

Civil Technical Maintenance Plan

ETE-00-03

Applicability

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SMS

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3.5	22 Mar 17	Standards	Stakeholders	Manager Standards	A/GM Technical Standards 11/04/2017

Amendment Record

Amendment #	Date Reviewed	Clause	Description of Amendment
3.0	10 Feb 15	4 (Sections 0, 1 & 5)	New revision of document on rebranded document template. Supersedes version 2.3. Updated to include 96 hour track inspections Mile End to Murray Bridge, as well as rail detailed inspections and track geometry inspections for CRN interface main lines.
3.1	07 Apr 15	4 (Section 1)	Updated ultrasonic testing frequency from Goobang Junction to Broken Hill from 6 monthly to 12 monthly.
		4 (Section 1)	Addition of missed section from Tarcoola to Asia

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Page 1 of 26

		and Section 5)	Pacific Interface (API) line.
3.2	07 Aug 15	4 (Section 3)	Amendments to align with changes in Track and Civil Section 3 removing the mandating of manual track geometry measurements. Editorial: deletion of references to main line leg and crossing loop leg for clarity.
3.3	25 Aug 2015	4 (Section 1) 4 (Section 3)	Addition of missed section from Albion to Jacana Addition of missed section Port Botany to Macarthur including Chullora Junction to Flemington Junction
3.4	18 Apr 16	4 (Section 0 4 (Section 8) 4 (Section 17) Various	Change to track inspections Mile End to Murray Bridge to 7 day. Removed reference to ellipse standard job nos for early warning systems. Requirements for redundant assets. Removed reference to specific clauses in the CoP sections.
3.5	22 Mar 17	Various 4 (Section 6)	Addition of rail yard inspection. Amendments to P&C inspections as well as a general review and update. Align with new track stability management standards ETM-06-08 and ETM-06-09.

1. INTRODUCTION.....	4
1.1. Overview.....	4
1.2. Definitions.....	4
1.3. TMP, ARTC T&C CoP and Standards	5
1.4. Competency	5
2. TECHNICAL MAINTENANCE PLAN USER INFORMATION.....	6
2.1. Type of Inspection	6
2.1.1. <i>Patrol inspections</i>	6
2.1.2. <i>General inspections</i>	6
2.1.3. <i>Detailed Inspections</i>	6
2.2. Scheduled Inspections.....	7
2.3. Unscheduled Inspections.....	7
3. DISUSED AND SEASONAL LINES	8
4. TECHNICAL MAINTENANCE PLAN.....	9
4.1. Type of Inspection	9
4.2. Infrastructure Element	9
4.3. Description.....	9
4.4. Reference	9
4.5. Minimum Frequency	9
4.6. Conducted by	9

Mandatory requirements also exist in other documents.

Where alternative interpretations occur, the Manager Standards shall be informed so the ambiguity can be removed. Pending removal of the ambiguity the interpretation with the safest outcome shall be adopted.

1. Introduction

1.1. Overview

This document sets out the routine inspection policy for rail track and civil infrastructure in terms of mandatory inspection tasks and minimum inspection frequency. The Technical Maintenance Plan (TMP) specifies:

- Which items are to be inspected
- What inspection tasks are to be carried out
- When inspection is required.

The inspection tasks and minimum frequencies defined in this document are mandatory for all Australian Rail Track Corporation managed track. Requirements for Structures are detailed in ARTC Track & Civil Code of Practice (T&C CoP) Section 9: Structures, ETG-09-01 and ETE-09-01.

This TMP details the minimum level of scheduled inspection. Additional inspection scope or increased frequencies may be authorised by local maintenance management in response to infrastructure condition or accelerated deterioration rates.

Any proposed reduction in routine inspection scope or frequency (lengthening time between inspections) must be authorised by way of an Engineering Waiver in accordance with ARTC Procedure *EGP-02-01 Engineering Waiver Management*.

1.2. Definitions

The Table 1.1 definitions are used within this standard.

Table 1.1 Terms used

Term or acronym	Description
CoP	The ARTC Track and Civil Code of Practice
Mainline	Includes all main operating lines, crossing loops, passing refuges, and sidings > 25km/h.
MGT	Million Gross Tonnes. The measure of the gross weight of train traffic carried by a section of track in one year.
Passenger Lines	Lines that carry scheduled passenger trains with services capable of 1000 passengers per day, excluding special heritage train services.
P&C	Points and Crossing assemblies including turnouts, catchpoints, diamonds, slips, etc.
TMP	The ARTC Track and Civil Technical Maintenance Plan
Track Inspector	A person with required competencies to undertake routine Patrol, General, and Detailed inspections (see 1.4). The term does not relate to any specific organisational position.

