

ARTC Drawing Management System

EGP-04-02

Applicability

ARTC Network Wide
SMS

Publication Requirement

Internal / External

Primary Source

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Document Status

Version #	Date Reviewed	Prepared by	Reviewed by	Endorsed	Approved
3.2	23 Aug 21	Configuration Management Administrator	Configuration Manager	Manager Standards	Acting GM Technical Standards 23/09/21

Amendment Record

Amendment Version #	Date Reviewed	Clause	Description of Amendment
1.0	23 Apr 13		First issue of new procedure. Supersedes PP-117.4 (v2.0), PP-117.4.1 (v1.0), PP-117.4.2 (v1.0), PP-117.4.3 (v1.0) & PP-117.4.4 (v1.0). Previous drawing procedures from PP-117.4 series combined into one document, renumbered and revised to describe the requirements of the automated DMS and updated drawing number system. Addition of new forms for submission, maintenance copy update & drawing alteration.

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1.1	14 Oct 15		Document rebranded and reference to CSA form replaced by Servicedesk Service Request reference.
2.0	17 Nov 17	Various	Document updated in depth to reflect new operating platform Aconex.
3.0	28 Jun 19	2.1, 6.6, 7.1, 8.3	Historical drawings details added to new section 2.1. Further detail added regarding cancelled or deferred projects and processing drawing requests. Information added for new drawing numbers to cover requirements for drawings detailing multiple locations. Metadata details updated to provide further clarity for status, location and ARTC Project ID requirements.
3.1	4 Mar 21	1.5, 12	Request for Drawings and Signal Data Submission forms added.
3.2	23 Aug 21	Various	Victorian drawing references updated, clarification on use of NAN and project numbers / cost codes & minor corrections.

Table of Contents

Table of Contents	3
1 Introduction.....	5
1.1 Purpose	5
1.2 Procedure Owner	5
1.3 Definitions.....	5
1.4 Responsibilities	6
1.5 Reference Documents	6
2 System Overview	7
2.1 Victorian Drawings	7
2.2 Historical Drawings	7
3 User Access	8
4 Drawing Control.....	9
5 Drawing Updates	10
5.1 Search and View Drawings	10
5.2 Requests for Existing Drawings and Signal Data	10
5.3 Requests for New Drawing Numbers.....	11
5.4 Processing Drawing Requests.....	11
5.5 Archiving Drawing Files.....	11
5.6 Cancelled or Deferred Projects.....	12
6 Drawing Numbering	12
6.1 Drawing Numbering for New Drawings.....	12
6.2 Additional Drawings for Existing NSW / QLD Signal Circuit Books	13
6.3 Standard Drawings.....	13
6.4 Previous Drawings	13
6.5 Proprietary Drawings.....	13
6.6 Manufacturing Drawings	14
7 Metadata	14
7.1 Existing Drawings.....	14
7.2 New Drawings	14
7.3 Metadata Required.....	14
8 Superseded Drawings.....	17
9 Baselines	17

10 Document Tree or Drawings Index17

11 Drawing Submission17

 11.1 Update of Field Maintenance Copies18

12 Drawing Management System Flowcharts19

 12.1 Request for Drawings.....19

 12.2 Receipt of Drawings20

1 Introduction

1.1 Purpose

The purpose of this procedure is to provide guidelines for the usage of the system for management of engineering drawings pertaining to the Australian Rail Track Corporation (ARTC) network, through the Drawing Management System (DMS).

1.2 Procedure Owner

The Configuration Manager is the Procedure Owner and is the initial point of contact for all queries relating to this procedure.

