

Drawing Management System

EGP-04-02

Applicability

ARTC Network Wide
SMS

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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.

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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).

Drawing ownership and management in Victoria resides with Public Transport Victoria (PTV) and Victorian Drawing Management System procedures apply.

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.

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
- 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:

- On line search capability
- Manage the booking in and booking out of drawings on-line
- 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.

3 Other Drawing Management Systems

3.1 Victorian Drawing Management System

Drawings related to the ARTC Network in Victoria are controlled by the Public Transport Victoria (PTV) Drawing Management System. PTV will issue new drawing numbers for use on their drawing template and hold the As-built drawings for this jurisdiction.

As-designed / For Construction and As-commissioned drawings for Victorian infrastructure will be held in the ARTC DMS as PTV DMS requirements only cover As-built drawings.

Drawings shall be managed in accordance with the PTV Drawing Management System Processes document. . This can be found on Connect under Our Network\Engineering Standards & Procedures\Network Configuration or by contacting PTV DMS email dms@ptv.vic.gov.au and all staff or contractors that require access to the PTV DMS shall make themselves aware of the requirements of this document and comply with the conditions it contains.

4 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 and access to drawings requested for update. Completed drawings are also returned by contractors via Aconex.

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

5 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 activities 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 or maintenance activities 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.

Updates to drawings from defined projects and maintenance activities are identified by the use of the NAN 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 7.3).

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\Engineering Standards & Procedures\Network Configuration. Full details of DMS Administrator functions are available to approved users only.

6 Drawing Updates

6.1 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 an orange 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.

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.

6.2 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 2.6 for more information.

Once a project or maintenance activity has been approved, a Network Alteration Notice (NAN) needs to be completed for this activity. The NAN 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 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.

6.3 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 6.3 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.

6.4 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 have a reference number. This should be used in any follow up inquiries regarding the drawings.

For requestors who are users in Aconex the transmittal and files will be accessible via this system. Requestors who are not users in Aconex will need to be provided with this information via Outlook or file sharing programs such as Dropbox.

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

6.5 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.

6.6 Cancelled or Deferred Projects

When a project is cancelled or deferred indefinitely and drawings have been issued for update, the booked out status will need to be removed from the Drawing Management System and 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.

7 Drawing Numbering

7.1 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

7.2 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.

7.3 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.

7.4 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.

7.5 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.

8 Metadata

8.1 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.

8.2 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.

8.3 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.

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

Standard available options are As-Built, As Commissioned, For Construction, Information Only and Superseded.

Not Started is available for use when issuing new drawing numbers and Archived is available for use with Standard and former CRN drawings.

Revision

As described in EGP-04-01 section 3.2

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.

Discipline (Function)

As per the table in section 7.1.

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 copies other than NSW signals As-Builts (eg – For Construction, As Commissioned etc.) 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.

9 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.

10 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.

11 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.

12 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 that has been completed and submitted via the ARTC DMS 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. Signal specific drawing submission checklist forms can be found at http://extranet.artc.com.au/eng_signal_form.html

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.

12.1 Update of Field Maintenance Copies

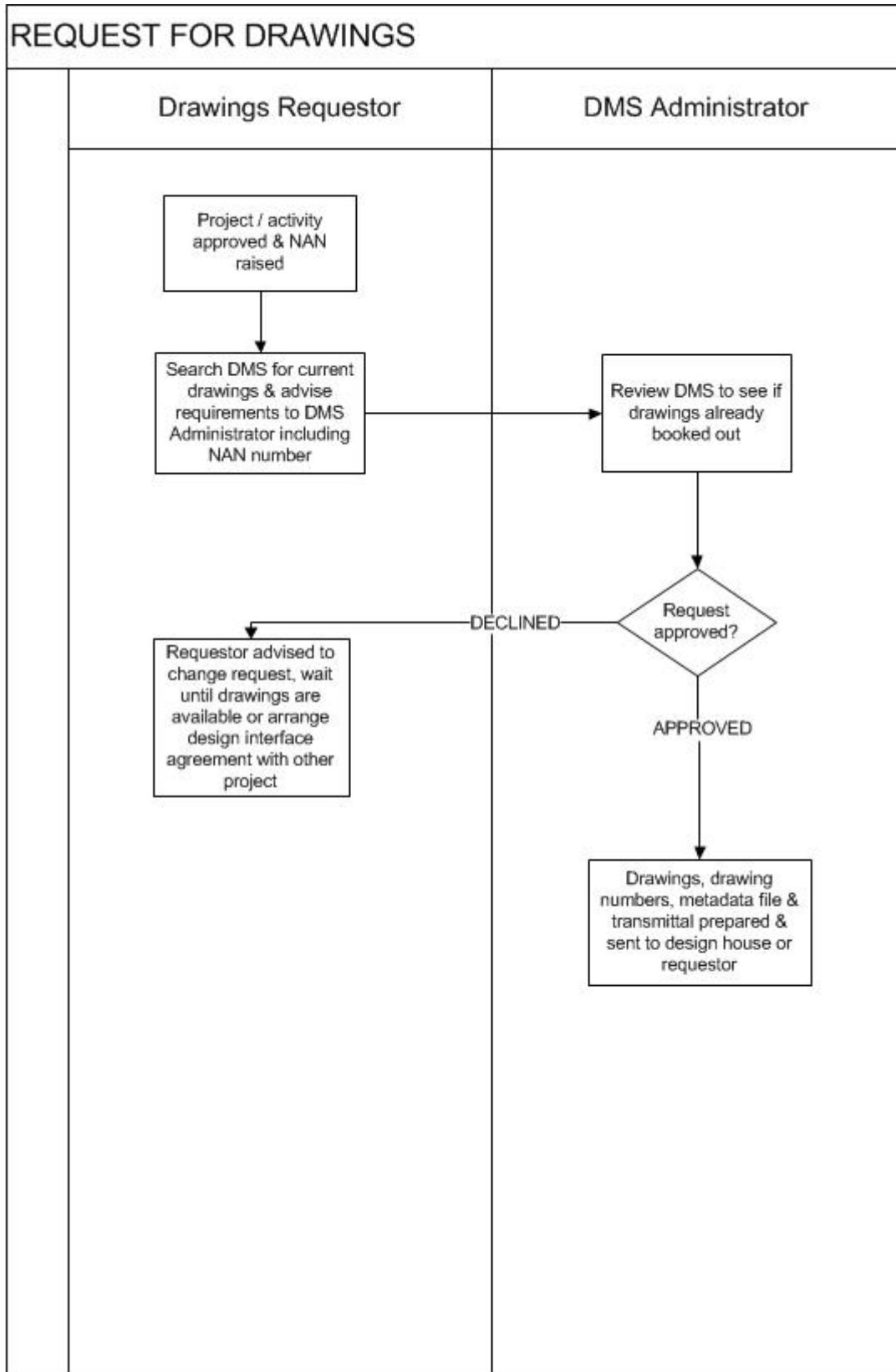
Following receipt of As Built drawings from a defined project or maintenance activity and where a hard copy of the drawings/documents is required to be forwarded from the Drawing Management System to be held on site, the Maintenance Copies Drawings Transmittal form EGP0401F-03 will be used to confirm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

13 Drawing Management System Flowcharts

13.1 Request for Drawings



13.2 Receipt of Drawings

