

# Drafting & Modelling



THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA

**DESIGN STANDARDS**

**DS-24**

## Document Register

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## **Disclaimer**

Refer to the Disclaimer within the UQ Design Standards.

The University of Queensland has made every effort to ensure the University of Queensland CAD Requirements are accurate. However, the CAD Requirements are provided solely on the basis that readers will be responsible for making their own assessment of the matters discussed. The University of Queensland does not accept liability for the information or advice provided in this publication or incorporated into the CAD Requirements by reference or for loss or damages, monetary or otherwise, incurred as a result of reliance upon the material contained in the CAD Requirements. The inclusion in the CAD Requirements of information and material provided by third parties does not necessarily constitute an endorsement by The University of Queensland of any third party or its products and services.

## **Reference Documents**

Refer to the UQ Design standards for the list of documents and associated standards to be referenced for design work.

The designer is to coordinate between disciplines and standards.

# 01 Introduction

The University of Queensland (UQ) acknowledges BIM and CAD requirements need to be clearly defined to ensure that the UQ Properties & Facilities Division (P&F) has access to high-quality digital information.

This high-quality information allows UQ to maintain an accurate record of the built and natural environments which is essential for ongoing operation, maintenance and future development.

Delivery Teams (all disciplines) engaged in UQ projects are required to produce and submit drawings, digital models (BIM, GIS, etc.) and Operation and Maintenance manuals in accordance with the requirements set out in this document.

This document shall be read in conjunction with the UQ BIM Project Information Requirements (where applicable, ie for nominated BIM projects).

# 02 Abbreviations & definitions

For the purpose of interpreting this Design Standard, the abbreviations listed in Table 2–1 apply.

**Table 2–1 Abbreviations**

Abbreviation	Definition
2D	Two-dimensional digital drawing
3D	Three-dimensional digital model
AHD	Australian Height Datum
BIM	Building Information Modelling
CAD	Computer Aided Design/Drafting - The process of creating a 2D technical drawing with the use of computer software
CDE	Common Data Environment
DM/DO	Digital Modelling/Documents Office
GIS	Geographic Information System
.IFC	Industry Foundation Classes (.IFC format)
LOD	Level of Detail - The progressive development of the object's geometric accuracy within the BIM Model
LOI	Level of Information - the specific data associated with the individual objects within the BIM
O&M	Operation and Maintenance Manual. This term also includes documents other than Manuals required for Operation and/or Maintenance of an Asset.
PMO	Project Management Office, pmo@pf.uq.edu.au
PSM	Permanent Survey Mark. Locations can be provided by the UQ Digital Modelling Office.
VBIS	Virtual Buildings Information System
UQ	The University of Queensland

For the purpose of interpreting this Design Standard, the definitions listed in Table 2–2 apply.

**Table 2–2 Definitions**

Term	Definition
Building Information Modelling	The sharing and leveraging of structured information over the asset lifecycle
Common Data Environment	A central data repository where construction project information is collected, shared and managed with the whole project team.
Delivery Team	Lead Appointed Party and their Appointed Parties contributing to a project – the composition of which may change according to the project requirements and schedule.
Layer	Group of objects in a CAD drawing. Helps to better organize and modify similar objects. Can be turned on/ off in a CAD software.
Laser Scanning	The process of capturing digital information about the shape of an object with equipment that uses a laser to measure the distance between itself and the object, the resulting output is a point cloud
Level of Detail	The degree to which the element's geometry has been developed and the degree to which Delivery Team members may rely on the information when using a BIM Model.
Project Information Requirements	The University of Queensland requirements to enable the creation and management of the Project Information Model to support the ongoing Asset Information Model
Project Manager	Please refer to the UQ Project Management Framework for a definition of this term.

# 03 Scope

The submission of CAD drawings and Operation and Maintenance manuals is required on **all** University of Queensland buildings, infrastructure and grounds projects. The implementation of the UQ BIM Project Information Requirements (PIR) is required for all projects above \$50m. BIM may also be implemented on projects <\$50M, but above \$20M at UQ's discretion.

If BIM Authoring Software is used on UQ projects not defined as a BIM project, UQ still requires the submission of these digital models in accordance with item **3.1**.

