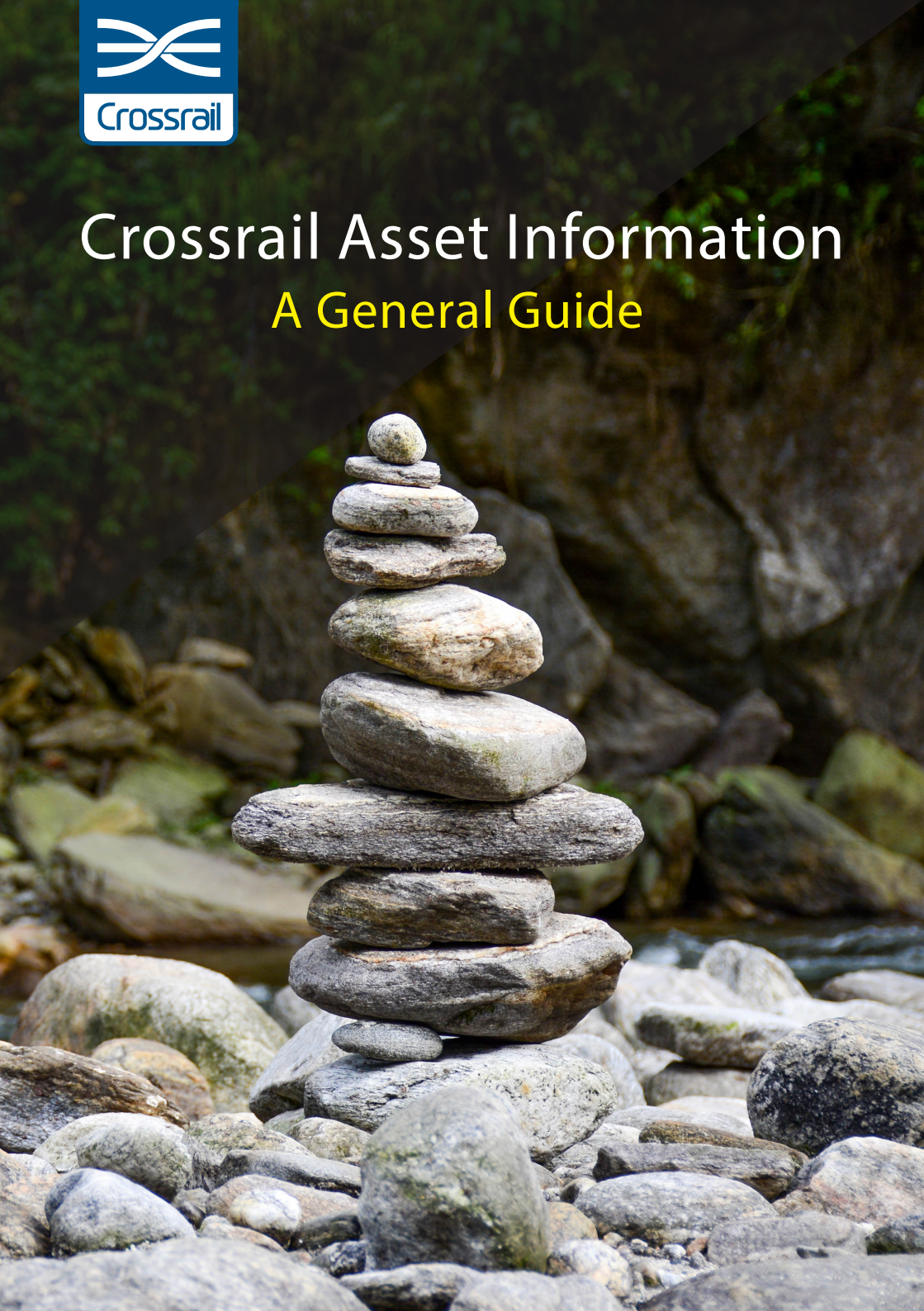
Crossrail Asset Information

A General Guide



Introduction to Asset Information

Delivering a complete, detailed set of Asset information to support the operations and maintenance of the Elizabeth Line is one of Crossrail's major challenges.

