Data Classification – Track & Civil

AMT-WI-023

Applicability

ARTC Network Wide
SMS

Publication Requirement

Internal / External

Primary Source

Supersedes EGW-10-04

Document Status

Version #	Date Reviewed	Prepared by	Reviewed by	Endorsed	Approved
1.1	30 Nov 2023	Assurance Engineer (Interstate Network)	Asset Management Systems Manager	Manager Asset Planning & Investment (Interstate) Manager Engineering (Hunter Valley)	General Manager Development & Planning 24/11/2023

Amendment Record

Amendment Version #	Date Reviewed	Clause	Description of Amendment
1.0	08 Feb 2023		First issue of document to supersede EGW-10-04. Engineering document transferred to Asset Management document. No content has changed. Only updates to cover page, Header / Footer, Procedure Owner, Document numbers within.
1.1	August 2023	Various	Amendments to the document reflect recent changes to T&C Equipment structures including but not limited to: • Clause 1.4 replace Corridor Manager title with Manager Asset Maintenance Services as per latest IS structure. • Clause 2.2 Include Note re Ellipse Equip searching. • Clause 2.3 Table 1 Equipment Class (Inclusion of Classes EW, HY, LE, NV, PU, SE, SI and deletion of SX) • Clause 2.4 minor edit 2nd paragraph - Table 2 EGI (Inclusion of 7 new for Class EC, IJEXPJ, 5 new for Class LC, 6 new for Class LE, new PULSEG, 15 new for Class NV, 2 new for Class SE, 3 new for Class SI, 4 new (Dual G) for Class TR and deletion of 3 from Class SX) • Clause 2.6 Table 3 Equip Status (Inclusion of IA, PU, SM, deletion of NM, RI amended wording for DI, GM, IS, SW plus adjustments to Notes) • Adjustments to discrete and continuous asset Kilometrage descriptions to reflect Ellipse 9 structure (Clauses 2.11.1, 2.11.2 & 2.11.3) • Section 3 Equipment Reference – structure for each new equipment in Class Ellipse Plant Codes forming SPN defined. • Clause 3.8 as per above Table details adjusted appropriately. • Section 5 – 5.1 Include "Clearance Points" in the convention.

Table of Contents

1   Introduction

1.1   Purpose

ARTC maintains an Asset Management System (AMS) to ensure that assets are fit for the purpose of allowing the operation of trains over ARTC infrastructure. The AMS enables ARTC to perform the following core responsibilities:

•   Capital investment in the network

•   Manage the infrastructure comprising the network

•   Maintain the infrastructure comprising the network

The purpose of this work instruction is to describe the mandatory attributes required by the system, as currently configured, to manage Track & Civil assets in the system in a way that ensures the stated purpose of the AMS above is achieved.

1.2   Scope

This work instruction covers the information requirements to register all Track & Civil assets, including configuration, engineering data and attributes, in the AMS that are necessary to allow for structured works management of these assets to be performed.

1.3   Procedure Owner

The Manager Asset Management Systems is the Document Owner and is the initial point of contact for all queries relating to this work instruction.

1.4   Responsibilities

The Manager Asset Strategy (IS) / Manager Engineering (HV) is responsible for the implementation of this guideline.

The Manager Asset Maintenance Services (IS) / Manager Maintenance (HV) is responsible for approving changes to infrastructure equipment details within the Ellipse equipment register.

The Area Manager is responsible for ensuring recommended changes to infrastructure equipment are appropriate and correct.

Change Initiators are responsible for advising Area Managers where changes are required to infrastructure equipment they are required to maintain.

Asset Data Administrators, Maintenance Planners, Asset Management System Administrator (AMSA) and Asset Management Systems Support Officer (AMSSO) are responsible for ensuring required changes are correctly recorded.

1.5   Reference Documents

The following documents support this work instruction:

- AMT-PR-010 Enterprise Asset Management System

- EGP-03-02 Equipment Register – Updating & Maintenance

- AMT-WI-021 Data Classification – Structures

- AMT-WI-020 Data Classification – Universal

- AMT-WI-022 Data Classification – Signals

- AMT-WI-033 Track & Civil Nameplates

1.6   Definitions

Term	Description
Ellipse	Ellipse is a proprietary enterprise resource planning software provided by ABB that is used by ARTC to manage the assets.
Ellipse Applications	Various modules contained within Ellipse which assist ARTC in managing its assets during the entire life cycle from purchase through to disposal.
Equipment Register	Is used to record details of all infrastructure maintained by ARTC. Designated Ellipse application MSE600.
Equipment Number	A unique system generated number which is used to relate equipment to the various modules in Ellipse.
Attribute	Single component of an asset's record similar to a database field.
Controlled Attribute	An attribute that can only contain limited data types i.e. from a list.
Uncontrolled Attribute	An attribute that can hold any data (subject to character limit).
Automatic Attribute	An attribute that is reserved in Ellipse and are automatically populated on a Nameplate when certain Ellipse fields are completed. To make use of any automatic attributes they must be first set up as master attributes
Equipment Class (EC)	The equipment class is the highest level of the hierarchy used to organise assets in Ellipse. It is a controlled attribute. The rules for the Equipment Reference are defined against each equipment class.
Productive Units	Allow equipment to be grouped in a hierarchical structure, with an unlimited number of higher levels, for reporting purposes.
Equipment Group Identifier (EGI)	The Equipment Group Identifier groups items of similar operating and maintenance characteristics. It is a controlled attribute. Equipment Nameplates are defined against each EGI.
Nameplates	Nameplates are used to store a variety of engineering characteristics against equipment in Ellipse
Equipment Reference (also known as Plant Number)	A combination of plant detail fields to form a unique equipment identifier. These fields are a combination of controlled and uncontrolled attributes. The structure of the Equipment Reference is defined by Equipment Class and the rules regarding these structures are detailed within this document.
Track Node	A point used to define the start or end position of a continuous asset or network element.
Through Road	The leg of a turnout designated as the track from which the turnout is being utilised to divert trains from. On standard conventional turnouts this will always be the straight leg.
Site	A virtual equipment item utilised in Ellipse to group equipment items from different Equipment Classes into a parent child hierarchy at logical locations like turnouts and level crossings.
Standard Job	Skeleton Work Orders that record the details of complex jobs in a structured form that can be readily copied into Work Orders.

1.7   Application of this Work Instruction

This work instruction predominantly describes data attributes or requirements that are governed by technical or other specific requisites of Track & Civil equipment items. Universal data attributes or requirements are detailed in AMT-WI-020, those relevant only to Structures equipment are contained in AMT-WI-021 and Signals equipment in AMT-WI-022. This work instruction is intended to be read and used in conjunction with those other instructions, particularly AMT-WI-020.

This work instruction is supplemented by AMT-WI-033 Track & Civil Nameplates which describes the attributes or requirements that are governed by technical or other specific requisites of Track & Civil equipment Nameplate items.

2 Equipment Register Overview

2.1 Introduction

The Equipment Register [MSE600] is the primary repository of asset data in Ellipse. The data stored in this module drives the functionality of the other modules in Ellipse.

The responsible Area Manager shall ensure that all data is correct and conforms with the current requirements as detailed within this document.

2.2 Equipment Number

The Equipment Number is a controlled attribute. It contains a 12-digit number that is a unique identifier for equipment in Ellipse which is automatically generated by the system when the equipment record is first created. An example of a valid Equipment Number would be '000000038276'.

[Note: When performing an equipment search utilising Ellipse module 'mse600', entering the equipment number into the "Equipment Reference" field on the 'Primary Search' tab, will return the same result as entering the Equipment Reference.]

2.3 Equipment Class (EC)

The Equipment Class is a controlled attribute. It contains a 2-character alpha code. The equipment class is the highest level of the hierarchy used to organise Track & Civil assets in Ellipse. The structure of the SPN, as detailed in Section 3 below, is dictated by the equipment class.

Table 1 - Track & Civil Equipment Class:

Equipment Class	Class Description
AS	Airstrip
BF	Buildings & Facilities
DG	Sub-Surface Drainage [1]
EC	Calibrated Equipment
EW	Engineering Waiver
HY	Hierarchy
IJ	Track Insulated Joint
LC	Level Crossing
LE	Logical Equipment
MS	Miscellaneous Structures [2]
NV	Environment
PS	Permanent Signs
PU	Productive Unit Hierarchy
RL	Rail Lubricators
RW	Right of Way
SE	Special Location/Event
SI	Site
ST	Station
TO	Turnout
TR	Track
XX	Obsolete Equipment [3]

Notes:

[1]   *Culverts/Pipes that pass under the track as well as cess drainage pipes with an opening less than 500mm in diameter are classed as Sub Surface Drainage equipment and are inspected and maintained as part of Track & Civil track drainage.*

[2]   *The majority of the Miscellaneous Structures are managed as Structures Equipment assets however some of the smaller items like Stop Blocks and Cattle Stops are managed by Track & Civil.*

[3]   *Obsolete Equipment (XX) exists as an Equipment Class in Ellipse. When a Track & civil asset has been completely removed from the Network the equipment Status is to be changed to 'DI – Disposed of' and the Equipment Class changed to 'XX'. Changing the Equipment Class to XX results in Ellipse replacing the Plant Number structure with the Equipment Number in the Equipment Reference field, which then provides an indication during future searches on equipment that don't focus on the status that the item has been disposed of.*

2.4   Equipment Group Identifier (EGI)

The Equipment Group Identifier (EGI) is a controlled attribute. It contains a 6-character alpha or numeric code. It is utilised to group items of similar operating and maintenance characteristics. It provides a method to further group items of similar characteristics within an equipment class without creating distinct classes of their own e.g., Equipment Class "Turnout" contains EGIs for "Turnout", "Catchpoint" and "Diamond". The structure of Nameplates, as detailed in AMT-WI-033, are dictated by the EGI.

The EGI is the primary mechanism used by Ellipse to identify what type of asset is being described by an equipment record. It is therefore essential to ensure that the appropriate EGI is associated with an asset to allow for the correct assignment of nameplate attributes, defect attributes, MST's in accordance with the TMP and tailored inspection scripts via mobility.

Table 2 - Track & Civil EGI:

Class	EGI	EGI Description	Definition
AS	ASTRIP	Airstrip	Emergency landing facilities maintained by ARTC adjacent to the Corridor in the Western jurisdiction.
BF	BF0001	Buildings / Facility	Buildings, offices or sheds owned and maintained by ARTC
BF	BF0002	Platform	Passenger platforms are not maintained by ARTC however they are recorded as assets in order to facilitate clearance inspections as these platforms are permanently approved infringements to the Kinematic Clearance envelope.
DG	DGSYS1	Drainage System	A sub-surface drainage system comprising of multiple pipes/pits that is either under track or off track or both.
DG	DGSCU1	Small Culvert / Pipe (Under Track)	All pipes and culverts under track that are ≤500mm in size.
DG	DGSCU2	Small Culvert / Pipe (Off Track)	All pipes and culverts off track that are ≤500mm in size.
EC	EC0101	Calibrated Equipment - General	General equipment which requires periodic calibration. Mostly includes signals meters etc.
EC	EC1502	Maintenance Gauges	Specialised gauges utilised in maintenance tasks which require periodic calibration.
EC	ECDG01	Calibration Device & Master Gauges	Devices utilised to perform periodic calibration checks on equipment required to be periodically calibrated or master gauges kept in a controlled environment and utilised to check the condition of specialised gauges utilised in maintenance tasks.
EC	ECND01	NDT Kit	Devices utilised to perform non-destructive testing of rails.
EC	ECTM01	Track Measurement Kit	Devices utilised to undertake measurements on or about the track.
EC	ECVG01	Verse Gauge	Specialised equipment utilised to measure the tensile forces within rails to enable SFT to be determined.
EC	ECWD01	Track & Civil Welding Kit	Specialised equipment utilised in rail welding processes including, but not limited to, straight edges, thermometers and gas pressure regulating gauges.

