Enterprise Asset Management System

AMT-PR-010

Applicability

ARTC Network Wide

SMS

Publication Requirement

Internal / External

Primary Source

Superseded EGP-10-01

Document Status

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1.0	08 Feb 2023	Senior Project Manager Asset Systems	Project Support and Training Officer	Manager Asset Management Systems	Manager Asset Planning & Investment

Amendment Record

Amendment Version #	Date Reviewed	Clause	Description of Amendment
1.0	08 Feb 2023		First issue of document to supersede EGP-10-01. Engineering document transferred to Asset Management document. No content has changed. Only updates to cover page, Header / Footer, Document Owner, Document numbers within.

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1 Introduction

1.1 Purpose

ARTC maintains an Enterprise Asset Management System (EAMS) to manage assets throughout their lifecycle and to ensure that assets are fit for the purpose of allowing the safe and reliable operation of trains over ARTC infrastructure. The EAMS enables ARTC to perform the following core responsibilities;

- Managing new capital investment in the network

- Manage the replacement and refurbishment of Network infrastructure; and

- Maintaining Network infrastructure

The purpose of this procedure is to describe the EAMS that supports asset management of the ARTC network.

1.2 Scope

This procedure currently applies to ARTC's infrastructure assets including;

- All Network Assets including Track and Civil, Structures, and Signal assets; and

- A limited number of non-network assets used to support the management of Network Assets

This procedure applies to the following aspects of the EAMS;

- The management of assets and work including;
  - A register of network assets, including configuration and engineering data
  - A register of deficiencies and condition affecting network assets
  - Implementation of Network Alteration Notices (NAN's)
  - Implementation of the short-term Annual Works Plan (AWP)
  - Implementation of the medium to long term Asset Management Plan (AMP) including the 10-year register of work
  - Recording of preventive, corrective, and reactive maintenance (required and performed)
  - Management of work activities; and
  - Management of risk associated with asset deficiencies

1.3 Document Owner

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

1.4 Reference Documents

This procedure supports the following documents and systems:

- COR-PO-005 Asset Management Policy
- INF-PL-007 Asset Management Strategy
- ARTC Safety Management System (SMS)

- EGP-03-01 Rail Network Configuration Management

- EGP-20-01 Project Management

- INF-PR-002 Assurance Framework

- INF-PR-005 Asset Information Governance Framework

The following documents support this procedure:

- ETE-00-03 Civil Technical Maintenance Plan (Track and Civil)

- ESM-26-02 Technical Maintenance Plan (Signals)

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

- EPG-20-01 Project Management

The following Subordinate documents to this procedure describe the important components of the Ellipse EAMS;

- AMT-WI-021 Data Classification – Structures

- AMT-WI-020 Data Classification – Universal

- AMT-WI-022 Data Classification – Signal Systems

- AMT-WI-023 Data Classification – Track & Civil

- AMT-WI-024 Known Condition Management

- AMT-WI-025 Work Order Management

- AMT-WI-029 Annual Works Plan – Project Work Orders

- AMT-WI-030 Recording of Train Control Reports (TCR's) in Ellipse

- AMT-WI-033 Track & Civil Nameplates

- EGW-03-02 Using Ellipse for Configuration Change

1.5 Management Definitions

The following terms and acronyms are used within this document:

Term or acronym	Description
AK Car	An automated track geometry recording car
AMP	Asset Management Plan – 10-year register of work
AMS	Asset Management System
ARTC	Australian Rail Track Corporation Ltd.
Attribute	Single component of a record. Similar to a database field.
AWP	Annual Works Program – single year register of work
DMS	Drawing Management System
EAMS	Enterprise Asset Management System including Ellipse and other support enterprise systems
EGI	Equipment Group Identifier