This guide provides simple guidance on the key activities to make tthis happen.

Process Overview

- Asset Naming
- Key Asset Relationships
- Equipment Process
- Asset Tag & Serialised Equipment Labelling
- Complete Asset Inventory inc. Attribute Data
- Handover to Infrastructure Maintainers

Key Documents

The list below features the key documents that provides more detailed information on how to conduct the activities featured in this guide.

Although this list is not exhaustive, the documents featured do contain links to other key Asset Information documents and guides.

Asset Information Management Framework

CRL1-XRL-Z3-STP-CR001-50002

Discipline Specific Strategies

Crossrail BIM Principles document CR-XRL-Z3-RGN-CR001-50005

GIS Business Development Plan 2013 – 2015 CRL1-XRL-G-STP-CR001-50002 (Under Review)

Governance

Asset Information Governance Group Terms of Reference - CRL1-XRL-Z-STP-CR001_Z-50005

Specification

Asset Identification Standard CRL1-XRL-O6-STD-CR001-00031

Asset Data Dictionary AIM-ADD-001

CAD Standards CR-STD-005

Asset Information Glossary CRL1-XRL-Z3-GUI-CR001-50012

Asset Information Naming and Labelling Convention CRL1-XRL-Z3-ADDSD-CR001-50413

Acquisition

Asset Information Provisioning Procedure CRL1-XRL-Z3-GPD-CR001-50004

Document Management Procedure CRL1-XRL-Z3-GPD-CR001-50001

Storage

AIMS User Manual CRL1-XRL-Z5-GML-CR001-50001

Asset Information Fundamentals CRL1-XRL-Z3-GPD-CR001-50007

Transfer

Section 11 of the Asset Information Management Framework

Key Terms

This section will list and briefly explain key terms and activities in the Asset Information lifecycle. For a more extensive list see document {document reference required}.

Asset
Generic term to describe a physical entity, or entities, supporting the provision of rail services

AIPP
Asset Information Provisioing Procedure - The method for the creation of Assets in AIMS and the provision of relevant Asset information by Crossrail staff, Contractors and Third Parties

ADD
Asset Data Dictionary - Specifies the Functions, Classes and related Attributes agreed as relevant to Crossrail

AD4
Asset Data Dictionary Definition Document - Defines in detail, the content of the Asset Data Dictionary (ADD)

AIMS
Asset Information Management System - A part of the Crossrail specific Bentley eB system used to manage and coordinate assets and related information

ADCS
Asset Data Collection Spreadsheet - Method to capture data relating to assets, variants of ADCS not mentioned in this glossary are equipment related (eg. EAS)

Asset Tag
A specific design duty or functional requirement that needs fulfilling for Civils & Structures, MEPA and Railway Systems assets

Asset Naming
Applying a specific meaningful name to each individual asset

Attributes
Functional and physical characteristics of items held on the ABS

ABS
Asset Breakdown Structure - A structure made up of Facilities, PFUs, LFUs and FUs which is used to logically group assets

ATOS
Asset Tag Owner Spreadsheet - Method to assign Assets to an Owner (Infrastructure Manager)

ATPS
Asset Tags to PFU Spreadsheet - Method to allocate Assets to a PFU and other nodes of the ABS

ATSS
Asset Tags to Spaces Spreadsheet - Method to assign Assets to a physical space

Asset Labelling
Applying Asset Tag Labels & Equipment Labels to aid future asset identification

Equipment
A distinct combination of make/manufacturer and model/type that can be used to fulfil the duties of an Asset Tag

PFU
Primary Functional Unit - A virtual Asset that represents a system of inter-related Functional Units (Sub-systems) and/or Asset Tags, Equipment and Serialised Items fulfilling a specific duty

LFU
Locational Functional Unit (LFU) is defined by all the Functional Units and assets that make up and support the Primary Functional Unit (PFU) at a defined LCS1 area. The LFU is a subset of a PFU where systems span across two or more locations such as Geographic Facilities.