IJ	IJEXPJ	Expansion Joint	A fixed switch and stockrail assembly which allows longitudinal movement between consecutive rails on the same leg while also providing continuous vertical support for wheels.
IJ	IJOINT	Insulated Joint	Purpose built joints placed in track in circuited areas to divide and isolate the flow of electricity between sections of rail in order to control the operation of signals and active level crossings. Can be mechanical (MIJ) or glued insulated joints (GIJ).
LC	LCING1	Level Crossing-Active Rd-Pub and Pri	Road level crossing, either public or private, which is fitted with warning devices such as lights, bell and booms to warn road users of the approach of a train.
LC	LCING2	Level Crossing-Passive Rd-Pub and Pri	Road level crossing, either public or private, which is fitted with signs only (stop, give way, look for trains etc.) and require road users to look for approaching trains.
LC	LCING3	Level Crossing-Active Ped	Pedestrian level crossing which is fitted with warning devices such as lights, bells, swing gates or booms to warn pedestrians of the approach of a train.
LC	LCING4	Level Crossing-Passive Ped	Pedestrian level crossing which is fitted with signs only (stop, give way, look for trains etc.) and require pedestrians to look for approaching trains.
LC	LCING5	Level Crossing-Service Crossing/Take Off	Level crossing which are not provided for crossings by the general public but have restricted access for rail vehicles only or a provided solely for road-rail vehiles to get on or off track.
LE	LELC01	Level Crossing Licence	The licence between the landholder or road owner and the rail manager which provides the legal right for a private level crossings existence and specifies responsibilities.
LE	LEPROV	Logical Prov Centre	This is a virtual equipment item created within the equipment hierarchy to represent all equipment managed by the PC. It is utilised for assigning work orders for tasks that cover multiple assets e.g. TSMP Reviews covering all running lines.
LE	LESIA1	Safety Interface Agreements Rail/Road	An agreement between the road and rail managers that defines roles and responsibilities for managing risks at interfaces at road/pedestrian level crossings, road over rail bridges, rail over road bridges, subways/underpasses, or footbridges.
LE	LESIA2	Safety Interface Agreements Rail/Rail	An agreement between adjoining rail managers that defines roles and responsibilities for managing risks at interfaces at shared corridors, private sidings, terminals, yards etc.
LE	LESIA3	Safety Interface Agreements Above Rail	An agreement between the rail infrastructure managers and rail operators that defines roles and responsibilities for managing risks at interfaces relating to rail operations including rolling stock and RMVs accessing the corridor.
LE	LESIA4	Safety Interface Agreements Wayside Rail	An agreement between the other entities and rail managers that defines roles and responsibilities for managing risks at interfaces at stations, equipment adjacent to the track, network loading.
NV	NV0001	Contaminated Site	Location where contamination has occurred

NV	NV0002	Protected Vegetation Site	Location containing protected or endangered vegetation
NV	NV0003	Invasive Vegetation Site	Location containing known invasive vegetation species requiring containment protocols to be observed
NV	NV0004	Stormwater Basin	Purpose built basin for slowing stormwater
NV	NV0005	Site Remedial Works	Location undergoing site remediation work
NV	NV0006	Dust Monitoring Station	Monitoring Station containing specialised devices to record airborne particle levels
NV	NV0007	Noise Monitoring Station	Monitoring Station containing specialised devices to record ambient noise levels
NV	NV0008	Fauna Furniture	Purpose built equipment provided to assist native fauna movements
NV	NV0009	Refuelling Site	Location utilised for refuelling rail bound rolling stock
NV	NV0010	Vegetation Rehabilitation Site	Location undergoing isolation protocols to facilitate vegetation rehabilitation
NV	NV0011	Heritage	Location of historical significance
NV	NV0012	Waterways	Active rivers and streams
NV	NV0013	Groundwater Bore	Location where subsurface water is accessed via a bore
NV	NV0014	Waste Material Site	Location designated for the storage of waste materials
NV	NV0015	Wastewater	Non potable water access to requiements
PS	PSIGN1	Sign	Any permanently erected signage that conveys information that is critical to network operations that is not considered to be a signal.
PU	PULSEG	Line Segment	Fifth level of ARTC business hierarchy. Used as a grouping mechanism facilitating equipment searches for all equipment located within a specified segment. Aligns with Account codes as defined in ARTC's financial systems.
RL	RLUB01	Rail Lubricator Simple	Lubricators the are mechanically operated.
RL	RLUB02	Rail Lubricator Complex	Lubricators that are electronically operated.
RW	RW0001	Right of Way	Each section of the rail corridor must have a 'Right of Way' asset. They will all have this EGI.
SE	SEFE01	Flood Discrete Event	Any flooding situation or emergency flooding situation that has been responded to via TCR even if the flood water did not reach the track area and/or no damage occurred
SE	SEFL01	Flood Special Location	Locations deemed as specific flood risk zones based on statistical analysis of previous flooding events or the results of scheduled waterway and drainage inspections which are listed for prompt intervention in order to minimise operational impacts during potential or actual flood events
TO	TO0001	Turnout - Running Line	Turnouts where at least one of the roads, turnout or through is assigned the TR0001 or TR0005 EGI.

TO	TO0002	Turnout - Siding	Turnouts where neither of the roads, turnout or through are assigned the TR0001 or TR0005 EGI.
TO	TO0003	Catch Point - Running Line	Catch Points where the through road is assigned the TR0001 or TR0005 EGI.
TO	TO0004	Catch Point - Siding	Catch Points where the through road is not assigned the TR0001 or TR0005 EGI.
TO	TO0005	Diamond - Running Line	Diamonds where at least one of the roads, turnout or through is assigned the TR0001 or TR0005 EGI.
TO	TO0006	Diamond - Siding	Diamonds where neither of the roads, turnout or through are assigned the TR0001 or TR0005 EGI.
TR	TR0001	Track - Running Line	Includes all main operating lines, crossing loops, passing refuges, and sidings with operating speeds >25km/hr.
TR	TR0002	Track - Siding	Main operating lines, crossing loops, passing refuges, and sidings with operating speeds ≤25km/hr.
TR	TR0003	Track - Crossover	Short section of track between the last long timbers of turnouts forming a crossover between adjacent tracks. [NB: As the primary purpose of having separate equipment items for crossover locations is to ensure that the little bit of track between the 2 turnouts is properly inspected and to provide equipment for defects to be recorded if necessary, a separate "Crossover" track item is not required if this is encapsulated by the limits of an existing track.]
TR	TR0004	Track - Yard	Used for Parent Equipment - A collection of sidings at a common location with operating speeds ≤25km/hr
TR	TR0005	Track - Loop	Crossing loops, passing refuges, and sidings with operating speeds >25km/hr, where it can basically operate as a mainline, however track patrol inspections can be completed via the adjacent main line.
TR	TR0011	Track Dual - Running Line	Includes all dual gauge main operating lines, crossing loops, passing refuges, and sidings with operating speeds >25km/hr.
TR	TR0012	Track Dual - Siding	All dual gauge main operating lines, crossing loops, passing refuges, and sidings with operating speeds ≤25km/hr.
TR	TR0013	Track Dual - Crossover	Short section of dual gauge track between the last long timbers of dual gauge turnouts forming a crossover between adjacent dual gauge tracks.
TR	TR0015	Track Dual - Loop	Dual Gauge crossing loops, passing refuges, and sidings with operating speeds >25km/hr, where it can basically operate as a mainline, however track patrol inspections can be completed via the adjacent main line.

2.5 Equipment Reference

The Equipment Reference is another form of unique identifier for equipment in Ellipse. It is created using a combination of Plant Codes following a structure dictated by the equipment class.

An Equipment Reference is more useful as a unique identifier to maintenance staff than a system generated number as it provides certain key information that helps describe the item of equipment e.g., route, basecode, discrete kilometrage, equipment function. The Equipment Reference also provides useful searching capabilities.

E.g. W34122630476.925CPSIDG2DA

2.5.1 Plant Codes

The Plant Codes are a combination of controlled and uncontrolled attributes. There are 6 levels of Plant Codes and each level has its own character structure convention. Plant codes are utilised to provide the controlled attribute structure for the Equipment Reference. The choices of options available to select from each of the Plant Code tables is limited in accordance with the Equipment Class. Further detail on using the Plant Codes to construct the Track & Civil Equipment Reference's is contained in Section 3.

E.g.

Plant Seg 1	Plant Seg 2	Plant Seg 3	Plant Seg 4	Plant Seg 5	Plant Seg 6
W34	12263	0476.925	CP	SIDG	2DA

2.6 Equipment Status

The Equipment Status is a controlled attribute. It contains a 2-character alpha code. The status is used in conjunction with Equipment Class and EGI to determine the appropriate inspection schedule for an asset.

All equipment with status "IS – In Service" must have an active MST associated with them at all times.

Certain non-safety critical items of equipment do not need to have separate MSTs created for inspections for each individual item of equipment but may be covered under a group MST. In this case the Equipment Status "GM – Within Group MST" may be associated with these items.

Only equipment within equipment classes:

- EC – Calibrated Equipment,
- BF – Buildings/Facilities,
- IJ - Insulated Joint,
- PS – Permanent Signs,

or which have the following EGI:

- DGSCU2 - Small Culvert / Pipe (Off Track),
- RLUB01 - Rail Lubricator Simple,

may be assigned the status of GM.

GM equipment may be upgraded to status IS if the Area Manager determines the equipment in question poses a greater risk than similar equipment in his area and thence have individual MSTs assigned to them. IS equipment however must retain that status unless the equipment has been permanently removed from service, has been booked out of service and will remain that way for an extended period of time or is no longer being maintained by ARTC and is covered by an interface agreement with a third party.

The Area Manager will be responsible for ensuring that the correct Equipment Status is assigned to all Track & Civil assets in order to allow accurate compliance reporting.

Table 3 - Track & Civil Equipment Status:

Status	Status Description	Extended Description	MST Required
BM	Booked Out of Service - Maintain	No part of the service the equipment provides supports full or limited train or other business operations. It is temporarily booked out for replacement or maintenance and there is an Intention to bring it back into full or limited service. However there is still a safety risk to Rail or General Public that requires inspections and related maintenance activities.	Y [1]
BO	Booked Out of Service	No part of the service the equipment provides supports full or limited train or other business operations. It is temporarily booked out for replacement or maintenance and there is an Intention to bring it back into full or limited service.	N [1]
DI	Disposed Of	Equipment decommissioned and removed. [Note: in some cases there may be new equipment to replace the removed item (e.g. like for like) this is to ensure old maintenance history does not carry over to the replacement.]	N
GM	Group Maintained	Equipment supports full or limited train or other business operations however the preventative maintenance activities from the service schedule is grouped in with those of other common equipment components and is being recorded on a different equipment item (e.g. Insulated Joint Inspections are assigned to the Track equipment not individual IJs).	Y
IA	Interfacing Assets	Equipment not maintained by ARTC, however due to being connected to or in close proximity to ARTC assets, has the potential to impact our business objectives so requires us to know its health and other critical aspects. Safety Interface Agreements and where applicable licences/agreements provide the conduit for managing the interface.	Y [2]
IS	In Service	Equipment supports full or limited train or other business operations and keeps its maintenance history.	Y
PN	Project New	Equipment that is being brought into service. Either as a project or replacement of existing equipment that requires a new Equipment Number, or new equipment being held in this status until commissioned when the Equipment Status should be changed to 'IS – In Service'.	N
PU	Productive Hierarchy	Logical Equipment i.e., not physical equipment per say, utilised to group physical equipment by Business Units or Management Regions.	Y [3]
SW	Service Withdrawn	Equipment that has the full or limited service function withdrawn and there is no intention for it to be brought back into service.	N
SM	Service Withdrawn - Maintain	Equipment that has the full or limited service function withdrawn and there is no intention to bring back into service but there is still a requirement for limited maintenance or inspection to ensure safety is maintained. This status is used for Redundant Infrastructure that has not been removed and poses a risk due to unauthorised third-party access that needs to be managed.	Y [4]

Notes:

[1]   Equipment that has been booked out and is not likely to be booked back in for an extended period and therefore does not require on-going maintenance, may have its status changed to 'BO – Booked Out' to enable MST's to be switched off. Any defects on these assets are to remain in the system so they can be reassessed prior to the asset being brought back into service. An Infrastructure Booking Authority (IBA) must been issued for each asset booked out and retained at the Provisioning Centre.

[2]   Interfacing Assets (IA) shall be used for track & civil assets that interact with or are located within the rail corridor but are not the responsibility of ARTC. Even though ARTC is not responsible for the inspection or maintenance of these assets they are included in Ellipse for completeness.

[3]   Equipment within the Productive Unit Hierarchy is sometimes assigned MST workorders for actions to be undertaken across multiple assets e.g. TSMP pre and post high temperature season reviews are assigned at the Provisioning Centre (PC) level within the hierarchy and not to the individual tracks within the PC covered by the plan.

[4]   Where possible and reasonable to do so, redundant assets shall be removed or isolated from the public and railway workers. Isolation actions can include filling in, entry barricading, fencing and signage. Some assets may be partially removed, leaving some residual elements in place. Until total removal or isolation, redundant assets will be subject to 2 yearly general inspections as detailed in clause 17.3.2 of ARTC T&C CoP Section 17 Right of Way and the minimum maintenance assessed as necessary to prevent an increased risk to the public and railway workers above that considered necessary SFAIRP. Such inspection and maintenance actions of redundant structures and fittings shall be described in Maintenance Schedules Tasks (MST) and scheduled in Ellipse until such time as the structures are removed or isolated.

