Transport Asset Standards Authority

T MU AM 01014 ST

Standard

Asset Information Handover Requirements

Version 1.0

Issue date: 05 July 2019

Important message

This document is one of a set of standards developed solely and specifically for use on Transport Assets (as defined in the Asset Standards Authority Charter). It is not suitable for any other purpose.

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Standard governance

Owner: Manager Asset Information, Network and Asset Strategy, Asset Standards Authority

Authoriser: Director, Network and Asset Strategy, Asset Standards Authority

Approver: Executive Director, Asset Standards Authority on behalf of the ASA Configuration Control Board

Document history

Version	Summary of changes
1.0	First issue

Preface

The Asset Standards Authority (ASA) is a key strategic branch of Transport for NSW (TfNSW). As the network design and standards authority for NSW Transport Assets, as specified in the *ASA Charter*, the ASA identifies, selects, develops, publishes, maintains and controls a suite of requirements documents on behalf of TfNSW, the asset owner.

The ASA deploys TfNSW requirements for asset and safety assurance by creating and managing TfNSW's governance models, documents and processes. To achieve this, the ASA focuses on four primary tasks:

- publishing and managing TfNSW's process and requirements documents including TfNSW plans, standards, manuals and guides
- deploying TfNSW's Authorised Engineering Organisation (AEO) framework
- continuously improving TfNSW's Asset Management Framework
- collaborating with the Transport cluster and industry through open engagement

The AEO framework authorises engineering organisations to supply and provide asset related products and services to TfNSW. It works to assure the safety, quality and fitness for purpose of those products and services over the asset's whole-of-life. AEOs are expected to demonstrate how they have applied the requirements of ASA documents, including TfNSW plans, standards and guides, when delivering assets and related services for TfNSW.

Compliance with ASA requirements by itself is not sufficient to ensure satisfactory outcomes for NSW Transport Assets. The ASA expects that professional judgement be used by competent personnel when using ASA requirements to produce those outcomes.

About this document

This document informs stakeholders involved in identifying the information deliverables required during the development of asset information delivery plans used in the transition of asset information throughout the asset life cycle including project commissioning handover and contract term end handover.

This document has been developed from T MU AM 02001 GU *Developing Configuration Information Delivery Plans*, version 2.0.

This document supersedes T MU AM 02001 GU and is a first issue.

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1. Introduction

Transport for NSW (TfNSW) requires that data and information, being assets, are effectively managed across the life cycle. TfNSW also requires that any activities related to a network level configuration change (covering both fleet and infrastructure assets) as part of asset acquisition (design, construction or procurement), operations and maintenance and disposal are appropriately managed to meet the requirements of the TfNSW configuration management framework.

The Asset Standards Authority (ASA) seeks to achieve a high level of confidence that accurate and up-to-date asset data and information is maintained and available for TfNSW transport assets across the life cycle including asset handover of the following:

- new or altered assets delivered or procured as part of acquisition
- assets maintained under contract during operations and maintenance including disposal

2. Purpose

This document defines the fundamental asset information requirements (AIRs) and respective timing of the asset information handover in accordance with the following:

- asset handover plan as specified in T MU AM 01005 ST *Asset Handover Requirements* for new or altered assets delivered by projects
- contractual requirements during and at the end of a maintenance contract

This document also supports the prompt delivery of consistent asset information as specified in T MU AM 04001 PL *TfNSW Configuration Management Plan*. It provides the confidence that configuration change managers (CCMs) are aware of their deliverables and obligations related to network level configuration changes associated with construction, procurement and maintenance contracts.

2.1. Scope

This standard provides a description of AIRs and timing of asset information handover. It specifies the minimum set of asset information deliverables by type and format required for asset acceptance and as part of the asset handover throughout the asset life cycle. The focus of this document is related to defining the requirements and the delivery of information requirements leading up to and including asset handover at the following stages:

- at asset acquisition to TfNSW (asset data owner) and to maintenance service providers (asset data custodian)
- from maintenance service providers (asset data custodian) back to TfNSW (asset data owner)

2.2. Application

This document applies to parties implementing configuration changes to the Transport Network and associated asset information. The requirements of this document apply when delivering or receiving all necessary asset information from the following:

- projects for new or altered assets (including those disposed, repurposed or preserved under heritage)
- maintainers for contracted assets

This document applies to all TfNSW transport assets and associated asset information that is created and managed by all transport cluster agencies and service providers contracted by TfNSW.

3. Reference documents

The following documents are cited in the text. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document applies.