Please refer to the UQ Project Information Requirements of the specific project for further information.

## 3.1 Project Requirements

The University of Queensland requires the Project Delivery Team to adhere to the following:

- a) Information shall be collaboratively developed, shared, and managed using a Common Data Environment (CDE)/centralised approach to information management
- b) Submitted drawings to be compliant with AS/NZS 1100.
- c) Every discipline/trade shall nominate a contact person contactable by the UQ Digital Modelling and Document Office

regarding BIM, GIS, CAD and O&M coordination.

- d) The Project Delivery Team shall verify with the UQ Digital Modelling Office the availability and currency of any previous As-Built models, drawings or survey information prior to undertaking any work.
- e) Existing drawings, surveys and any BIM Models (if available) shall be obtained and site-checked for accuracy by the Project Delivery Team.
- f) Any point clouds, 3D models, etc. created to model existing conditions are to be submitted to the University of Queensland Project Management Office.

## 3.2 Delivery Requirements

The Project Delivery Team shall submit all required documentation (drawings, BIM models, O&M manuals etc.) to the UQ Project Management Office **via email** using the following address: [pmo@pf.uq.edu.au](mailto:pmo@pf.uq.edu.au)

Where a CDE, third party document management system, or cloud-based storage is engaged (e.g., Aconex, Dropbox etc.), the Project Delivery Team will be responsible to setup a UQ account to these platforms, using the email address above.

Construction Issue drawings for all disciplines shall be delivered in accordance with Item **3.3** at the beginning of the project construction stage. The Construction Issue drawings shall



be delivered as a complete set (i.e., Cover Sheet, Legend, Site Plans, Demolition Plans, Floor Plans, Elevations, Sections, Schedules etc.). The PMO shall be notified via email when any subsequent drawing revisions are issued.

As-Built Issue drawings (or As Installed or Record drawings) for all disciplines shall be delivered in accordance with Item **3.3** at the practical completion or project handover stage.

Operation and Maintenance manuals shall be delivered in accordance with Item **3.5** at the practical completion or project handover stage.

Digital models (BIM) shall be managed and delivered in accordance with Item **3.1** and the relevant requirements and milestones as set out in the Project Information Requirements and BIM Execution Plan.

Survey drawings shall be delivered on (or before) the contract specified date in accordance with Item **3.4** and any other custom requirements as referenced in the survey contract.

GIS data shall be delivered in accordance with Item **3.2** and any additional arrangements made on a project specific case-by-case basis.

### 3.2.1 Building numbers

Site Plans and Surveys shall show the UQ Building number of every building in the model/drawing. Please contact the UQ Project Manager if you don't know the building number.

### 3.2.2 Space/Room Info

All rooms and spaces shall be tagged/labelled with room number, room name and area (m<sup>2</sup>) attributes. Additional attributes may be requested if necessary.

The numbering of spaces/rooms shall be coordinated and approved by the UQ Project Manager.

### 3.2.3 Sheets/Layouts

2D Drawing Layouts to show the scale and north direction of each view.

### 3.3 Datum

Any georeferenced data shall use MGA2020/GDA2020 map grid/reference datum.

Levels shall be measured with reference to Australian Height Datum (AHD).

### 3.4 Xref's/ Links

If a DWG file contains External References, the file shall be submitted by using the eTransmit tool in AutoCAD.

If Links are used in a Revit model, all linked files are to be submitted together with the host file.

### 3.5 Units

The following units/settings shall be used in submitted CAD and/or BIM data:

- Building/Floor Plans to be drawn in Millimetres, Precision 0.0
- Site Plans and Surveys to use Meter, Precision 0.000

### 3.6 Plot Settings

The usage of Layout tabs in the submitted DWG files is required. All DWG files shall be accurately printable with the AutoCAD built-in printer driver "DWG to PDF". If a Plot Style table (other than AutoCAD built-in) is used, the corresponding CTB needs to be submitted with the DWG file. DWG files based on Named Plot Styles (STB files) are not acceptable.

