Signals Technical Maintenance Plan

(Maintenance Responsibilities, Frequencies, Latitudes and Reporting)

ESS-26-01

Applicability

ARTC Network Wide SMS

Publication Requirement

Internal / External

Primary Source

ESM2602-S01-S02-S03 (v2.0) / ESM-26-02

Document Status

Version #	Date Reviewed	Prepared by	Reviewed by	Endorsed	Approved
1.0	07 Mar 24	Standards	Stakeholders	Manager Signalling Standards	Head of Engineering Standards 28/03/2024

Amendment Record

Amendment Version #	Date Reviewed	Clause	Description of Amendment
1.0	07 Mar 24		Document renumbered to align with document numbering procedure EGP-01-02. Included ground-based inspection for LED Signal. Other minor updates and clarifications.

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1 Introduction

1.1 Purpose

This procedure specifies requirements for the application of the Signals Technical Maintenance Plan.

1.2 Scope

This procedure covers the complete ARTC network. It details the requirement for the performance of maintenance activities on signalling and control systems infrastructure and related infrastructure.

1.3 Standard Owner

The Head of Engineering Standards is the Document Owner. For any query, initial contact to be made at standards@artc.com.au.

1.4 Responsibilities

- Signal Engineer is to ensure that all assets are included in the Asset Management system in accordance with the TMP. No changes should be made to the asset listed in asset management system without permission and final authorisation of data from signal maintenance engineer. Please refer EGP-03-02 for further information.
- WGL/Signal Engineer ensure all assets have Maintenance Service Tasks (MST's) issued in accordance with the TMP.
- Maintenance teams ensure all maintenance is recorded in the Asset Management system.
- Maintenance teams ensure the planning and repair of all defects/known conditions corrective and reactive are recorded in the Asset Management system. Please refer AMT-WI-024 for further information.
- Technical decisions to support staff engaged in signalling maintenance and repair are made by competent signal engineer.
- Engineering inspections are to be planned and undertaken in accordance with relevant Standards and procedures. Signal Engineer is responsible for inspections are to be recorded in the Asset Management system.
- All service schedules are to be completed by a suitably qualified person in accordance with the TMP and the relevant Standards and procedures.
- All signal maintenance personnel, including contractors completing signal activities hold current accreditation.
- Maintenance teams ensure reliability of equipment to ensure required availability.
- The Signal Work Group Leader is responsible for managing the process for each application of the Latitude.
- The Engineering Standards is responsible for the approval of new types or classes of equipment.

- The Signal Maintenance Engineers are responsible for reporting the requirement for new service schedules to the Manager Signalling Standards. The Signal Maintenance Engineers shall also use this identification schema in the naming of related documents.
- All the above activities are to be undertaken within the timeframes specified in the Technical Maintenance Plan.

1.5 Reference Documents

The following documents support this procedure:

- Signals Service Schedules / Standard Jobs: ESW-26-01
- Signalling standards
- AMT-WI-024 – Known Condition Management
- AMT-WI-025 – Work Order Management
- EGP-03-02 – Equipment Register - Updating and Maintenance

1.6 Definitions and Acronyms

The following terms and acronyms are used in this document.

Term or acronym	Description
AMS	Authority Management Server
ATMS	Advanced Train Management System
EGI	Equipment Group Identifier as used in the asset management system
Ellipse	The current asset management system when drafting the standard
Latitude	The permitted time plus or minus between the service due date and the performed date
Standard Job	This is the name used within the asset management system for the specific service schedules
Service Schedule	The detailed document covers the actions required when maintaining a specific item of equipment
Technical Standards	The ARTC engineering standards and procedures including signalling standards and procedures that cover work on ARTC infrastructure
TMP	Technical Maintenance Plan
TPWS	Train Protection & Warning System

2 General

The maintenance of signalling equipment is managed in accordance with a maintenance plan. This plan details the frequency for the performance of each type of maintenance service. This is specified as the period between each scheduled maintenance service. For a large integrated item of signalling equipment, there may be different maintenance services each with its own maintenance frequency. It includes the equipment identification schema to be used with the asset management system, there are 2 levels to be used being the Class and the EGI.