2.7   Equipment Descriptions 1 & 2

The Equipment Description fields are uncontrolled attributes. These fields are free text fields that display relevant information to describe the asset. Each field contains a maximum of 40 characters including spaces. Further details regarding how these fields are utilised to assist in providing better asset identification for Track & Civil equipment is contained in Section 4.

2.8 Basecode

A track Basecode is a grouping of Track Elements that defines an individual track from nodal point to nodal point within one Asset Management Corridor. The system was introduced in 1994 within Rail Infrastructure Corporation.

Business Rules:

1. A Basecode represents only one track within one Asset Management Corridor

2. Basecodes start and finish at the same points as an Asset Management Corridor, ie Basecodes can be rolled up into one Asset Management Corridor

3. All tracks have a unique Basecode.

4. Basecodes may be one of the following:

    o Main

    o Crossing/passing loop

    o Goods loop

    o Siding, including balloon loops

    o Crossover- two turnout tracks and one adjoining track between the turnout points

5. The track relating to a specific Basecode will have continuous kilometres in one direction.

6. Basecodes start at the track node with the lowest km value.

7. They have a defined start and end node location that are one of the following physical track assets:

    o points

    o dead ends such as buffer stops or stop blocks

    o 0 km

    o major km discontinuities (km changes from ascending to descending, where km changes to a lower value but continues to ascend)

    o boundary point (State Border, interface with other Rail Authority, Lease, Provisioning Centre)

    If such physical features are removed during a configuration change process, the nodes shall remain, but the asset is described with a status of "disposed of".

8. A Basecode does not necessarily break at a Boundary.

9. A new Basecode is given at major discontinuities, e.g. change of kilometrage.

10. Basecode sections should be as long as possible.

11. Basecode numbering starts from the mainline and works into the Yards (historically).

12. Basecode is used to locate ARTC assets within the Equipment Reference.

13. Where a basecode needs to be attributed to discrete assets which cross multiple lines, e.g. level crossings, bridge abutments, culverts, then the following will apply:

- o When the asset crosses more than 1 main line track, the basecode to be utilised is that for the track furthest to the left-hand side when facing in the direction of ascending kilometrage,

- o When the asset crosses a single main line as well as passing lanes, loops or sidings, the basecode to be utilised is that for the main line, no matter its position relative to the other tracks,

- o For turnouts the basecode for the through road is to be utilised.

Code Rules:

1. Basecode is a 5-digit number.

2. The first digit of the Basecode is used for the State, namely:

   - o "1" are for NSW track (inclusive of North Coast Main in QLD from Border Loop to Roma Street Station).

   - o "3 and 4" are for Victorian track

   - o "5" are for SA track

   - o "7" are for Qld track (exclusive of North Coast Main from Border Loop to Roma Street Station)

   - o "6" are for WA track

3. The second digit of the Basecode is used for the sub-corridor, namely:

   For South Australia:

   - o "0" is used for Keswick to SA/Vic Border

   - o "1" is used for Keswick to Coonamia

   - o "2" is used for Coonamia to Port Augusta/Whyalla points junction

   - o "3" is used for Port Augusta/Whyalla points junction to Tarcoola

   - o "4" is used for Tarcoola to SA/WA Border

   - o "5" is used for Coonamia to SA/NSW Border

   - o "6" is used for Port Augusta/Whyalla points junction to Whyalla

   - o "7" is used for Outer Harbour

   For Western Australia:

   - o "0" is used for SA/WA Border to Kalgoorlie

   - o "1" is used for Kalgoorlie to Perth

   For Victoria (first digit of "3"):

   - o "0" is used for NE line, Spencer Street (signal 184) to NE line/Western line points junction (Tottenham)

   - o "1" is used for SW line, NE line/SW line junction (Tottenham) to Newport (km change)

   - o "2" is used for SW line, Newport (km change) to North Geelong (km change)

   - o "3" is used for SW line, North Geelong (km change) to Maroona (km change)

   - o "4" is used for NW line, Maroona (km change) to Ararat (km change)

- o "5" is used for NW line, Ararat (km change) to Pyrenees (km change)

- o "6" is used for NW line, Pyrenees (km change) to Serviceton (km change)

- o "7" is used for NE line, NE line/SW line junction (Tottenham) to Jacana

- o "8" is used for NE line, Jacana (km change) to Vic/NSW Border

Note: West Line Seymour to Wodonga utilises "9" so carries basecode "39000".

For Victoria (first digit of "4"):

- o "0" is used for Appleton Dock to Melbourne Local line junction

- o "4" is used for Maroona points junction to Portland (Julia Street)

- o "5" is used for the Benalla to Oaklands Line

4. The third, fourth and fifth digits are used for a location and loop, siding numbers . For example:

51000 for the main line Keswick to Coonamia

Location Snowtown is designated by "09" in the 3rd and 4th digits with:

51091 for the Crossing Loop connected to the Main Line

51092 for the Wallaroo Spur connected to the Crossing Loop

Location Redhill is designated by "10" in the 3rd and 4th digits with:

51101 for the Crossing Loop connect to the Main Line

51102 for the Goods Loop connected to the Crossing Loop

5. Numbers are sequential.

6. Track Basecodes can be rolled up into a Corridor as they start and finish at Corridor boundaries.

2.9 Equipment Location

The Equipment Location is a controlled attribute. It contains either a 3- or 5-character code. The code refers to the general geographic location of the asset on the Network and for discrete assets is based on whether the asset is located within the defined limits of an interlocking area or is in the section in between 2 adjacent interlocking areas. The location code for assets within the defined limits of an interlocking location contain 3 characters e.g.:

- GOD = Goddards WA

- W21 = Zanthus WA

The location code for assets located in the section in between interlocking location2 contain 5 characters with the first 3 characters being the full location code for the location with the smallest kilometrage and the last 2 characters being the first 2 from the location code of the location at the further end of the section e.g.:

- GODW2 = Goddards WA to Zanthus WA

Linear assets like tracks and right of way which cross over several defined locations or sections in between are generally assigned to the location at which they start from. The values in the Equipment Location attribute are not directly controlled by another hierarchy attribute (e.g. Route,

Basecode or Account Code), therefore the responsible Area Manager must ensure that the values in these various attributes are consistent.

A Location can belong to more than one Route (e.g. Junee S00 and S80, Muswellbrook N00 and N40). A Location may belong to several Basecodes and Account Code segments.

Location can be a handy search option when utilising the Ellipse [MSE600] 'Search Equipment Register' Module. Searches can be filtered to return all equipment within a location or only those of a certain class. Further benefits to utilising the equipment location when performing searches will be expected when planning work as the location can be utilised to search for all work orders at that location which will facilitate enhanced co-ordination and scheduling of works across disciplines. This should also lead to better utilisation of possessions and shutdowns.

2.10   Track Nodes

Track Nodes are any points on the track used to define the start and end positions of a datum Network Element like basecodes and equipment locations. Nodes are used in the segmentation model of the network. Node points may also be required at 'notional' boundaries, eg, maintenance or regional boundaries, depending on how security and Network maintenance activities are to be administered.

Start and End reference points become the lowest common denominators from which all business unit rail network segmentation hierarchies are based.

Business Rules:

1. A Track Node can only belong to one Location.

2. A Track Node defines the start and end of all the above codes.

3. A Track Node is usually a:

    o   Nose (sharp leading edge) of the switch blade of a turnout

    o   terminus or dead end

    o   0km

4. Track Nodes may have one or more kilometrage at an intersection of tracks where different kilometrages come to a point or can occur at a point where kilometrage changes occur along a continuous track.

5. The Track Node feature 'points' is defined as belonging to the through Main line.

2.11 Asset Kilometrage Conventions

For the purpose of determining track distance, every rail track has an assigned direction, with an assigned start of track and end of track.

The assigned direction of a track kilometrage predominately steadily increases when moving away from Capital Cities however there are places on the network where there are step changes in the kilometrage that have been brought about due to spirals or deviations, or because of interfaces between either existing or past corridors that utilised a different route. Notable anomalies are detailed in 2.11.4 below.

To determine the UP side from the DOWN side, the DOWN is on the left-hand side when one stands facing in the direction of increasing kilometrage. This means that at locations where the kilometrage changes from ascending to descending, or vice versa, the sides will change at that point, in other words the Down Rail will become the Up Rail etc., a change in basecode will also be required in this instance.

2.11.1 Discrete Asset km

The Discrete kilometrage defines the position of a discrete asset, e.g. bridge, culvert, turnout, level crossing, etc. It is an 8-character uncontrolled attribute. It contains a track kilometrage reference in the format "NNNN.NNN". When the kilometrage is less than 1000.000km the first whole number is to be preceded by zeros. When the kilometrage is less than 1.000km then the decimal point is also preceded by 4 zeros. On most discrete asset records in Ellipse this kilometrage is recorded within the Equipment Reference at Plant Code Level 3 as detailed in Section 3 as well as one of the Equipment Description text fields as detailed in Section 4.

Business Rules:

1. There is only one kilometrage designated for each discrete asset no matter how long it is.

2. For bridges and culverts, the discrete kilometrage is the location of the leading edge of the headwall.

3. For level crossings, the discrete kilometrage is the location of the centreline of the road surface.

4. For turnouts, the discrete kilometrage is the location of the nose of the points or switch tip. For turnouts the discrete kilometrage will be the same as either the continuous asset start KM or the continuous asset end KM depending upon which way the turnout lays relative to the direction of ascending kilometrage.

5. For Insulated Joints, the discrete kilometrage is the location of the centre of the joint.

6. For all other assets, the discrete kilometrage is either the location of the asset or the part of the asset with the lowest kilometrage if the asset is large.

2.11.2 Continuous Asset Start km

The Start kilometrage defines the start position of continuous asset. It is displayed as a normal number to 6 decimal places though only to the nearest 1 metre is utilised., e.g. 1646.262000 km.

2.11.3   Continuous Asset End km

The End kilometrage defines the end position of continuous assets or the highest meterage on discrete assets. It is displayed as a normal number to 6 decimal places though only to the nearest 1 metre is utilised, e.g. 1646.265000 km.

Note: *Ensuring the Continuous Asset Start & End Kilometrages are accurate on Discrete Assets (Bridges, Turnouts, Level Crossings) as this is utilised to determine the overall length of that asset within the length of the track asset upon which it is positioned.*

2.11.4   Kilometrage Change Anomalies

The following anomalies in the kilometre range need to be considered when planning works of implementing configuration changes across the ARTC network (listed in no particular order):

- Marrickville Jct. NSW – 779B & 780B Points junction between the Up & Down Metropolitan Goods Lines and the Up & Down Botany Lines, 6.626km descending towards Sydenham on the Metro Goods Lines = 16.472km descending towards Sydenham on the Botany Lines (Note Botany Lines never reach 0 km).

- Sefton Park NSW on SSFL – Km adjust from 22.304 ascending to 20.660 ascending, basecode changes from 12986 to 14986.

- Cabramatta Jct. NSW on SSFL – Km adjust from 28.210 ascending to 31.774 ascending, no basecode change.

- Moss Vale NSW – 122A Points - Jct. Main South (Down Refuge) & Unanderra to Moss Vale Branch (North Fork) – 144.650 (MS) = 150.500 (BR).

- Moss Vale NSW – 131B Points - Jct. Main South (Down Refuge) & Unanderra to Moss Vale Branch (South Fork) – 145.000 (MS) = 150.600 (BR).

- Frampton NSW on Down Main South – Km adjust from 442.972 ascending to 444.600 ascending, no basecode change.

- Bethungra NSW on Up Main South – Km adjust from 457.617 ascending to 454.801 ascending - Basecode changes from 10048 to 10049.

- NSW/VIC Border Albury Wodonga –648.433 NSW = 302.835 VIC.

- The Gap NSW – 107A Points – Jct. Mungindi Line & Binnaway to The Gap Line – 415.839 via Werris Creek = 599.974 via Binnaway.

- Gulgong NSW – 2CA Points – Jct. Gwabegar Line & Ulan Line – 340.174 via Mudgee = 460.114 via Ulan.

- Merrygoen NSW – 4AB Points – Jct. Gwabegar Line & Troy Junction to Merrygoen Line – 417.521 via Mudgee = 562.320 via Dubbo.

- Narromine NSW – 8A Points – Jct. Main West & Goobang Junction to Narromine Line – 497.633 via Dubbo = 556.912 via Goobang Junction.

- Goobang Junction NSW – 221 Points – Jct. Orange to Broken Hill Line & Stockinbingal to Goobang Junction Line – 447.429 via Parkes = 628.340 via Stockinbingal.

- NSW/SA Border Broken Hill – 1,126.840 NSW = 392.200 SA

- Jacana Jct. VIC – VIC NE – In Down direction - Km adjust from 27.000 ascending to 16.000 ascending, basecode changes from 37000 to 38000.