# 04 File Requirements

## 4.1 BIM Models

### 4.1.1 File format

The UQ preferred file format is Revit 2021. All project data that was originally created in Autodesk Revit needs to be submitted in this format. If a different BIM Authoring Software (e.g., ArchiCAD) was used, an IFC file, Version 2x3 or later, needs to be submitted. Please see **3.1.2** for requirements for IFC files.

Every plan issued “For Construction” or “As-Built” during the project needs to be submitted as a DWG and an PDF file.

When exporting a DWG file from Revit, the option “Preserve coincident lines” in the DWG/DXF export settings shall be enabled.

### 4.1.2 IFC file Settings

When exporting IFC files, the following settings need to be used:

- Coordinate Base: Shared Coordinates/ Datum Reference
- Elements split by level
- one IFC file per discipline/ trade
- Export Rooms/ Spaces
- Include all Property sets and Base Quantities
- No export of Bounding boxes
- Detail Level Low
- Export of Element GUID

### 4.1.3 Parameter

UQ is aiming for a consistent quality of all submitted information models. Therefore, the usage of the following Parameters is expected in each BIM model. Autodesk Revit users are required to use the **UQ Shared Parameter** file, available from the Digital Modelling Office.

Table 1: Minimum set of Parameters in a “For Construction” model

	▲ SUPPLIED BY UQ	PARAMETER	EXAMPLE	Use Built-In Parameter Revit	Type or Instance	INFORMATION SOURCE	INITIATION / PLANNING	CONSTRUCTION DOCUMENTATION
	▼ POPULATED BY PROJECT DELIVERY TEAM (SUPPLIED TO UQ)							
BUILDING		BUILDING ID	0001		I	Contact UQ (P&F)	▲	▼
		BUILDING NAME	Forgan Smith Building		I	Contact UQ (P&F)	▲	▼
		SITE_ID	01		I	Contact UQ (P&F)	▲	▼
		ADDRESS LINE 1	427 Queen St		I	Contact UQ (P&F)	▲	▼
		ADDRESS LINE 2	Brisbane 4000		I	Contact UQ (P&F)	▲	▼
FLOORS & SPACES		FLOOR ID	01		I	Contact UQ (P&F)	▲	▼
		FLOOR NAME	Level 1		I	Contact UQ (P&F)	▲	▼
		ROOM NUMBER	E101	X	I	Contact UQ (P&F)	▲	▼
		ROOM NAME	Faculty Office	X	I	Contact UQ (P&F)	▲	▼
		PRIMARY ROOM TYPE	1		I	Contact UQ (P&F)	▲	▼
		ROOM TYPE	108		I	Contact UQ (P&F)	▲	▼
		PRIMARY ROOM FUNCTION	6		I	Contact UQ (P&F)	▲	▼
		ROOM FUNCTION	61		I	Contact UQ (P&F)	▲	▼
		FLOOR TYPE	Carpet		I	Delivery Team defined	▲	▼
		ROOM AREA	31.95	X	I	Contact UQ (P&F)	▲	▼
ALL OBJECTS		VBIS.Code	ST-EC		T	<a href="https://vbis.com.au/">https://vbis.com.au/</a>	-	▼
		VBIS.Description	Structure, External Cladding		T	<a href="https://vbis.com.au/">https://vbis.com.au/</a>	-	▼
		PHASE CREATED	09_2021	X	I	Delivery Team defined	▲	▼
		PHASE DEMOLISHED	08_2021	X	I	Delivery Team defined	▲	▼
		MATERIAL (assigned to all sub-components)	Concrete	X	I	Delivery Team defined	-	▼





 SUPPLIED BY UQ  POPULATED BY PROJECT DELIVERY TEAM (SUPPLIED TO UQ)	PARAMETER	EXAMPLE	Use Built-In Parameter Revit	Type or Instance	INFORMATION SOURCE	INITIATION / PLANNING	CONSTRUCTION DOCUMENTATION
	VOLUME (M3)	1.35	X	I	Delivery Team defined	-	
	AREA (M2)	10.35	X	I	Delivery Team defined	-	

Table 2: The following Parameters are expected in the final Project Information Model (Handover/ As-Built)