Transport for NSW standards

ST-207 Digital Engineering Standard Part 2 – Requirements (available from digital.engineering@transport.nsw.gov.au)

T MU AM 01001 ST Life Cycle Costing

T MU AM 01003 ST Development of Technical Maintenance Plans

T MU AM 01005 ST Asset Handover Requirements

T MU AM 01007 TI Asset Reference Codes Register

T MU AM 01009 TI Technical Maintenance Coding Register

T MU AM 01012 ST Engineering Document Requirements

T MU AM 02001 ST Asset Information and Register Requirements

T MU AM 02002 TI Asset Classification System

T MU AM 02003 TI Register of Asset Information Systems and Repositories

T MU AM 02004 ST Management of Asset Information

T MU AM 02006 TI Asset Register and Data Dictionary

T MU AM 04001 PL TfNSW Configuration Management Plan

T MU MD 00006 ST Engineering Drawings and CAD Requirements

Other reference documents

Disability Discrimination Act 1992

The Australian Building Codes Board, National Construction Code, Volume one and Volume two

4. Terms and definitions

The following terms and definitions apply in this document:

AFC approved for construction

AIDP asset information delivery plan

AIM asset information model; data and information that relates to assets to a level required to support an organisation's asset management system

AIR asset information requirement; data and information requirements of the organisation in relation to the assets it is responsible for

AMSA Australian Maritime Safety Authority

asset data custodian a person accountable for managing the asset information on behalf of the data owner for the relevant life cycle stage and process within their scope

asset data manager a person responsible for managing the asset information repository and the processes related to the governance of the asset information in the repository on behalf of the data steward

asset data steward a person responsible for managing the asset information on behalf of the data custodian

asset information the combined set of data (geometrical and non-geometrical) and documents (drawings, manuals, plans, certificates) required to support the management of assets over the life cycle

asset information system a set of interrelated repositories and interfaces used to capture and manage both structured and unstructured asset information and enable related processes required to manage the asset portfolio over the life cycle

asset register record of asset inventory considered worthy of separate identification including associated historical, condition, construction, technical and financial information about each asset

ATP automatic train protection

CBI computer based interlocking

CCB configuration control board

configuration change a functional or physical change to an asset

CCM configuration change manager; the person who has primary responsibility for a configuration change. For projects, the project manager is the configuration change manager

DDA Disability Discrimination Act 1992

document any record of information and includes -

a) anything on which there is writing,

b) anything on which there are marks, figures symbols or perforations having a meaning for the person qualified to interpret them, or

c) anything from which sounds, images or writings can be reproduced with or without the aid of anything else, or

d) a map, plan, drawing or photograph

FMECA failure mode, effects and criticality analysis

information model data set comprised of documentation, geometrical (graphical - using shape and arrangement in space) and non-geometrical (non-graphical - using alphanumeric characters) data linked together using a common data structure (schemas) and classification system

level of development collective term used for and including the level of detail (graphical or geometrical) and level of information (non-graphical or non-geometrical)

NCC National Construction Code

network configuration the configuration of transport assets viewed as an overall system that is for achieving the transport objectives of TfNSW and is composed of discrete configuration items identified at a level commonly identified by TfNSW

OLA operational level agreement

PIM set of structured and unstructured information containers relating to the delivery phase

Note: refer to ISO 19650-1: 2018 for the definition of information containers

PIR project information requirement; specification for what, when, how and for whom information is to be produced in relation to the delivery of an asset

RAMS reliability, availability, maintainability and safety

SLA service level agreement

TfNSW Transport for NSW

TLS through life support

transport assets assets used for or in connection with or to facilitate the movement of persons and freight by road, rail, sea, air or other mode of transport, and includes transport infrastructure (Transport Administration Act 1988)

transport infrastructure infrastructure (including associated vehicles, vessels and rolling stock) used for or in connection with or to facilitate the movement of persons and freight by road, rail, sea, air or other mode of transport (including walking and cycling). It includes:

- railways and railway infrastructure
- roads and road infrastructure
- maritime infrastructure and ports
- transport safety infrastructure
- systems, works, structures, buildings, plant, machinery and equipment that are associated with or incidental to transport infrastructure

transport mode means by which people and freight move from place to place. Falls into one of three basic types; land (land, rail, active), sea, and air

Transport Network the transport system (transport services and transport infrastructure) owned and operated by TfNSW, its operating agencies or private entities upon which TfNSW has power to exercise its functions as conferred by the Transport Administration Act or any other Act.

transport services includes railway services (including heavy rail, metro rail and light rail), bus services and ferry services

transport system means the transport services and transport infrastructure of NSW for all modes of transport

5. Asset information delivery

An asset handover plan as defined in T MU AM 01005 ST identifies and describes the management and delivery of asset information. It helps the transparent and complete handover of asset information between the deliverer, owner, operator and maintainer for all new and altered assets as required for those service providers managing the resulting as-built or procured assets. The asset handover plan defines the following:

- scope of the asset handover including all new, altered or disposed assets as a result of the project (not covered in this standard)
- scope of the asset information that shall be progressively submitted leading up to each asset handover event; to whom it is provided including but not limited to the physical asset register and the financial fixed asset register (in accordance with the asset information delivery plan (AIDP)) including the following:
    - the delivery of the asset information shall meet the requirements of the specification, defined and managed in collaboration with all the relevant parties receiving the

information and in accordance with T MU AM 02001 ST *Asset Information and Register Requirements* and T MU AM 02004 ST *Management of Asset Information*

- the information under the custodianship of TfNSW that affects transport operations shall be handed over to TfNSW and shall be defined within the asset handover plan
- the interface coordination shall determine the agreed quantity or level of asset information required per project in conjunction with any supporting discipline specific infrastructure and fleet standards
- the cost of capturing and delivering the complete set of AIRs shall be factored in when preparing the business case

The asset information handover requirements are heavily dependent on the scope of the project being delivered for both infrastructure and fleet projects.