- Tottenham Vic – Triangle West Leg – KMs continue to descend from 10.633 at 9 Points via Tottenham to Jacana Corridor until 19 Points where the KM is 10.090. (19 Points = 16.817 via Newport & 9 Points = 17.360).

- Tottenham Vic -17U Points – Junction VIC NE to VIC South Line 9.973 via Tottenham to Jacana ascending = 17.257 via Tottenham to Newport descending. [Note kilometrages are descending when moving away from Tottenham Junction towards Newport]

- Newport Vic – In direction heading from Tottenham towards Geelong - Km adjust from 10.480 descending to 10.700 ascending – Basecode changes from 31000 to 32000.

- North Geelong VIC – In Down direction – Km adjust from 69.000 ascending to 71.000 ascending – Basecode changes from 32000 to 33000.

- Maroona VIC - In Down direction – Km adjust from 244.000 ascending to 244.524 ascending – Basecode changes from 33200 to 34000.

- Ararat VIC - In Down direction – Km adjust from 265.344 ascending to 265.000 ascending – Basecode changes from 34000 to 35000.

- Pyrenees VIC - In Down direction – Km adjust from 269.000 ascending to 215.000 ascending – Basecode changes from 35000 to 36000.

- VIC/SA Border Serviceton – 463.687 VIC = 313.210 SA.

- Mile End SA – Origin Mark 3.400 towards VIC = 0.000 towards Crystal Brook.

- Dry Creek SA – 20A Points Junction to Outer Harbour Line – 11.274 via Main = 0.000 via Outer Harbour.

- Crystal Brook SA – 9/20L Points Junction Mile End to Crystal Brook Line with Coonamia to Broken Hill Line – 197.225 via Mile End = 22.835 via Coonamia.

- Coonamia SA – Kms ascend from the Zero Point Datum in both directions.

2.11.5 Corridor and Kilometrage Conventions in Melbourne and Sydney Networks

The conventions applied to the tracks within the various corridors in both the Melbourne and Sydney Metropolitan Networks can be confusing due to the way Corridors intersect whilst following different routes from the Zero Datum reference and therefore have a different kilometrage creating a change in kilometrage at that location. The conventions utilised on ARTC equipment in these areas is explained in the following clauses.

2.11.5.1 Melbourne (including Corridors V01 to SA & V02 to NSW)

There are 5 Corridors defined within the Melbourne Metropolitan area 3 of them, V00, V04 & V03 are wholly contained in Melbourne whilst V01 extends from Melbourne to the SA Border and V02 to the NSW Border.

Business Rules:

V00 – Spencer Street to Tottenham:

V00 corridor includes all assets between the various interfaces with Melbourne Metro & V/Line assets originating from Spencer Street Station/Melbourne Yard and Tottenham, excluding those associated with the Docks. All assets on this Corridor share the same ascending kilometrage

convention commencing from the Bourke Street Zero Datum at Spencer Street Station. There are 5 access points that lead into this corridor each with a defined interface agreement and kilometrage, they are via:

- Main Line at Moonee Ponds Junction, 2.056Km, IA08 - Appendix 4 – V/Line

- Freight Link Track at Moonee Ponds Jct, 1.440Km, IA08 - Appendix 4 – V/Line

- Canal Lead at Appleton Junction, 2.453Km, IA08 – V/Line

- X Track at North Dynan Junction, 3.945Km, IA22 – VIC Track

- Y Track at North Dynan Junction, 4.450Km, IA08 - Appendix 5 – V/Line

This corridor ends at 10.181Km, which is the nose of 7 points Tottenham, where the Local Line junctions with the Main Line.

The nominal start & end kilometrages for this Corridor are 1.440 to 10.181.

V01 – Tottenham to VIC/SA Border:

V01 corridor commences at 17.257Km, 17U points at Tottenham.

In a unique arrangement that occurs at no other location on the ARTC Network, the kilometrage descends away from the start node for the first 6.777km then ascends after a KM adjustment at Newport.

There is a Kilometrage adjustment at Newport where the descending kilometrage from Tottenham, 10.480, becomes 10.700 and thence ascends towards Geelong where there is a kilometrage adjustment where 69.000Km becomes 71.000Km. The PC boundary for Civil assets on this Corridor between Kensington PC and Ararat PC is at 170.748Km. There are further Km adjustments at Maroona where 244.525 becomes 244.000, Ararat where 265.344 becomes 265.000 & Pyrenees where 269.000 becomes 215.000. The PC boundary for Civil assets on this Corridor between Ararat PC and Murray Bridge (SA) PC is at 463.610Km between Serviceton and Wolseley, this is also the end of the V01 Corridor and the Civil assets now assume Corridor A00 with SA kilometrages from 313.290 descending towards Adelaide. (Note: The actual VIC/SA Border is located at KMs 463.687 via VIC and 313.213 via SA).

The nominal start & end kilometrages for this Corridor are 10.480 to 463.610.

This arrangement of kilometrage on the V01 Corridor results in the true route length being 52.649 Km longer at 505.779 Km than what would be suggested by subtracting the lowest kilometrage attained from the highest (i.e. 463.610 - 10.700 = 452.910).

V02 – Tottenham to VIC/NSW Border:

V02 Mainline Corridor commences at 10.181Km, 7 points Tottenham. Kensington PC responsibility for Civil assets on this Corridor ceases at the PC boundary with Seymour PC at 30.285Km.

There is a Kilometrage adjustment at Jacana where the kilometrage from Tottenham, 27.000, becomes 16.000 and thence ascends towards the VIC/NSW Border.

This Corridor includes the West Leg of Tottenham triangle as it carries descending kilometrage from 10.633 at 9 points Tottenham (junction with the V02 Main Line) to 10.090 at 19 points Tottenham (junction with V01 Mainline).

The nominal start & end kilometrages for this Corridor in Kensington PC are 10.090 to 30.285.

This arrangement of kilometrage on the V02 Corridor in Kensington PC results in the true route length being 11.349 KM longer at 31.544 Km, then what would be suggested by subtracting the lowest kilometrage attained from the highest (i.e. 30.285 - 10.090 = 20.195).

There are no further kilometrage adjustments on this Corridor outside the limit of Kensington PC responsibility. The PC boundary for Civil assets on this Corridor between Seymour PC and Wagga Wagga (NSW) PC is at 302.835Km between Wodonga and Albury, this is also the end of the V02 Corridor and the Civil assets now assume Corridor S00 with NSW kilometrages from 648.433 descending towards Sydney. (NB: The actual VIC/NSW Border is located at KMs 302.702 via VIC and 648.566 via NSW).

V03 – Appleton & Swanson Docks:

V03 Corridor encompasses all assets associated with the West Swanson, Westgate and Appleton Docks.

The nominal start & end kilometrages for this Corridor are 4.760 to 7.100 which have no continuous relationship with Corridor V00 to which they are connected at Appleton Junction.

The nominal start & end kilometrages for this Corridor are:

- 4.760Km at 41D points to 6.560Km via South Dock Line to West Swanson Dock and,

- 4.933Km at 39D points to 7.100Km via North Dock Line to Appleton Docks and,

- 5.080Km at 27 points to 5.520Km via North Dock Line to Westgate Docks.

V04 – Newport to Tottenham:

V04 Corridor commences at the kilometrage adjustment at Newport where the descending kilometrage from Geelong 10.700 becomes 10.480 and then ascends towards Tottenham where it ends at 17U points 17.257km.

2.11.5.2   Sydney

There are 4 Corridors defined within the Sydney Metropolitan area. M50, M52 & M66 are wholly contained in Sydney whilst S00 extends from Sydney to the VIC Border.

Business Rules:

M50 – Botany Line:

Counter to normal convention where the kilometrage would continue to ascend from where it junctions with the Metropolitan Goods Corridor at Marrickville, the Botany Line has no zero reference but has a low KM of 6.620 at the interface boundary with Hutchinson Ports Terminal in Port Botany, the Kms then ascend towards Marrickville Junction where the highest Km is 16.472 at the nose of 779 Points on the Down Botany (6.626 via M52).

M52 – Metropolitan Goods Line:

The Up & Down Metropolitan Goods Lines carry continuous ascending kilometrage from the Zero Datum at Sydney Terminal via Sydenham. The Civil assets on this Corridor commence at the interface boundary with Sydney Trains at 6.371Km at Marrickville and finish at the interface boundary with Sydney Trains at 18.909Km at Flemington.

M66 – Chullora to Sefton Park Goods Line:

The Up & Down Chullora to Sefton Park Goods Lines carry continuous ascending kilometrage from the Zero Datum at Sydney Terminal via Sydenham and the M52 Corridor. The Civil assets

on this Corridor commence at the Junction with the M52 Corridor via 346 Points (Down) at 17.083Km and 347 Points (Up) at 17.084Km and finish at the interface boundary with Sydney Trains at 21.285Km on the Up and the commencement of the Southern Sydney Freight Line (SSFL) via 356B Points at 20.420Km on the Down.

The single line SSFL on this Corridor commences where it junctions with Down Goods at 20.420 and finishes at the KM adjustment where 22.304Km reduces to 20.660 and the SSFL becomes associated with the S00 Corridor.

This Corridor also includes the North Fork at Chullora Junction which commences at 351 Points where the KMs are 17.462 via the M66 Corridor. The kilometrages on this fork commence at 17.246Km on the nose of 351 Pts and ascend towards Flemington and the Junction with the M52 Corridor via 348 Points, where the Kilometrage is 17.592 via both the Fork and M52.

S00 – Main South Line:

From the 20.660 KM adjustment at Sefton Park Junction the SSFL carries ascending kilometrage from the Zero Datum at Sydney Terminal via Strathfield and Lidcombe. The SSFL now shares the Corridor with the Main South Corridor managed by Sydney Trains. At Cabramatta there is a KM adjustment where 28.210 increases to 31.774 and the SSFL now carries ascending kilometrage from the Zero Datum at Sydney Terminal via Strathfield, Lidcombe and Granville. The SSFL finishes when it junctions with the Up Main South via 65B Points Glenlee at 58.092Km.

The Up & Down Mains South carry continuous ascending kilometrage from the Zero Datum at Sydney Terminal via Strathfield, Lidcombe and Granville. The Civil assets on this Corridor commence at the interface boundary with Sydney Trains at 57.956Km at Glenlee and then continue to the VIC border in Albury.

2.11.6   Spirals and Deviations

The conventions applied to a track spirals and deviations, when these occur on corridors with multiple tracks, is unique. As the deviating or spiralling track is of greater length than the track or tracks which follow the normal alignment, a discontinuity of the kilometrage occurs at these locations.

2.11.6.1   Frampton Deviation

The Frampton Deviation is located on the Main South between Cootamundra and Junee. Due to similar circumstances to the situation of the Bethungra spiral, the steepness of the grade in the uphill direction prohibited the Up Main South, which is the uphill track, from being constructed on the same alignment as the Down Main South. Through this location, the Up Main South deviates away from the Down Main South following a gentler grade in order to pass over the crest of the ridge at this location.

The discontinuity in kilometrage due to the Frampton deviation occurs on the Down Main South where the two tracks come back together at the location called Frampton. The two tracks start to deviate at 439.800km and when they re-join the kilometrage on the Down is 442.972km, whilst the kilometrage on the Up is 444.600km. At the junction, the kilometrage of the Up is referred to for both tracks (i.e., 444.600km), thus creating a discontinuity of kilometrage on the Down.

Business Rules:

1. The kilometrage on the Up Main South ascends normally from the point the tracks first deviate at 439.800km to when they re-join at 444.600km.

2. The kilometrage on the Down Main South ascends normally from the point the tracks first deviate at 439.800km to kilometrage 442.972, at this location the kilometrage jumps to 444.600km.

3. Both tracks have their own kilometrage and half kilometrage pegs erected adjacent to them designating these points of reference throughout the deviation.

2.11.6.2   Bethungra Spiral

The spiral at Bethungra is located on the Main South corridor between Cootamundra and Junee. Due to the steepness of the grade as the corridor passes between the Bethungra and Ulandra Ranges, the Up Main South being the uphill track, was unable to be constructed on the same alignment as the Down Main South. In order to achieve an adequate uphill grade on the Up Main South, it was constructed to spiral around a hill and passes over and under not only itself but the Down Main South as well. At one point, there are three "layers" visible along the side of the hill: the uppermost part of the Up Main South, then the Down Main South in the middle, then the lower part of the Up Main South (see Figure 7.3).

Figure 7.3 – Bethungra Track Spiral.