The system for managing the maintenance will issue maintenance work orders for the activities to be completed in a forthcoming period, usually a month. A work order lists the standard job or service schedule number. The number represents a service of which contains one or many tasks to be performed.

Generally, it is desirable for efficiency reasons, that the different maintenance services are coordinated. For example, a base level maintenance service may be scheduled every 3 months and a second maintenance service may be at 12-month intervals. When the 3-month maintenance and the 12-month maintenance are to be completed within the same period, they should be done at the same maintenance visit.

3 Maintenance Frequencies

Maintenance frequencies are set out in the Section 11 of this document. The maintenance actions (tasks) are determined using the original equipment manufacturers recommendations as a foundation and any relaxation of periodicity or variation to maintenance tasks are based on experience with the equipment to achieve the following:

- Prevention of failures of the equipment;
- Renewal of consumables in the equipment if applicable;
- Prevention of wear and tear of the equipment;
- Adjustment of the equipment tolerances within limits;
- Prevention of any issues with the equipment that may lead to safety risks or hazards.

As such, the maintenance frequency is not an absolute value for every piece of equipment in service. It is an optimum value that will provide the required service and reliability outcome across all the items of that type currently in use.

If an asset condition requires intervention before the next scheduled maintenance visit refer to corrective maintenance section.

If maintenance is required beyond the set frequencies refer to the planning and Engineer's latitudes sections.

The Signal Maintenance Engineer is to direct that additional or more frequent maintenance be carried out where site specific conditions (such as asset condition, road movement or equipment approaching its life expectancy etc.) would otherwise cause a reduction in safety integrity or in reliability below requirements.

4 Corrective Maintenance

If an asset condition falls below the minimum condition to meet the above requirements before the next scheduled maintenance visit this should be recorded and managed through the works

management system. This may require additional work scheduled through the works management system to be completed between normal scheduled frequency visits.

5 Maintenance Planning Latitude

The planning of maintenance activities is in accordance with the frequency within this TMP. The number of maintenance activities in a given period is determined by the frequency without latitude, e.g. a 30-day frequency would equate to 12 services a year regardless of the use of the planning latitude. The frequency is used to set the scheduled date between services. The scheduled date may occur on a weekend, public holiday or other date when the maintenance work cannot normally be undertaken, in these circumstances the TMP includes a latitude or tolerance to allow for the work to be planned on a suitable date. The work may be planned before or after the scheduled date within the planning latitude % of the set frequency. (The planning latitude is a % plus or minus to the scheduled date).

Any work required beyond the planning latitude is to be assessed prior to the date and shall met the requirements details in Signal Engineer latitude.

Note: “Safety critical tasks” shall be completed within the defined planning latitude, i.e. no engineer’s latitude.

6 Signal Engineer Latitude

The due date for the performance of the maintenance may be extended beyond the planning latitude as referred in table below under managed situations provided there are no known conditions that may increase the safety risk. This shall be done on an exception basis and not as a regular situation.

Signal Workgroup Leaders / Planners shall notify the Signal Maintenance Engineer when it becomes apparent that the required maintenance will not be done by the planned finish date plus the planning latitude (Required By date) and request approval for an extension. Same requirement will apply when the required maintenance is being done earlier than the planned start date including planning latitude (Required Start date).

The Signal Maintenance Engineer shall assess the situation prior to extending beyond the planning latitude. If the requirements are met for the application of the Signal Engineer Latitude, then the maintenance activity may be scheduled to be completed within the Engineer Latitude period.

If the requirements are not met, then the equipment shall be booked out of use until the maintenance activity can be performed.

If the Engineers Latitude is approved and the work is not completed within the Engineers latitude the equipment shall be booked out of use unless a preapproved waiver is obtained.

Failure to secure the appropriate waiver will require removal of the asset from service.

The Signal Maintenance Engineer shall review the signal asset for the following requirements:

- confirm that the signal equipment is in good condition from his/her evaluation or knowledge
- confirm that there have not been recent failures associated with the equipment;
- confirm that there are no known conditions with the equipment.

The Signal Maintenance Engineer / Manager shall keep a record that the above requirements have been assessed and the Signal Engineer's Latitude is approved. Signal Engineer latitude shall be recorded in Ellipse as per AMT-WI-025.