1.3 Definitions

The following terms and acronyms are used within this document:

Term or acronym	Description
ARTC	Australian Rail Track Corporation Ltd.
Asset Manager	The relevant corridor position responsible for the ongoing ownership and maintenance of infrastructure in the rail corridor. The exact position title may vary between corridors.
Baseline Drawings	A set of drawings which identifies and describes the configuration of a product at a specific point in time and serves as a reference for further activities.
CAD	Computer Aided Design
DMS	Drawing Management System
Metadata	The data relating to files and used for searching
Proprietary Drawings	Drawings owned by other organisations
Project Manager	The ARTC or Alliance employee responsible for ensuring all aspects of a project or maintenance activity are fulfilled, prior to the close out of the project. The exact position title may vary between corridors.
DoT	Department of Transport Victoria - The Department of Transport (DoT) is a government department in Victoria, Australia. It's responsible for ongoing operation and coordination of the state's transport networks, as well as the delivery of new and upgraded transport infrastructure.
PTV	Public Transport Victoria - administers and operates the Victorian Drawing Management System on behalf of the Department of Transport Victoria (DoT) to provide a central repository for technical infrastructure drawings, engineering standards, and configuration data for the Victorian Transport Industry.

1.4 Responsibilities

The Configuration Manager is responsible for the implementation of this procedure.

The Asset Manager is responsible for the control and compliance of drawings to ARTC's procedures. For example if and when drawings are approved for issue to update and acceptance of drawings received for submission to the DMS.

Project Managers are responsible for ensuring that any drawings created or updated from a project or activity are supplied by the contractor in accordance with ARTC requirements and provided for inclusion in the DMS. They are also responsible for ensuring that drawings related to decommissioned infrastructure are amended accordingly in the DMS.

DMS Administrators are responsible for the general functions of the DMS relating to their part of the network. This includes issue of drawings, upload of drawings, archiving drawings and general maintenance of files and metadata.

The Configuration Management Administrator is responsible for managing all administrative aspects of the ARTC DMS including the set-up of new users.

NOTE: *Corridors are responsible for the management of their own drawings and the manner in which they are managed including any delegation of responsibilities*

1.5 Reference Documents

The following documents support this procedure:

- EGP-03-01 Rail Network Configuration Management
- EGP-04-01 Engineering Drawings and Documentation
- EGP0401F-01 Drawing Alteration Request – Field and Other Alterations
- EGP0401F-02 Drawings for Submission Checklist
- EGP0401F-03 Maintenance Copies Drawings Transmittal
- EGP0401F-05 Request for Drawings
- EGP0401F-06 Signal Data Submission
- SDS 25 Signalling Circuit Design Standards

2 System Overview

The ARTC DMS is a cloud platform of controlled, up-to-date 'as built' and historic drawings of ARTC rail infrastructure for NSW, QLD, SA and WA. The viewer program is Aconex and drawings are accessible to ARTC infrastructure staff and other appropriately authorised users.

Signalling data files will also be stored in the ARTC DMS to enable tracking of updates related to project and maintenance works.

The major functions of the ARTC DMS are:

- Online search capability
- Manage the booking in and booking out of drawings online
- Version Control
- Requesting copies of drawings registered in the DMS
- Set unified baselines in order to keep control of drawings as they are issued and returned
- Reporting capability particularly with respect to reports of outstanding tasks

Essential features of the DMS are:

- DMS will store electronic drawings, diagrams and related documents
- Security e.g. only designated administrators will be able to release drawings for update.

2.1 Victorian Drawings

For all ARTC infrastructure in the State of Victoria, drawings are required to be stored in the drawing management system managed by the Public Transport Victoria (PTV) on behalf of the Victorian Department of Transport (DoT).

This is a lease requirement placed upon ARTC and must be adhered to.

This procedure only covers the ARTC DMS and does not cover the requirements for the PTV DMS, refer to EGP-04-01 Engineering Drawings and Documentation for further information on the PTV DMS.

2.2 Historical Drawings

The older drawings contained in the Drawing Management System have been inherited from previous rail infrastructure owners and maintainers. Due to the age of many of these drawings and the lack of information provided at the time of their handover, their relevance to the current infrastructure in our network has been unknown. As a result, these drawings have been included in the Drawing Management System with the status of For Information.