The discontinuity in kilometrage due to the Bethungra spiral occurs on the Up Main South at the bottom of the hill, close to Bethungra township, where the two tracks re-connect. The Up Main South starts to deviate from the Down at the top of the hill at 449.993km and they re-join where the kilometrage on the Down is 454.801km, whilst the kilometrage on the Up is 457.617km. At the junction at the bottom of the hill, the kilometrage of the Down is referred to for both tracks (i.e. 454.801), thus creating a discontinuity of kilometrage on the Up.

Business Rules:

1. The kilometrage on the Down Main South ascends normally from the point the tracks first deviate at 449.993km to when they re-join at 454.801km.

2. The kilometrage on the Up Main South ascends normally from the point the tracks first deviate at 449.993km to kilometrage 454.500km. From 454.500km, kilometrages on the Up are designated as 454+km (i.e. 455km becomes 454+1km, 456km becomes 454+2km and 457km becomes 454+3km).

3. Both tracks have their own kilometrage and half kilometrage pegs erected adjacent to them designating these points of reference throughout the spiral.

4. The km and half km pegs located on the Up Main South beyond 454.500km display the 454+km convention as detailed in point 2 above.

5. The increased track length on the Up Main South is encapsulated utilising a separate Basecode 10048 which has Start Node of 454.500km and End Node of 457.617km.

Note: *Due to the combination of the Frampton Deviation and the Bethungra Spiral, the Up Main South is 4,444 metres longer than the Down Main South between 439.800km and 454.801km.*

2.12 Productive Unit

Individual equipment items are considered to be Productive Units and can be linked via the Productive Unit functionality in Ellipse in order to construct a structured hierarchy of equipment by using the equipment numbers to define parent equipment for other equipment records. This then allows reporting processes based on these structures. Each piece of equipment can be defined as both a parent and a child of other equipment.

In order to facilitate reporting along ARTC management structures, virtual equipment items have been created utilising the equipment class 'Hierarchy' and then the productive unit parent child functionality utilised to link the equipment from the top level "ARTC" down to the items of operational equipment, as shown below:

ARTC

- **Business Unit** (e.g. IS is Interstate Business Unit)

- **Network** (e.g. PBAD is Port Botany (NSW) – Appleton Dock (VIC) Network)

- **Corridor** (e.g. S00 is S00 – Main South Corridor)

- **Line Segment** (e.g. S00TRKABY is 0762 The Rock – Albury Line Segment)

- **Equipment Items** (e.g. S0010050TRSNG2)

2.13 Alternative References

Ellipse contains numerous Alternative Reference fields which could be utilised to describe various aspects of equipment. These reference codes include 'Equipment Type', 'Component Code', 'Category' and 'Classification' to name a few. These Alternate Reference codes are not currently being utilised to describe Track & Civil equipment. This is because these fields are not able to be delimited by either Equipment Class or EGI which means records can be selected from their control tables which may not be relevant to the particular item of equipment being described.

2.14 Nameplates

Nameplates are used to store a variety of engineering characteristics against equipment in Ellipse which allows ARTC to build a more comprehensive dataset for each asset. Nameplates contain a series of controlled and uncontrolled attributes. Nameplate attributes are defined for each EGI and as such the EGI assigned to the asset determines what information needs to be recorded against the asset. Further details regarding the structures of the various Track & Civil Nameplates is contained in work instruction AMT-WI-033.

2.15 Ellipse Data Tables

Valid data to be selected for controlled attributes is contained in a series of data tables in Ellipse. These tables are able to be created and populated by the ARTC system administrator which allows the data used to describe the assets to be customised to suit ARTC's requirements. The contents in these tables can be accessed by utilising the [MSE010] Search Table application.

The following tables will be the most commonly accessed when looking for the correct controlled attribute to apply when describing Track & Civil assets:

Table Code	Table Description
EC	Equipment Class
P1	Plant Code Level 1
P2	Plant Code Level 2
P3	Plant Code Level 3
P4	Plant Code Level 4
P5	Plant Code Level 5
P6	Plant Code Level 6
+BAS	Track Basecode
+BSC	Basecode Nodes
+COR	Corridor
EL	Equipment Location
CO	Component Code
MO	Modifier Codes

Equipment Class has been dealt with earlier, further detail relating to Plant Codes is provided in Section 3.

Tables CO & MO list the equipment component and modifier codes that are utilised when entering defects. Only valid codes will become available depending on the equipment EGI.

Table +BAS lists all valid basecodes available for use in Ellipse.

The 'Table Code' field in this table details the basecode, e.g.:

10006

60000

11811

The 'Description' field in this table details the name of the particular track, e.g.:

10006 = North Coast Single Line

60000 = SA Border to Parkeston

11811 = Branxton Goods Siding Up

The 'Associated Values' field in this table details a string of information relating to the basecode starting with the 3-character Corridor Code, then the start and end kilometrages, displayed in an 8 character format including the decimal point, with leading zeros if the kilometrage is less than 1000 and 3 decimal places (this displays as 4 numbers, decimal point 7 numbers decimal point

then 3 numbers). The string of numbers representing the kilometrages is then followed by the 3-character alpha/numeric codes representing the equipment location at the start and end of the respective track, in the case of 11811 below this is the same (BNX – Branxton NSW). Finally, there is a "Y" or "N" which represents whether that basecode forms part of the network model in the Decision Support Platform (Yes or No) e.g.:

> 10006 = N510194.9200875.480TLHBLPY
>
> 60000 = W011050.9651780.600W06W17Y
>
> 11811 = N000215.6460215.884BNXBNXN

Table +BSC also lists the basecode in the Table Code' field however doesn't provide the track name in the 'Description' field but utilises this field to provide a more user-friendly representation of the start and end nodes for the basecodes. The 'Associated Values' field is not utilised. The string of information again starts with the Corridor Code, this is followed by the start location name (not code), the start kilometrage, the end location and kilometrage. The various data is separated by hash tags, the kilometrages don't use leading zeros nor 3 decimals places and if the end location is the same as the start it is not repeated but the word "SAME" is used e.g.:

> 10006 = N51#TELARAH#194.92#BORDER LOOP#875.48
>
> 60000 = W01#DEAKIN#1050.97#PARKESTON#1780.6
>
> 11811 = N00#BRANXTON#215.65#SAME#215.88

Note: **As the master basecode database is controlled by Transport NSW, the +BAS & +BSC tables also list tracks that are not part of ARTC jurisdiction**

Table +COR lists the various corridor codes that are used to describe the ARTC network e.g.:

> N51 = North Coast
>
> W01 = SA Border to Kalgoorlie

Table EL contains the equipment location codes, e.g.:

> TLH = Telarah
>
> W06 = Deakin
>
> GODW2 = Goddards WA to Zanthus WA

3 Equipment Reference

3.1 Equipment Reference Overview

The ARTC Equipment Reference, also known colloquially as the Plant Number, is a form of unique identifier for equipment in Ellipse. It is more useful as a unique identifier to maintenance staff then a system generated number as it provides certain key information that helps describe the item of equipment. It is derived by linking the data stored in the 'Plant Code' attribute tables. There can be up to 6 levels of Plant Codes of 10 characters each utilised to create an Equipment Reference with a maximum of 30 characters.

The Equipment Class determines the specific Equipment Reference data required for the asset as well as the structure in which the Equipment Reference is created. As such the codes within the Controlled Attribute Plant Code Tables are always prefixed by the 2-digit equipment code (e.g. TR for track & TO for turnout etc.). This means the tables contain a level of duplication which can make working with them and exporting the data to excel cumbersome and time consuming.

It is therefore recommended that the Plant Code tables be avoided when searching for specific attributes relating to assets but to source the information from other tables. For instance, utilise the +BAS or + BSC tables to look up basecodes rather than Plant Code Level 2.

3.2 Plant Code Level 1

For most assets Plant Code Level 1 is a controlled attribute utilised to describe the designated Corridor to which the asset belongs.

This field is the 3-character ANN code representing the corridor, e.g. S00 = Main South (Sefton Jct. to Albury), N51 = North Coast (Telarah to Acacia Ridge), V02 = VIC NE (Tottenham to NSW Border) & W01 = SA Border to Kalgoorlie.

For PU Line Segments this field is a 9-character amalgamation of the 3 character codes for the Corridor, Equipment Location at the segment start and Equipment Location at the segment end, e.g. S00JUNTRK = Main South 0761 Junee – The Rock. Line Segments do not contain any information in the Equipment Reference past Plant Code Level 1.

For Buildings and Facilities, the 3-character code representing the Equipment Location is utilised in this field, e.g. CSO = Casino NSW & S71 = Mile End SA.

3.3 Plant Code Level 2

For most assets Plant Code Level 2 is a 5-character controlled attribute utilised to designate the basecode to which the asset belongs.

Where there are discrete assets which cross multiple lines with more than 1 Main Line tracks, e.g. level crossings or culverts, the Basecode that is utilised is that for the Main furthest to the left hand side when facing in the direction of ascending kilometrage.

When the asset crosses a Single Main as well as Passing Lanes, Loops or Sidings, the Main Line Basecode is used, no matter its position relative to the other tracks.

For turnouts the basecode for the through road is utilised.

For Buildings and Facilities, a 10-character uncontrolled attribute representing the building name is utilised. Buildings and Facilities do not contain any information in the Equipment Reference past Plant Code Level 2.

3.4   Plant Code Level 3

For most assets Plant Code Level 3 is an 8-character uncontrolled attribute. It contains a track kilometrage reference in the format "NNNN.NNN". When the kilometrage is less than 1000.000km the first whole number is to be preceded by zeros. When the kilometrage is less than 1.000km then the decimal point is also preceded by a zero.

For discrete assets this is the designated kilometrage for that asset as determined by the asset KM conventions (e.g. nose of points for turnouts & road centre line for level crossings etc.).

For Sub Surface Drainage assets this field represents the start kilometrage of the asset (KMs From).

For Right of Way and Track assets the 2 Character controlled attribute Plant Function code is displayed in this field (see table in section 3.5 below for details of Function codes).

3.5   Plant Code Level 4

For most assets Plant Code Level 4 is a controlled 2-character attribute utilised to further describe groups of assets within an Equipment Class which have distinct differences in function. For instance, EC Turnout contains functional types Turnout, Diamond and Catchpoints and EC Level Crossing function differentiates whether the crossing is signalled or un-signalled and whether it is a road or pedestrian crossing.

For Right of Way and Track assets the 4-character controlled attribute Track code is displayed in this field (further information regards the purpose of this code are detailed in 3.6 below).

Airstrip, Level Crossing Site, Permanent Sign, Right of Way, Turnout Site and Track assets do not contain any information in the Equipment Reference past Plant Code Level 4.

The Plant Function codes commonly utilised with Track & Civil assets are as detailed in the table below:

Equipment Class Code	Equipment Class Description	Plant Function Code	Plant Function Description
AS	Airstrip	AS	Airstrip
DG	Sub-Surface Drainage	CN	Culvert Non-Track
DG	Sub-Surface Drainage	VS	Small Culvert
DG	Sub-Surface Drainage	DG	Sub-Surface Drainage
IJ	Track Insulated Joint	DR	DN Rail
IJ	Track Insulated Joint	UR	UP Rail
LC	Level Crossing	PS	Pedestrian Signalled
LC	Level Crossing	PT	Private
LC	Level Crossing	PU	Pedestrian Unsignalled
LC	Level Crossing	RS	Roadway Signalled
LC	Level Crossing	RU	Roadway Unsignalled
LC	Level Crossing	SL	Service Level Xing
LC	Level Crossing	TF	Take-Off

Equipment Class Code	Equipment Class Description	Plant Function Code	Plant Function Description
LS	Level Crossing Site	LS	Level Crossing Site
PS	Permanent Sign	PS	Permanent Sign
RL	Rail Lubricator	DR	DN Rail
RL	Rail Lubricator	UR	UP Rail
RW	Right of Way	DS	DN Side
RW	Right of Way	US	UP Side
RW	Right of Way	RW	Right of Way
ST	Station	PL	Platform
ST	Station	ST	Station
TO	Turnout	CP	Catch Point
TO	Turnout	DE	Derailer
TO	Turnout	DI	Diamond
TO	Turnout	TO	Turnout
TR	Track	LP	Loop
TR	Track	SD	Siding
TR	Track	TR	Track
TR	Track	YD	Yard
TR	Track	XO	Crossover
TS	Turnout Site	XO	Crossover Site
TS	Turnout Site	TO	Turnout Site
TS	Turnout Site	GO	Gauge Grade Crossing Site

The following Plant Function Codes are for Miscellaneous Structures which may have shared maintenance functions between Track & Civil and Structures and therefore may have a Structures EGI applied so care needs to be taken when dealing with these assets to ensure the appropriate data guidelines are followed.