Term or acronym	Description
URFD	Ultrasonic Rail Flaw Detection, a form of non-destructive testing of rail.
Yard	A collection of sidings at a common location.

1.3. TMP, ARTC T&C CoP and Standards

The TMP references ARTC Engineering Standards and the ARTC T&C CoP. In their current form some of these documents contain task frequencies. Where the frequencies detailed in the TMP differ from those mentioned in ARTC standards and the ARTC T&C CoP, the TMP task frequency applies.

1.4. Competency

Persons carrying out track patrol, front of train, general, or detailed inspections shall hold the required competencies listed in the ARTC Track and Civil Competency Matrix and in particular:

- TLIB 3100A - Visually inspect track infrastructure
- TLIB 3099A - Examine track infrastructure

Other specialist competencies may be required, e.g. URFD, to perform specialised inspections.

The above competencies are part of the National Competencies for the Transport and Logistics Industry and are published by the Australian National Training Authority.

2. Technical Maintenance Plan User Information

The TMP documents the scheduled inspections of the infrastructure assets to be carried out.

The TMP table has the following elements:

- Type of inspection
- Infrastructure Element
- Brief description of the inspection to be performed
- Applicable ARTC Standard or Manual to be used and Ellipse Standard Job reference
- Minimum task frequencies or periods (including latitudes)
- Who conducts the inspection.

2.1. Type of Inspection

Inspection is the process by which information on the condition of the infrastructure is collected and recorded. Both Scheduled and Unscheduled Inspections may take the form of a Patrol, General or Detailed Inspection. Inspections must be carried out in a manner and at a speed consistent with the scope of the inspection and may be carried out in conjunction with each other or with inspections for other purposes.

2.1.1. Patrol inspections

Patrols are carried out by track inspectors who are familiar with the track characteristics and traffic patterns of the section. Scheduled track patrols are typically performed using hi-rail vehicles. Inspectors are to keep a lookout for obvious abnormal conditions and patrols should be frequent enough to enable the need for more detailed inspections to be determined. Patrols should include use of a listing of current defects which should receive particular attention.

2.1.2. General inspections

General inspections are typically visual but may include some elementary site testing and measurement. They should include the elements of a patrol inspection in addition to inspection of all readily visible elements of the infrastructure, and elements known to contain critical defects. They should be at a level of detail sufficient to:

- observe and record unsatisfactory conditions or changes in condition of the infrastructure since the previous inspection
- enable the need for more detailed or frequent inspections to be determined
- identify locations requiring more regular inspection due to expected high deterioration rates
- determine required repairs or remedial actions in cases where a detailed inspection is not required.

General inspection frequencies are specified in this standard.

2.1.3. Detailed Inspections

Detailed inspections address specific aspects of the infrastructure condition or behaviour and may involve visual inspection, measurements, testing and some diagnostic assessment. In addition to the elements included in general inspections they should be at a level of detail sufficient to record the condition of the infrastructure for purposes such as:

- determining necessary repairs or remedial actions
- establishing the capacity rating against set condition standards or assessment guidelines.

Detailed inspection frequencies are specified in this standard.

2.2. Scheduled Inspections

These inspections are regular inspections occurring at predetermined frequencies as detailed in section 4.

2.3. Unscheduled Inspections

These are inspections carried out in response to “defined or abnormal events”, and include those required at identified problem locations and where defects appear more likely to occur as indicated from other inspections.

Their primary purpose is to ensure that the defined event (initiating condition) has not resulted in any abnormal hazards or unexpected change in the condition of the infrastructure. Typical initiating conditions include:

- Climatic/environmental conditions such as storms, lightning, high winds, heavy rain/floods, fires, extremes of hot and cold air temperatures, earthquakes, etc.
- Bridge strikes, usually by road vehicles
- Dragging loads and/or damaged rolling stock.

ARTC is responsible for arranging suitably qualified staff to conduct the particular type of inspection required. When circumstances and/or appropriate resources permit, these inspections may be incorporated into other scheduled inspections. These inspections can often include the involvement of specialist technical/engineering personnel.