Should relevant corridor personnel identify that any of these drawings are still current or indeed no longer current, then the status of these drawings can be amended accordingly in the DMS. Details of the drawings concerned including drawing number and title and the new status required, such as As-Built or Superseded, are to be supplied to the relevant corridor DMS Administrator to enable the metadata to be updated.

3 User Access

ARTC DMS Access is given to approved stakeholders that have completed a Service Desk Service Request for access to ARTC systems and software.

Licences are designated to specific users using their email address.

The DMS users fall into the following categories:

- *Guest Users – contractors set up to receive transmittals of drawings requested for update.*
- *General Users – can search, view and obtain pdf files of drawings*
- *Corridor Administrators- issuing drawings for update and managing drawing versions in the system*
- *System Administrators – full system access*

4 Drawing Control

Drawings and signal data are updated as part of a defined project or maintenance activity. The issue and return of drawings and data required for updating needs to be managed. This assists in identifying the most current version of a drawing or data file and to ensure that changes from multiple simultaneous projects are captured in the correct manner.

Configuration management requires that a Network Alteration Notice (NAN) is completed for projects involving infrastructure change. The NAN number is then used for requesting the issue of existing drawings and data for update or new drawing numbers. This then enables the flow of drawings and design documentation from defined projects to be clearly identified and followed up as necessary. Information on Network Alteration Notices can be found in *EGP-03-01 Rail Network Configuration Management*.

For minor maintenance works, the use of a project number as issued in CI Financials instead of the NAN number is acceptable for requesting existing drawings or new drawing numbers.

Where updates to drawings are required for maintenance copy mark-up corrections, or as part of reconstruction activities due to derailments or natural disasters, use of a cost code is permitted instead of a project number or NAN number when booking out drawings or requesting new numbers.

Updates to drawings from defined projects and maintenance activities are identified by the use of the NAN / project number and tracked in the Drawing Management System. Changes to standard engineering drawings are managed separately and the request will be subject to approval by the Standards Manager (see section 6.3).

When the request has been received and if approved it will be processed or if declined or further information is required, the requestor will be advised by email.

The drawings and/or signal data and new drawing numbers are then forwarded to the requestor with a metadata sheet and transmittal advice. The completed, checked and approved drawings and data are then returned to the appropriate corridor DMS Administrators with the completed metadata sheet and any other supporting documentation required.

The drawings are then updated in the Drawing Management System for access by all users. Signal data will also be updated in the DMS for use by appropriate signal staff.

General User quick reference guides are available from the Aconex site and a basic user guide is also available on CONNECT under Our Network\ Standards & Procedures\Network Configuration. Full details of DMS Administrator functions are available to approved users only.

5 Drawing Updates

5.1 Search and View Drawings

Drawings and data can be located by selecting either of two search methods:

- use of the various metadata fields shown at the top of the Document Register screen
- use of the Super Search field which is highlighted when the Document Register screen is selected and has a black Search button to the right hand side

Known information can then be input in the appropriate field(s). After the enter key or search button is selected, a list of results will be shown for successful searches or an error message for unsuccessful searches. To view previous versions of drawings, the Show Document History box can be selected.

The results of the search are displayed below the search fields. The data fields displayed on the register can be customised to suit each user's preferences. Instructions on this function are available from the Help area of Aconex.

Search results can then be viewed and a read only copy of any drawings required, can be obtained from the system. Editable versions of drawings will only be supplied as part of a project or other authorised request.

Signal data files can be stored in the DMS with relevant metadata fields completed to enable a search to be performed. The relevant signed configuration data form must also be included with any signal data stored in the DMS.

NOTE: For drawings which are frequently updated, such as signal drawings, the NAN or project number is used as part of the document number in the DMS for Issued for Construction and Commissioning versions of these drawings. This practice enables the designs from various projects to be identified more easily.

