event of interlocking failures, the level crossing lights and audible warning devices will become activated and the booms will descend. After a time period of 4 minutes, the level crossing will be de-activated and the booms will rise to allow road and pedestrian traffic to proceed and will return to normal operation.

Under such circumstances, rail traffic crews will be required to activate the level crossing warning equipment from the Manual Operation Switch before proceeding across the level crossing.

Manual Operation of Level Crossing Warning Equipment

A manual operation switch is provided on the outside of the level crossing location hut. The manual operation switch is unlocked by SL key and provided for use by Competent Workers in accordance with ARTC Network Rule ANGE 218 'Type F Level Crossing Management' and Procedure ANPR 715 'Protecting Type F Level Crossings'.



2.13 Wilpinjong Coal Loop (WJL)

Wilpinjong Coal Loop and Wilpinjong are one consolidated location.

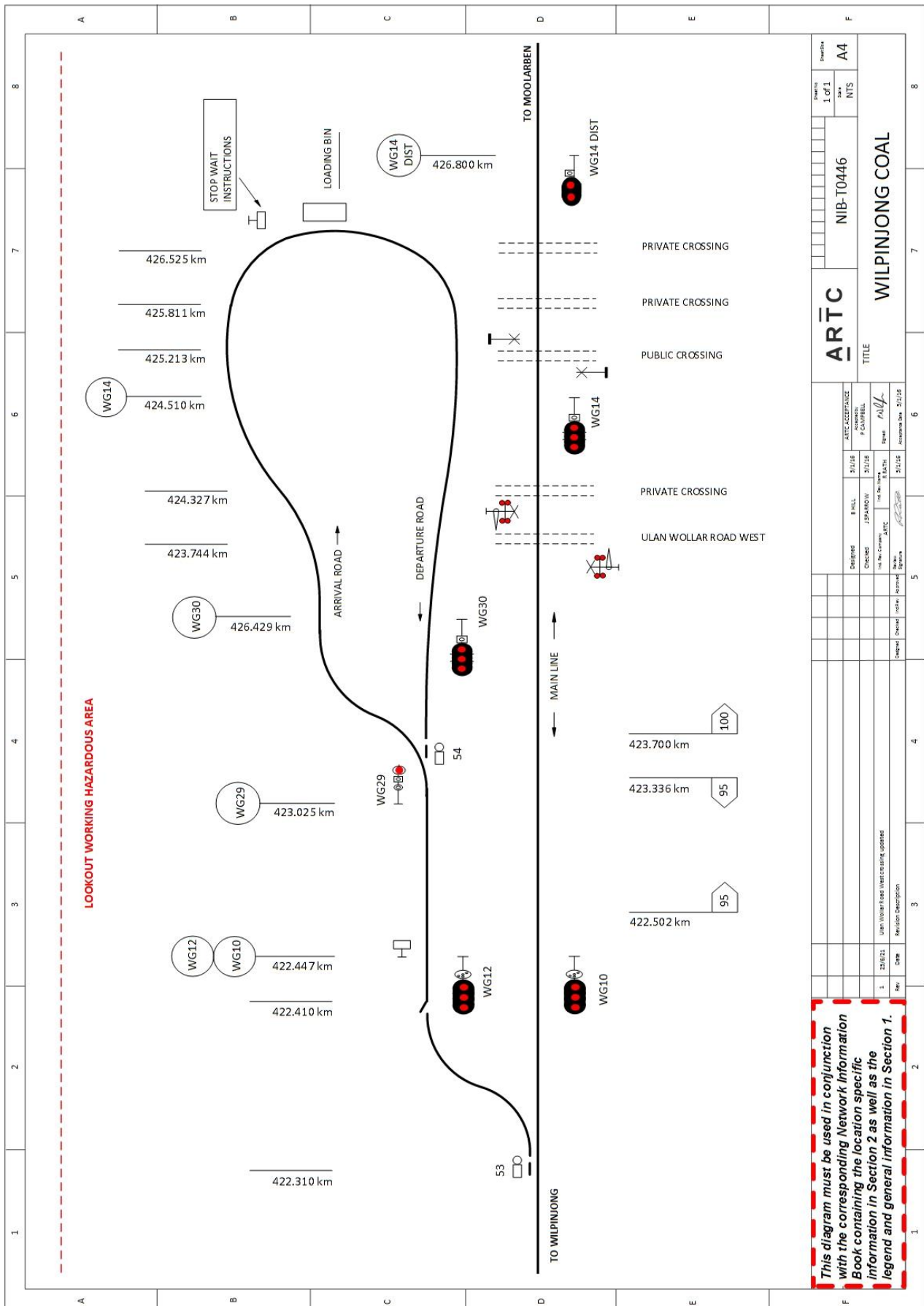
Entry and Exit to Wilpinjong Coal Loop is by Rail Vehicle Detection with entry and exit points and signals controlled by Network Control Centre North.