FU
Functional Unit - A virtual Asset that represents a sub-system of inter-related Asset Tags, Equipment and Serialised Items fulfilling a specific duty

Serialised Item or Serial/Batch
A unique instance of Equipment identified by a serial ID

Asset Naming

What is Asset Naming?

The activity of applying a specific meaningful name to each individual asset to give context eg. not just 'Pump' but 'Pump 04'

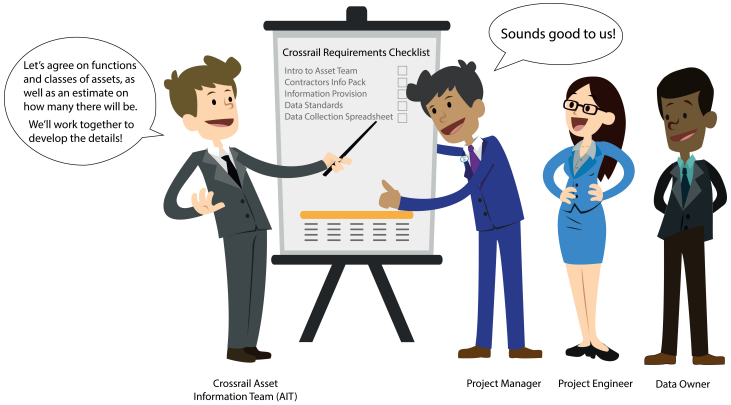
Naming involves clear and consistent naming of assets to ensure asset identification can be achieved more easily. Consistent, and intelligent, naming principles will also enable manipulation of asset data through the use of consistent structured asset names.

How are Assets Named?

There are two stages to naming assets, **Stage A** and **Stage B**.

Stage A initiates the process of capturing asset information:

- Ensure all staff involved are aware of overall process
- Agree the Functions and Classes related to a project and estimate the overall number of Asset Tags

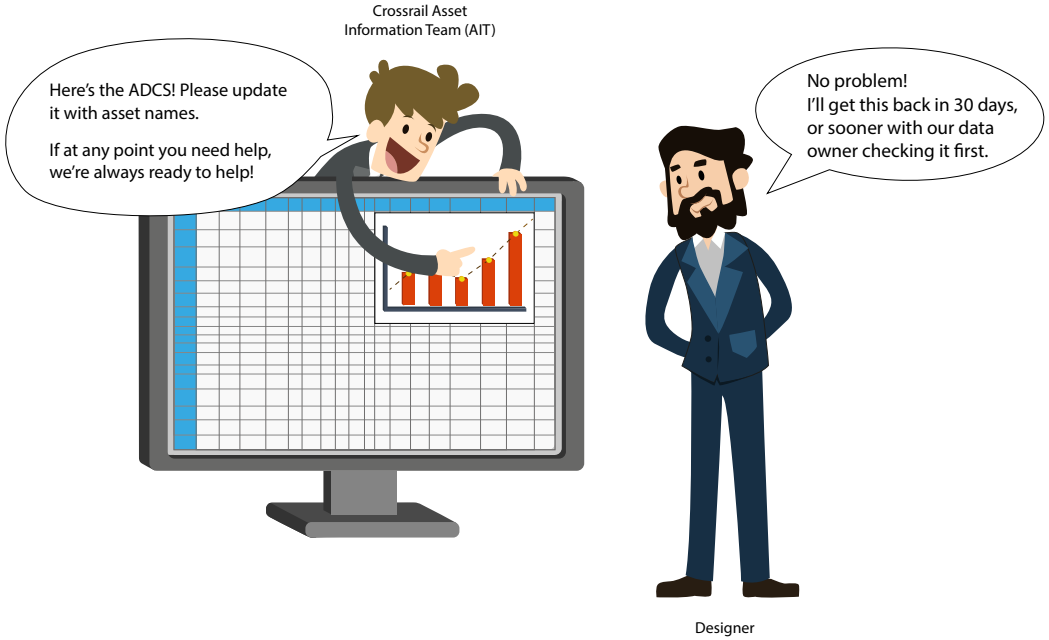


Deliverables:

- Stakeholders Identified and requirements communicated
- Tag estimates agreed
- ADCS created and issued by Asset Information Team to the Contractor

Stage B - Collating design information:

- Update the Asset Data Collection Spredsheet (ADCS) with asset names[1]



Deliverables:

- All asset tags named

When do Assets need to be named by?[2]

100% of asset should be named by contract by no later than 4 weeks prior to Final Design Gate 3 Wrap-up

1. Asset Naming & Labelling Convention Document - CRL1-XRL-Z3-ADDSD-CR001-50413
2. Asset Information Provision Procedure - CRL1-XRL-Z3-GPD-CR001-50004

Key Asset Relationships

What are the Key Asset Relationships?

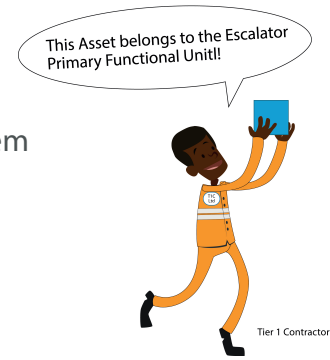
The objective of this stage is to relate assets to:

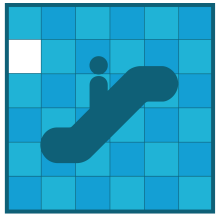
1. Relevant nodes of the ABS
2. A room or space
3. A future owner (Infrastructure Manager)
4. A Contractor 'Design Alternative Asset ID'

Note: documents are related to assets as part of the O&M information process

Relating assets to the ABS - more commonly known as the 'Asset Breakdown Structure' (ABS). The ABS is the method Crossrail uses to logicallt structure assets. They form of PFUs, LFUs and FUs:

- Functional Unit – a group of Asset Tags related to each other as part of a single subsystem or system
    - *e.g. the drive motor for an Escalator*
- Primary Functional Unit – a group of Asset Tags and/or Functional Units related to each other as part of a single system or structural assembly
    - *e.g. a complete Escalator*
- Locational Unit – a group of linear Functional Units/Asset Tags which form part of a single system





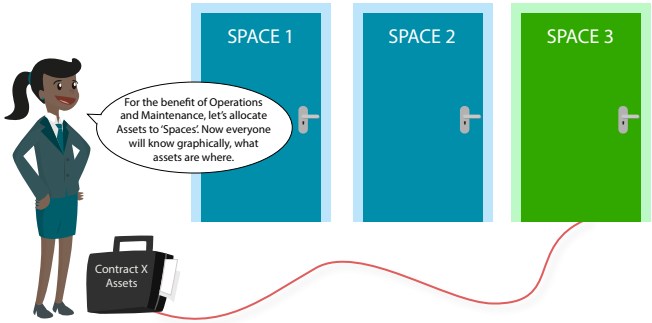
Representative of a Primary Functional Unit (PFU) for an Escalator. A group of Assets or Functional Units collated and configured to form one overarching system

Assets are related to the ABS using the Asset Tags to PFU Spreadsheet (ATPS).

Relating assets to a Space

Assets are related to areas in the design model known as 'Spaces'. This will allow for the easy indentification of all of the assets within a space e.g. a room, once the Elizabeth Line is operational.

Relaing Assets to a Space is performed by completing the Asset Tags to Spaces Spreadsheet (ATSS).



Relating assets to a Future Owner

Assets need to be assigned to an owner for the sake of operations and maintenance. This is undertaken by Crossrail's Asset Information Provisioning team in collaboration with the Contractors using the 'Asset to Owner Schedule' (ATOS).