Term or acronym	Description
Inspection	The examination of an infrastructure asset, for the purposes of ensuring the asset is safe and capable of performing to operation requirements
km	Kilometrage of Network Assets included in the SPN and continuous asset segments
Known Condition	Any unsatisfactory condition which has the potential to develop into asset failure. May be a discrete fault against a component of the asset, or the overall condition of the asset (sometimes referred to as a Defect).
MST	Maintenance Schedule Task
Nameplate	Instrument used to store engineering characteristics against an asset in Ellipse
RCRM	Routine Corrective and Reactive Maintenance
Reliable	An asset is reliable if it is considered likely it can perform it's specified function or performance level at least until the next corrective maintenance window.
Responsible Manager	ARTC personnel with designated responsibility for management of the asset, or an aspect of the management of the asset
ServiceNow	Requesting changes to Enterprise systems including Ellipse
SMS	Safety Management System
SPN	Structured Plant Number
TCR	Train Control Report
TMP	Technical Maintenance Plan
URFD Car	Ultrasonic Rail Flaw Detection Car
User	A suitably competent person, authorised to interact with the EAMS in accordance with this procedure

2 Overview

The scope of Asset Management at ARTC is shown in Figure 1. Ellipse is currently used by ARTC as the core EAMS to manage the life cycle of Network Assets through the four stages of Acquire, Operate, Maintain, and Dispose as depicted below by the "Lifecycle Delivery" symbol within Figure 1.
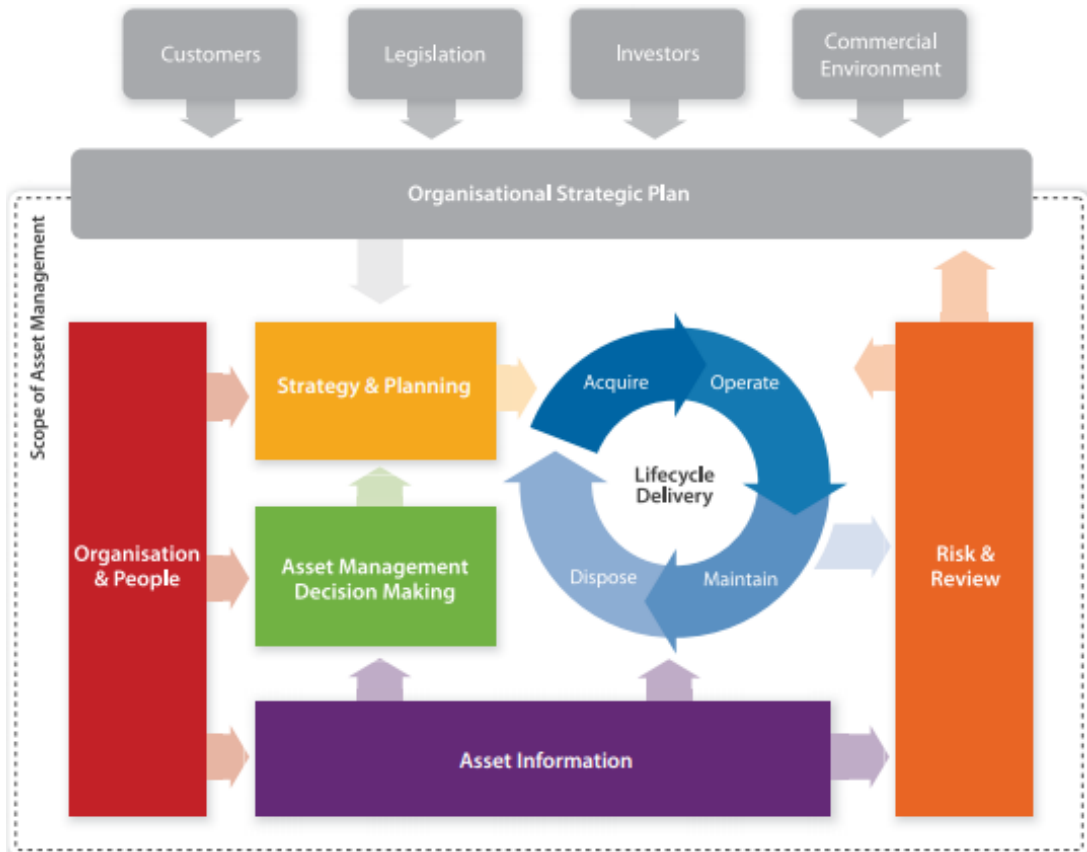
Figure 1 – Scope of Asset Management & Lifecycle Delivery

2.1 Enterprise Systems Related to Asset Management

There is a relationship between Ellipse and the other enterprise systems that support the Asset Management of ARTC's Network assets. Any record stored in a support enterprise system must contain the unique identifier of the record in Ellipse to allow data to be cross-referenced.