Equipment Class Code	Equipment Class Description	Plant Function Code	Plant Function Description
MS	Miscellaneous Structure	AS	Ash Stop
MS	Miscellaneous Structure	AW	Access (e.g. Stairs, Walkways)
MS	Miscellaneous Structure	BS	Buffer Stop (incl. Stop Block)
MS	Miscellaneous Structure	CG	Cattle Grid
MS	Miscellaneous Structure	CL	Coal Loader
MS	Miscellaneous Structure	CM	Communications Tower
MS	Miscellaneous Structure	CN	Culvert Non-Track
MS	Miscellaneous Structure	CR	Coal Unloader
MS	Miscellaneous Structure	CS	Cattle Stop (Pit)
MS	Miscellaneous Structure	CT	Communications Tower
MS	Miscellaneous Structure	FG	Flood Gate
MS	Miscellaneous Structure	FP	Flushing Points
MS	Miscellaneous Structure	GC	Gantry Crane
MS	Miscellaneous Structure	GY	Gantry
MS	Miscellaneous Structure	LD	Loading Dock/Platform
MS	Miscellaneous Structure	LG	Lighting Gantry
MS	Miscellaneous Structure	LS	Loading Structure
MS	Miscellaneous Structure	LT	Light Tower
MS	Miscellaneous Structure	OT	Other Misc. Str. (e.g. Crane, Water Tank)
MS	Miscellaneous Structure	OX	Service Crossing (Overhead)
MS	Miscellaneous Structure	PF	Fuelling Points
MS	Miscellaneous Structure	PI	Inspection Pit
MS	Miscellaneous Structure	PW	Platform Wall
MS	Miscellaneous Structure	RD	Retension Dam
MS	Miscellaneous Structure	SB	Sand Box
MS	Miscellaneous Structure	SK	Sound Barrier (incl. Fencing)
MS	Miscellaneous Structure	SO	Silo Stage
MS	Miscellaneous Structure	SR	Sound Barrier
MS	Miscellaneous Structure	SW	Water Structures
MS	Miscellaneous Structure	SX	Service Under Crossing

Equipment Class Code	Equipment Class Description	Plant Function Code	Plant Function Description
MS	Miscellaneous Structure	SY	Stockyards
MS	Miscellaneous Structure	TT	Turntable
MS	Miscellaneous Structure	UP	Pedestrian Undercrossing
MS	Miscellaneous Structure	VO	Flood Structure
MS	Miscellaneous Structure	WB	Weighbridge
MS	Miscellaneous Structure	WR	Retaining Wall
MS	Miscellaneous Structure	WS	Water Spout
MS	Miscellaneous Structure	WT	Water Tower
MS	Miscellaneous Structure	WW	Walkway

3.6   Plant Code Level 5

For most assets Plant Code Level 5 is a controlled 4-character attribute. It is utilised to designate the type of track to which the asset belongs. It is not intended to be utilised to designate the actual track itself but to be more of at a higher-level descriptor to distinguish between Mains on multiple tracks, Loops, Sidings, Yards etc. Where non-track assets cross multiple lines then either "ALLT – All tracks" or "YARD – Yard" are applied depending on the circumstances.

For turnout assets this code is utilised to differentiate between Main line, Loop and Siding as there is a different frequency of inspections relative to these assets being located on these types of tracks so this field then can be utilised to filter and check the appropriate frequencies are being observed. This is also the case for Crossovers however in their case the two tracks involved may not both be the same type in which case the crossover is allotted the higher level e.g. a crossover from a main to a loop will be allotted 'MAIN' and a loop to a siding 'LOOP'.

For Station assets the controlled 3-character Equipment Location Code is defined in this level.

For Service Crossing assets this contains a maximum 12-character description relating to the crossing.

3.7   Plant Code Level 6

Plant Code Level 6 is an uncontrolled attribute and is only utilised globally in the Equipment Reference for Turnout and Rail Lubricator Track & Civil assets and for defined Sub Surface Drainage assets.

For turnouts it is used to input the points number, for non-interlocked points the term "NIPS" is utilised.

For rail lubricators it is used to describe which rail the lubricator is attached to (U or D) and the number of reservoirs attached at the location.

For Sub Surface Drainage assets that run parallel to the track or in the case of certain complex yard or station drainage systems that span a significant length of track, this field represents the end kilometrage of the asset (KMs To).

3.8 Track & Civil Equipment Reference Structures

ORDER	FIELD NAME	SIZE	MANDATORY
Track Segment			
1	SEGMENT	9	Y
Turnout Sites			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS	8	Y
4	FUNCTION	2	Y
5	POINTS NO.	8	N
Level Crossing Sites			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS	8	Y
4	FUNCTION	2	Y
Airstrip			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS	8	Y
4	FUNCTION	2	Y
5	NAME	10	Y
Buildings/Facilities			
1	CORRIDOR	4	Y
2	NAME	10	Y
Insulated Joint			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS	8	Y
4	FUNCTION	2	Y
5	TRACK	4	Y
Level Crossing			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS	8	Y
4	FUNCTION	2	Y
5	TRACK	4	Y

ORDER	FIELD NAME	SIZE	MANDATORY
Permanent Sign			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS	8	Y
4	FUNCTION	2	Y
Rail Lubricator			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS	8	Y
4	FUNCTION	2	Y
5	TRACK	4	Y
6	SIDE/No.	3	Y
Right of Way			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	FUNCTION	2	Y
4	TRACK	4	Y
Station			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS	8	Y
4	FUNCTION	2	Y
5	STATION	3	Y
Sub-Surface Drainage			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS From	8	Y
4	FUNCTION	2	Y
5	TRACK	4	Y
6	KMS To	8	N
Turnout			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	KMS	8	Y
4	FUNCTION	2	Y

ORDER	FIELD NAME	SIZE	MANDATORY
5	TRACK	4	Y
6	POINTS NO.	8	N
Track			
1	CORRIDOR	3	Y
2	BASECODE	5	Y
3	FUNCTION	2	Y
4	TRACK	4	Y

4 Equipment Description Text Fields

4.1 Equipment Description 1 - Overview

Item Name 1 Description is a text field that displays relevant information to describe the asset. Information entered in this field always starts with what the asset is followed by where it is. Depending on what asset is being described this means this field may start with either the equipment class or plant function description, or codes if greater detail requirements are imposing character length restrictions. The class or function information is then followed by either the equipment location description, the track or corridor name.

This field contains a maximum of 40 characters including spaces. All text displayed in this field is always in upper case.
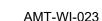
4.2 Equipment Description 2 - Overview

Item Name 2 description is a text field that displays relevant information to describe the asset.

This field contains a maximum of 40 characters including spaces. All text displayed in this field is always in upper case.

If the kilometrage of an asset is provided in this field, it is always to be displayed in the first 8 characters in the format "NNNN.NNN". When the kilometrage is less than 1000.000km the first whole number is to be preceded by zeros. When the kilometrage is less than 1.000km then the decimal point is also preceded by a zero.

For discrete non-lineal assets excluding turnouts the kilometrage will be followed by a corridor segment description as per the table below in order to provide a cut down grouping for assets on very long corridors.

Corridor	Segment	Km From	Km To
A00	MILE END - SA/VIC BORDER	3.400	313.290
A01	MILE END - CRYSTAL BROOK	0.000	197.136
A01	CRYSTAL BROOK - ZERO COONAMIA	0.000	23.701
A01	ZERO COONAMIA - PORT AUGUSTA	0.000	92.793
A01	PT AUGUSTA - TARCOOLA	92.793	505.435
A01	TARCOOLA - COOK	505.435	916.521
A01	COOK - SA/WA BORDER	916.521	1050.965
A01	SA/WA BORDER - KALGOORLIE	1050.965	1780.600
A02	TARCOOLA - A.P. INTERFACE	503.327	510.850
A05	CRYSTAL BROOK - SA/NSW BORDER	23.701	346.014
A05	SA/NSW BORDER - BROKEN HILL	346.014	392.200
A06	PORT AUGUSTA - WHYALLA	95.294	163.500
M50	PORT BOTANY - MASCOT	6.620	12.610
M50	MASCOT - MARRICKVILLE	12.610	16.472
M52	MARRICKVILLE - CHULLORA JCT	6.371	17.083

Corridor	Segment	Km From	Km To
M52	CHULLORA JCT - FLEMINGTON	17.083	18.909
M66	CHULLORA JCT - REGENTS PARK	17.083	22.304
N00	WOODVILLE JCT - SANDGATE	163.920	170.201
N00	SANDGATE - MAITLAND	170.201	192.820
N00	MAITLAND - MUSWELLBROOK	192.820	289.010
N00	MUSWELLBROOK - WERRIS CREEK	289.010	411.201
N40	MUSWELLBROOK - SANDY HOLLOW	288.616	331.212
N40	SANDY HOLLOW - GULGONG	331.212	460.114
N51	TELARAH - CRAVEN NORTH	194.920	291.810
N51	CRAVEN NORTH - KUNDABUNG	291.810	486.827
N51	KUNDABUNG - LAWRENCE ROAD	486.827	739.620
N51	LAWRENCE ROAD - NSW/QLD BORDER	739.620	875.980
N51	NSW/QLD BORDER - ACACIA RIDGE	875.980	971.136
N70	BINNAWAY - THE GAP	458.235	599.974
N73	WERRIS CREEK - TURRAWAN	410.711	547.600
N73	TURRAWAN - CAMURRA	547.600	679.040
N85	CAMURRA - NORTH STAR	677.029	760.400
S00	REGENTS PARK - MACARTHUR	20.660	57.965
S00	MACARTHUR - MOSS VALE	57.965	146.728
S00	MOSS VALE - JOPPA JCT	146.728	230.545
S00	JOPPA JCT - COOTAMUNDRA	230.545	430.144
S00	COOTAMUNDRA - JUNEE	430.144	486.008
S00	JUNEE - NSW/VIC BORDER	486.008	648.433
S34	UNANDERRA - MOSS VALE	91.080	150.600
S70	COOTAMUNDRA - STOCKINBINGAL	428.224	454.906
V00	MOONEE POND - TOTTENHAM	2.056	10.625
V01	TOTTENHAM - NEWPORT	10.484	17.250
V01	NEWPORT - NORTH GEELONG	10.710	77.370
V01	NORTH GEELONG - VITE VITE	77.370	189.089
V01	VITE VITE - MAROONA	189.089	244.938
V01	MAROONA - ARARAT	244.938	265.344
V01	ARARAT - PYRENEES	265.000	269.000
V01	PYRENEES - VIC/SA BORDER	215.000	463.610
V02	TOTTENHAM - JACANA KM ADJUST	10.625	26.976

Corridor	Segment	Km From	Km To
V02	JACANA KM ADJUST - SEYMOUR	16.000	99.809
V02	SEYMOUR - VIC/NSW BORDER	99.809	302.702
V03	APPLETON DOCK - TOTTENHAM	0.000	10.625
V05	MAROONA - PORTLAND	232.094	405.000
V06	BENALLA - YARRAWONGA	194.970	260.267
V06	YARRAWONGA - OAKLANDS	260.267	320.880
W00	DUBBO - NARROMINE	460.810	497.790
W20	GOOBANG JCT - IVANHOE	446.950	818.271
W20	IVANHOE - BROKEN HILL	818.271	1126.640
W33	GOOBANG JCT - NARROMINE	447.521	556.912
W34	STOCKINBINGAL - WIRRINYA	454.729	555.500
W34	WIRRINYA - GOOBANG JCT	555.500	628.340
W50	GULGONG - MERRYGOEN	340.270	417.453
W50	MERRYGOEN - BINNAWAY	417.453	459.204
W60	DUBBO - TROY JCT	461.577	466.020
W60	TROY JCT - MERRYGOEN	466.020	562.320

4.3 Conventions for Track & Civil Equipment Description Fields 1 & 2

4.3.1 Level Crossing Site

4.3.1.1 Level Crossing Site - Description 1

This field will begin with SITE LXING followed by the location of the crossing and then the road/street name. E.g.

SITE LXING BRIDGEWATER YATINA RD

SITE LXING MILAN TERRACE KAIN AVE

SITE LXING MT LOFTY CAREY GULLY RD

4.3.1.2 Level Crossing Site - Description 2

This field will detail the 8-digit kilometrage followed by Corridor segment description as detailed in the table in 4.2 above. E.g.

0035.555 MILE END - SA/VIC BORDER

0036.313 MILE END - SA/VIC BORDER

0037.161 MILE END - SA/VIC BORDER

4.3.2 Turnout Site

4.3.2.1 Turnout Site - Description 1

This field will begin with 'SITE TO' followed by the location. E.g.

> SITE TO COOTAMUNDRA
>
> SITE TO BETHUNGRA
>
> SITE TO DARNICK
>
> SITE TO MAITLAND

4.3.2.2 Turnout Site - Description 2

This field will detail the 8-digit kilometrage of the turnout with the lowest KM and the points number. As there may be more than one turnout involved then the designated ends (A,B,C etc) are not detailed for the sites. If the site contains motorised points, then the number is followed by "POINTS" whereas "FRAME" is detailed for ground frames. E.g.