The Signal Engineer Latitudes are calculated from the original scheduled date and includes the planning latitude.

LATITUDES FOR SIGNAL ENGINEER

SCHEDULED MAINTENANCE PERIOD	NON-SAFETY CRITICAL
30 days	28 days
60 days	35 days
90 days	42 days
120 days	42 days
180 days	56 days
360 days	98 days
720 days	112 day
1440 days	180 day
4 years <	OC

7 Safety Critical and Non-Safety Critical Tasks

All tasks included in Section 11 of this document are important for the safe and reliable operations of the signalling system and expected to be completed within the planning latitude.

Safety critical assets or components are defined as an item whose failure either by itself or as a function of another failure will result in the likelihood of a significant incident occurring.

A safety critical task is one that protects against an immediate or likely failure mode in a safety critical asset or component.

There is significant risk associated with tasks being extended beyond the task period without defined approved risk mitigation measures in place.

A safety critical asset/component being the facing point lock and the allocated task being "gauging the gap between switch and stock rail to ensure the gap is not beyond its specified limits or the maintenance of a level crossing being a series of allocated tasks such as battery, battery charger lights, bells booms.

Safety Critical tasks shall be completed within the defined planning latitude. For those tasks that cannot be achieved due to special circumstances an engineering waiver shall be obtained.

Failure to secure the appropriate waiver will require removal of the asset from service.

Non-safety critical or "other" tasks are those that are performed to ensure that the signalling equipment is maintained in good condition and will not decrease its service life and continues to operate safely. These tasks are expected to be completed within the planning latitude to avoid any potential impact on the safe working of the signalling system. An example of such task considered to have a higher safety importance is insulation testing where no ELD exists and the potential for unsafe failures can increase as cables degrade.

The following assets/components and tasks are safety critical.

Description	Service Schedule
Level crossings	S03012
Level crossing power supply/battery	S09311
Mechanical Interlocking test – Main frame > 4 levers	S05314
Electric locks (main frame only)	S05311
Relay Interlocking (single cut circuits without ELD only)	S05031
ML releasing switch (unmodified only)	S06611
Points/Derailers/Mechanical Points	S06011, S06021, S06031, S06041, S06111, S0612, S06131, S06211, S06221, S06311, S06321, S06411, S06421, S06511, S06521, S06531, S06541, S06711
Train Detection	S07012, S7052, SX7112, S07211, S07212, SX7312, SX7322, SX7332, S07342, SX7352, S07362, SX7372, SX7382, SX7392, SX7411, SX7421, SX7612, S07622, S07632, S07642, S07712, S07722, S07751, S07761

For points maintenance, inspection should be planned in such a way that one joint inspection will be performed with the track inspector.

8 Compliance

It is intended that all equipment is to be maintained to the frequency set within the TMP. Compliance is achieved if maintenance is completed by the scheduled due date plus the planning latitude, for example maintenance may be required to be performed before the scheduled date on one service and on the following service it is completed after the scheduled date. e.g. an asset with a 60-day frequency and 10% planning latitude (6 days) is completed 6 days prior to the first scheduled date and then completed 6 days after the next scheduled date or a total of 72 days between services.

Monitoring of compliance with the intent the periodicities contained in the TMP are met is to be assessed by the Signal Maintenance Engineer, Assurance Engineer or other nominated role.

This process of checking the engineer latitude approval is as follow. This requires a comparison of the maintenance due date with the actual completed date looking for evidence of approved engineering latitude and waiver date in Ellipse if maintenance goes beyond the planning latitude into the engineering latitude. If there is no evidence of engineering latitude approval and waiver dates in Ellipse, it is deemed as non-compliant.

Both checks should be reviewed six monthly.

9 Reports and Records

Details of preventative and corrective maintenance performed shall be documented using the Maintenance Management System combined with signalling equipment history cards and test record sheets, where specified under the relevant maintenance procedure.

Maintenance records and reports are an important documented account that is used to investigate incidents and train accidents. They assist in demonstrating the integrity of the signalling system.

Records of actual maintenance carried out are also required to assist in determining the optimum level of maintenance for each type of equipment.