Crossrail will migrate Asset Information to both Rail for London and London Underground

When do Asset need to be related by?

Assets are to be related by a contract no later than 4 weeks after Final Design Gate 3 (FDG3) wrap-up.

Asset Labelling

What is Assets Labelling?

Once the asset requirements, naming and relationships have been defined, a Contractor can now begin to physically label for ease of identification during and post-installation. There are a number of factors on how one should label different types of assets based upon their type, location and general circumstance.

Final labelling locations should be determined using Crossrail standards (below) and common sense from the perspective of the future asset maintainer, taking into account line of sight and peripheral vision.

How is Asset labelling conducted?

Each Contractor is recommend to create a 'Label Positioning & Installation Document' (see section 10.2 of the Asset Identification Standard, CRL1-XRL-O6-STD-CR001-00031 for detail of ideal content).

When do Assets need to be labelled by?

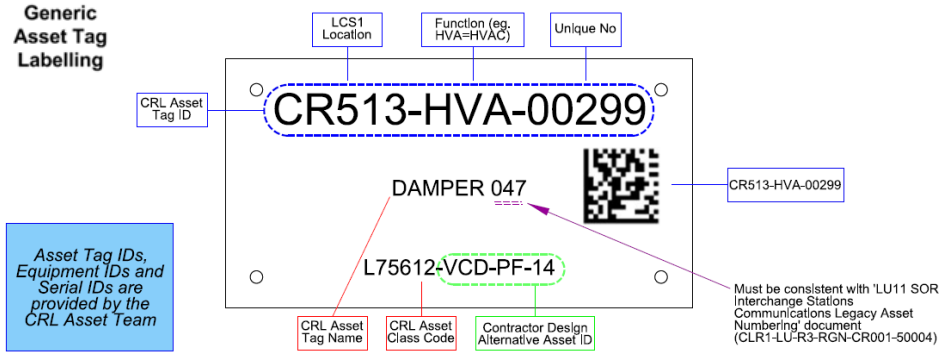
All Assets are to be labelled by a contract no later than 4 working weeks after the Asset/Equipment has been installed but Crossrail encourages Contractors to install all labels prior to installation.

1. Guidance Note for Identifying Cable Assets - CRL1-XRL-Z3-GUI-CR001-50029
2. Asset Identification Standard - CRL1-XRL-O6-STD-CR001-00031
3. Asset Naming and Labelling Convention Document - CRL1-XRL-Z3-ADDSD-CR001-50413

Label Types

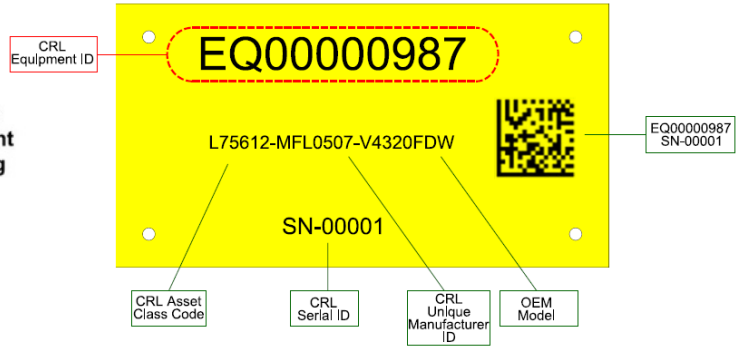
There are two types of labels: Asset Tag labels and Serailised Equipment labels.

Asset Tag Labels - A (white/metallic) label which represents the virtual asset tag requirement that needs fulfilling in a specific space eg. we need a Pump No4 in this specific space



Serialised Equipment Labels - A (yellow) label which carries the particular make, model and serialisation of equipment that fulfils the duty/ requirement of an asset e.g. a specific replaceable pump which is installed to fulfill the duty/requirement of Pump No4

Note: only Cat3 equipment carries a yellow label



Replaceable Equipment Process

As equipment may need replacing often, the particular make and model needs recording while it serves the function of the Asset Tag. Equipment can represent manufactured assets (such as a particular make and model of pump or hardware).