5.2 Requests for Existing Drawings and Signal Data

As part of a defined project or maintenance activity, drawings may need to be updated as well as new ones created. Signal data may also need to be updated or created. Only drawings and data that are not already booked out are to be included in the request. Where drawings and data are required for multiple simultaneous projects, arrangements are to be made through the appropriate asset manager. A Design Interface Agreement may be used in this case, refer to EGP-04-01 Engineering Drawings & Documentation section 3.6 for more information.

Once a project has been approved, a Network Alteration Notice (NAN) needs to be completed for this activity. For minor works or maintenance updates, the changes may be updated via a work order in Ellipse including the required configuration items. The NAN / project number is then provided as part of any request to update existing drawings or obtain new drawing numbers from the DMS. Drawing requests are to be directed to the relevant corridor DMS Administrator for processing in the system.

When existing drawings are booked out for update, they will be shown in the DMS as being Checked Out and show the relevant NAN / project number for the request. Other information which is also displayed is the organisation updating the drawings and a project number or description in the Additional Notes field.

In some cases, new designs may not yet be available through the Drawing Management System or the office copy may not yet have been updated from previous design changes. In all cases the designer for new works or projects shall check the status of the delivered files with the respective asset manager or delegated authority for the location. The Design Engineer is responsible for ensuring that the designs are based on the correct status of the current infrastructure. In some cases, this may involve correlation checking.

5.3 Requests for New Drawing Numbers

For new infrastructure works where drawings are not already in the Drawing Management System or upgrade works result in the requirement to add extra drawings, new drawing numbers will need to be issued.

Some requests will involve a combination of updating existing drawings and new drawing numbers to be issued. In this case, the procedure detailed in section 5.2 will be followed for existing drawings. New drawing numbers will be created separately and the existing drawings and new drawing numbers will have their own metadata sheet. A transmittal advice will be created and sent with the metadata sheets and existing drawings approved for update.

Where only new drawing numbers are requested, the transmittal advice and a metadata sheet containing the new drawing numbers will be issued.

The location code forms part of the new drawing number issued from the DMS. A full list of codes from RAMS is available from the DMS Administrator.

5.4 Processing Drawing Requests

Where a request is approved, the DMS Administrator will prepare the requested drawings and signal data for issue. The records in the DMS are updated to show that the drawings and data have been checked out and a transmittal and metadata sheet are also created for issue to the drawings requestor.

The Transmittal will reference the Network Alteration Notice or project number for the works being undertaken. This should be used in any follow up inquiries regarding the drawings. The relevant corridor engineer is to be copied in on the transmittal to ensure they are aware of pending changes to the drawings affecting their part of the network.

For requestors who are users in Aconex, the transmittal and copy files will be accessible via this system. Master files which have restricted access will need to be provided separately. Requestors who are not users in Aconex will need to be provided with this information via Outlook or file sharing programs such as ARTC data exchange platform or OneDrive.

Drawings may be held as either scanned drawing files or CAD files and files available will vary from location to location.

5.5 Archiving Drawing Files

When drawings have been updated and the new versions provided for update to the DMS, the existing drawing files will need to be superseded and their data amended accordingly.

In some cases drawings may not have been updated but may no longer be required as a result of a project or maintenance activity. Details of these drawings also need to be supplied with the updated files and metadata so that redundant files can be archived in the system.

These tasks are performed by the DMS Administrator.

NOTE: *Drawings relating to decommissioned infrastructure also need to be archived in the DMS and relevant details included in the drawings metadata.*

5.6 Cancelled or Deferred Projects

When a project is cancelled or deferred indefinitely and existing drawings have been issued for update, the checked out status will need to be updated in the Drawing Management System so that the current file then becomes available for future use. Details relating to the project cancellation or deferment shall be included in the Additional Notes metadata field for future reference.

Any design drawings created for a project which has been cancelled or deferred are to be added to the Drawing Management System with the status of Not Started. The project number and further information relating to the cancellation/deferment also need to be included in the relevant metadata fields.

