Crossrail Asset Information
A General Guide

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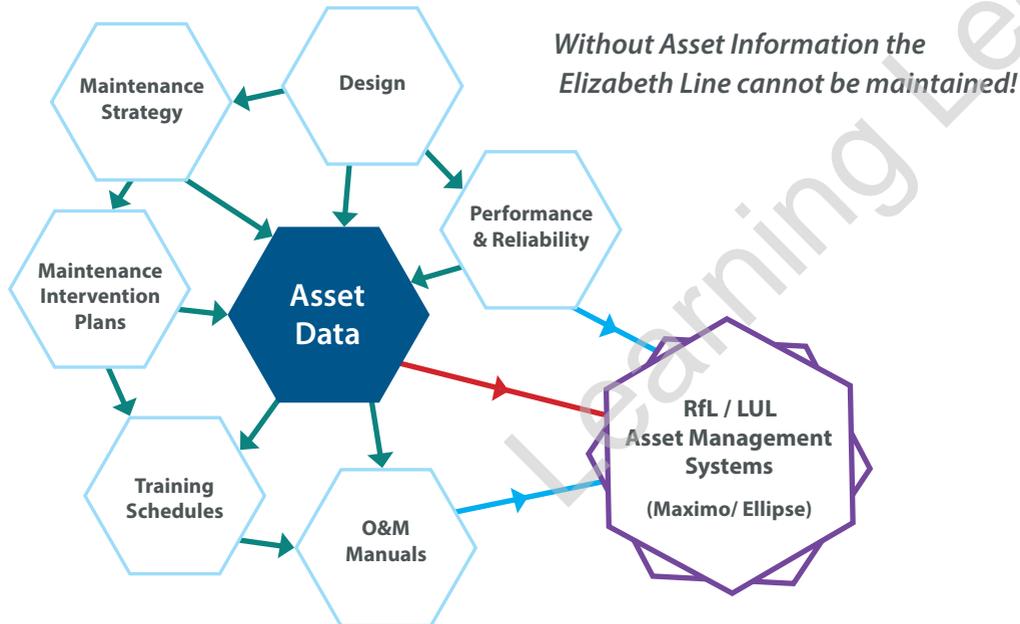
Introduction to Asset Information

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 booklet provides simple guidance on the key activities to make this happen.

Process Overview

Estimate then name the Assets	Create key Asset Relationships	Install and label the Assets	Capture Asset Data and Attributes	Handover Asset Information
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Why Asset Information Matters

Without Asset Information the Elizabeth Line cannot be maintained!

Diagram: Asset Data connected to Maintenance Strategy, Design, Performance & Reliability, Maintenance Intervention Plans, Training Schedules, O&M Manuals, and RfL / LUL Asset Management Systems (Maximo/ Ellipse).
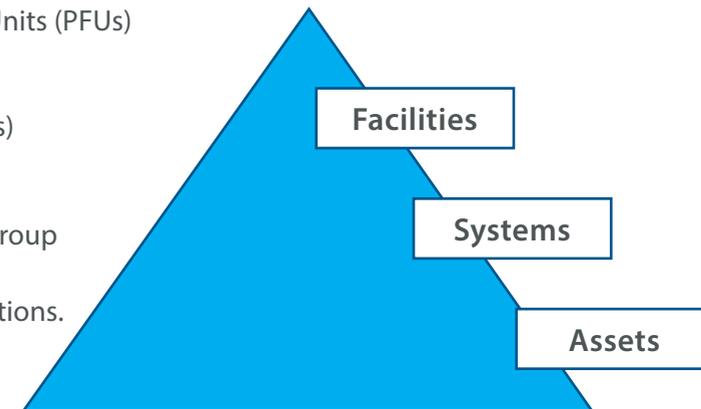
The Asset Breakdown Structure

The Asset Breakdown Structure - known as the ABS - is a structure made up of:

- Facilities e.g. a Station

- Primary Functional Units (PFUs) e.g. Systems

- Functional Units (FUs) e.g. Sub-systems

This is used to logically group Assets and align related classifications and definitions.

Pyramid diagram: Facilities, Systems, Assets.

Key Terms

This section lists and briefly explains key terms and activities in the Asset Information lifecycle.

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

AIPP
Asset Information Provisioning 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 (e.g. 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 Estimating and Naming

What is Asset Naming?

The activity of applying a specific meaningful name to each individual Asset to give context e.g. not just 'Pump' but 'Pump 04'. Naming follows the initial process of estimating the number of specified assets.

Naming involves clear and consistent naming of Assets to ensure Asset identification can be achieved more easily. Consistent and intelligent naming also means that Asset data can easily be re-used across many contracts.

How are Assets Named?

There are two stages to naming assets, **Stage A** and **Stage B**. When a contractor is ready, they will work with Crossrail to initiate the 'Stage A' 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 Spreadsheet (ADCS) with Asset Names

Deliverables:
- All Asset Tags named

When do Assets need to be named by?