The current support enterprise systems are described in Table 1 below:

Title	Purpose
AMP Interim Database	Register of projects that make constitute the AWP and AMP data
Aconex	Management of drawings and related data [Note 1]
Basecode Database[1]	The master copy of Basecode records

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[1] The Basecode data base is managed by Sydney Trains

Title	Purpose
Ellipse	The principal enterprise system of the EAMS
Ellipse Analytics	Reporting Data Base for the Ellipse EAMS
FieldWorker	Mobile application used with Work Force Management by Field Maintainers
Geographic Information System (GIS)	Spatial record of Network Assets and Work
Geotechnical Database	Geological assets and deficiencies
LXM Level Crossing Database[2]	Level crossing data
SharePoint	Document Management System
SIMS	Register Train Control Reports (TCR)
Trackdata	Track information including materials and curvature
Work Force Management	Enterprise system to support the field mobility between Ellipse and the FieldWorker application

Table 1 - Enterprise Systems of the EAMS

Note: As Built drawings for ARTC assets are currently stored in Aconex and DMS (Victoria).
It is a condition of ARTC's lease in Victoria that Vic Track's DMS (Victoria) is used to store the As Built drawings for assets in Victoria.

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[2] The LXM Level Crossing Database is owned by the Australian Level Crossing Assessment Model Committee and ARTC data is provided by ARTC

3 Equipment Register

The Ellipse Equipment Register is the primary application at the core of the EAMS. The data stored in the Equipment Register application drives the other applications in Ellipse.

Every Network Asset on the ARTC network must have a record in the Equipment Register. For each asset the Equipment Register record shall describe 'what' the asset is and 'where' the asset is on the ARTC network.

The definition (and controls) of information for each asset type are defined in the relevant Data Classification work instruction (refer to cl 1.4 above). Ellipse defines this information as 'data attributes'.

In some specialised circumstances asset data is managed outside Ellipse. Where this is the case;

- The asset shall have an equipment record in Ellipse; and

- The asset data held outside Ellipse shall contain an Ellipse equipment number; to relate the data back to the Ellipse equipment record

The Equipment Number is the unique identifier for equipment in Ellipse. The Equipment Number is automatically generated by Ellipse for new assets. An example of a valid Equipment Number would be '000000038276'.

Note: The ARTC Structured Plant Number (Also known colloquially as the Plant Number or SPN) is the identifier for an equipment record. The SPN should not be confused with – or used instead of – the equipment number. Refer to EGW-10-02 Data Classification – Universal for more information on the SPN.

3.1 Updating the Equipment Register

Modification of the ARTC equipment register (e.g. creation, disposal, or modification of equipment records) must be performed in accordance with EGP-03-02, Equipment Register – Updating and Maintenance. Any requested changes must be submitted through ServiceNow to the Ellipse system administrator, supported by;

- EGP0301F-01   Network Alteration Notice

- EGP0302F-01   Change Authorisation Form

Limited modifications are permitted without a ServiceNow request by authorised users with the Ellipse MAINT-PLAN profile. Where this occurs EGP0302F-01, Change Authorisation Form, must be completed and filed locally.

3.2 Equipment Maintenance

The minimum equipment maintenance strategy is documented in the relevant technical maintenance plan (TMP). The technical maintenance plans are the documents that govern the creation and specification of Maintenance Scheduled Tasks (MST's) against any given asset in Ellipse.

The equipment maintenance strategy prescribes three types of maintenance activities to be performed on an asset;

- Preventative Maintenance – scheduled servicing and inspections to preserve or determine the remaining useful life of an asset

- Corrective Maintenance – scheduled maintenance to restore the function of an asset

- Reactive Maintenance – unscheduled maintenance to restore the function of an asset

3.2.1 Preventative Maintenance

Preventative maintenance is scheduled inspection or servicing required to achieve an acceptable level of function. The purpose is to either prevent or detect a fault prior to affecting the performance level of the asset. Any required preventive effort that can't be conducted during preventative maintenance becomes corrective maintenance, to be scheduled for repair prior to resulting in the need for reactive maintenance.