3. Disused and Seasonal Lines

The TMP detailed in Section 4 applies to operational lines. On lines that have had rail transport services withdrawn temporarily or indefinitely the rail infrastructure does not have to be maintained except where there is a legal duty of care to landowners or the public. Where a line is withdrawn from use temporarily (e.g. seasonal line), suitable arrangements need to be in place to prevent access to that line if inspections are deferred, and arrangements put in place to inspect/repair the line prior to it being returned to use.

Statutory requirements may exist with respect to fire hazard reduction, noxious weeds and vermin, and waterway management. Public safety risks may need to be mitigated e.g. at level crossings, urban fencing etc. as well as risks to landowners from embankment collapse or erosion.

ARTC standard *ETE-00-04 Infrastructure Inspections for Non-Operational Lines* provides more detailed guidance on the inspection and management of non-operational railways.

4. Technical Maintenance Plan

The Technical Maintenance Plan presented in Table 4.2 is divided into sections reflecting the Code of Practice sections from which the routine scheduled inspection requirements are derived. Section 0 Track System includes the Patrol and Front of Train inspections which apply to multiple CoP sections. A brief description of the TMP table columns is given below.

4.1. Type of Inspection

This column identifies the type of inspection: Patrol; General; or Detailed, and the focus of the inspection.

4.2. Infrastructure Element

This column identifies the component, system, or aspect of the track assets to which the inspection applies.

4.3. Description

This column provides a more detailed scope of each inspection.

4.4. Reference

This column references the applicable ARTC Standard as well as the Ellipse Standard Job reference applicable to the inspection tasks.

4.5. Minimum Frequency

This column defines the minimum frequency at which relevant inspection must be carried out for each asset element.

Where criteria overlap, the most stringent is to apply. For example if a section of timber sleeper track carries passenger services and freight traffic less than 1mgt per annum, two different track patrol frequencies might be seen to apply (two patrols per week and every 14 days). In this case the most stringent (two patrols per week) will apply.

Where appropriate, latitude is stated, extending the allowable completion date to accommodate scheduling or unforeseen events. The average time between maintenance events should still be in accordance with the specified minimum. Latitudes are generally expressed in days. That is, a task with a period of 4 months and scheduling latitude of 12 days should be completed within a period of 120 ±12 days.

A guideline for calculating Latitudes is as shown in Table: 4.1:

Table: 4.1 Latitudes

Frequency Range	Latitude
≤ 42 days	± 20%
≥ 43 days	± 10%

4.6. Conducted by

This column specifies who or what performs the inspection. Nominated persons e.g. Track Inspector refers to persons holding the required competencies to perform the inspection and not to any organisational position. See section 1.4.

Table 4.2: Technical Maintenance Plan

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
Section 0 - Track System						
Track Patrol Inspection (By Road/Rail vehicle or by walking. When patrol is by Engine Patrol, ETE-00-02 clause 3.4 applies.)	Rails and Joints	Includes: Rail; New Welds; Mechanical and Insulated Joints; Rail Wear; Lubrication.	CoP Sect 1 ETE-00-02	P00001	For SA WA & Vic: 1 Patrol / 7 days (1 day latitude) For NSW/QLD: Concrete Sleepers: Passenger lines or Freight Mainlines >10 MGT/year 1 Patrol / 7 days (1 day latitude) Timber or steel sleepers: Passenger Lines or Freight Mainlines > 10 MGT/year 2 Patrols / 7 days (maximum 3 days between days of Patrol) Freight Mainlines 1 MGT/yr to 10 MGT/yr also Lower Hunter lines on Kooragang Is and Port Waratah where >10MGT, but train speed is <=25 km/h	Track Inspector
	Sleepers & Fastenings	Includes: Sleepers, Turnout Bearers, and Bridge Transoms; Timber, Steel, and Concrete; Resilient and Non Resilient Fastenings.	CoP Sect 2 ETE-00-02			
	Points and Crossing arrangements	Includes: Turnouts; Catchpoints; Diamonds; Slips; Expansion Switches; etc.	CoP Sect 3 ETE-00-02			
	Ballast	Includes: ballast type, condition, and profile.	CoP Sect 4 ETE-00-02			
	Geometry, Clearances and Stability	Includes: Top, Twist, Line and Gauge; Transit Space; Track Centres; Track Buckling.	CoP Sect 5 ETE-00-02			
	Earthworks and Drainage	Includes: Cuttings and Embankments; Waterways; Cess, Top, and Toe Drains.	CoP Sect 8 ETE-00-02			
	Bridges and Structures	Includes: Underbridges; Overbridges; Tunnels; Timber, Steel, Concrete, and Masonry.	CoP Sect 9 ETE-00-02			
	Level crossings	Includes: Public, Private, and Service crossings; Passive or Active.	CoP Sec 16 ETE-00-02			
Signage	Includes: Permanent Speed Boards; Temporary Speed Boards; Safety signs.	CoP Sec 11 ETE-00-02				