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

— Also see

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. The Asset Breakdown Structure (ABS)
2. Where they are i.e. a 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 logically structure assets. The ABS forms of PFUs and FUs:

- 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. Complete Escalator*

- Functional Unit – a group of Asset Tags related to each other as part of a single subsystem or system
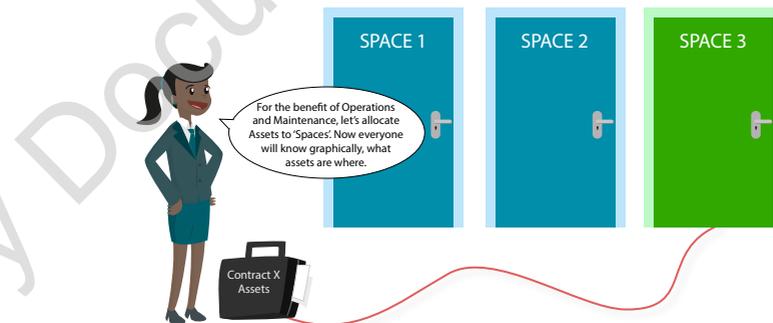 - *e.g. the drive motor for an Escalator*

Representative of a PFU for an Escalator. A group of Asset or FUs collated and configured to form a system.

Tier 1 Contractor e.g. Data Owner

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

Relating assets to a Space

We need to record the Space e.g. a room, in which each Asset is situated. This will allow for the easy identification of all of the Assets within a space e.g. a room, once the Elizabeth Line is operational.

Relating 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

Rail for London

Crossrail will migrate Asset Information to both RfL and LU und
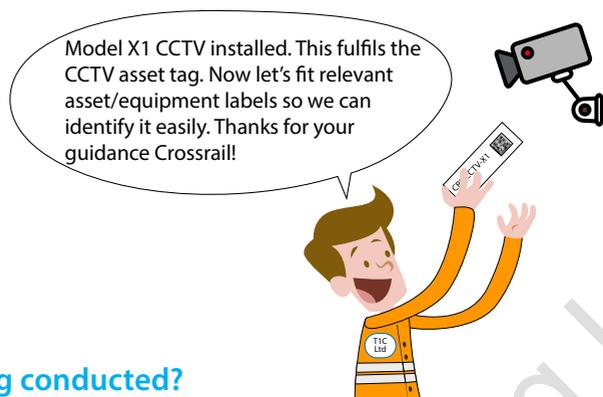
When do Asset need to be related by?

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 the Asset 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 (labelling for Asset identification should not be confused with labelling for operational signage).

Final Asset 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.

Model X1 CCTV installed. This fulfils the CCTV asset tag. Now let's fit relevant asset/equipment labels so we can identify it easily. Thanks for your guidance Crossrail!

How is Asset labelling conducted?

Each Contractor is recommended 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.
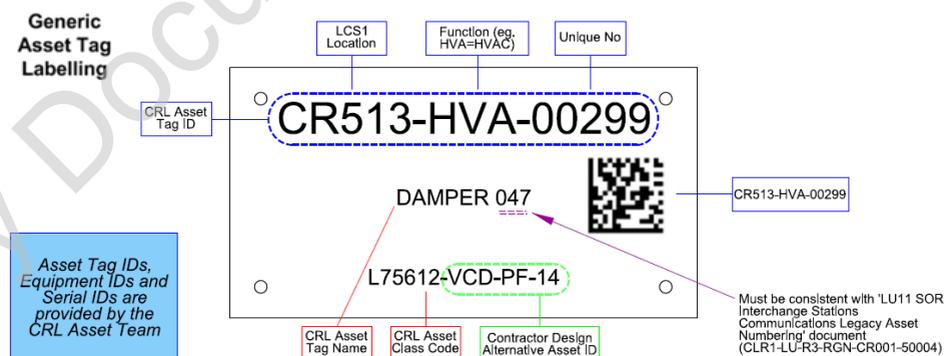
— Also see

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
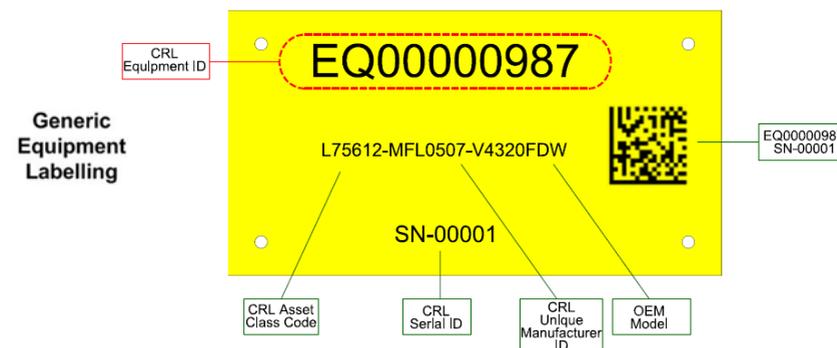
Label Types

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

Asset Tag Labels - A (white/metallic) label which represents the virtual Asset Tag requirement that needs fulfilling in a specific space e.g. "We need Pump No. 4 in this specific space."