6 Drawing Numbering

6.1 Drawing Numbering for New Drawings

New drawing numbers will be allocated from the Drawing Management System and supplied by the DMS Administrator. Requests for new drawings shall only be issued if a valid Network Alteration Notice number has been provided.

As part of project planning, drawing requirements and outputs need to be clearly identified. These requirements should include whether existing drawings will need to be updated or new drawings created or a combination of both and how many drawings will be involved. If new drawings are required numbers are requested through the DMS using the quantity identified to meet the project needs. Should extra new drawings subsequently be required, further drawing numbers can then be requested from the DMS in a separate request.

The DMS Administrator will issue new Drawing numbers in the following format:

ZZZ-X0001

Breakdown of Number:	
ZZZ	Location code from RAMS
X	Indicates the appropriate ARTC Discipline as tabled below
0001	This is the sequential unique drawing identifier

Discipline
S – Structures
C - Civil - Rail
E – Environmental & Studies
R – Rail Systems (signals, communications, wayside, electrical, ATMS)
T - Tunnels

Where drawings are required to cover the details relating to multiple locations, new drawing numbers will be issued in the following format:

YYY-ZZZ-X0001

Breakdown of Number:	
YYY	Location code from RAMS for start location of multiple location drawing
ZZZ	Location code from RAMS for end location of multiple location drawing
X	Indicates the appropriate ARTC Discipline as tabled below
0001	This is the sequential unique drawing identifier

Where drawings are required for infrastructure situated between designated RAMS locations, the location code of the RAMS location nearest to the infrastructure is to be used. If further guidance is required, then advice is to be sought from the Configuration Manager.

6.2 Additional Drawings for Existing NSW / QLD Signal Circuit Books

Where new drawings are required to be added to an existing NSW/QLD signal circuit book, new drawing numbers are to follow the requirements detailed in SDS 25 Signalling Circuit Design Standards. In this instance new drawing numbers would not be requested through the DMS.

Where a new signal circuit book is being established, the request for new drawing numbers can be processed through the DMS.

6.3 Standard Drawings

To ensure there is no duplication of Standard Drawing numbers, all Standard Drawings requests shall be through the ARTC DMS.

Requests to update Standard Drawings will require the completion of a Drawing Alteration Request Form EGP0401F-01, specifying the changes required and reason for the change. The form will be submitted for approval to the Manager Standards and drawings will not be issued for update until the application is approved. See procedure EGP-04-01 Engineering Drawings and Documentation for further information.

6.4 Previous Drawings

All Drawings produced under previous administrations and procedures will be entered into the ARTC DMS using the original drawing number.

Should these drawings require updating and be in non-editable format, they shall be updated into AutoCAD or Microstation, on a standard ARTC template and be issued with a new ARTC drawing number.

6.5 Proprietary Drawings

These are drawings prepared by other organisations such as manufacturers and third parties (e.g. utilities). The intellectual property of these drawings belongs to the organisation that created them. These drawings may be supplied to various clients of the organisation and updated at any time. The content of the drawings can only be updated with the permission of the organisation and the current status or version can only be verified by them.

These drawings are supplied to ARTC for reference only purposes such as maintenance requirements and they are therefore normally supplied in non-editable format. These drawings will be referenced in the DMS by their original drawing number and any other information relevant to ARTC that assists with finding them in the DMS such as location and project number.

6.6 Manufacturing Drawings

Drawings used in the manufacture of equipment or standard infrastructure items such as turnouts and culverts are normally generated and maintained by the manufacturing organisation.

Should manufacturing drawings be created specifically for ARTC, they shall use the ARTC standard drawing template, an ARTC issued drawing number and follow ARTC drawing requirements detailed in EGP-04-01.

7 Metadata

7.1 Existing Drawings

Once an existing drawing has been updated, the Metadata Form shall be updated to include all the required metadata for each drawing. The completed metadata shall be sent with a copy of the finished drawing.