For example, the Asset Tag may be for a Pump with a 1 year lifecycle, the make and model needs to be recorded, but the Asset Tag remains the same. After one year elapses, the replacement pump will be assigned a new equipment number. This enables effective operations and maintenance.

What is the Equipment process for?

The objective of this stage is to record Equipment IDs and associated serial IDs which have been installed to fulfil the requirements of the Asset Tag placeholders plus related attribute data. Assets should have been labelled by this point.

How is the Equipment process delivered?

The Asset Information Systems Team will send contractors Electronic Request Forms (ERFs) upon request that will allow Contractors to submit the essential details of a piece of equipment. Namely:

CATEGORY '0'

- No details required

Fixed non-replaceable assets or assets with no requirement for identification of type used

CATEGORY '1'

- Make
- Model

Type of equipment used can be identified with no requirement on traceability

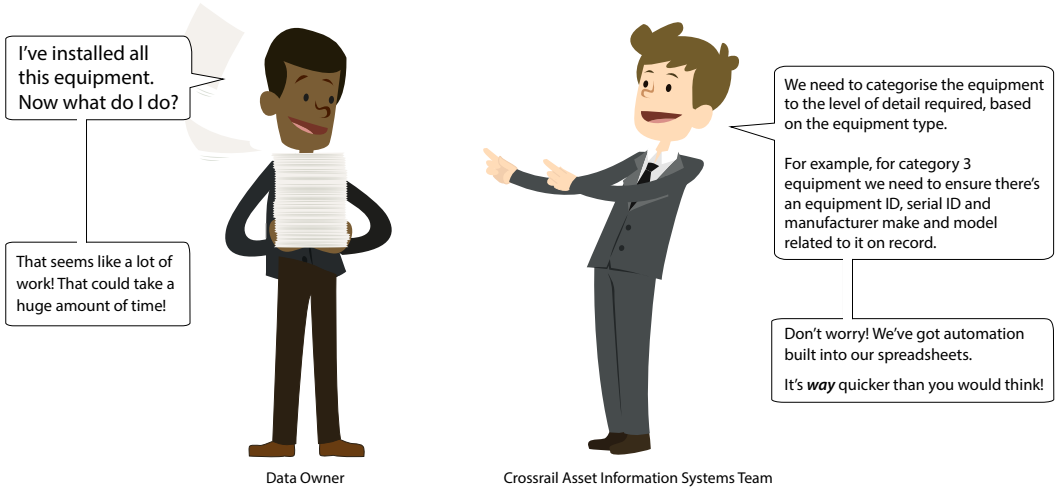
CATEGORY '3'

- Make
- Model
- Serial Item Number

Type of equipment used can be identified allowing traceability against each instance of item installed

When should the Equipment process be completed by?

During this stage Asset Information should be compiled progressively and complete by each contractor no later than four weeks after the relevant equipment has been installed.



How to establish and maintain the installation status of Equipment?

Contractors are responsible for ensuring that their asset data collection spreadsheets which includes the equipment allocation schedule are kept up to date whilst they are custodians of the equipment.

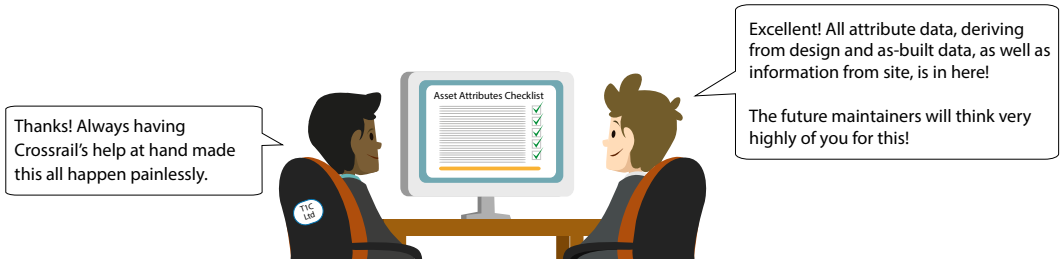
1. AIMS Equipment Request Process - CRL1-XRL-Z3-GPS-CR001-50009

Asset Attributes

Asset attributes are characteristics and values of items held on the Asset Breakdown Structure (ABS) in order to support whole ife intelligent decision making.