10 Lines on which Rail traffic has been Suspended

Should rail traffic be suspended signal maintenance may be suspended with the approval of the Corridor Manager. The operations manager shall be notified in writing advising the signal maintenance is not being carried out and that no train movements are permitted until arrangements have been made for signal maintenance to be completed and any defects repaired prior to commencement of train movements. A train notice or equivalent is required to ensure all operators are aware of the situation and written acknowledgement of the above is required from the operations manager. Signalling equipment not being maintained is to be booked out on an Infrastructure Booking Authority (IBA) form.

11 Maintenance Plan

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Planning Latitude Days
SI	Signal SITE			SI0010	Signal Site	S01002	ST	90	30%	27
						S01001	ST	180	15%	27
						S01003	ST	360	8%	28

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Planning Latitude Days
CS	Control System	010	Operator	CS0101	Control System Operator Local panel	S01011	ST	180	15%	27
		011	Equipment	CS0111	Control System Territory Phoenix	S01111	CST	7 – Non mandatory	30%	2
						S01112	CST	30	15%	5
				CS0112	Control System Territory PTOS	S01121	CST	30	20%	6
				CS0113	Control System Territory TMACS	S01131	CST	30	20%	6
				CS0114	Control System Territory ATMS	S01141	AM/AE	30	10%	3
						S01142	AM	180	15%	27
		012	Equipment Monitor	CS0121	Control Sys Equip Mon 4Site	N/A	CST	Operator Monitored	N/A	N/A
				CS0122	Control Sys Equip Mon Points	N/A	CST	Operator Monitored	N/A	N/A
				CS0123	Control Sys Equip Mon WAM	N/A	CST	Operator Monitored	N/A	N/A
				CS0124	Control Sys Equip Mon Maint Terminal	N/A	CST/CT	Operator Monitored	N/A	N/A

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Planning Latitude Days
TM	Telemetry	020	Telemetry	TM0201	Telemetry FDM	S02011	ST	180	15%	27
				TM0202	Telemetry iMAC	S02021	ST	180	15%	27
				TM0203	Telemetry Kingfisher	S02031	ST	180	15%	27
				TM0204	Telemetry Moscad	S02041	ST	180	15%	27
				TM0205	Telemetry ICAPs	S02051	ST	180	15%	27
				TM0206	Telemetry S2 TDM	S02061	ST	180	15%	27

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Planning Latitude Days
LX	Level Crossing	030	Monitored - Approved monitor system only	LX0301	Level Xing Mon RX-5 Lights	S03011	Refer Civil TMP ETE-00-03			
						S03012	ST	90	20%	18
						S03013	ST	360	15%	54
						S03014	SE	720	10%	72
				LX0302	Level Xing Mon RX-5 Lights & Booms	S03011	Refer Civil TMP ETE-00-03			
						S03012	ST	90	20%	18
						S03013	ST	360	15%	54
						S03014	SE	720	10%	72
				LX0303	Level Xing Mon RX-12 Ped. Lights	S03011	Refer Civil TMP ETE-00-03			
						S03012	ST	90	20%	18
						S03013	ST	360	15%	54
						S03014	SE	720	10%	72
				LX0304	Level Xing Mon RX-12 Ped.	S03011	Refer Civil TMP ETE-00-03			

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Planning Latitude Days
					Light & Boom	S03012	ST	90	20%	18
						S03013	ST	360	15%	54
						S03014	SE	720	10%	72
						S03015	ST	5400	5%	270
				LX0305	Level Xing Mon Supplementary Lights	S03011	Refer Civil TMP ETE-00-03			
						S03012	ST	90	20%	18
						S03013	ST	360	15%	54
						S03014	SE	720	10%	72

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Planning Latitude Days
LX	Level Crossing	031	Not Monitored	LX0311	Level Xing Not Mon RX-5 Lights	S03011	Refer Civil TMP ETE-00-03			
						S03012	ST	30	20%	6
						S03013	ST	180	15%	27
						S03014	SE	360	15%	54
				LX0312	Level Xing Not Mon RX-5 Lights & Booms	S03011	Refer Civil TMP ETE-00-03			
						S03012	ST	30	20%	6
						S03013	ST	180	15%	27
						S03014	SE	360	15%	54
				LX0313	Level Xing Not Mon Ped Lights	S03011	Refer Civil TMP ETE-00-03			
						S03012	ST	30	20%	6