If an existing drawing is to be redrawn from a scanned file, a new drawing number will be required and the drawing placed into the standard ARTC template with all required metadata entered in to the border as well as on the Metadata Form supplied from the Drawing Management System.

The previous drawing number shall be included in the Additional Notes field of the Metadata Form to identify which drawing has been superseded during the update.

7.2 New Drawings

Once an allocated drawing number and template has been used, the required metadata shall be completed on the standard ARTC sheet to include all the required metadata for each drawing. On return of the completed sheet the metadata shall be automatically loaded in to the ARTC DMS on registration of the completed drawing.

7.3 Metadata Required

The following metadata is to be supplied with drawings:

File Name

The file name is a combination of the drawing number, revision and file format.

E.g. drawing number ARTCN010596, revision A, in AutoCAD format would have a filename ARTCN010596A.dwg.

Document No.

All new drawings will be numbered in accordance with section 8.1 of this procedure.

Inherited generic drawings would retain their drawing number unless being updated.

Drawings from other organisations held for reference would retain their drawing number.

Revision Date

Date a new design is signed; or date as-built drawings are updated; or date certified commissioning copy was commissioned.

For NSW signal drawings this is the date shown on the control sheet for the circuit book.

Location

This contains the geographic location name. For drawings covering multiple locations, each location can be referenced against the drawing as required.

Line Segment

The ARTC line segment is as detailed in the Drawing Management System for existing drawings. For new drawings, a full list of line segments is available from the DMS Administrators.

Location in Km

This is the distance of the location as traditionally measured for the state/region and shown with 3 decimal places.

File Category

Master or Copy

Type

Denotes the type of document being stored. Most commonly this will be Drawing.

Other available options include Checklist, Data Sheet, Plan, Report, Schedule and Work Package

Status

Drawing Status	Description
For Construction	An accepted design drawing issued for construction as part of a project or maintenance activity
As Commissioned	A marked up For Construction drawing containing changes identified during the project works, which need to be made to the design drawing to form the As Built drawing version. Most common in signalling drawings.
As Built	The final drawing version from project or maintenance works that reflects the current configuration of the item in operational mode.
Not Started	Used to issue new drawing numbers when there are no existing records. Can also be used for design drawings which have been stored in the DMS from a project which has been put on hold or not proceeded
For Information	Used for drawings which are the property of other organisations such as manufacturers and utilities. Also used for historic drawings where the current relevance of the drawing has not been determined.
Superseded	Used for drawings where the content is no longer relevant to the current infrastructure. e.g new or changed infrastructure now represented by a different drawing or infrastructure that has been decommissioned from service without replacement.
Archived	Used for standard drawings which are no longer suitable for use
At Completion	Used where a drawing set is subject to multiple concurrent designs or frequent updates and enables each design version to be closed out in the DMS as the changes are incorporated into the As Built file. This assists in identifying which designs are still outstanding in the DMS at any given time.

Revision

As described in EGP-04-01 section 4.2

Title

This field contains the detail that would appear in the title block of a drawing such as:

- Muscle Creek Underbridge Renewal Pier Strengthening Concrete Details
- Nammoona Loop Extension Track Alignment
- Yongala 13P Location Power Supply Circuits

Sub Discipline

This includes additional information to concentrate searches using a particular discipline.

For structures drawings this could include Culvert, Bridge – Rail Over, Bridge – Road Over, , Retaining Structures.

For rail systems drawings this could include Circuit Book, Control Table, Detailed Site Survey, Drivers Diagram, Signal Plan, Track Insulation Plan, Communications Systems.

For signalling data this could include CBI (computer based interlocking), LX Predictor (e.g. GCP grade crossing predictor), LX Monitor (e.g. Cerberus)

For track and civil drawings this could include Alignment, Drainage, Road-Rail Crossing, Formation, Signage, Turnout, Public Utilities, Fencing, Access Roads.

Discipline (Function)

As per the table in section 6.1.

Authoring Organisation

Organisation responsible for originating the drawing.