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/ Manual	Ellipse Std Job		
	Right of Way	Includes: Fencing; Noxious Weeds and Animals; Vegetation; Fire Hazard; Access roads; Fire Breaks.	CoP Sec 17 ETE-00-02		1 Patrol / 7 days (1 day latitude) Freight Mainlines < 1 MGT/yr also Lower Hunter lines on Kooragang, Morandoo and Bullock Islands where <10MGT, but train speed is <=25 km/h 1 Patrol / 14 days (1 day latitude) Refuges and Loops: As for adjacent mainline	
	Yards and Sidings	Includes sidings ≤25km/h maximum speed. Includes all above Patrol scope for: Rails and Joints; Sleepers and Fastenings; Points and Crossings; Ballast; Geometry, Clearances and Stability; Earthworks and Drainage; Bridges and Structures; Level Crossings; Signage; and, Right of Way.	Relevant CoP Sections ETE-00-02		Partial or fully timber sleepereid siding: 24 months visual (walking) inspection (72 day latitude) Fully concrete or steel sleepereid sidings: 60 months visual inspection (not necessarily walking) (180 day latitude)	
Front of Train Inspection on Lines with Track Speed >	Rail Lubrication	Includes: Wheel/Rail noise; Carry of lubricant along the rail; Over or under lubrication; Ballast contamination.	CoP Sect 1 ETE-00-02 ETE-01-01	P00002	For SA, WA & Vic: 1 FoT inspection at least once every 6 months	Track Inspector

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/ Manual	Ellipse Std Job		
50km/h	Joints: Mechanical and Glued Insulated	Includes: Noise from impact or loose components; Horizontal and vertical geometry.	CoP Sect 1 ETE-00-02		(18 day latitude) For NSW/QLD: 1 FoT inspection at least every 3 months (9 day latitude)	
	Track Geometry	Includes: Short and long wavelength Top and Line, and Twist.	CoP Sect 5 ETE-00-02			
	Signage	Includes: Sighting distance and clarity of temporary and permanent speed signs and other safety signs.	CoP Sec 11 CoP Sec 15 ETE-00-02 ETM-11-01			
	Right of Way	Includes: Fencing, access roads, vegetation, noxious weeds.	CoP Sec 12 CoP Sec 13 CoP Sec 17 ETE-00-02			
	Level Crossings	Includes: Sighting distance, track geometry.	CoP Sec 16 ETE-00-02			

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by	
			Standard/Manual	Ellipse Std Job			
Section 1 - Rail							
Rail Detailed Inspection	Rail – internal	Continuous ultrasonic rail flaw inspection. Or Manual hand-held inspection where continuous inspection is not effective. Frequency will be in accordance with the CoP requiring a test at least every 15 MGT.	CoP Sect 1 ETG-01-02 ETM-01-04 ETM-01-03 ETE-01-03	P03001 P08002		Ultrasonic Rail Flaw Detection Vehicle or Manual hand held URFD by qualified person	
		Melbourne Metro, Adelaide to Crystal Brook, Coonamia to Tarcoola.					6 months (1 month latitude)
		Tottenham to Adelaide, Tarcoola to Kalgoorlie, Tarcoola to API, Crystal Brook to Coonamia, Crystal Brook to Broken Hill, Whyalla line, Maroona to Portland line, Albion to Jacana.					12 Months (2 month latitude)
		Crossing Loops Vic, SA and WA.					60 months (6 month latitude)
		Hunter Valley Up Coal, Newdell Jct to Waratah (Scholey St) Up Main & Port Waratah Arrival Rd.					31 days (14 day latitude)
		Whittingham to Mt Thorley Up Branch, Mt Thorley Balloon Loop, Branxton to Dartbrook Jct Down Main, Dartbrook to Antiene Single Main and Antiene to Newdell Jct Up Main.					61 days (14 day latitude)
		Down Coal Kooragang Is Jct to Maitland, Maitland to Branxton Down main, Pelton line (Maitland to ARTC limit) & Telarah to Farley Triangle Loop.					84 days (14 day latitude)