	 SUPPLIED BY UQ  POPULATED BY PROJECT DELIVERY TEAM (SUPPLIED TO UQ)	EXAMPLE	Use Built-in Parameter Revit	Type or Instance	INFORMATION SOURCE	INITIATION / PLANNING	HANDOVER
	PARAMETER						
<b>BUILDING</b>	BUILDING ID	0001		I	Contact UQ (P&F)		
	BUILDING NAME	Forgan Smith Building		I	Contact UQ (P&F)		
	SITE_ID	01		I	Contact UQ (P&F)		
	ADDRESS LINE 1			I	Contact UQ (P&F)		
	ADDRESS LINE 2			I	Contact UQ (P&F)		
<b>FLOORS &amp; SPACES</b>	FLOOR ID	01		I	Contact UQ (P&F)		
	FLOOR NAME	Level 1		I	Contact UQ (P&F)		
	ROOM NUMBER	E101	X	I	Contact UQ (P&F)		
	ROOM NAME	Faculty Office	X	I	Contact UQ (P&F)		
	PRIMARY ROOM TYPE	1		I	Contact UQ (P&F)		
	ROOM TYPE	108		I	Contact UQ (P&F)		
	PRIMARY ROOM FUNCTION	6		I	Contact UQ (P&F)		
	ROOM FUNCTION	61		I	Contact UQ (P&F)		
	FLOOR TYPE	Carpet		I	Delivery Team defined		
	ROOM AREA	31.95	X	I	Contact UQ (P&F)		
<b>ALL OBJECTS</b>	VBIS.Code	ST-EC-Br		T	<a href="https://vbis.com.au/">https://vbis.com.au/</a>	-	
	VBIS.Description	Structure, External Cladding, Brick		T	<a href="https://vbis.com.au/">https://vbis.com.au/</a>	-	
	PHASE CREATED	09_2021	X	I	Delivery Team defined		
	PHASE DEMOLISHED	08_2021	X	I	Delivery Team defined		
	MATERIAL (assigned to all sub-components)	Concrete	X	I	Delivery Team defined	-	
	VOLUME (M3)	1.35	X	I	Delivery Team defined	-	
	AREA (M2)	10.35	X	I	Delivery Team defined	-	

	<p>▲ SUPPLIED BY UQ</p> <p>▶ POPULATED BY PROJECT DELIVERY TEAM (SUPPLIED TO UQ)</p>	EXAMPLE	Use Built-In Parameter Revit	Type or Instance	INFORMATION SOURCE	INITIATION / PLANNING	HANDOVER
	PARAMETER						
	ASSET NAME	PV Board		T	Delivery Team defined	-	▶
	FLOOR ID	1		I	From FL above	▲	▶
ASSETS	MANUFACTURER	ABB	X	T	Delivery Team defined	-	▶
	MODEL NUMBER	A1234/TF4	X	T	Delivery Team defined	-	▶
	EXPECTED LIFE (YEARS)	15		T	Delivery Team defined	-	▶
	ROOM LOCATED	E101		I	From SPACE above	▲	▶
	DATE INSTALL (YYYYMMDD)	20210917		I	Delivery Team defined	-	▶
	INSTALLER	Company XX		I	Delivery Team defined	-	▶
FIXED PLANT AND EQUIPMENT	CONTRACTOR ASSET ID	C0001		I	Delivery Team defined	-	▶
	UQ ASSET ID	U0101		I	Contact UQ (P&F)	-	▶
	SUBCOMPONENT OF UQ ASSET ID	C1234		I	Contact UQ (P&F)	-	▶
	LENGTH (MM)	1576		I	Delivery Team defined	-	▶
	WIDTH (MM)	978		I	Delivery Team defined	-	▶
	HEIGHT (MM)	1523		I	Delivery Team defined	-	▶
	SERIAL NO	SN123456		T	Delivery Team defined	-	▶
	PURCHASE COST	\$40,000		T	Delivery Team defined	-	▶
	AREA LOCATED	Next to window		I	Delivery Team defined	-	▶
	LATITUDE (Center of Asset Footprint)	-27.498907		I	Delivery Team defined	-	▶
	LONGITUDE (Center of Asset Footprint)	153.013737		I	Delivery Team defined	-	▶
	ELEVATION AHD	78.406		I	Delivery Team defined	-	▶
	WARRANTY DOCUMENT LINK	[Link] "WD-123.pdf"		I	Delivery Team defined	-	▶