3.2.2 Corrective Maintenance

Corrective maintenance is the term given to activities that aim to restore the capability of an asset to provide reliable functional performance. Corrective maintenance typically involves repairing or replacing a component of an asset.

3.2.3 Reactive Maintenance

Reactive maintenance is unscheduled restoration efforts to restore assets to operational condition typically after a functional failure that has or, has the potential to, interrupt train operations and usually are associated with a Train Control Report. For clarity, responding to Known Conditions identified, for example, through scheduled geometry or rail flaw inspections is Corrective maintenance not Reactive maintenance. These jobs are sometimes called break-in.

Reactive maintenance is often the most expensive form of maintenance, both financially and operationally. The Technical Maintenance plan is designed to minimise the occurrence of functional failures that lead to Reactive maintenance events.

Reactive Maintenance includes unscheduled inspections undertaken outside of the prescribed scheduled inspection regime. The reasons for performing an unscheduled inspection include;

- Monitoring a specific Known Condition to manage risk

- Reassessment of a Known Condition for a period prior to rectification; and

- Inspection of an asset for potential hazards following an incident or weather event (e.g. potential flooding, fire, heat patrols, bridge strike, VTI or ICW reported conditions)

An unscheduled inspection is recorded in Ellipse by creating and closing a work order. Unscheduled inspections do not have an MST in Ellipse.

4 Equipment Technical Maintenance Plans

Maintenance activities must be performed on assets to maintain a predictable level of performance. Technical Maintenance Plans define the inspection policy for assets on the ARTC network including;

- Mandatory inspection tasks

- Minimum inspection frequencies

- Maximum inspection latitude

- What assets (and their components) are to be inspected; and

- What inspection or maintenance tasks are to be performed?

Activities prescribed in the Technical Maintenance Plans are mandatory. Any deviation from the prescribed activities constitutes an engineering non-compliance and an engineering waiver should be obtained prior to enacting any deviation. All maintenance activities performed in accordance with the Technical Maintenance Plans must be performed by a suitably competent person.

A typical TMP is shown in Figure 2 below:

Type of Inspection	Infrastructure Element	Element Description	Reference		Ellipse Std Job		Applicability		Inspection Interval	Latitude (±)	Conducted by
General Inspection of Points and Crossings	Includes all Turnouts, Catchpoints, Diamonds, Slips etc. on all Running lines & Sidings.	A general inspection includes all the visual condition assessments of the detailed P&C inspection however measurements are only taken where the Inspectors has deemed they are required.	CoP Sect 3: Points & Crossings	3.3.2	TURN02	Gen. Insp. of Points & Crossings	All ARTC	P&C ≥ 5MGT and also: 1) on timber or concrete bearers with >30MGT, or 2) on curves <800m radius, or 3) with heeled switches (pivot heels) on timber bearers, or 4) on timber bearers with non-resilient (dogspike) fasteners.	91 Days	10%	Track Inspector
								P&C ≥ 5MGT not included in 1), 2), 3), or 4), above	182 Days	10%	
			ETE-03-01					P&C < 5MGT.	364 Days	10%	
							Hunter Valley	Inspection frequency as per ETN-00-03. Reliability based inspections determined from ETE-00-05. Inspection period may be no greater than double the frequency that would otherwise apply above. Where ETN-00-03 does not state a frequency, the standard frequency shall apply.			

Figure 2 – Typical TMP Data Requirements

5   Preventive Maintenance - Inspections

Inspection activities are performed by suitably competent staff in accordance with the relevant ARTC technical standards. Inspections provide the information required for monitoring asset condition, asset planning and risk management. The two main types of inspection are;

- Scheduled manual inspections; and
- Scheduled Mass Recording inspections

5.1   Scheduled Manual Inspections

The purpose, frequency, latitude and scope of scheduled inspections are governed by the relevant ARTC Technical Maintenance Plan, Code of Practice or Technical Standard.

An MST for each scheduled inspection must be created in Ellipse against the appropriate Equipment Group Identifier for allocation to all relevant assets.

These inspections are typically conducted by Infrastructure Maintainers and involve visual assessments or measurements.