ARTC Project ID

Used for booking out drawings for update and as an additional reference for searching for drawings.

This will be the Network Alteration Notice number for all drawings. (eg – As-Builts, For Construction, As Commissioned etc.) The drawing numbers relating to For Construction and As Commissioned drawings may contain the NAN number to assist in identifying drawings where multiple or frequent works affect a particular set of drawings.

Project ID is not relevant for standard drawings as these are not specific to any one project.

Additional Notes

Additional field for searching for specific subject - Optional use.

This may include details relating to an equipment approval, specific project information, related file details or further information on other organisation's drawings included for reference purposes.

Asset/Equipment ID

This is an equipment number derived from the Ellipse asset management system. It covers all physical assets installed on the network. The structures engineers use this as a reference for much of their information and it also applies to signals, electrical and track assets.

8 Superseded Drawings

A list of known superseded drawings is to be supplied to the ARTC DMS to enable ready archiving of these superseded drawings.

This information can be provided as part of the metadata supplied with updated drawings, if the superseded drawings were included in the drawing request for the project and should therefore be included in the drawings being returned to the Drawing Management System for update.

For existing drawings superseded by new drawings and not identified as part of the initial drawing request, advice of superseded drawings details would be provided separately to the metadata of the new drawings, as the entire metadata of the existing drawings may not be known by the requestor.

9 Baselines

Drawings can be identified as part of a set of product drawings which describe that product at a specific point in time. This is known as a baseline and once established, can be used as a reference for further activities relating to that product. An example is an As-Designed baseline.

Note: The Baseline functionality within the DMS is yet to be developed.

10 Document Tree or Drawings Index

The Document Tree is the relational structure of the drawings and documents. Elements within the drawings and/or documents form a document tree and link them together in different relations.

A document tree shall be shown in its own drawing file either listing the details of all the drawings relating to a particular set or showing in a flowchart format how each drawing relates to the other drawings in the set.

On receipt of the drawing numbers and prior to the design being issued for construction, the drawing designer shall provide to ARTC an agreed document tree. This will allow us to identify the baseline of the drawings and provide details on how the documents are to be returned.

11 Drawing Submission

All drawings will be checked and accepted on behalf of ARTC and then approved by the relevant corridor representative for inclusion into the DMS.

All drawings, new or revised, submitted for capture in the DMS shall be accompanied by a Transmittal form along with the required metadata as required by this procedure.

A Drawings for Submission Checklist EGP0401F-02 should be completed and forwarded with the metadata and drawing files.

A Signal Data Submission form EGP0401F-06 shall be completed and forwarded with the data files.

Contractors returning drawings to the ARTC DMS shall ensure that all drawings comply with the requirements of this procedure and shall provide the original CAD design along with a signed pdf version.

A sample check will be carried out by ARTC and any drawings found not to be compliant will be returned to the contractor for correction.

For contractors not providing files via Aconex, drawing files may be submitted in a 'zip' file by email to ARTC DMS or via file sharing programs and must include the following information:

- Zip filename which includes project identifier, date of submission
- Email volume # of # (if applicable)
- Submission Checklist
- Drawing Number/Metadata Form
- Transmittal Notice.