PARAMETER	EXAMPLE	Use Built-In Parameter Revit	Type or Instance	INFORMATION SOURCE	INITIATION / PLANNING	
					INITIATION / PLANNING	HANDOVER
<p>◀ SUPPLIED BY UQ</p> <p>▶ POPULATED BY PROJECT DELIVERY TEAM (SUPPLIED TO UQ)</p>						
WARRANTY EXP (YYYYMMDD)	08/06/30		I	Delivery Team defined	-	▶
O&M REFERENCE	[Link] "OM-123.pdf" page 4		T	Delivery Team defined	-	▶

#### 4.1.4 Asset and/ or Fixed Plant and Equipment Definition

The definition of “Assets” and “Fixed Plant + Equipment” is based on the objects VBIS code (Reference: <https://vbis.com.au/search-and-download>), maintenance requirements, addressability, and cost. Please see below criteria for each category. **Every Fixed Plant and Equipment item is also an Asset.**

##### Fixed Plant + Equipment:

- VBIS tags starting with EP, FD, FR, FS, HY, ME, MG, RE, WA, VT, SE, SP **AND**
- Scheduled maintenance necessary **OR** purchase price more than 50,000AUD

##### Assets:

- **NOT** Fixed Plant + Equipment **AND**
- VBIS tag starting with FFE **OR**
- Electrical/ data addressable **OR** purchase price more than 50,000AUD

#### 4.1.5 Parameter Tables

An Asset table (Multi-Category) shall be used within the BIM Authoring Software, containing all the above Parameters, for all Assets in the project.

A second table is required with all Rooms/ Spaces in the project and the relevant Parameters from the above tables.

#### 4.1.6 Level of Detail

The UQ BIM framework is focusing more on the level and consistency of Information in the BIM Model, rather than on highly detailed models. However, the UQ expects that at least a Level of Detail of 300 should be achieved for the “For Construction” documentation, and a Level of Detail of at least 350 should be achieved for the “As-Built” Model.

Level of Detail to be according to the definition of the BIM Forum LOD Spec 2020. For further details visit: [www.bimforum.org/lod/](http://www.bimforum.org/lod/)

## 4.2 GIS data

The UQ nominated GIS software is ESRI ArcGIS Pro 2.8.

#### 4.2.1 File formats

Only file formats compatible with ArcGIS Pro are accepted. Commonly used file formats are (but not limited to):

- \*.MXD, \*.3DD, \*.SXD Maps
- \*.APRX, \*.PPKX Project files
- \*.SHP, \*.SHX, \*.DBF Shapes
- \*.KML and KMZ

### 4.3 2D CAD data

#### 4.3.1 File format

CAD files are to be submitted in the format DWG 2018.

Every drawing issued “For Construction” or “As-Built” during the project shall be submitted as a 2D CAD file without any 3D volumes, faces or meshes, and all Z elevations of objects set to 0. All CAD files to be 100% compatible with native AutoCAD software, without the use of any Object Enabler. A corresponding PDF for every drawing is also required.

All objects, except title blocks or legends, are to be drawn in the “Model” space of the DWG file, using a scale of 1:1. Other scales of a drawing only to be used for viewports inside the “Paper” space of the DWG file.

#### 4.3.2 Annotations

The Standard Annotations used for UQ DWG files are:

- Arial, 2.5mm for general notes
- Arial, 3.5mm for labels
- Arial, 5.0mm for main titles
- Arial, 7.0mm for extra-large text

The text sizes above represent the size of printed text. This should be achieved by using Annotative Scaling. Alternatively, the author of the DWG file can use different Annotation layers to be able to use different text sizes for multiple scales.

#### 4.3.3 Layer

All objects in a submitted floor-based drawing shall use one of the following layer categories. The creator of a drawing can use sub-categories to control different representations of an element (e.g., hidden lines, different line weights, etc). The name of a sub-category must be represented within the main category.

UQ is currently not requesting a specific layer naming/setting.

