

CURTIN UNIVERSITY

PROJECT DELIVERY GUIDELINES

DOCUMENTATION DELIVERABLES GUIDELINES



Curtin University

This summary provides a synopsis of the changes made to the Documentation Deliverables Guidelines and shall not be relied upon as an absolute comparison that identifies each revision.

<i>Summary of revisions</i>			
<i>No.</i>	<i>Details</i>	<i>Date</i>	<i>Initial</i>
<i>1</i>	<i>Publication of Guidelines</i>	<i>Aug-20</i>	<i>MH/AW</i>

CONTENTS

1	INTRODUCTION	4
1.1	OVERVIEW OF THE GUIDE	4
1.2	PURPOSE OF THIS GUIDELINE	4
1.3	DEFINITIONS	5
1.4	ABBREVIATIONS	6
2	CURTIN UNIVERSITY REQUIREMENTS	7
2.1	OUR AIM AND OBJECTIVE	7
2.2	DOCUMENTATION ROLES AND RESPONSIBILITIES	7
2.3	CONSTRUCTION DOCUMENTATION PORTAL	9
2.4	OBTAINING EXISTING DOCUMENTATION	10
2.5	SCHEDULE OF DOCUMENTATION TO BE SUPPLIED	11
3	BUILDING, STRUCTURE AND ROOM NUMBERS	12
3.1	REQUESTING NEW BUILDING AND STRUCTURE NUMBERS	12
3.2	APPROVAL OF ROOM NUMBERING	12
4	CURTIN CAD STANDARD	13
4.1	DRAWING FORMAT	13
4.2	DRAWING SHEET LAYOUTS	13
4.3	DRAWING FILE NAMING	13
4.4	DRAWING MODEL SPACE AND PAPER SPACE	13
4.5	POSITION OF BASE DRAWING	13
4.6	DRAWING LINETYPES AND TEXT STYLES	14
4.7	DRAWING LAYERS	14
4.8	DRAWING BLOCKS AND SYMBOLS	14
4.9	DRAWING EXTERNAL REFERENCES	14
4.10	DRAWING TITLE BLOCK	14
4.11	DRAWING LEGENDS	14
4.12	DRAWING READINESS	14
5	OPERATION & MAINTENANCE MANUALS	15
6	EVACUATION DIAGRAMS	16
7	IN-GROUND SERVICES	17
8	SPACE DATA SCHEDULE	18
9	GREEN STAR CERTIFICATION	19
	APPENDIX A DRAWING FILE NAMING	21
	APPENDIX B REGISTER OF CAD CONSULTANTS	25
	APPENDIX C IN-GROUND SERVICES SURVEY DATA	26

1 INTRODUCTION

1.1 OVERVIEW OF THE GUIDE

The Documentation Deliverables Guidelines outline the requirements of all project documentation prepared by consultants and contractors for Curtin University projects.

This document aims to:

- explain the process of consultants and contractors requesting existing drawings/documentation from Curtin University (Consumer) and delivering the project documentation at the correct stages of the project to Curtin University (Contributor)
- provide a clear understanding of the minimum requirements for the preparation of all AutoCAD DWG format drawings generated during a Curtin University project
- provide the required procedures to be followed by the consultants and contractors for project documentation required by Curtin University.

This guide will be updated at regular intervals to ensure it continues to reflect the processes it is designed to control.

All parties using this guide are encouraged to provide feedback via email to drawingservices@curtin.edu.au.

1.2 PURPOSE OF THIS GUIDELINE

This guideline is used to ensure that a high quality of consistent project documentation is produced for every project, while taking into consideration Curtin University's obligations as detailed in the State Records Act 2000.

The State Records Act 2000, in conjunction with Curtin University's Record Keeping Policy specifies 'As-constructed' documentation shall be retained indefinitely.

These documents are also utilised for a variety of purposes including:

- updates to Curtin University spatial management data
- the operation, refurbishment and maintenance of buildings and service assets
- storage and supply (Consumer) of historic documentation, for provision to consultants and contractors, as a base for designing new projects.

The guideline ensures our multiple stakeholders have the project documentation in an appropriate and consistent format to efficiently operate, maintain and improve all of Curtin University's assets.