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Planning Latitude Days
						S03013	ST	180	15%	27
						S03014	SE	360	15%	54
				LX0314	Level Xing Not Mon Ped Light & Boom	S03011	Refer Civil TMP ETE-00-03			
						S03012	ST	30	20%	6
						S03013	ST	180	15%	27
						S03014	SE	360	15%	54
						S03015	ST	5400	5%	273

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Planning Latitude Days
SG	Signal	040	Signal	SG0401	Signals Incandescent	S04011	ST	90	30%	27
				SG0402	Signal LED	S04021	ST	180	15%	27
						S04022	ST	720	10%	72
		041	Mechanical	SG0411	Signal Mechanical Semaphore	S04111	ST	60	10%	6
						S04113	ST	360	15%	54
NB	Notice Board	042	Noticeboards/ Signs	SG0421	Signal Noticeboard Signs	S04211	ST	180	15%	27

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
IN	Interlocking			IN0503	Int. Relay Miniature Plug in / Large Plug in	S05031	ST	180	15%	27
						S05032	ST	720	10%	72
		051	Computer	IN0511	Int. CBI Microlok 2	SX5111	ST	180	15%	27

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Planning Latitude Days
			Based			S17000	SE	1440	5%	72
				IN0512	Int. CBI HIMA	S05121	ST	180	15%	27
						S17000	SE	1440	5%	72
				IN0513	Int. CBI Westrace 1	S05131	ST	180	15%	27
						S17000	SE	1440	5%	72
				IN0514	Int. CBI Westrace 2	S05141	ST	180	15%	27
						S17000	SE	1440	5%	72
				IN0515	Int. CBI ElectrologIXS	S05151	ST	180	15%	27
						S17000	SE	1440	5%	72
				IN0516	Int. CBI Westlock	S05161	ST	30	10%	3
						S05162	ST	180	15%	27
						S17000	SE	1440	5%	72
				IN0517	Int. CBI VHLC	S05171	ST	180	15%	27
						S17000	SE	1440	5%	72
				IN0518	Int. CBI EC4	S05181	ST	180	15%	27
						S17000	SE	1440	5%	72
				IN0519	Int. CBI EC5	S05191	ST	180	15%	27
						S17000	SE	1440	5%	72

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
				IN0522	Int. CBI HD Link	S05221	ST	180	15%	27
						S17000	SE	1440	5%	72
				IN0523	Int. CBI SSI	S05231	ST	180	15%	27
		053	Mechanical	IN0531	Int. Mech. Cam And Tappet Main Frame	S05311	ST	30	20%	6
						S05312	ST	90	30%	27
						S05313	ST	180	15%	27
						S05314	SE	720	10%	72
				IN0532	Int. Mech. Ground Frame	S05321	ST	60	10%	6
						S05322	ST	360	15%	54
						S05323	SE	1440	10%	144
				IN0533	Int. Mech. Rel.	S05331	ST	180	15%	27
						S05332	SE	1440	10%	144

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
PT	Points	060	Combined	PT0601	Points Combined M Series	S0601L	ST/SM	On Condition	30%	N/A
						S06011	ST	60	10%	6
						S06012	ST	360	15%	54
						S0601B	ST	90	10%	9
				PT0602	Points Combined HW Series	S0601L	ST/SM	On Condition	30%	N/A
						S06021	ST	60	10%	6

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
						S06022	ST	360	15%	54
						S0601B	ST	90	10%	9
				PT0603	Points Combined KA Series	S0601L	ST/SM	On Condition	30%	N/A
						S06031	ST	60	10%	6
						S06032	ST	360	15%	54
						S0601B	ST	90	10%	9
				PT0604	Points Combined M III Series	S0601L	ST/SM	On Condition	30%	N/A
						S06041	ST	90	10%	9
						S06042	ST	360	15%	54
						S0601B	ST	90	10%	9
		061	Derailer	PT0611	Points Derailer M Series	S06111	ST	60	10%	6
						S06112	ST	360	15%	54
				PT0612	Points Derailer KA Series	S06121	ST	60	10%	6
						S06122	ST	360	15%	54
				PT0613	Points Derailer 84M Series	S06131	ST	60	10%	6
						S06132	ST	360	15%	54
		062	Clamp Lock	PT0621	Points Clamplock Hydraulic	S0601L	ST/SM	On Condition	30%	N/A
						S06211	ST	60	10%	6
						S06212	ST	360	15%	54
						S0601B	ST	90	10%	9
				PT0622	Points Clamplock Vossloh Series	S0601L	ST/SM	On Condition	30%	N/A
						S06221	ST	180	15%	27