What attributes need to collected?

Attributes are collected in accordance with relevant ABS classes and their defintions documented in AD4s (Asset Data Dictionary Definition Documents).



How are Asset attributes collected?

Attributes are collected in Asset Data Collection Spreadsheets (ADCS) provided. Attribute data is sourced from design and as-built information. AD4s are referred to if required.

When should all Asset attributes be complete by?

100% of attributes need to be complete for each Contract by the completion of phase 2.3 Static Testing.

1. MEP and Systemwide Certification Process - CRL1-XRL-O8-GUI-CRG-50001
2. Asset Data Dictionary Master Configuration - CRL1-XRL-Z3-ADDSD-CR001-50186

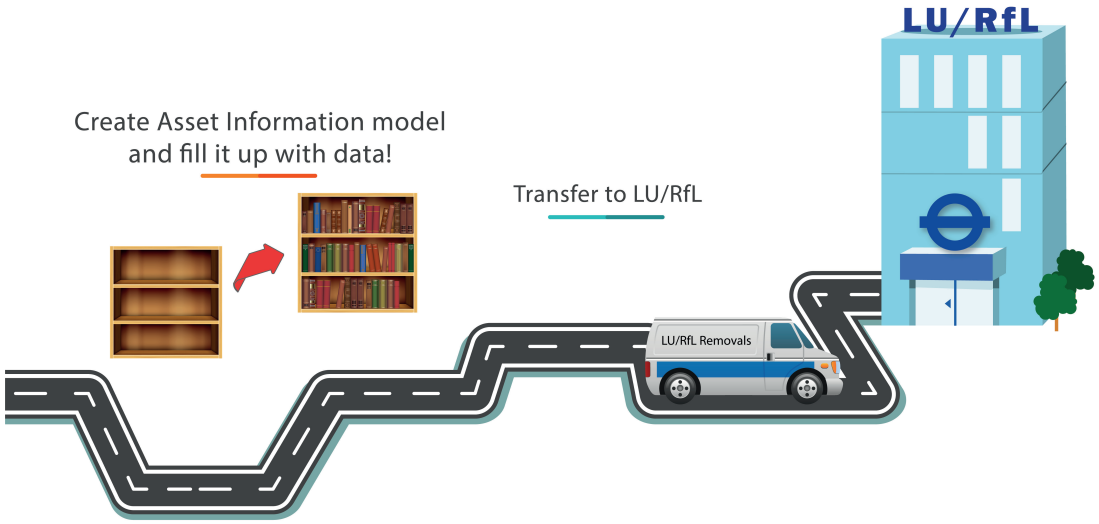
Asset Information Handover

The Asset Information handover stage is an internal process to Crossrail whereby Handover Teams work alongside the Asset Information Team to verify and package the data and information for handover.

A major part of this process is the agreement of what is to be transferred and how. This has been agreed with Rail for London (RfL) and London Undergound (LU), known as 'LU/RfL'.

The 'Project Information Handover Procedure' specifies the methods of data and information handover between CRL and RfL/LU.

The current target for commencement of final handover is July 2018 so all Contracts will need to be completed and ready well before this time but in accordance with their individual contractual requirements.



1. Asset Information Provision Procedure - CRL1-XRL-Z3-GPD-CR001-50004
2. Project Information Handover Procedure - CRL1-XRL-Z3-GPD-CR001-50016

Asset Information - A General Guide - CRL1-XRL-Z3-GUI-CR001-50072