An AIDP shall be used to demonstrate control and governance of the delivery and acceptance of accurate and complete asset information. An AIDP shall be tailored to suit the information requirements of TfNSW, cluster agencies and service providers involved in the asset handover and asset handback.

5.1. Asset information delivery – acquire stage (gates 2 to 5)

An AIDP shall be used as a tool to assist the delivering party (for example, CCMs) and the receiving party (for example, agencies and maintenance service providers) identify the asset information required by the proposed configuration change in consultation with the interface managers. The plan shall identify affected asset information at the completion of a detailed design or the construction stage of a project. The completed AIDP shall assure TfNSW as the asset owner and demonstrate that a project has appropriately managed the asset handover.

The delivering party shall develop AIDPs as part of the asset handover plan. The detailing of the AIDP shall assist the delivering party to be fully aware of the asset information deliverables and promptly prepare the asset information for delivery to TfNSW (asset owner and asset data owner) and the agencies and maintenance service providers (asset maintainer and asset data custodian).

5.2. Asset information delivery – operate and maintain stage (gate 6)

An AIDP shall be used as a tool to assist the delivering party (for example, agencies and maintenance service providers) and the receiving party (for example, TfNSW) identify the asset information required at contract end in consultation with the contract managers. The plan shall identify affected asset information at the completion of the maintenance contract. The completed AIDP shall assure TfNSW as the asset owner and demonstrate that the maintainer has appropriately managed the asset handover.

The delivering party shall develop AIDPs as part of the contract end of term. The detailing of the AIDP shall assist the delivering party (asset maintainer and asset data custodian) to be fully aware of the asset information deliverables and promptly prepare the asset information for delivery to TfNSW (asset owner and asset data owner).

6. Asset information delivery requirements

As a minimum the asset information delivery requirements defined in Section 6.2 and Section 6.3 support the high level requirements defined in T MU AM 02001 ST.

The delivering party shall provide asset information to the asset data custodian as agreed. The asset data custodian or delegate shall update their asset information systems to reflect the asset information delivered (for new or altered assets). This standard does not specify the process on how the asset information is delivered.

The delivering party shall develop the AIDP in consultation with all key stakeholders (including operators and maintainers) and in collaboration with TfNSW and asset data custodians. The asset information affected shall be clearly communicated and recorded between the delivering party and each asset data custodian. The plan should contain a submission schedule for delivery of each asset information requirement.

When a configuration change is complex and involves multiple packages (design and construction) a number of AIDPs shall be developed to improve the identification, management and delivery of the asset information. Figure 1 illustrates an example of asset information delivery for multiple sub-projects or packages delivered as part of a complex project.