> 0225.506 114 POINTS
>
> 0224.743 R FRAME

4.3.3 Level Crossing

4.3.3.1 Level Crossing - Description 1

This field will begin with LXING followed by the type of Level Crossing as determined by the Plant Function Code utilising the abbreviations listed in the table below. The crossing type will be followed by the location and the road/street or crossing name if known.

Plant Function Code	Abbreviated Description	Description
RS	RD SIG	Public Road Signalled Level Crossing
RU	RD UNSIG	Public Road Passive Unsignalled Level Crossing
PS	PED SIG	Public Pedestrian Signalled Level Crossing
PU	PED UNSIG	Public Pedestrian Passive Unsignalled Level Crossing
PT	PRIVATE	Private Level Crossing – Passive, Passive with supplementary lights or Signalled
SL	SERVICE	Access for ARTC purpose only
TF	TAKE OFF	Hi Rail Vehicle take off

For example:

> LXING PED UNSIG COOTAMUNDRA COWCUMBLA ST
>
> LXING RD SIG COOTAMUNDRA COWCUMBLA ST
>
> LXING SERVICE COOTAMUNDRA
>
> LXING PRIVATE COOTAMUNDRA MCPHAIL

For Un-signalled Road Level Crossings whether the road traffic is to stop or give way is to be indicated by inserting either STOP or GWAY before the location. E.g.

LXING RD UNSIG STOP MURDO BERRYBANK RD

LXING RD UNSIG GWAY VITE VITE BROOKS RD

4.3.3.2 Level Crossing - Description 2

This field will detail the 8-digit kilometrage followed by Corridor segment description as detailed in the table in 4.2 above. E.g.

0239.242 SEYMOUR - VIC/NSW BORDER

0234.224 MAROONA - PORTLAND

4.3.4 Turnout

4.3.4.1 Turnout - Description 1

This field will begin with TO, CP, DE or DI representing the Plant Function (Turnout, Catchpoint, Derailer or Diamond) followed by the location. E.g.

TO COOTAMUNDRA

CP BETHUNGRA

DE DARNICK

DI MAITLAND

If the asset is a turnout which forms either end of a crossover "XO" is displayed following the location, this is preceded by "EM" for emergency crossovers. E.g.

TO ALBURY XO

TO TOWRANG EM XO

If the asset is a turnout that is configured with a swingnose crossing this is detailed by the inclusion of "(SNX)". E.g.

TO WHITTINGHAM XO (SNX)

TO SINGLETON XO (SNX)

If the asset is a turnout that is the start or end node of a corridor this information is displayed in this field. E.g.

TO BOGAN GATE START W32

TO JUNEE XO END DOUBLE START SINGLE

TO STOCKINBINGAL START W34

TO TROY JCT START W60

TO MUSWELLBROOK END UP START SINGLE N00

TO MUSWELLBROOK END DN N00 START N40

If the asset is a turnout that forms the junction between two corridors which do not have the same kilometrage at that point, then the turnout has dual kilometrage. In this instance the kilometrage of the through road is allocated to the turnout in the discrete kilometrage field as well as the EQUIPMENT REFERENCE, the dual kilometrage is displayed in this field. E.g.

TO NARROMINE END W33 556.912 VIA W33

TO MERRYGOEN XO 417.521 VIA W50

TO MOSS VALE END S34 150.600 VIA S34

TO DRY CREEK ZERO KM VIA A07 BRANCH

TO CRYSTAL BROOK 197.225 VIA DRY CREEK

If the asset is a diamond that is formed by tracks of different gauges crossing one another then the location in this field is followed by "MIXED GAUGE". E.g.

DI WARATAH

DI SCHOLEY STREET

DI TOTTENHAM JCT MIXED GAUGE

DI KILMORE EAST MIXED GAUGE

4.3.4.2   Turnout - Description 2

For turnouts this field will detail the 8-digit kilometrage followed by the tracks the turnout goes from and to. The tracks from/to always details the through road first and are separated by a dash, this is followed by the number of the points (in the case of non-interlocked points, which don't have a points number, the abbreviation "NIPS" is utilised). E.g.

0225.506 DEPART RD-DN MAIN 114C PTS

0224.699 NO3 CAR-NO4 CAR NIPS

0224.743 NO1 CAR-DN MAIN 2RA PTS

Note: *In SA "Yard Plans and Component Identification" maps are provided on the ARTC Connect site under "Our Network, Network Maps, Operational System Maps" which provide sequential numbering for turnouts in a blue box preceded by an "L" for lead. These numbers are detailed after the points number as provided in the NIBs manuals separated by a forward slash.*

E.g.

0013.005 LOOP-MAIN 42/L104 PTS

0031.790 LOOP-SIDG 11/L2 PTS

If the asset is a diamond, the points number is followed by "DIAMOND", and in the case of mixed gauge diamonds the standard gauge track is detailed first. E.g.

0166.161 DN COAL 124 PTS DIAMOND

0165.074 ISJ ARR-PWY DEP 95 PTS DIAMOND
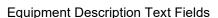
0017.130 MAIN V01-BG1 17U PTS DIAMOND

0065.720 MAIN V02-BG 22 PTS DIAMOND

If the asset is a catchpoint (or derailer) then the kilometrage is followed by the track name upon which it is located, then the points number. E.g.

0475.633 LOOP 48B PTS

0014.810 UP BOTANY LINE 783C PTS

0922.466 SIDG 3AA PTS

4.3.5 Track

4.3.5.1 Track - Description 1

For running line track assets, including all main lines, branch lines, fork legs between mains at triangles and passing lanes, this field will begin with "MAIN". This will be followed by the track designation e.g. UP, DN, SNGL and then either the location from/to separated by a hyphen for the longer continuous assets or the location for forks and passing lanes etc. E.g.

> MAIN DN METRO GOODS M'VILLE-FLEMINGTON
>
> MAIN SSFL CHULLORA WEST-SEFTON JCT
>
> MAIN PORT WARATAH DEPARTURE
>
> MAIN DN COAL SCHOLEY ST JCT-HEXHAM
>
> MAIN NTH FORK CHULLORA WEST-NTH JCT
>
> MAIN SNGL PYRENEES-SERVICETON (SA BORDER)
>
> MAIN SSFL CHULLORA WEST-SEFTON JCT
>
> MAIN UP BETHUNGRA SPIRAL
>
> MAIN PASSING LANE DONNYBROOK

For track assets designated as loops, refuges or sidings where the permissible speed is greater than 25kp/h, this field will begin with "LOOP". This will be followed by the location name where the loop is located and then the track name if it is not designated as a loop. E.g.

> LOOP GLENFIELD
>
> LOOP MOSS VALE DN REFGE & INSPECTION RD
>
> LOOP GOULBURN UP REFUGE
>
> LOOP COOTAMUNDRA PLATFORM RD

For track assets designated as loops, refuges or sidings where the permissible speed is 25kp/h or less, this field will begin with "SIDG" followed by the location name where it is located and then the track name. E.g.

> SIDG PICTON UP GOODS
>
> SIDG MITTAGONG DOWN REFUGE
>
> SIDG MITTAGONG UP PERWAY

For crossovers this field will begin with "XOVR" followed by the location name where it is located and then the points number. E.g.

> XOVR THORNTON 108 POINTS
>
> XOVR COONAMIA 7 POINTS
>
> XOVR DUBBO J FRAME

For track assets in areas like inner Melbourne where a lot of variations in gauge are present on adjacent and/or connecting tracks then a 2-character designation for gauge type is utilised after the initial 4 character designation for the track type. "SG" for Standard Gauge, "BG" for Broad Gauge, "NG" for Narrow Gauge, "DG" for Dual Gauge and "MG" for Mixed Gauge. The mixed gauge designation is utilised for track assets that contain a portion of a single gauge type (either Standard, Broad or Narrow) and some Dual Gauge. The limits of the gauge variations for mixed

gauge tracks are detailed as Track Features/Associated Equipment Items linked to the relevant track equipment. E.g.

    MAIN MG MOONEE PONDS JCT-TOTTENHAM JCT

    LOOP DG ANAKIE RD

    MAIN BG TULLAMARINE-BROADMEADOWS

    MAIN SG SNGL JACANA-CRAIGIEBURN (INCL)

4.3.5.2   Track - Description 2

For running line track assets, including all main lines, branch lines, fork legs between mains at triangles and passing lanes, this field will detail the start and end nodes for the track asset as well as their kilometrage which will be contained in brackets be to 3 decimal places and not have leading zeros. The start and end nodes may be turnouts in which case the point number is detailed, an interface boundary to another maintainer, a boundary between PC's or corridors or locations where kilometrage changes occur so the abbreviation "B'DRY" is utilised after an indication of the type of boundary. "KM ADJUST" indicates locations where the track continuity is impacted by kilometrage changes where the variation is from a greater to lower kilometrage. E.g.

    1120BPTS (96.893) TO 131B PTS (150.600)

    3CB PTS (579.845) TO IF B'DRY (582.500)

    104A PTS(428.244) TO KFC B'DRY(431.300)

    NSS B'DRY(431.300) TO CRN BDRY(454.906)

    17U PTS (17.242) TO KM ADJUST (10.484)

    KM ADJUST (10.710) TO KM ADJUST (69.000)

    PC B'DRY (170.748) TO 187 KM POST

    BORDER (1050.965) TO IF B'DRY (1780.600)

    38/L129 PTS TO MAC/KFC B'DRY (196.030)

For track assets designated as loops, refuges or sidings where the permissible speed is greater than 25kp/h, this field will detail the start and end nodes for the track asset as well as their kilometrage contained in brackets in the same manner as the running lines. The start and end nodes for these assets however will mostly be turnouts and very rarely be for boundaries nor kilometrage changes. A notable exception being Pyrenees Loop near Ararat on the VIC South Line which has a KM change in the middle of it. E.g.

    7/L5 PTS (30.682) TO 20/L8 PTS (31.504)

    106 PTS (176.198) TO 107 PTS (177.918)

    KM ADJUST (215.000) TO 27 PTS (215.752)

For track assets designated as loops, refuges or sidings where the permissible speed is 25kp/h or less, this field will be the same as for running lines and loops accept one of the nodes may be a stop block or buffer stop. Further due to the fact that a lot of NIPS may be encountered at the same Km then the equipment number is sometimes utilised in place of the points kilometrage. E.g.

    11/L10PTS(210.210) TO 12/L11PTS(210.928)

    IF B'DRY 0145.555 TO 3DB PTS(EQ 500974)

    2DAPTS(EQ 36776) TO STOP BLOCK (162.842)

For crossovers this field details the start and end points numbers and their kilometrage contained in brackets. E.g.

108A PTS (183.408) TO 108B PTS (183.476)

7A/L1 PTS (0.150) TO 7B/L2 PTS (0.238)

2JA PTS (463.340) TO 2JB PTS (463.450)

4.3.6   Right of Way

4.3.6.1   Right of Way - Description 1

This field will begin with ROW followed by the location from/to separated by a hyphen. E.g.

ROW Werris Creek-Gap

ROW Junee-The Rock

4.3.6.2   Right of Way - Description 2

This field will detail the 8-digit from and to kilometrages separated by "TO". E.g.

0410.708 TO 0416.025

0486.008 TO 0551.448

4.3.7   Insulated Joint

4.3.7.1   Insulated Joint - Description 1

This field will begin with either "GIJ" or "MIJ" depending upon whether the insulated joint type is glued or mechanical. This is followed by the 4-character Plant 'TRACK' code from the EQUIPMENT REFERENCE followed by "UP RAIL" or "DN RAIL" and the equipment locality will be detailed within the final 20 characters.   E.g.

GIJ MAIN UP RAIL GLADSTONE

MIJ DEP2 DN RAIL BOTANY

4.3.7.2   Insulated Joint - Description 2

This field will detail the 8-digit kilometrage followed by Corridor segment description as detailed in the table in 4.2 above. E.g.

0043.857 CRYSTAL BROOK-SA/NSW BORDER

0006.620 PORT BOTANY-MASCOT

4.3.8   Rail Lubricator

4.3.8.1   Rail Lubricator - Description 1

This field will begin with "RAIL LUB" followed by "UP RAIL", "DN RAIL" or "BOTH RAIL" and the pump type. E.g.
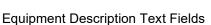
RAIL LUB DN RAIL PUMP-TYPE M4

RAIL LUB BOTH RAIL IV T.O.R.

4.3.8.2   Rail Lubricator - Description 2

This field will detail the 8-digit kilometrage followed by Corridor segment description as detailed in the table in 4.2 above. E.g.