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
						S06222	ST	360	15%	54
						S0601B	ST	90	10%	9

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
PT	Points	063	Clawlock	PT0631	Points Clawlock 84M Series	S0601L	ST/SM	On Condition	30%	N/A
						S06311	ST	90	10%	9
						S06312	ST	360	15%	54
						S0601B	ST	90	10%	9
				PT0632	Points Clawlock S700 Series	S0601L	ST/SM	On Condition	30%	N/A
						S06321	ST	90	10%	9
						S06322	ST	360	15%	54
						S0601B	ST	90	10%	9
		064	Spherolock	PT0641	Points Spherolock 84M Series	S0601L	ST/SM	On Condition	30%	N/A
						S06411	ST	180	15%	27
						S06412	ST	360	15%	54
						S0601B	ST	90	10%	9
				PT0642	Points Spherolock S700 Series	S0601L	ST/SM	On Condition	30%	N/A
						S06421	ST	180	15%	27
						S06422	ST	360	15%	54
						S0601B	ST	90	10%	9
		065	Mechanical	PT0651	Points Mechanical	S0601L	ST/SM	On Condition	30%	N/A
						S06511	ST/SM	60	10%	6

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
						S0601B	ST	90	10%	9
				PT0652	Points Mechanical Solar Hydra Series	S0601L	ST/SM	On Condition	30%	N/A
						S06521	ST	360	15%	54
						S0601B	ST	90	10%	9
				PT0653	Points Mechanical Derailer	S06531	ST/SM	90	30%	27
						S0601B	ST	90	10%	9
				PT0654	Points Mechanical GRS	S06541	ST/SM	60	10%	6
		066	Releasing Switches and Switchlocks	PT0661	Points Releasing Switch	S06611	ST	60	10%	6
						S06612	ST	180	15%	27
						S06613	SE	720	10%	72
						S0601B	ST	90	10%	9
				PT0662	Points Releasing Switch Fortress	S06621	ST	180	15%	27
						S06622	SE	720	10%	72
						S0601B	ST	90	10%	9
				PT0663	Points Switchlock Westinghouse	S06631	ST	60	30%	18
						S06632	ST	180	15%	27
						S0601B	ST	90	10%	9
				PT0664	Points Switchlock Westinghouse HLM	S06641	ST	60	30%	18
						S06642	ST	180	15%	27
						S0601B	ST	90	10%	9
		067	Hydraulic	PT0671	Points Unistar HR	S0601L	ST/SM	On Condition	PR	NA
						S06711	ST	180	15%	27
						S06712	ST	360	15%	54

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
						S0601B	ST	90	10%	9

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
TD	Train Detection	070	DC	TD0701	Train Detection DC Standard	S07011	ST	180	15%	27
						S07012	ST	720	10%	72
				TD0702	Train Detection DC Shelf Type	S07011	ST	90	30%	27
						S07012	ST	720	10%	72
						S05013	ST	3630	5%	182
				TD0703	Train Detection Westrack/TD4	S07051	ST	180	15%	27
						S07052	ST	720	10%	72
		071	HVI	TD0711	Train Detection HVI	SX7111	ST	180	15%	27
						SX7112	ST	720	10%	72
		072	AC	TD0721	Train Detection AC	S07211	ST	90	30%	27
						S07212	ST	360	15%	54
						S05013	ST	3630	5%	182
		073	Frequency	TD0731	Train Detection Frequency CSEE	SX7311	ST	180	15%	27
						SX7312	ST	720	10%	72
				TD0732	Train Detection Frequency MLTI21 Analog	SX7321	ST	180	15%	27
						SX7322	ST	720	10%	72