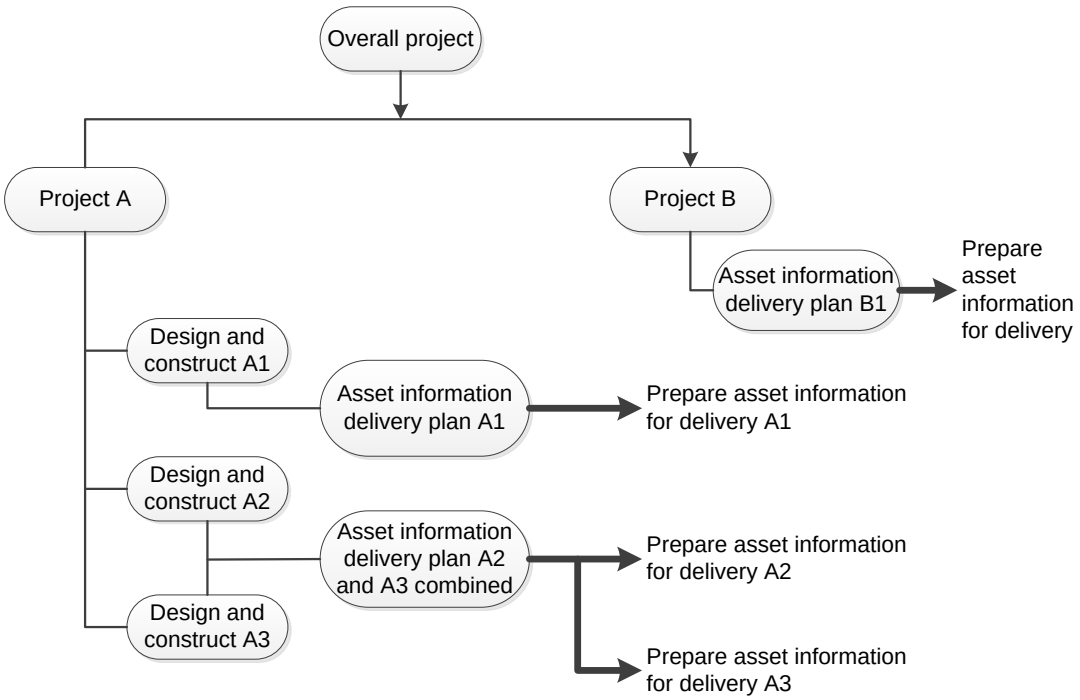

Figure 1 - AIDP – development

The identified asset information and dates in the plan shall be reviewed at key stages of the project. Figure 2 illustrates the progressive development of an AIDP across project stages and during operations and maintenance as part of contract end handover.

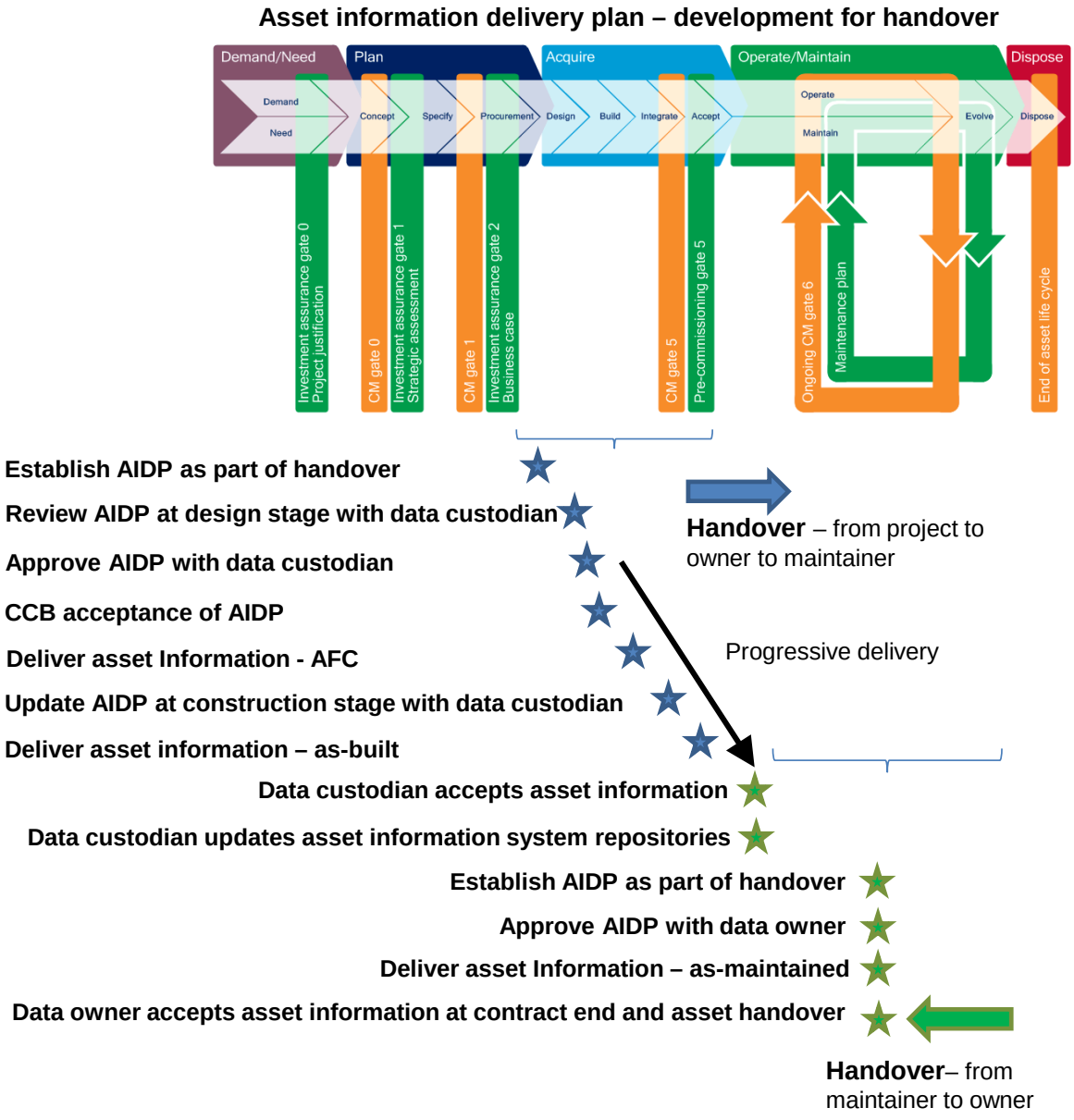

Figure 2 - AIDP - development for handover

6.1. Project assurance

Project delivery and assurance artefacts submitted as part of project configuration control gates that are staged deliverables are not defined as AIRs and therefore not covered in this standard in relation to asset information handover. This information shall still be submitted and retained by TfNSW. Project artefacts include, but are not limited to, the following:

- safety assurance plan
- safety assurance statement

- safety assurance report
- system assurance plan
- safety hazard assessment and hazard log
- project risk register (residual risks are handed over to the operator maintainer)
- concession to TfNSW standards (handed over to the operator maintainer)
- type approval
- proposed electrical traction and high voltage operating diagrams (new and amended)
- interface coordination plan
- asset handover plan
- asset handover notification (notification of forthcoming handover)
- asset handover certificate (technical and contractual)
- operational concept definition
- maintenance concept definition
- technical and functional specification – infrastructure and fleet

6.2. Asset information delivery requirements – acquire stage (gates 2 to 5)

The AIDP shall be part of the assurance evidence presented at defined project stages in accordance with configuration control board (CCB) requirements defined in T MU AM 04001 PL together with evidence that all required parties have been consulted for asset handover.

After the AIDP is approved by the relevant CCB it shall form the baseline for the delivery of asset information (data, documents, drawings and models) by the delivering party. The acceptance of the plan as part of a submission to a CCB shall be recorded to provide a traceable history of that particular configuration change.

The two primary asset information submissions shall coincide with the following two project stages as shown in Figure 3:

- end of detail design and prior to construction (AFC)
- after construction and commissioning (as-built)

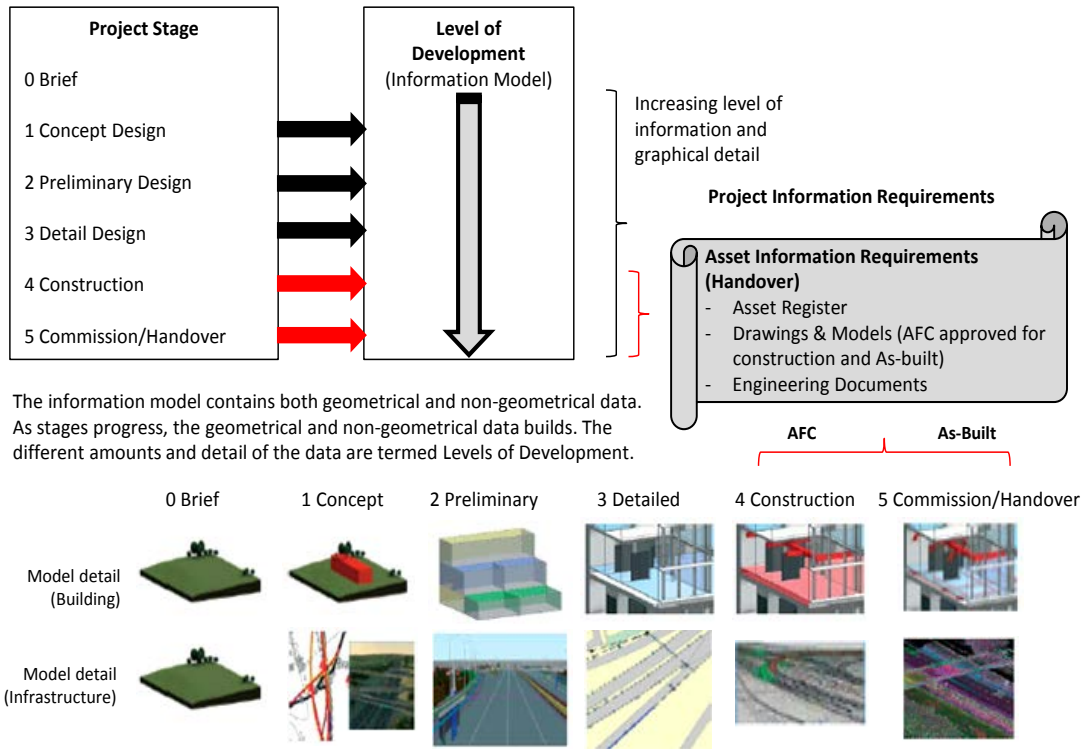

Figure 3 - Asset information maturity and delivery

When preparing an AIDP at detailed design stage, the delivering party shall identify the following:

- asset information for the proposed change required and appropriate for the project stage and type of project (construction or procurement)
- applicable standards, templates and format relevant to the delivery of each asset information deliverable
- dates for delivery of the AFC asset information

After the detailed design is completed and approved, the delivering party shall provide the relevant checked and verified asset information to the asset data custodian. The relevant CCB shall seek assurance that the asset information is delivered to the asset data custodian and recorded to provide traceability. After the agreed asset information is submitted, the asset data custodian shall provide the delivering party with confirmation of its receipt.