The loop is a private siding and an Isolation Key can be found in the Relay Cupboard located at 53 points at 422.310km. Refer safety interface agreement IA1607 for further details.

Balloon Loop Length

51 points to 51 points	3300 metres
CP (423.105) to Bin (424.690)	1585 metres
Bin (424.690) to WG30 (423.112)	1578 metres
WG12 to WG29	578 metres
CP to WG30	3163 metres

Locations and Sections Information



2.14 Moolarben Coal Loop (MLR)

Moolarben Coal Loop and Ulan are one consolidated location.

Entry and Exit to Moolarben Coal Loop is by Rail Vehicle Detection with entry and exit points and signals controlled by Network Control Centre North.

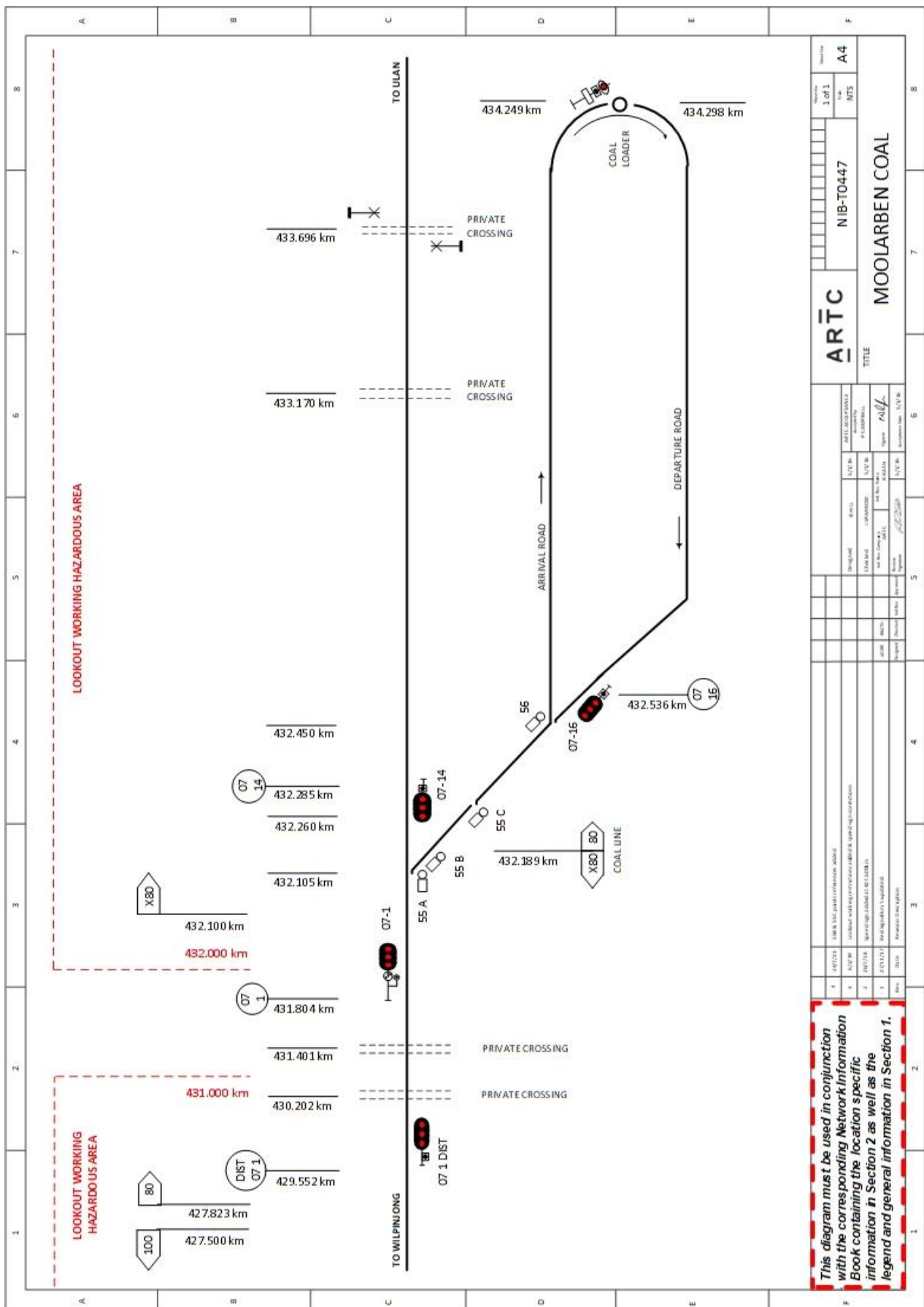
A private siding isolation switch is located on the down side at 432.105km to isolate Moolarben coal loop from the main line.