5.2   Scheduled Mass Recording Inspections

Mass recording inspections are performed by vehicles travelling the ARTC network. Mass recording inspections produce a large quantity of data pertaining to ARTC's continuous rail assets and the operating envelope around it. This data is processed and any results that meet the criteria of an exceedance in accordance with the Code of Practice are created as a Known Conditions record against the asset in the Alarms and Defects module of Ellipse.

ARTC currently has five principal methods for performing mass recording inspections;

- Track recording car (AK Car)
    - Track geometry Known Conditions
    - Rail Wear
    - Structure and Track Centre Clearances using Light Imaging Detection and Ranging (LiDAR)
    - Ground penetrating radar (GPR)
- Ultrasonic rail flaw detection car (URFD Car)
    - Rail flaws
    - Untestable rail
- Vehicle Track Interaction[3]
    - Locomotive inertia exceedance location recording
- Instrumented Coal Wagon[4]
    - Coal Wagon inertia exceedance location recording

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[3] VTI inertia hits are created in Ellipse as Work Orders for inspection and investigation rather than as Known Conditions
[4] ICW inertia hits are created in Ellipse as Work Orders for inspection and investigation rather than as Known Conditions

The process for managing mass recording inspections (recording of results, transfer of exceedances to Ellipse, verifying exceedances, and programming remedial actions etc.) is prescribed in the relevant ARTC technical maintenance plan or technical standard.

5.3   External Reports

External reports may be generated by a number of sources, including;

- Members of the public
- Local authorities
- Train drivers

Such reports should be forwarded by the initial recipient to the relevant stakeholders for review (always including the local Area Manager).

The typical process (unless otherwise specified) for assessing and recording the actions generated by an external report would be;

- Create a Work Order for investigation; and
- Where the investigation identifies a Known Conditionvit is to be created against the offending asset in Ellipse and managed as outlined in below.

5.4   Maintenance Scheduled Task (MST)

Technical Maintenance Plans are deployed in Ellipse as MST's against Equipment Group Identifiers (EGI's). This deployment against the EGI ensures a standard application of MST's against all Equipment records.

The core data set of an MST includes:

- Equipment Number
- Standard Job
- Frequency
- Scheduled Dates
- Work Group; and
- Inspection Segment Kilometres

MST's are set to auto commit to Work Orders providing a short-term view of the planned inspection activities. A longer-term view can be created by undertaking an MST forecast.

Creation, deletion, or modification of an MST recorded against an Equipment record must be performed in accordance with EGP-03-02 Equipment Register – Updating and Maintenance (refer to cl 3.1 above).

6 Known Conditions

EAMS procedures and work instructions have adopted the term "Known Condition" rather than the previously used term "defect". This terminology change has been implemented to facilitate a cultural change in the recording and management of asset deficiencies within ARTC since not all conditions require repair depending on the assets age, location, and demand.

Known Condition data is used to manage;

- The necessity and urgency of limited types of Preventative maintenance including preventive rail grinding and tamping

- The rectification and urgency of Corrective maintenance; and

- The scope of Refurbishment and Replacement works in the Annual Works Program (AWP) and the longer-term Asset Management Plan (AMP).

Known Conditions (along with inspections) initiate the bulk of the work orders in Ellipse.

Known Conditions are recorded for all asset deterioration or deficiencies in Ellipse including, where appropriate, those which may not have reached a mandatory intervention point (as governed by ARTC Codes of Practices or other documentation) but will benefit from monitoring. This increased volume of equipment condition data (referred to as the Known Condition pool) is used to develop long term condition-based asset management strategies.

Known Conditions are entered into Ellipse against the relevant Equipment record. Once entered, Known Conditions are managed by considering the appropriate;

- Corrective actions

- Urgency of the required work

- Creation of Work Orders

- Planning, scheduling, and assigning the Corrective work

Known Conditions shall be monitored to ensure that the Corrective work has been completed effectively and in the required time frame.

6.1 Train Control Reports

A Train Control Reports (TCR) is created by Network Control when an incident occurs that effects train running and or is a safety concern. TCR incidents are typically identified by field maintainers, train controllers and train crews.