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
		Woodville to Waratah Up Main, Woodville to Maitland Down Main, Dartbrook Jct to Antiene Down Main, Antiene to Gunnedah, Down Coal Waratah to Kooragang Is Jct, Telarah to Wauchope, Macarthur to Albury, Port Botany to Macarthur including Chullora Junction to Flemington Junction, Albury to Somerton west track, Hanbury Jct Nth & Sth Forks, Kooragang Is Walsh Point Single Line, Whittingham to Mt Thorley Down Branch & Newdell Jct to Newdell (ARTC limit).			4 months (14 day latitude)	
		Wauchope to Acacia Ridge, Muswellbrook to Ulan, Moss Vale to Unanderra			6 months (1 month latitude)	
		Gunnedah to Moree, Werris Ck to Dubbo, Merrygoen to Ulan, Goobang Jct to Broken Hill, Goobang Jct to Dubbo, Cootamundra to Goobang Jct, Albury to Somerton east track, Benalla to Oaklands.			12 months (2 month latitude)	
		Moree to North Star			48 months (6 month latitude)	
		CRN Interface Main Lines: Werris Creek - Armidale @ Werris Creek, Lithgow - Dubbo @ Dubbo, Joppa Jct - Canberra @ Joppa Jct, Orange - Parkes @ Parkes, Narromine - Nyngan @ Narromine, Stockinbingal - Griffith @ Stockinbingal, Junee - Griffith @ Junee, Narrabri Jct - Walgett @ Narrabri Jct, Camurra - Weemalah @ Camurra, Dubbo - Coonamble @ Troy Jct, Bogan Gate - Tottenham @ Bogan Gate, The Rock - Boree Ck @ The Rock, and all other main line CRN interfaces			The time period specified for adjoining ARTC line	
		Crossing Loops NSW.			Twice the time period specified for adjacent mainline	
	Rail wear and condition	All main lines	CoP Sect 1	P03003	12 months (36 day latitude)	Track Inspector or Track geometry recording
		Crossing loops:				

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
		<ul style="list-style-type: none"> NSW (except Goobang Jct to Broken Hill & Cootamundra to Goobang Jct) VIC (only where adjacent to XPT main lines) 			Twice the time period specified for adjacent Main line (Latitude = twice the adjacent Main line latitude)	vehicle
		<ul style="list-style-type: none"> WA 			12 months (2 months latitude)	
		<ul style="list-style-type: none"> SA VIC (except adjacent to XPT main lines) Goobang Jct to Broken Hill & Cootamundra to Goobang Jct 			24 months (4 months latitude)	
	Rail corrosion	Includes: Rail in Tunnels and other wet locations.	CoP Sect 1	P00017	12 months (36 day latitude)	Track Inspector
	Rail Lubricator	All lubricators.	CoP Sect 1	P28001	6 months NSW (18 day latitude) 12 months Vic, SA ,WA (36 day Latitude)	Track Inspector
	Guard rails	All guard rails.	CoP Sect 1	P15012	12 months (36 day latitude)	Track Inspector
Plain Track Mechanical and Insulated Joint General Inspection	Continuously Welded Rail and Jointed Welded Rail	Includes: Joint plates and bolts; any insulation material; track geometry; vertical support (pumping); longitudinal movement at joint.	CoP Sect 1	P05001 P05002	12 months (36 day latitude)	Track Inspector

Type of Inspection	Infrastructure Element	Description	Reference	Minimum Frequency	Conducted by
Section 2 - Sleepers					
Plain Track General Inspection	Sleepers & Fastenings	Includes: Sleeper, Turnout Bearer, and Bridge Transom integrity and effectiveness; Timber, Steel, and Concrete materials; Resilient and Non Resilient Fastenings.	CoP Sect 2 ETE-00-02	P06001 Partial or fully timber sleepers mainline: 12 months visual (walking) inspection (36 day latitude) Fully concrete or steel sleepers mainline: 24 months visual inspection (not necessarily walking) (72 day latitude) Partial or fully timber sleepers siding: 24 months visual (walking) inspection (72 day latitude) Fully concrete or steel sleepers sidings: 60 months visual inspection (not necessarily walking) (180 day latitude)	Track Inspector