Axle Counter exists across all points and on main and coal loop lines.

Coal Loop Length 3800 metres

Catch Points to Bin 2038 metres

Bin to 07-16 signal 1762 metres



2.15 Ulan (ULN)

General Arrangements

Ulan and Moolarben Coal Loop are one consolidated location.

Crossing Loop length 936 metres

Yard Limits 07/1 to 07/2

Operation of points and signals

The points and signals at Ulan are operated from Network Control Centre North.

All points worked from the Network Control Centre North are controlled by track circuit and cannot be moved unless the track indicator diagram is showing that the track(s) controlling the points is unoccupied.

Operating power-operated points in an emergency

All points worked from Network Control Centre North are electrically power-operated.

If these points fail to operate correctly, the Network Controller must try to restore the points to their previous position to allow trains to continue running. However, if it is necessary to alter the route, the points may be manually operated.

The Signals maintenance representative must be promptly advised of the circumstances.

Special instructions for isolating the points leading to Ulan coal siding for maintenance purposes

To prevent access to Ulan coal siding during maintenance work within the siding, a key-locked isolating switch is provided in a locked box to enable the power for Nos. 53 and 54 points to be isolated.

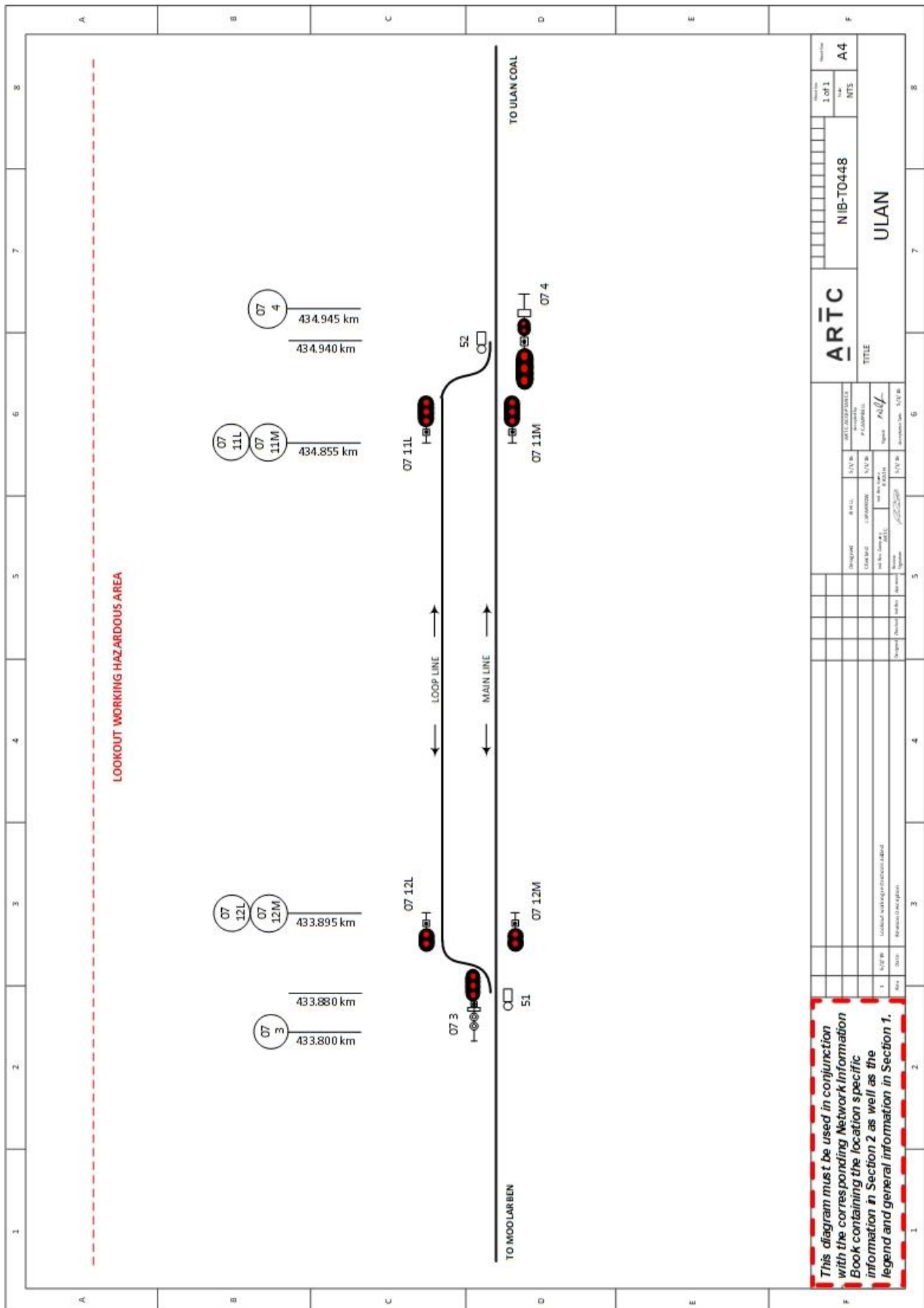
The key for the isolating switch box is held by the infrastructure maintainer for the area.

The isolating switch has two positions, "Normal Operating" and "Siding Isolated". The normal position for the switch is the "Normal Operating" position.

When the switch is locked in the "Normal Operating" position, the points can be operated normally. When the switch is locked in the "Siding Isolated" position, the power supply will be isolated and the points cannot be power-operated.

Ulan Road Level Crossing

Type F flashing lights and warning bells are provided at Ulan Road level crossing at 438.832km.



2.16 Ulan Coal Loop

Ulan Coal Loop is part of the Ulan consolidated location.

Ulan Coal loop is a private siding and an Isolation Key can be found in the Relay Cupboard located at 53B points at 435.555km. Refer safety interface agreement IA1605 for further details.

Entry of Down trains into the arrival road is controlled by signal no 07/13(s) and departure for Up trains from the departure road is controlled by signal no. 07/8.