Asset information at the completion of detailed design stage shall include AFC drawings and information deliverables shown in Table 1 and corresponding with the relevant project stage listed in Table 2 as a guide.

Table 1 - Asset documents, drawings and models grouped by type

Type	Asset information deliverable - by type
Certificate	• Disability Discrimination Act 1992 (DDA) compliance certificate • National Construction Code (NCC), Volume one and Volume two compliance certificates (including design or construction certificates) - see note 1 • test and commissioning certificate – see note 2 • fleet certificate – see note 3
Drawing	• drawings - in accordance with T MU MD 00006 ST *Engineering Drawings and CAD Requirements* and applicable TfNSW standards (including site survey and aerial photography)
Model	• models - in accordance with ST-207 *Digital Engineering Standard Part 2 – Requirements*
Manual	• system manuals covering the following: o installation and maintenance manual o engineering manual o operations manual o training manual • equipment manual • warranty
Plan	• technical maintenance plan • asset management plan including an annual works plan • life cycle cost plan - in accordance with T MU AM 01001 ST *Life Cycle Costing Standard* • inspection and test plan (additional Inspection and test documentation requirements are specified in the applicable TfNSW standard) • environmental management plan
Procedure	• local instructions (site) • operating instructions and procedures (including fleet preparation procedures) • safe work method statement • test procedures and instructions

Type	Asset information deliverable - by type
Record	• design calculations • inspection and test records • configuration settings (for example, circuit breaker trip settings, transformer tap settings, I/O settings) • configuration records (for example, computer based interlocking (CBI) data, automatic train protection (ATP) balise data, clearance data, survey data – track alignment, curvature and monument data, fibre allocation) • interface agreement (including through life support – (TLS) deed) • maintenance agreement • material safety data sheet • service level agreement (SLA) and operational level agreement (OLA) • protocol of trials (vessels) • provisional acceptance record • builders guarantee • maintenance records during construction, testing and commissioning
Register	• asset register (including associated fixed asset capitalisation and Section 170 Heritage and Conservation Register and assets impacted (modified, disposed or vested) – in accordance with T MU AM 02001 ST • defects register • spares register • materials register (as-built construction materials) • register of special tools and equipment • register of vital and non-vital data • register of software and licences • work order register (including measurements and service records)
Report	• design report and design life • survey report • environmental report including geotech • sea trial reports (builders and Sydney Harbour – Australian Maritime Safety Authority (AMSA) requirement) • power study • failure mode, effects and criticality analysis (FMECA) or reliability, availability, maintainability and safety (RAMS) report • test and commissioning report • stability book (vessels) • asset condition report and assessment criteria • asset inspection or examination reports
Schedule	• service schedules - in accordance with T MU AM 01003 ST *Development of Technical Maintenance Plans* • schedule of finishes (in accordance with the NCC certificate)

Type	Asset information deliverable - by type
Specification	• material specification • process specification
Standard	• engineering standard • concession to TfNSW standards

Note 1: Examples of certificates required in relation to completed works – NCC compliance certificates:

- *certificate of design compliance*
- *certificate of construction compliance covering:*
  - *structural construction certificate*
  - *communication services construction certificate*
  - *drainage construction certificate*
  - *electrical services construction certificate*
  - *fire services construction certificate*
  - *glazing construction certificate*
  - *lifts and escalators construction certificate*
  - *mechanical ventilation and air conditioning construction certificate*
- *fire and life safety certificate*
- *fire door certificate*
- *fall arresting system certificate*
- *surveyors certificate*
- *WorkCover registration for lifts and escalators*
- *occupation certificate*

Note 2: Examples of test and commissioning certificates:

- *design integrity test certificate*
- *test readiness certificate*
- *practical completion certificate*
- *final completion certificate*

Note 3: Examples of fleet certificates and forms:

- *welders certification (vessels)*
- *compass deviation certificate (vessels)*

- *certificate of non-registration (vessels)*
- *P-mark certification (buses)*
- *bill of sale (vessels - AMSA requirement)*
- *notification of change of ownership (vessels - AMSA requirement)*
- *builders certificate (vessels - AMSA requirement)*
- *certificate of survey (vessels - AMSA requirement)*

All documents (except drawing and models) shall be delivered in accordance with T MU AM 01012 ST *Engineering Document Requirements*.