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
Section 3 – Points and crossings						
Points and Crossings General Inspection	Turnouts, Catchpoints, Diamonds, Slips etc.	<p>Includes all P&C: Mainline, Loops, Sidings, etc</p> <p>A visual inspection which includes:</p> <p>Condition of Switch and Stock rail, Crossing and Check rail assemblies; closure rails, fastenings, bolts, chocks, heel block etc.</p> <p>Wear on switch and stock rails, crossing noses, and wing rails.</p> <p>Bearer condition and effectiveness;</p> <p>Ballast condition and effectiveness;</p> <p>Track Geometry including: top, line, twist, and gauge; as well as switch tips, clearances, flangeways, and check rail effectiveness.</p>	CoP Sect 3 ETE-03-01	P08010	<p>P&C ≥ 5MGT:</p> <p>1) on timber or concrete bearers with >30MGT, or</p> <p>2) on curves <800m radius, or</p> <p>3) with heeled switches (pivot heels) on timber bearers, or</p> <p>4) on timber bearers with non-resilient (dogspike) fasteners.</p> <p>Min. Freq: 3 months Latitude: 14 days</p> <p>P&C ≥ 5MGT not included in 1), 2), 3), or 4), above Min. Freq: 6 months Latitude: 18 days</p> <p>P&C < 5MGT. Min. Freq: 12 months Latitude: 36 days</p>	Track Inspector

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
Points and Crossings assemblies Detailed Inspection	Points and Crossings components	Includes all P&C: Mainline, Loops, Sidings, etc	CoP Sect 3 ETE-03-01	P08001 P09001	P&C ≥ 5MGT Min. Freq: 12 months Latitude: 36 days P&C < 5MGT Min. Freq: 24 months Latitude: 72 days	Track Inspector

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
	Points and Crossings Rails - Internal Rail	Continuous ultrasonic rail flaw detection (For untestable areas refer to ETE-03-01)	CoP Sect 1 ETE-01-03 ETE-03-01		As for Section 1 Rail, Detailed Inspection - Internal	Ultrasonic Rail Flaw Detection Vehicle

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
Section 4 - Ballast						
Ballast General Inspection	Ballast condition	Includes: Assessment of ballast profile Mud holes or wet spots Indications of poor sleeper support by ballast Excessive track vibration Other defects affecting track support and stability.	CoP Sect 4	P16001	12 months (36 day latitude)	Track Inspector

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
Section 5 – Track geometry						
Track Geometry Recording Detailed Inspection	Track Geometry	Includes: Top, Twist, Line and Gauge; Rail Wear; Horizontal and Vertical accelerations; Track condition index.	CoP Sect 5	P00004		Track geometry recording vehicle
		Main lines:				
		<ul style="list-style-type: none"> Hunter Valley Mainlines, Dartbrook to Werris Ck, Werris Ck to Moree, Telarah to Acacia Ridge, Macarthur to Albury, Albury to Somerton Muswellbrook to Ulan, Unanderra to Moss Vale, Port Botany to Macarthur including Chullora Junction to Flemington Junction, Melbourne Metro, Melbourne to Adelaide, Adelaide to Crystal Brook, Crystal Brook to Kalgoorlie, Tarcoola to API, Crystal Brook to Broken Hill, Whyalla line. 				
		<ul style="list-style-type: none"> Goobang Jct to Broken Hill, Ulan to Merrygoen to Dubbo, Dubbo to Goobang Jct Cootamundra to Goobang Jct 				
		<ul style="list-style-type: none"> Benalla to Oaklands, Maroona to Portland and Merrygoen to The Gap, Moree to North Star, and all other main lines. 				
		CRN Interface Main Lines:				
		Werris Creek - Armidale @ Werris Creek, Lithgow - Dubbo @ Dubbo, Joppa Jct - Canberra @ Joppa Jct				
		Orange - Parkes @ Parkes, Narromine - Nyngan @ Narromine, Stockinbingal - Griffith @ Stockinbingal, Junee - Griffith @ Junee				
Narrabri Jct - Walgett @ Narrabri Jct, Camurra - Weemalah @ Camurra, Dubbo - Coonamble @ Troy Jct, Bogan Gate - Tottenham @ Bogan Gate, The Rock - Boree Ck @ The Rock, and all other main line CRN interfaces .						
					4 months (14 day latitude)	
					6 months (1 month latitude)	
					12 months (2 month latitude)	
					4 months (14 day Latitude)	
					6 months (1 month latitude)	
					12 months (2 month latitude)	