TCR's are created in SIMS and published in the daily shift journal. TCR incidents that are related to assets are also created in the EAMS as a TCR Work Request in accordance with AMT-WI-030, Recording of Train Control Reports (TCR's) in Ellipse. Each TCR incident related to assets includes:

- A Work Request including the TCR Number, incident type and comments from SIMS

- A Work Order for investigation including two tasks:

  o Task 1 – Field response, Known Condition creation and completion comments; and

  o Task 2 - Engineering review and the entry of failure codes

A thorough investigation of TCR incidents is imperative as these are typically functional failures that have affected the provision of service. Failure records and associated Known Conditions are essential

for informing priorities in the Annual Works Plan and the Asset Management Plan and for the review of maintenance effectiveness.

7   Asset Strategy

The enterprise systems used to support delivery of the Asset Management Policy and Asset Management Strategy include both the EAMS and the AMP Interim Database.

The purpose of the EAMS in conjunction with the AMP Interim Database is to deliver a consistent and uniform asset management model across ARTC's Business Units, facilitating strategic engineering decisions that are supported by sound evidence of asset condition.

7.1   Asset Management Plan

The AMP is the 10 year register of work and is developed in accordance with the AMP Process Control Plan (refer to Figure 3). The template for the AMP process control plan is located in the asset management section of the Safety Management System (SMS).
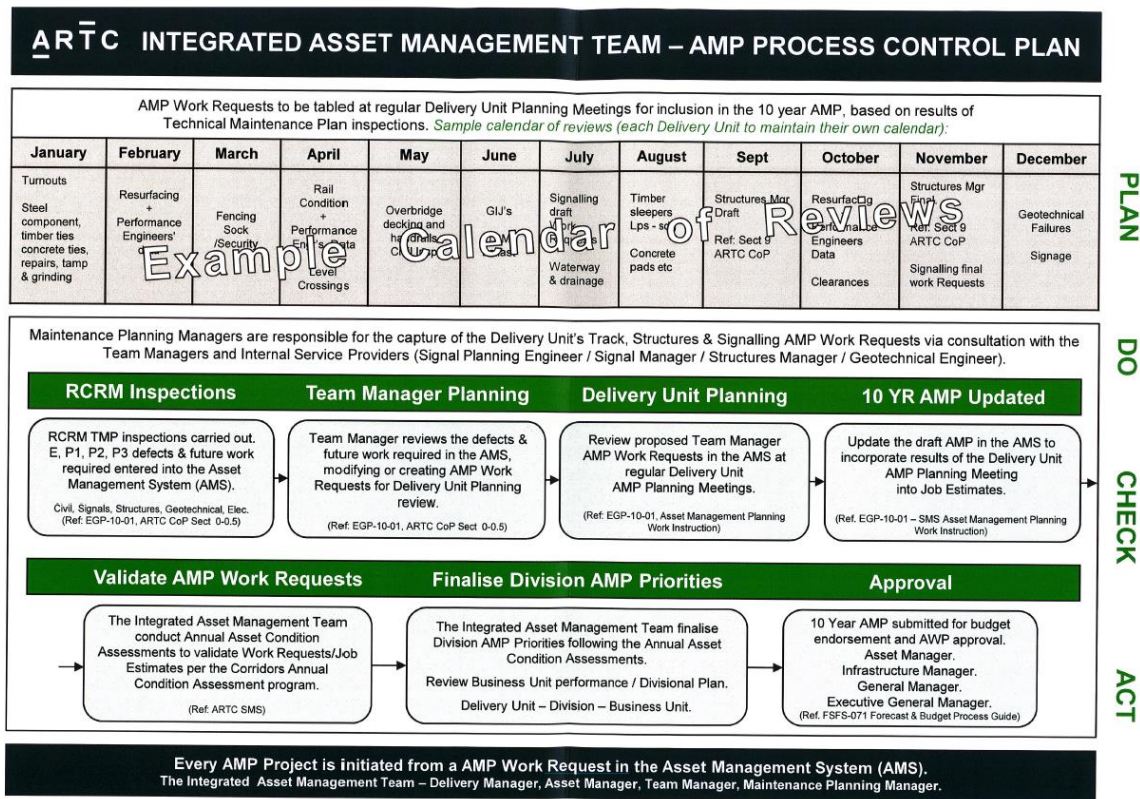
Figure 3 - AMP Process Control Plan Template[5]

An AMP process control plan will be created and approved for each maintenance team (e.g. corridor), creating the calendar of reviews and identifying the stakeholders. Responsibility for each stage of the AMP process control plan and what AMS system is used is shown in

Table 2.