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
				TD0733	Train Detection Frequency MLTI21 Digital	S07331	ST	180	15%	27
						SX7332	ST	720	10%	72
				TD0734	Train Detection Frequency PSO III	S07341	ST	180	15%	27
						S07342	ST	720	10%	72
				TD0735	Train Detection Frequency PSO 4000	SX7351	ST	180	15%	27
						SX7352	ST	720	10%	72
				TD0736	Train Detection Frequency SMTC	SX7361	ST	180	15%	27
						S07362	ST	720	10%	72
				TD0737	Train Detection Frequency IPITC	SX7371	ST	180	15%	27
						SX7372	ST	720	10%	72
				TD0738	Train Detection Frequency AFTAC Model 2	S07381	ST	180	15%	27
						SX7382	ST	720	10%	72
				TD0739	Train Detection Frequency FS2500	SX7391	ST	180	15%	27
						SX7392	ST	720	10%	72
		074	Axle Counter	TD0741	Train Detection Axle Counter ACS2000	SX7411	ST	360	15%	54
				TD0742	Train Detection Axle Counter FADC	SX7421	ST	360	15%	54
		075	Treadle	TD0751	Train Detection Treadle Mechanical	SX7511	ST	90	30%	27
						SX7512	ST	180	15%	27

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
TD	Train Detection	076	Coded	TD0761	Train Detection Coded Microtrax	SX7611	ST	180	15%	27
						SX7612	ST	720	10%	72
				TD0762	Train Detection Coded Electrode 4	SX7621	ST	180	15%	27
						S07622	ST	720	10%	72
				TD0763	Train Detection Coded Electrode 5	S07631	ST	180	15%	27
						S07632	ST	720	10%	72
				TD0764	Train Detection Coded GEO	S07641	ST	180	15%	27
						S07642	ST	720	10%	72
		077	Predictor	TD0771	Train Det. Predictor(Non Mon)GCP 3000	S07711	ST	90	15%	13
						S07712	ST	720	10%	72
						S17000	SE	1440	5%	72
				TD0772	Train Detection Predictor GCP 3000	S07711	ST	180	15%	27
						S07712	ST	720	10%	72
						S17000	SE	1440	5%	72
				TD0773	Train Det. Predictor(Non Mon)GCP 4000	S07721	ST	90	15%	13
						S07722	ST	720	10%	72
						S17000	SE	1440	5%	72
				TD0774	Train Detection Predictor GCP 4000	S07721	ST	180	15%	27
						S07722	ST	720	10%	72
						S17000	SE	1440	5%	72
				TD0775	Train Detection Predictor HXP-3	S07751	ST	180	15%	27
						S17000	SE	1440	5%	72

				TD0776	Train Detection Predictor XP-4	S07761	ST	180	15%	27
						S17000	SE	1440	5%	72
		078	Gauge Detector	TD0781	Train Detection Gauge Detector TURCK	S07811	ST	180	15%	27
		079	TPWS	TD0791	Train Detection TPWS	SX7911	ST	180	15%	27
						SX7912	ST	1440	5%	72

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
TA	Train Authority Systems (TA Sys.)	080	Token Block	TA0801	TA Sys.Token Block Train Staff	S08011	ST	360	15%	54
						S08012	SE	720	10%	72
			ATMS	TA0802	ATMS-AMS	S08021	AE	360	15%	54
						S08022	AE	360	15%	54
						S08023	AM	7	30%	2
PO	Power Supply	090	AC	PO0901	Power Supply AC	S09011	ST	360	15%	54
				PO0902	Power Supply AC Transformed	S09021	ST	180	15%	27
						S09022	ST	360	15%	54
		091	Motor Generator	PO0911	Power Supply Motor Generator	S09111	ST	90	30%	27
						SX9112	ST	360	15%	54
		092	UPS	PO0921	Power Supply UPS	S09211	ST	180	15%	27
		093	DC Supplies	PO0931	Power Supply DC Batt Backup LX No Mon	S09311	ST	30	20%	6
						S09312	ST	360	15%	54
				PO0932	Power Supply DC Battery Backup	S09321	ST	180	15%	27
						S09312	ST	360	15%	54
				PO0933	Power Supply DC Batt Backup	S09311	ST	90	15%	14