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
		<p>Crossing loops (where operating speed is 25kph or less, loops are not tested):</p> <ul style="list-style-type: none"> NSW (except Goobang Jct to Broken Hill & Cootamundra to Goobang Jct) VIC (only where adjacent to XPT main lines) 			Twice the time period specified for adjacent Main line (Latitude = twice the adjacent Main line latitude)	
		<ul style="list-style-type: none"> WA 			12 Months (2 months latitude)	
		<ul style="list-style-type: none"> SA VIC (except adjacent to XPT main lines) Goobang Jct to Broken Hill & Cootamundra to Goobang Jct 			24 Months (4 months latitude)	

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
Section 6 – Track stability						
Track Stability General Inspection	Track Stability	Includes welded and non-welded rail. Review preparedness for high temperatures	CoP Sect 6 ETM-06-08 ETM-06-09	P00008 P00032	By end of September before the start of high temperature season	Track Inspector
Section 7 - Clearances						
Track Clearance and Track Centres General Inspection	Track Clearances	Includes: Measurement of clearance to structures within structure gauge and track centres of multiple tracks.	CoP Sect 7 ETM-07-01 ETG-07-01	P00009/10	For NSW the following has been approved for the Technical Maintenance Plan: Passenger lines and freight lines carrying > 10 MGT: 12 months (36 day latitude) Other lines and sidings > 25 km/h: 24 months (72 day latitude) For Vic, SA & WA the ARTC T&C Code of Practice will apply. Nominated locations are checked every 6 months or as specified for the location.	Track Inspector

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/ Manual	Ellipse Std Job		
Section 8 - Earthworks						
Earthworks General Inspection	Earthworks	<p>Includes:</p> <ul style="list-style-type: none"> (i) Indications of recent movement including slippage, slumping, settlement or heaving. (ii) Fissures and cracks in formation or earth batters. (iii) Rock, earth, or other debris falling on or near the track. (iv) Loss of track geometry. (v) Track subsidence due to ground movements. (vi) Earthwork scour and/or erosion including narrow formation leading to loss of ballast and undercutting of the toe of embankments and cuttings by water or wind. (vii) Water seepage from embankments and cuttings. (viii) Damage to embankments or cuttings including that caused by construction or vehicle access. (ix) Conditions that may cause future slip, scour, slump, settlement including burning off or clearing of steep embankments and cuttings. (x) Any other occurrence likely to impact on the stability of earthworks. 	CoP Sect 8 ETM-08-01	P19001	12 months (36 day latitude)	Track Inspector
Warning Device General Inspection	Geotechnical Monitors	<p>Includes:</p> <p>Geotechnical</p>			1 month (6 day latitude)	Track Inspector

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
Section 10 - Flooding						
Drainage General Inspection	Drainage	Includes: Cess, Top and Toe drains; Under track pipes 350mm or less.	CoP Sect 10	P23003	12 months (36 day latitude)	Track Inspector
Section 11 – Railway operating signs						
Railway operating signs General Inspection	Railway operating signs	Includes: Permanent and temporary signs Warning signs including whistle and advance warning signs Change of operations systems or operational parameters.	CoP Sect 11	P15006	36 months (72 day latitude)	Track Inspector
Section 16 – Level crossings						
Level Crossing Detailed Inspection	Level Crossings	Includes: Public, Private and Service Level Crossings; Passive and Active protection; Signage; Sighting; Vegetation; and Track structure components Condition of sleepers, pumping, rail, flangeways, geometry. Road and walkway surface fencing and guide fencing etc.	CoP Sect 16 RAP 5141	P24001	All level crossings on highways, main roads, and major arterial roads, or Passenger lines and freight lines carrying > 10 MGT: 12 months (36 day latitude) All other level crossings: 24 months (72 day latitude)	Track Inspector

Type of Inspection	Infrastructure Element	Description	Reference		Minimum Frequency	Conducted by
			Standard/Manual	Ellipse Std Job		
Section 17 – Right of Way						
Right of Way General Inspection	Right of Way	Includes: Damaged or defective fencing Unsafe condition of access facilities Treated or controlled areas including ballast, cesses and firebreaks not substantially free from vegetation growth High risk fire locations Evidence of unauthorised encroachment onto the ROW.	CoP Sect 17	P00C06	12 months (36 day latitude)	Track Inspector
		Redundant assets		P15020		