11.1 Update of Field Maintenance Copies

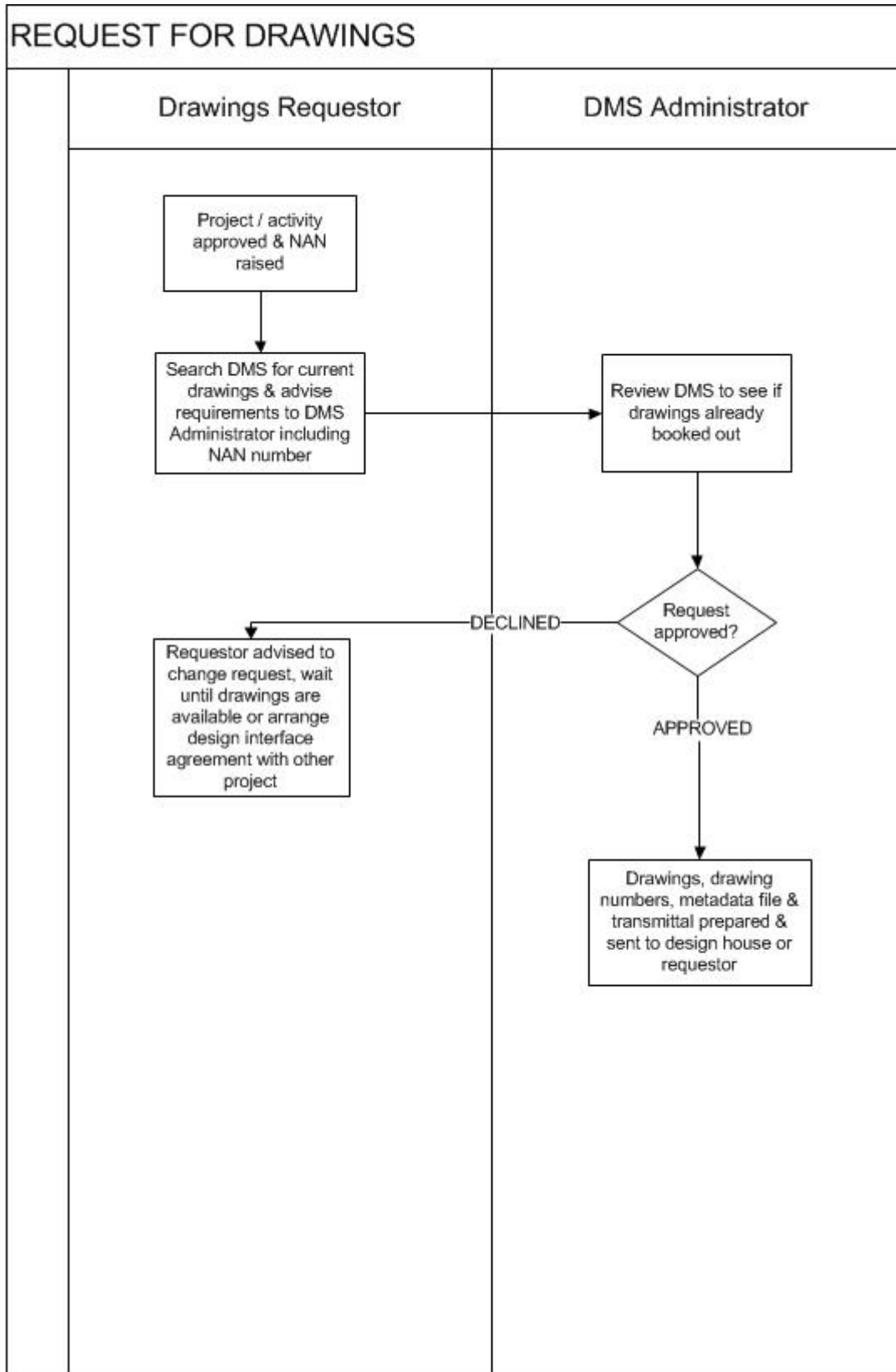
Following receipt of As Built drawings from a defined project or maintenance activity and where a hard copy of the drawings/documents is required to be forwarded from the Drawing Management System to be held on site, the Maintenance Copies Drawings Transmittal form EGP0401F-03 will be used to confirm the receipt of these drawings/documents and destruction of any previous versions held at that location.

The DMS Administrator will complete the form with the details of the drawings/documents to be supplied and then forward all relevant files with the form to the required location.

The relevant ARTC maintenance staff member will complete their details on this form to acknowledge that these actions have been performed and then return the form to the DMS Administrator.

12 Drawing Management System Flowcharts

12.1 Request for Drawings



12.2 Receipt of Drawings