Generic Asset Tag Labelling

LCS1 Location | Function (eg. HVA=HVAC) | Unique No

CRL Asset Tag ID

CR513-HVA-00299

DAMPER 047

L75612-VCD-PF-14

CR513-HVA-00299

Asset Tag IDs, Equipment IDs and Serial IDs are provided by the CRL Asset Team

CRL Asset Tag Name | CRL Asset Class Code | Contractor Design Alternative Asset ID

Must be consistent with 'LU11 SOR Interchange Stations Communications Legacy Asset Numbering' document (CLR1-LU-R3-RGN-CR001-50004)

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 fulfil the duty/requirement of Pump No4.

Note: only Cat3 equipment carries a yellow label

CRL Equipment ID

EQ00000987

Generic Equipment Labelling

L75612-MFL0507-V4320FDW

EQ00000987 SN-00001

SN-00001

CRL Asset Class Code | CRL Serial ID | CRL Unique Manufacturer ID | OEM Model

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 forever. 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 physically labelled on site 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'	CATEGORY '1'	CATEGORY '3'
• No details required	• Make • Model	• Make • Model • Serial Item Number
Fixed non-replaceable Assets or Assets with no requirement for identification of type used	*Type of equipment used can be identified with no requirement on traceability*	*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.

I've installed all this equipment. Now what do I do?

That seems like a lot of work! That could take a huge amount of time!

We need to categorise the equipment to the level of detail required, based on the equipment type.

For example, for category 3 equipment we need to ensure there's an equipment ID, serial ID and manufacturer make and model related to it on record.

Don't worry! We've got automation built into our spreadsheets.

It's *way* quicker than you would think!

Data Owner   Crossrail Asset Information Systems Team

How to establish and maintain the installation status of Equipment?

Contractors are responsible for ensuring that their Asset Data Collection Spreadsheets (ADCS), which includes the equipment allocation schedule, are kept up to date whilst they are custodians of the equipment.

— Also see

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

Asset Attributes

Attributes are detailed characteristics and values about assets in order to support whole-life maintenance and intelligent decision making.

What attributes need to collected?

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

Thanks! Always having Crossrail's help at hand made this all happen painlessly.

Asset Attributes Checklist

Excellent! All attribute data, deriving from design and as-built data, as well as information from site, is in here!

The future maintainers will think very highly of you for this!

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.

─ Also see ─

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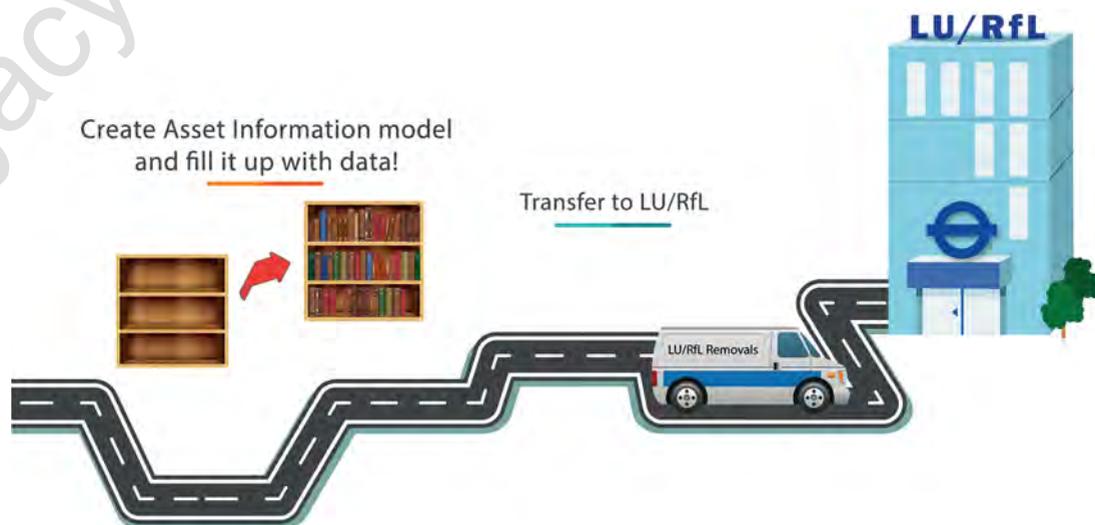2. Asset Data Dictionary Master Configuration - CRL1-XRL-Z3-ADDSD-CR001-50186

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 Underground (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.

Create Asset Information model and fill it up with data!

Transfer to LU/RfL

LU/RfL Removals

LU/RfL

─ Also see ─

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

Other Key Documents

1. Asset Information Management Framework
    CRL1-XRL-Z3-STP-CR001-50002

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

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

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

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

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