0467.140 CRAVEN NORTH-KUNDABUNG

4.3.9 Airstrip

4.3.9.1 Airstrip - Description 1

This field will begin with AIRSTRIP followed by the Equipment Location description. E.g.

AIRSTRIP HUGHES

AIRSTRIP REID

4.3.9.2 Airstrip - Description 2

This field will detail the 8-digit kilometrage followed by Corridor segment description as detailed in the table in 4.2 above. E.g.

1001.117 TARCOOLA-WA BORDER

1106.000 SA BORDER-KALGOORLIE

4.3.10 Tunnel

4.3.10.1 Tunnel – Description 1

This field will begin with TUNNEL followed by the tunnel name or location. E.g.

TUNNEL BOWRAL (GIB)

TUNNEL BETHUNGRA SPIRAL NO1

TUNNEL BETHUNGRA SPIRAL NO2

TUNNEL DOMBARTON SNOW SHUTE

4.3.10.2 Tunnel - Description 2

This field will detail the 8-digit kilometrage followed by Corridor segment description as detailed in the table in 4.2 above. E.g.

0134.620 MACARTHUR - MOSS VALE

0454.028 COOTAMUNDRA - JUNEE

0455.854 COOTAMUNDRA - JUNEE

0098.947 UNANDERRA - MOSS VALE

4.3.11 Permanent Signs

4.3.11.1 Permanent Signs - Description 1

For Permanent Signs this field starts with the type of sign, as there is a consistency across the entire ARTC network as to certain types of signage, the standard sign types to be utilised are listed in the table below. Some signs however contain site specific information or instructions to train drivers relating to Safeworking changes etc., in these instances the word "SIGN" is used at the start of this field.

Sign Type	Sign Purpose
CLEARANCE POINT	Advise when train is clear
FOULING POINT	Point beyond which train will foul adjacent track
LANDMARK	Advise of interlocking ahead – in place of distant signal
LOCATIONBOARD	Advise of interlocking ahead – includes distance
PREDICTOR	Advise of level crossing predictor circuit
SHUNT LIMIT	Marks limit of shunting outside interlocking
SIGN	Any advisory sign not covered by standard types
STOPBOARD	Warn drivers to stop
WHISTLEBOARD	Driver to sound horn – mostly for level crossings
YARD LIMIT	Limit of signalled authority for an interlocking area

For advisory signs like whistle boards and level crossing predictor circuit boards on single or bi-directional lines, sign type will be followed the direction of travel for trains facing the board, e.g., for a train travelling from Keswick to Crystal Brook "TO CRYSTAL BROOK" would be utilised.

For advisory signs like landmarks, catchpoint, derail and limit boards etc. that relate to a specific interlocking area, the equipment location for that interlocking will be included after the sign type. E.g.

WHISTLEBOARD TO NSW BORDER

WHISTLEBOARD TO OAKLANDS

SIGN BEGIN TOW

STOPBOARD

SIGN DO NOT PROCEED

LANDMARK DUBBO MITCHELL HWY

YARD LIMIT

4.3.11.2 Permanent Signs - Description 2

This field will detail the 8-digit kilometrage followed by Corridor segment description as detailed in the table in 4.2 above. E.g.

0321.310 YARRAWONGA-OAKLANDS

0321.310 YARRAWONGA-OAKLANDS

0465.105 DUBBO-NARROMINE

4.3.12　Drainage Systems – EGI DGSCU1 – Small Culvert/Pipe (Under Track)

4.3.12.1　DGSCU1 – Small Culvert/Pipe (Under Track) - Description 1

For small culverts under track this field starts with "CULVT", followed by the type of culvert "PIPE" or "BOX" and then the material it is made from "STEEL" "CONC" or "MASRY".　E.g.

CULVT PIPE STEEL

CULVT PIPE CONC

CULVT BOX CONC

CULVT BOX MASRY

4.3.12.2　DGSCU1 – Small Culvert/Pipe (Under Track) - Description 2

This field will detail the 8-digit kilometrage followed by Corridor segment description as detailed in the table in 4.2 above.　E.g.

0321.310 YARRAWONGA-OAKLANDS

0321.310 YARRAWONGA-OAKLANDS

0465.105 DUBBO-NARROMINE

4.3.13　Drainage Systems – EGI DGSCU2 – Small Culvert/Pipe (Off Track)

4.3.13.1　DGSCU2 – Small Culvert/Pipe (Off Track) - Description 1

For small culverts off track this field starts with "CULVT", followed by the type of culvert "PIPE", "OPEN" or "BOX", followed by the material it is made from "STEEL" "CONC" or "MASRY" and then where the culvert/pipe/drain is located relative to the track.　E.g.

CULVT PIPE STEEL UP LXING

CULVT PIPE CONC DN CESS

CULVT PIPE CONC 6 FOOT

CULVT OPEN CONC DN TOP DRAIN

4.3.13.1.1　DGSCU2 – Small Culvert/Pipe (Off Track) - Description 2

This field will detail the 8-digit kilometrage followed by Corridor segment description as detailed in the table in 4.2 above.　E.g.

0321.310 YARRAWONGA-OAKLANDS

0321.310 YARRAWONGA-OAKLANDS

0465.105 DUBBO-NARROMINE

4.3.14   Drainage Systems – EGI DGSYS1 – Drainage System

4.3.14.1   DGSYS1 – Drainage System - Description 1

For subsurface drainage systems this field will begin with the "DGSYS", followed by the location and then the from and to kilometrages to 3 decimal places without leading zeros. E.g.

DGSYS BRANXTON 215.180 TO 215.500

DGSYS GUNNEDAH 475.490 TO 476.300

DGSYS NEWDELL JCT 262.263 TO 262.350

DGSYS MAITLAND 192.459 TO 192.624

4.3.14.2 DGSYS1 – Drainage System - Description 2

This field will be a free text field that will contain further pertinent information with regards to the system. This may include reference to drawings or design documents, comments referencing that the system is for yard drainage, flushing points etc. E.g.

SUB-SOIL DRAIN DN CESS 750RCP

GUNNEDAH YARD TRACK DRAINAGE

PDFs 3468-01-RA-0012 & 3468-01-RA-0013

ARTCN1060009001 - DRAINAGE SCAN-0119.TIF

ARTC

5   T&C MST Application Conventions

5.1   MSTs for Std. Jobs 'CLEAR1 Gen. Insp. of Track Centre Clearances', 'CLEAR6 Track Centre Clearance Analysis (LiDAR)' & 'CLEAR4 Gen. Insp. of Clearance Points'

5.1.1   Background

These inspections are required to determine adequate clearance is being provided between adjacent running lines therefore applying the MST to both tracks would create undue duplication. This duplication will be eliminated by applying the MSTs to the tracks as detailed in 5.1.2 below. The detail of the track not carrying the MST is to be noted in the MST Description 2 field. E.g.

"Track Centre to Up" or "Clearance Point to Up"

"Track Centre to Main" or "Clearance Point to Main"

"Track Centre to non ARTC BG" or "Clearance Point to non ARTC BG"

Note: *The nameplate for the equipment that carries the MST will have "Yes" selected in the attribute "Track Centre MST applied" or "Clearance Pt MST Applied".*

5.1.2   MST Application Conventions

On corridors where multiple running lines run parallel to each other the following tracks will hold the MST:

- Hunter Valley Hamilton Jct. to Islington Jct. between the Up & Down Mains, the Up Main,

- Hunter Valley Main North between the Up & Down Mains, the Up Main,

- Hunter Valley between the Up & Down Coals, the Down Coal,

- Hunter Valley between the Up Coal & Down Main North, the Down Main,

- NSW Main South between the Up & Down Mains, the Down Main,

- VIC NE between the East & West Tracks, the East Track,

- Sydney Freight Network between Up and Down tracks, the Up track,

- Port Botany between No2 Departure and No1 Departure, No2 Departure,

- Port Botany between No1 Departure and No1 Arrival, No1 Departure,

- Port Botany between No1 Arrival and No2 Arrival, No1 Arrival,

- Enfield between No1 and No2 Staging Roads, No1,

- Tottenham Jct. to Dynan Jct. in Melbourne between Main Line and Local Line running lines, Main Line,

- Coonamia between East Bound and West Bound running lines, East Bound,

- Adelaide Outer Harbour Line between East Dual Gauge Main and West Dual Gauge Main running lines, East DG,

- Where passing lane running lines are adjacent to a Main running line, the passing lane,

- Where loops, refuges or sidings are adjacent to a Main or passing lane running line, the loop, refuge or siding,

- Where sidings are adjacent to a loop or refuge running line, the siding,

- Where loops, refuges or sidings are adjacent to a Main or passing lane running lines, the loop, refuge or siding.

5.2   MSTs for Std. Job 'CLEAR2 Gen. Insp. of Structure Clearances' & 'CLEAR7 Structure Clearance Analsis (LiDAR)'

5.2.1   Background

These inspections are required to confirm compliance with the clearance standards and to detect infringements to the maintenance intervention and base operating standards at locations inside the adopted structure outline. A clearance register will be maintained as a 'Feature Set' of the track asset, listing all locations within the adopted structure outline that require inspecting. In general terms this inspection would apply to all running line and siding track equipment, however certain of these assets will not have any locations listed within the clearance register requiring this inspection.

5.2.2   MST Application Conventions

The nameplate for equipment that has locations detailed in the clearance register and therefore requires the MST to be applied, will have "Yes" selected in the attribute "Structures Clearance MST applies".

5.3   MSTs for Std. Job 'CLEAR3 Gen. Insp. of Approved Perm. Inf'ments' & 'CLEAR8 Perm Infringement Admin Review'

5.3.1   Background

The CLEAR3 inspection is a subset of the structure clearances inspections and is required to be undertaken at a greater frequency than the normal inspection at locations that reduced clearance within the maintenance intervention standard have been approved. This would include but is not limited to passenger platforms. If there are no approved infringements located adjacent to the track asset this MST will not be required. The clearance register will include an attribute that identifies a listed location as being an approved infringement. CLEAR 8 is undertaken to ensure waivers and risk mitigations are updated subsequent to each inspection.

5.3.2   MST Application Conventions

The nameplate for equipment that has locations detailed in the clearance register as approved infringements and therefore requires the MST to be applied, will have "Yes" selected in the attribute "Approved Permanent Infringements MST applies".

5.4   MSTs for Std. Job 'CLEAR5 Gen. Insp. of Track Centres in Sidings'

5.4.1   Background

As with 5.1 above there is a need to avoid undue duplication when inspecting track centres between sidings in yards. The siding adjacent to the running line will carry the running line inspection CLEAR1 however the clearance between the rest of the sidings will be confirmed by undertaking the CLEAR5 inspection. As for the previous section the track not carrying the MST is to be noted in the MST Description 2 field.

5.4.2   MST Application Conventions

The siding adjacent to the first siding will carry the MST for the inspection between these 2. The next track will then carry the MST between siding 3 & 4 and this will continue to be applied until the last siding is reached.

The nameplate for the equipment that carries the MST will have "Yes" selected in the attribute "Track Centre MST applied".

5.5   MSTs for Std. Job 'RAIL04 Gen. Non-Welded Joint Inspection'

5.5.1   Background

The primary function of this inspection is to inspect the overall condition of mechanical joints; therefore this MST will only be required for the track assets that have mechanical joints in situ.

5.5.2   MST Application Conventions

The nameplate for track equipment that has mechanical joints in place, and therefore requires the MST to be applied, will have "JWR" selected in the attribute "Rail Join". Conversely those with "CWR" will not require this MST to be applied.

5.6   MSTs for Std. Job 'RAIL05 Gen. Insp. Of Corrosion in Wet Locations'

5.6.1   Background

The primary function of this inspection is to inspect the web and foot of the rail for cross sectional loss due to the corrosive effect of being in a continuously damp environment. This inspection is primarily targeted towards rails within tunnels that contain continuous water ingress but is also required at any other location where the rails are subjected to high levels of acidity or dampness.

A 'Wet Locations' register will be maintained in the track assets Feature Set to detail those locations that have been identified as susceptible to high levels of corrosion as required. This MST will only be required for the track assets that have wet locations listed in this register.

5.6.2   MST Application Conventions

The nameplate for track equipment that has wet locations that require this MST to be applied will have "Yes" selected in the attribute "Wet Locations".

5.7   MSTs for Std. Job 'RAIL08 Gen. Insp. Of Guard Rail Condition'

5.7.1   Background

The primary function of this inspection is to inspect the overall condition of guard rails where these are installed on underbridges located along a track asset.

A 'Guard Rails' register will be maintained in the track assets Feature Set to detail those locations where guard rails are installed as required. This MST will only be required for the track assets that have guard rails listed in this register.

5.7.2   MST Application Conventions

The nameplate for track equipment that has guard rails in place, and therefore requires the MST to be applied, will have "Yes" selected in the attribute "Guard Rails".