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[5] The Asset Management Process Control Plan is interim pending the ultimate deployment of the AMP and AWP into Ellipse

The AMP focuses on the following;

- Management of discrete assets – repair of wear and tear to assets (e.g. turnouts, level crossings)

- Management of linear assets – program of cyclical works along the track structure (e.g. re-railing, grinding, drainage, resurfacing, ballast cleaning, vegetation control)

- Management of the technical maintenance plans (e.g. inspections, preventative maintenance derived from inspections)

Stage	Responsibility	Managed In
RCRM Inspections	Corridor Maintenance	Ellipse
Area Manager Planning	Corridor Maintenance	Ellipse
Delivery Unit Planning	Asset Management	AMP Interim Database
10yr AMP Updated	Asset Management	AMP Interim Database
Validate AMP Work Requests	Asset Management	Ellipse
Finalise Division AMP Priorities	Asset Management	AMP Interim Database
Approval	Business Unit Management	-

Table 2 - AMP Process Control Plan Responsibilities

The managers responsible for infrastructure maintenance (e.g. Area Managers) shall submit requests for work to the asset management team for approval and incorporation into the AMP. Requests for work shall be submitted in accordance with the process approved by the relevant asset management team. Requests for work should be supported by appropriate evidence, such as;

- Known conditions recorded in Ellipse

- Information on the overall condition of the asset

- Any other pertinent factors.

Requests for work that are approved by the asset management team shall be recorded as projects in the AMP interim database against the relevant programmed funding stream and planned financial year. Work Requests (or projects) residing in the AMP Interim Database are reviewed and validated by the relevant stakeholders as part of the annual condition inspections.

7.2 Annual Works Plan

The Annual Works Plan is the approved maintenance activities and budget for a given financial year. The AWP is developed from a variety of sources and includes preventative and corrective maintenance, major periodic maintenance and capital works.

The AWP is managed both manually (offline) in accordance with EGP-20-01 and as Work Requests, Standard Estimates and Work Orders in Ellipse. The principal interactions with the AMS during this process are as follows;

- The annual works program is initiated using data supplied via an export from the AMP Interim Database to Ellipse as Work Requests and Standard Estimates.

- Standard Estimates are tailored to the project and committed to Work Orders which include Job Description codes.

- The AMP data is processed by the relevant manager into a project.

- As part of this project development stage the asset configuration and deficiency data shall be retrieved from Ellipse and incorporated in the project work package.

- Any configuration changes will be identified and managed in accordance with the Rail Network Configuration Management procedure (EGP-03-01).

- Any Ellipse Known Conditions that will not be removed by the project will be recorded on the project handover checklist (EGW2001T-18) and supplied to the relevant infrastructure maintenance team.

- The relevant infrastructure maintenance team will be responsible for inspecting the asset at the completion of the project and;

  - Confirming that the captured configuration data is correct; and

  - Removal of any Known Conditions still recorded against the asset that have been rectified by the project works

8 Works Management

Works are managed through the Ellipse EAMS. Ellipse has a range of applications available to execute the required processes, including;

- Work Requests

- Standard Jobs

- Inspection Scripts

- Work Orders

- Work Order Tasks; and

- Maintenance Scheduled Tasks

Ellipse is supported by a field Mobility solution which includes:

- Work Force Management which supports the Mobile FieldWorker application and required interaction with Ellipse; and

- FieldWorker application used with Work Force Management by Field Maintainers on mobility tablets

Field Maintainers can undertake inspections, create, and edit Known Conditions and process work orders on their Mobility tablet through FieldWorker.

8.1 Work Order

Work orders are the principal instrument of the works management process within Ellipse. Work Orders carry a Work Order Type and Maintenance Type which defines the programmed funding stream for the work activity required by the work order.