Table 2 - Asset documents, drawings and models grouped by stage of delivery and configuration gate

Gate	Asset information deliverable - by stage or gate
Requirements definition (gate 0 and 1)	• nil
Preliminary design (gate 2)	• concept drawings – in accordance with T MU MD 00006 ST • concept models – in accordance with ST-207
Detail design and construction (gate 3)	• AFC drawings – in accordance with T MU MD 00006 ST • AFC models – in accordance with ST-207 • asset register (including associated fixed asset capitalisation and Section 170 Heritage and Conservation Register and assets impacted (modified, disposed or vested) – in accordance with T MU AM 02001 ST • interface agreement (including TLS deed) • maintenance agreement • installation and maintenance manual • engineering manual • operations manual • training manual • equipment manual • technical maintenance plan and service schedules - in accordance with T MU AM 01003 ST • asset management plan including an annual works plan • register of special tools and equipment • register of software and licences • life cycle cost plan • operating instructions and procedures (including fleet preparation procedures) • local instructions (site) • test procedures and instructions • environmental management plan • environmental report including geotech

Gate	Asset information deliverable - by stage or gate
Testing and commissioning (gate 4)	• configuration records (for example, CBI data, ATP balise data, clearances, survey data – track alignment, curvature and monument data, fibre allocation) • configuration settings (for example, circuit breaker trip settings, transformer tap settings, I/O settings) • inspection and test plan • test and commissioning report • test and commissioning certificate • inspection and test records • maintenance records during construction, testing and commissioning
Handover to contracted maintainer (gate 5)	• as-built drawings – in accordance with T MU MD 00006 ST • as-built models – in accordance with ST-207 • defects register • spares register (required based on criticality and spares analysis) • materials register (as-built construction materials) • register of vital and non-vital data • warranty • design report and design life • design calculations • survey report • stability book (vessels) • power study • FMECA or RAMS report • material specification • process specification • SLA and OLA • DDA compliance certificate • NCC compliance certificates (including design or construction certificates) • schedule of finishes (in accordance with the NCC certificate) • protocol of trials (vessels) • sea trial reports (builders and Sydney Harbour – AMSA requirement) • provisional acceptance record • builders guarantee

Gate	Asset information deliverable - by stage or gate
Handover to TfNSW at contract end (gate 6)	• asset management plan (current for the financial year) • annual works plan (historic and current for the financial year) works program and delivery at a program level including forecast budget required to deliver the program • asset register (as-maintained) – in accordance with T MU AM 02001 ST including configuration changes or modifications and fitment of serialised rotables • defects register • work order register (complete work history including measurement and service records) • spares register (required level as defined at handover and actual level) • asset condition and assessment criteria and methodology used • updated documents or drawings provided at handover • additional documents or drawings not provided at handover (including reports) • technical maintenance plan (updated)

The asset data custodian is responsible for ensuring the AFC asset information is stored and managed in approved asset repositories. This includes asset information on assets altered, repurposed or disposed as a result of the project.

When preparing an AIDP for a proposed configuration change at the construction stage, the delivering party should identify the following:

- asset information for the proposed change required and appropriate for the project stage and type of project (construction or procurement)
- applicable standards, templates and format relevant to the delivery of each asset information deliverable
- dates for the delivery of pre-commissioning and post-commissioning asset information
- details of any temporary configuration change such as enabling works, or services relocation that will require the delivery of updated asset information
- a schedule of consultation about asset information handover with the asset owner, the asset data custodian and future or existing operators and maintainers

After construction and commissioning is completed, the delivering party shall provide the relevant checked and verified asset information to the asset data custodian. Evidence that the asset information has been checked and verified shall also be provided. The relevant CCB shall seek assurance that the asset information is delivered to the asset data custodian and recorded to provide traceability. After the agreed asset information is submitted, the asset data custodian shall provide the delivering party with confirmation of its receipt.

Asset information at the completion of construction and commissioning stage shall include as-built drawings and information deliverables shown in Table 1 and corresponding with the relevant project stage listed in Table 2 as a guide.

The timing of the handover of AFC and as-built asset information can vary with project complexity and how the project is delivered. The delivery party shall ensure that all asset information is complete and accurate in accordance with defined TfNSW standards.

The asset data custodian is responsible for ensuring the as-built asset information is stored and managed in approved asset repositories.

Both the structured and unstructured data shall be stored and managed in one, or a combination of linked systems, as shown in Figure 4 reflecting the complete asset history and shall be accessible by TfNSW as required.

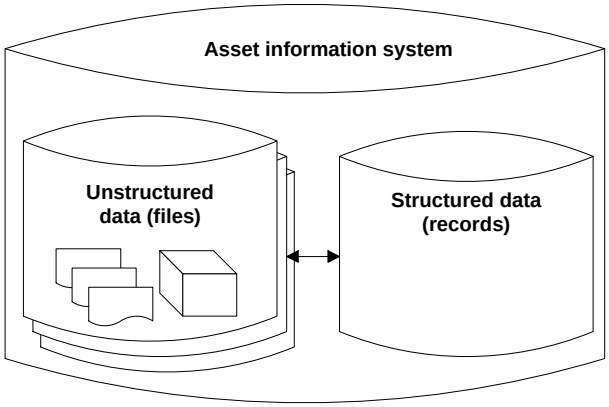

Figure 4 - Asset information system and repositories

Each unique asset instance in the asset register shall be the means to link the asset with unstructured documents and models using defined schema and leveraged off metadata standards in accordance with the following:

- T MU AM 02002 TI *Asset Classification System*
- T MU AM 01007 TI *Asset Reference Codes Register*
- T MU AM 01009 TI *Technical Maintenance Coding Register*
- T MU AM 02006 TI *Asset Register and Data Dictionary*

TfNSW publishes a list of approved asset repositories containing information owned by TfNSW. Refer to T MU AM 02003 TI *Register of Asset Information Systems and Repositories*.