Object Type	Layer Code	Layer Colour	Layer Line style	Layer Thickness
Column				
Ceiling				
Walls				
Fire/ Emergency Symbols				
Furniture				
Gridlines				
Doors				
Internal Screen (not room high)				



Roofline above				
Roofline below				
Room Tag				
Room/ Area Outline				
Staircase				
Underground (Foundations, Landscape Features)				
Viewport				
Windows				

All objects in a submitted site-based drawing shall use one of the following layer categories. The creator of a drawing can use sub-categories to control different representations of an element (e.g., hidden lines, different line weights, etc). The name of a sub-category must be represented within the main category.

UQ is currently not requesting a specific layer naming/setting.

Object Type	Layer Code	Layer Colour	Layer Line style	Layer Thickness
Building Outlines				
Building Text				
Botanical Name (Tree)				
Contour Text				
Common Name (Tree)				
Contour Lines				
Carpark				
Carpark Kerb				
Bins				
Boulder				
Bridges				
Cultivation				
Gardening				
Fence				
Foliage				
Fountains				
Gates				
Kerb (Landscape)				
Footpath				
Railings				
Retaining Walls				
Seating (Landscape)				
Shading Element				
Signage				
Slab (Landscape)				
Stairs (Landscape)				
Structure (Landscape)				
Tactile Elements				
Tanks				
Troughs				
Water (Landscape)				
Rubber Surface (Sport)				
Fence Playing Fields				
Playing Fields				
Oval				
Bike path				
Crossing (Roads)				

Kerb (Roads)				
Text (Roads)				
Q 100 Flood Level				
Riverbank				
River Jetty				
Lakes				
Piles (Water)				
Swimming Pools				
Easements				
Internal Boundary				
Boundary Property				
Property Description				
Text (Surveys)				
Tree Protection Zone				
Tree Identification Number				
Tree Symbols				

All objects in a submitted drawing containing Building Services or In-Ground Services shall use one of the following layer categories. The creator of a drawing can use sub-categories to control different representations of an element (e.g., hidden lines, different line weights, etc). The name of a sub-category must be represented within the main category.

UQ is currently not requesting specific a layer naming/setting.

Object Type	Layer Code	Layer Colour	Layer Line style	Layer Thickness
Communication				
Text (Communications)				
Telstra				
Data				
Text (Data)				
Conduit (empty)				
Irrigation (from Potable Water)				
Text (Irrigation Potable Water)				
Irrigation				
Text (Irrigation)				
Irrigation (from Stormwater)				
Text (Irrigation Stormwater)				
High Voltage				
High Voltage (Overhead)				
Text (High Voltage)				
Low Voltage				
Low Voltage Overhead				
Text (Low Voltage)				
Streetlight LV				
Streetlight				
Text (Streetlight)				
Stormwater				
Headwalls (Stormwater)				
Text (Stormwater)				
Water (Potable)				
Text (Water)				
Water (Fire)				
Text (Fire)				

#### 4.3.4 Layouts

A submitted DWG file can contain more than one layout. The name of an PDF shall always contain the name of the DWG file it was created from.

For example: DrawingA\_Layout3.pdf.

### 4.4 Survey Data

#### 4.4.1 Survey Extents

Before conducting any survey works, the contractor shall clarify the area/ elements to be surveyed with the UQ Project Manager. The elements under **3.4.5 Survey Content** are a minimum requirement. Additional elements/ data may be needed.

#### 4.4.2 Coordinate System

Surveys shall be conducted, and results delivered with reference to the Geocentric Datum of Australia (GDA2020) coordinate reference system, using a scale factor of 1:1. Levels shall be measured with reference to Australian Height Datum (AHD).

Use existing site PSM (Permanent Survey Mark) details for survey control (Locations can be obtained from the UQ Digital Modelling Office).

Provide details of any temporary survey mark installed (i.e., nails, screws, etc).

#### 4.4.3 File format

CAD files are to be submitted in AutoCAD DWG format in release version 2018. A corresponding PDF for every drawing is also required.

All CAD files to be 100% compatible with native AutoCAD software, without the use of any Object Enabler.