Work Order Types include:

- Administration

- Capital Project

- Health and Safety; and

- Maintenance

Maintenance Types include:

- Asset Renewal

- Network Reliability

- Network Capacity Growth

- Corrective Work

- Preventive Work

- Reactive Work; and

- A number of administrative Maintenance Types not directly related to assets

8.1.1 Capital Activities

Capital activities provide ARTC with a future economic benefit that can be identified or measured. Capital activities include;

- Upgrading the capacity of the asset (in order to increase the capacity of the ARTC network)

- Replacement or renewal of an asset or component; and

- Extending the lifecycle of an asset

All other activities are maintenance or operating cost activities.

8.2 Prioritisation

All Corrective work orders must be assessed in accordance with ARTC technical standards to determine what actions are required (to mitigate the risk imposed by the associated Known Conditions) and the urgency of the actions.

The priority assigned to a Known Conditions describes the timeframe within which the work order must be completed to either rectify or reinspect the Known Condition or re-inspect to ensure that it is appropriately risk managed.

The current Priority Codes used are detailed in Table 3 below:

Code	Title
E	Do Immediately
P1	Less than 7 Days
P2	Less than 28 Days
P3	Less than 6 Months
P4	Less than 1 Year
P5	Less than 2 Years
PR	Less than 90 Days
PN	Planned Maintenance

Table 3 – Priority Codes

Priority codes P3, P4 and P5 are allocated to lower risk Known Conditions and where not rectified are typically reinspected at the next scheduled MST Work Order. Repair and reinspection timeframes for P3, P4 and P5 Known Conditions in Table 3 are nominal and may be extended up to 20% to align with the scheduling of MST Work Orders.

In certain situations, the management of known conditions requires ad hoc inspections and reassessment to mitigate the risk imposed by the Known Conditions. The reinspection of Known Conditions is not permitted where the Code of Practice or other Technical requirement precludes it. A typical example is geometry exceedances cannot normally be reinspected and should be rectified within the repair period.

9 Assurance

Assurance provides oversight that all maintenance and infrastructure works and the configuration and administration of the EAMS is in accordance with the relevant ARTC technical standards and that ARTC's business interests and accreditation are not compromised. Assurance is governed through the document INF-PR-002 Assurance Framework and the Internal Audit annual plan.

9.1 Dashboards and Reports

Dashboards and reports using Power BI are available that source data from Ellipse Analytics and the Data Warehouse to monitor compliance with Technical Maintenance Plans, the Code of Practice, general data quality and the effectiveness of works management. Important Dashboards and reports are detailed in Table 4 below:

Dashboard/Report	Description
Compliance Dashboard	Details compliance of MST Work Orders and Known Conditionss in the Known Condition Pool
TCR Dashboard	Details the management of TCR incidents in Ellipse
Performance Dashboard	Provides details of Asset Performance Metrics
Nameplate Report	Provides nameplate detail of assets by EGI
MST Compliance Report	Validates the deployment of the relevant TMP maintenance strategy by EGI
Provisioning Centre Works Dashboard	Provides key metrics for Provisioning Centres to assist with effective work management

Table 4 – Dashboards and Reports

9.2 Data Warehouse

The data warehouse is the corporate reporting environment that is capable of merging data from various systems to create standard reports. The data warehouse is the current repository of mass inspection data.

9.3 Asset Information Governance

The verification of data is supported by INF-PR-005, Asset Information Governance Framework. The Governance Framework has been established to enhance and protect the data quality stored in asset management systems. The Governance Framework defines:

Data Owners - Those accountable / responsible for defining the information required by a business process including its quality. There may be multiple business process owners for one set of information each with different requirements.

Data Stewards - Those responsible for managing and assuring data on behalf of the owner. They may also be responsible for validating information submitted from field staff or external contractors and physically updating the recorded information.

Data users - Those using asset information for tactical, operational and strategic purposes.

9.4 Verification of Data

The delegated responsible manager (refer to cl 1.5) shall ensure that there is an equipment record in the Ellipse equipment register for all assets on the ARTC network. The responsible manager shall also ensure that the equipment record (including the nameplate where such attributes are defined) is accurate and complete, as far as is practical.

To facilitate this function the responsible manager has access to a number of standard reports including nameplate reports in Ellipse Analytics.