6.3. Asset information delivery requirements – operate and maintain stage (gate 6)

The AIDP shall be part of the assurance evidence presented during the maintenance stage in accordance with TfNSW requirements, along with evidence that the all required parties have been consulted for asset handover.

After the AIDP is approved by the relevant CCB, it shall form the baseline for the delivery of asset information (data, documents, drawings and models) by the delivering party. The acceptance of the plan as part of a submission to a CCB shall be recorded to provide a traceable history of that particular configuration change.

The primary asset information submission shall coincide with the end of maintenance contract as shown in Figure 2 or progressively as defined within the contract.

The timing of the handover of as-maintained asset information can vary with contract complexity.

7. Asset document, drawing and model deliverables – by type

The documents, drawings and models in Table 1 define the minimum requirement (unless specified in a TfNSW standard) with respect to the type of asset information deliverables required as part of asset handover.

8. Asset document, drawing and model deliverables – file format

The file format for submission of asset information deliverables includes, but not limited to, the following:

- all unstructured documents (for example, certificates, manuals, plans, procedures) shall be in either pdf or doc format
- all structured data within documents (for example, registers, records, technical maintenance plan (TMP) service schedules) shall be delivered separately in either xlsx or csv format
- all associated drawing metadata shall be delivered in either xlsx or csv format
- all associated asset register attributes and metadata shall be delivered in either xlsx or csv format

- all 2D drawings shall be in either dgn or dwg format as well as pdf format in accordance with T MU MD 00006 ST
- for models refer to ST-207

9. Asset document, drawing and model deliverables – by stage or gate

The documents, drawings and models in Table 2 define the minimum requirements (unless specified in a TfNSW standard), with respect to the timing of asset information deliverables progressively required leading up to the project asset handover and contract asset handover in accordance with the asset life cycle shown in Figure 5.

The timing of the submission of the required documents, drawings and models are shown in Table 2 as a guide. The timing may be subject to change to meet the requirements of the contracted maintainer (data custodian) up to and including gate 5.

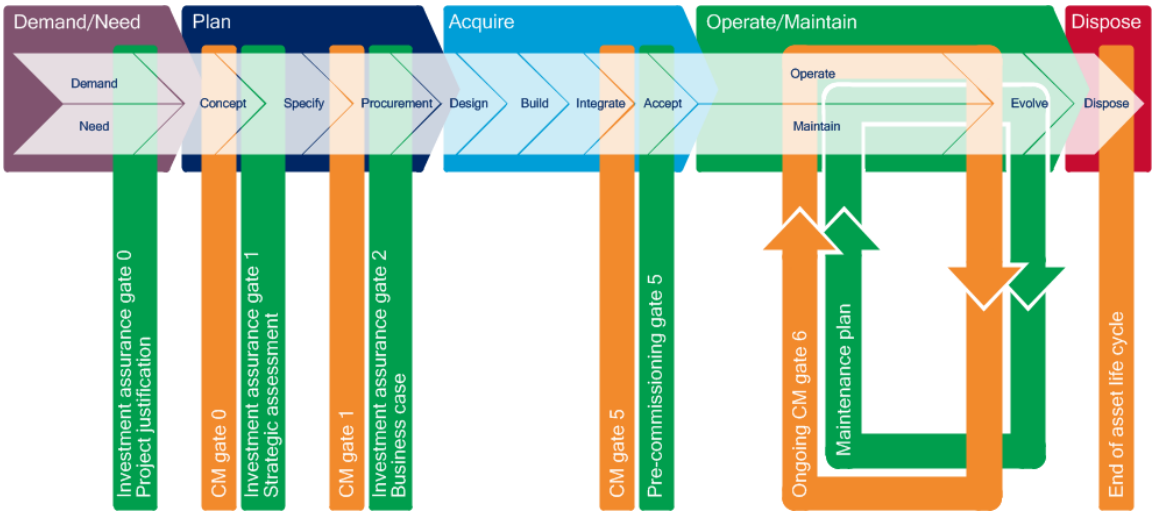

Figure 5 - Asset life cycle - phases, stages and configuration gates

10. Review process

AIDPs shall be reviewed by the asset data custodian and parties requiring asset information such as owners, operators and maintainers. The relevant CCB shall ensure that an effective review has occurred before it is delivered and accepted.