					LX Mon	S09312	ST	360	15%	54
				PO0934	Power Supply DC Rectified	S09341	ST	180	15%	27
						S09342	ST	360	15%	54
		094	Solar	PO0941	Power Supply Solar System	S09411	ST	180	15%	27
		095	Wind Turbine	PO0951	Power Supply Wind Turbine	S09511	ST	90	15%	14

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
CM	Communications	100	Radio	CM1001	Comms Vital Radio	S10011	ST/CT	180	15%	27
						S10012	ST/CT	360	15%	54
				CM1002	Comms Radio Satellite	S10021	ST	360	15%	54
				CM1003	Comms Non-Vital Radio	S10031	CT	180	15%	27
		102	System	CM1021	Comms System	S10211	CT	180	15%	27
LR	Cable & Line Route	110	Signalling Cable	LR1101	Signalling Cable	S11011	ST	1440	10%	144
		111	Cable Route	LR1111	Cable Route	S11111	ST	360	15%	54
		112	Aerial Route	LR1121	Aerial & Pole Route	S11211	ST	90	30%	27
						S11212	EM	1440	10%	144
				LR1122	Pole Inspection	S11212	EM	1440	10%	144
EN	Equipment Enclosures	120	Enclosures	EN1201	Equipment Enclosures	S12011	ST	180	15%	27
TB	Trainborne	130	Trainborne	TB1301	Trainborne ATMS	S13011	AE	360	15%	54
EC	Equipment Calibration	150	Equipment Calibration	ECSG01	Signals Kit - Test Instruments	ECSG02	ST	720	10%	72
						ECSG03	ST	1440	10%	144
				EC1502	Maintenance Gauges	S15021	ST	720	10%	72

Equipment Class	Equipment Class Description	Asset Group Code	Asset Group Description	EGI Code	EGI Description	Standard Job	Resource Skill type	Frequency	Planning Latitude %	Latitude Days
WS*	Wayside	160	Infrastructure	WS1601	WSI Ground -Slip Detector	S16011	ST	180	15%	27
				WS1602	WSI Rockfall Detector	S16021	ST	180	15%	27
				WS1603	WSI Weather Station	S16031	ST	180	15%	27
				WS1604	Stream Flow Detector	S16041	ST	180	15%	27
				WS1605	WSI Pump Station	S16051	ST	180	15%	27
				WS1606	WSI Camera	S16061	ST	180	15%	27
		161	Rollingstock	WS1611	WSR Hot Box Detector (HBD)	S16111	CT	180	15%	9
						S16112	CT	60	15%	27
				WS1612	WSR Bearing Acoustic Monitor - (RailBAM)	S16121	CT	180	15%	27
				WS1613	WSR Dragging Equipment Detector (DED)	S16131	ST	180	15%	27
						S16132	CT	180	15%	27
				WS1614	WSR Wheel Condition Monitor (WCM)	S16141	CT	180	15%	27
				WS1615	WSR Wheel Profile Monitor	S16151	CT	90	15%	27
				WS1616	WSR Wheel Noise Detector (Rail SQAD)	S16161	CT	180	15%	27
				WS1617	WSR Bogie Monitor (TBOGI)	S16171	CT	90	15%	27
				WS1618	WSR Weigh Bridge	S16181	ST	180	15%	27
				WS1619	WSR Height Detector	S16191	ST	180	15%	27
RW	Right Of Way	170	Engineer Inspection	RW0001	Engineer Inspection	S17011	SE	720	10%	72
					Signal Sighting – Front of Rail Vehicle	S17012	SE	360	15%	54

RESOURCE SKILL LEGEND	
EM	ELECTRICAL MAINTAINER
SM	SIGNAL MECHANICAL
ST	SIGNAL TECHNICIAN
SE	SIGNAL ENGINEER
CT	COMMUNICATION TECHNICIAN
CST	CONTROL SYSTEM TECHNICIAN
AE	ATMS ENGINEER
AM	ATMS NCC MAINTAINER (ST/CT WITH ATMS SKILL SET

*- Wayside items are not signalling items. For any queries regarding these items, please contact ARTC wayside team (waysidesystems@artc.com.au).