Final submission of the survey is to be delivered as a 3D terrain model.

All objects, except title blocks or legends, are to be drawn in the “Model” space of the DWG file, using a scale of 1:1. Other scales of a drawing only to be used for viewports inside the “Paper” space of the DWG file.

#### 4.4.4 Survey Content and Layer

The following section describes a minimum scope of elements and data to be included in any survey for UQ. Additional work may be required, in this instance please contact the UQ Project Manager to clarify the requirements of the project/works.

Surveyed features are to be provided utilising a unique layering convention for each individual object type. Object types may include but not be limited to the examples outlined in the below tables.

##### 4.4.4.1 Buildings

For all buildings wholly within the surveyed area, show at least the following elements:

Object Type	Layer Code	Layer Colour	Layer Line style	Layer Thickness
Outlines				

Heights				
Overhang				
Envelope				

#### 4.4.4.2 Roads, Carparks and Paths

Locate and detail all roads, carparks and paths wholly within and crossing the survey boundary. Show at least the following elements:

Object Type	Layer Code	Layer Colour	Layer Line style	Layer Thickness
Crown				
Edge				
Lip Line				
Kerb Lines				

#### 4.4.4.3 Structures

Locate and detail all structures wholly within and crossing the survey boundary. Show at least the following elements:

Object Type	Layer Code	Layer Colour	Layer Line style	Layer Thickness
Stairs				
Seats				
Retaining Walls/ Walls				
Bollards				
Fences				

#### 4.4.4.4 Landscape Elements

Locate and detail all trees and plants wholly within and crossing the survey boundary. For significant trees (trunk diameter > x,x m) also indicate species, height, trunk diameter and canopy spread. Show at least the following elements:

Object Type	Layer Code	Layer Colour	Layer Line style	Layer Thickness
Grass				
Trees				
Shrubs				
Hedges				
Planting Areas				
Garden Edges				
Paths Edges				

#### 4.4.4.5 Services

Locate and detail all existing services lines (overhead and underground) and related hardware/equipment, like manholes and pits, wholly within and crossing the survey boundary.

Pipes, conduits and cables to include invert level, material/type and size.

Manholes and pits to include size, surface level, invert level and material. Also include all visible services in manholes and pits with pipe/wire/conduit sizes and invert level. Provide depth below ground to existing services at periodic intervals.

Also include any hardware/ equipment related to the single services, including valves, hydrants, meters, inspection openings, grates, lighting fixtures, poles.

Contact the UQ Digital Modelling Office for DYBD (Dial before you dig) drawings of the subject area. Include at least the following services (if present):

Object Type	Layer Code	Layer Colour	Layer Line style	Layer Thickness
Water				
Fire Services				
Stormwater				
Sewer				
Effluent Drainage				
Chemical Waste				
Irrigation				
Gas				
Chilled Water				
Low Voltage				
High Voltage				
Street Lighting				
Telephone/ Data				
Optical Fibre				

#### 4.4.4.6 Contours

Contour height information shall be provided as 3D polylines at an appropriate contour interval to suit the terrain of the site. Generally, minor contours are to be provided at 0.25m and major contours at 1.0m intervals. Contours are to be labelled and provided on separate layers.

Object Type	Layer Code	Layer Colour	Layer Line style	Layer Thickness
Contour major				
Contour minor				

#### 4.4.5 Point Cloud Data

Point cloud data (Laser scan data) to be provided in a format that is compatible with Autodesk ReCap.

### 4.5 Operation and Maintenance Manuals

#### 4.5.1 File Format

Please make sure the files are not password protected and are human readable (e.g., required fonts are embedded, no quality loss during creation, etc.)

PDF files must be archivable per discipline. Do not merge multiple documents of different origin or type of content.

Manuals shall be provided in PDF and native format.

#### **4.5.2 Documents**

A complete set of As-Built documents for O&M manuals, warranties, certificates, commissioning information, specialist reports, project specifications and the like are required for submission.

The As-Built documents are to contain all relevant information applicable to the project with regards to goods, services, materials, equipment, warranty details, operation and maintenance instructions, specifications, finishes etc.

An accompanying transmittal shall be included listing all documents submitted.