1.3 DEFINITIONS

Term	Meaning
As-constructed Documentation	All As-constructed Drawings and Operating Manuals including Warranties and Guarantees, prepared for Practical Completion and approved by the Nominated External Project Manager.
CAD Consultant	Organisations prequalified to update Curtin University's AutoCAD MASTER In-Ground Services Drawings and MASTER Evacuation Diagrams.
Contractor	The person, partnership or corporation bound to execute work under a contract agreement.
Construction Documentation Portal	Provides registered users with the ability to securely search and download existing PF&D documentation required for their projects, and for PF&D project documentation to be submitted online. https://cdp.curtin.edu.au/site
Consultant	Personnel from a third-party organisation engaged to provide consultancy-based task(s) for the University.
Document Contributor	The individual responsible for the consolidation and upload of Project Documentation to the Construction Documentation Portal once approved by the Nominated External Project Manager.
Final Documents	All As-constructed Documentation updated to include variations after Practical Completion (if any), Maintenance Logs, Green Star Certification and similar.
In-ground Services	Assets such as pipes and cables, located (completely or partially) below ground.
In-ground Services Survey Data	CAD data capturing three dimensional 'in-ground' services in accordance to Australian Standard 5488-2013 delivered to PF&D.
Internal Project Manager	The University's Representative on projects as the person responsible for the project and to whom the Nominated External Project Manager reports. This role is undertaken by either a Project Delivery Manager, Project Coordinator, Project Officer, Service Manager or similar.
Issued For Tender Documentation	All drawings, specifications and bills of quantities, prepared for tender purposes and approved by the Nominated External Project Manager.
Nominated External Project Manager	The consultant that manages the external project team, administers all project-related contracts and is the point of contact for communication between the Internal Project Manager and the external project team.
MASTER Drawings	CAD data maintained by PF&D to reflect schematic current layouts of assets.
MASTER In-ground Services Data	CAD data maintained by PF&D to reflect schematic current layouts of In-ground Services assets.
Project	The application of resources to a unique set of coordinated activities, with a defined start and finish, undertaken to meet specific objectives within defined cost and performance parameters.
Project Documentation	All drawings, specifications, manuals, test results and survey data associated with a project.

1.4 ABBREVIATIONS

Abbreviation	Term
BIM	Building Information Modelling
BSDP	Curtin University Building and Services Data Portfolio
CAD	Computer-aided Design
CC	CAD Consultants
CDP	Construction Documentation Portal
DBYD	Dial Before You Dig (1100.com.au)
DLP	Defects Liability Period
DMS	Drawing Management System
DS	Curtin University Drawing Services (Team within BSDP)
DWG	Drawing (native AutoCAD format)
EM	Curtin University Emergency Management
EPT	External Project Team (managed by NEPM)
IM	Curtin University Infrastructure Manager
IPM	Internal Project Manager (Curtin University)
LS	Licensed Surveyor
NEPM	Nominated External Project Manager
O&M	Operations and Maintenance (Curtin University)
PDF	Portable Document Format (native Adobe Acrobat Reader format)
PF&D	Curtin University's Properties, Facilities and Development
QFM	O&M computerised maintenance management system
RFQ	Request for Quotation
TEFMA	Tertiary Education Facilities Management Association
WCS	World Coordinate System
ZIP	Compressed File Archive

2.1 OUR AIM AND OBJECTIVE

Curtin University aims to be an innovative leader when it comes to building and services data for not only the University sector, but across the entire Facility Management sector.



Our objective is to create an environment for all stakeholders of a Curtin project to feel as though they are an integral part of the process. This requires a mutual respect to listen, value and acknowledge the requirements of all parties involved and also the end users of the buildings and services data. We encourage our project teams to strive for excellence with every Curtin project, no matter the size.

For Curtin University to make an impact within the building and services data field we have developed a well-balanced set of requirements for our project teams to follow.

2.2 DOCUMENTATION ROLES AND RESPONSIBILITIES

The following roles are to provide clarity for how a project team shall define the responsibilities for documentation delivery at the beginning of all Curtin University projects.

It is the **Internal Project Manager's** responsibility to ensure all consultants and contractors follow the requirements set out in the current version of the Documentation Deliverables Guidelines. Any variation from the guide shall be approved on a project-by-project basis by Drawing Services (BSDP) prior to any commencement of work.

The **Nominated External Project Manager's** responsibility is to disseminate all instructions associated with project documentation and ensure that correct processes are in place to facilitate the timely delivery of compliant project documentation from consultants and contractors, as set out in the schedule of documentation to be supplied.

The project's **Document Contributor** role is the individual responsible for the consolidation and upload of project documentation to the Construction Documentation Portal, following approval by the Nominated External Project Manager. The Document Contributor role may be filled by the Nominated External project Manager if they so choose but may change as the project progresses, but one individual shall be applied to this role at all times of the project.

Individual consultants and contractors will form part of the **External Project Team**. The compliant project documentation is the responsibility of the individual consultant or contractor and they shall ensure that all technical aspects of the Documentation Deliverables Guidelines are followed.

For further assistance in allocating roles and responsibilities please refer to 'Figure 1 - Documentation Roles and Responsibilities' chart on the following page.

DOCUMENTATION ROLES AND RESPONSIBILITIES

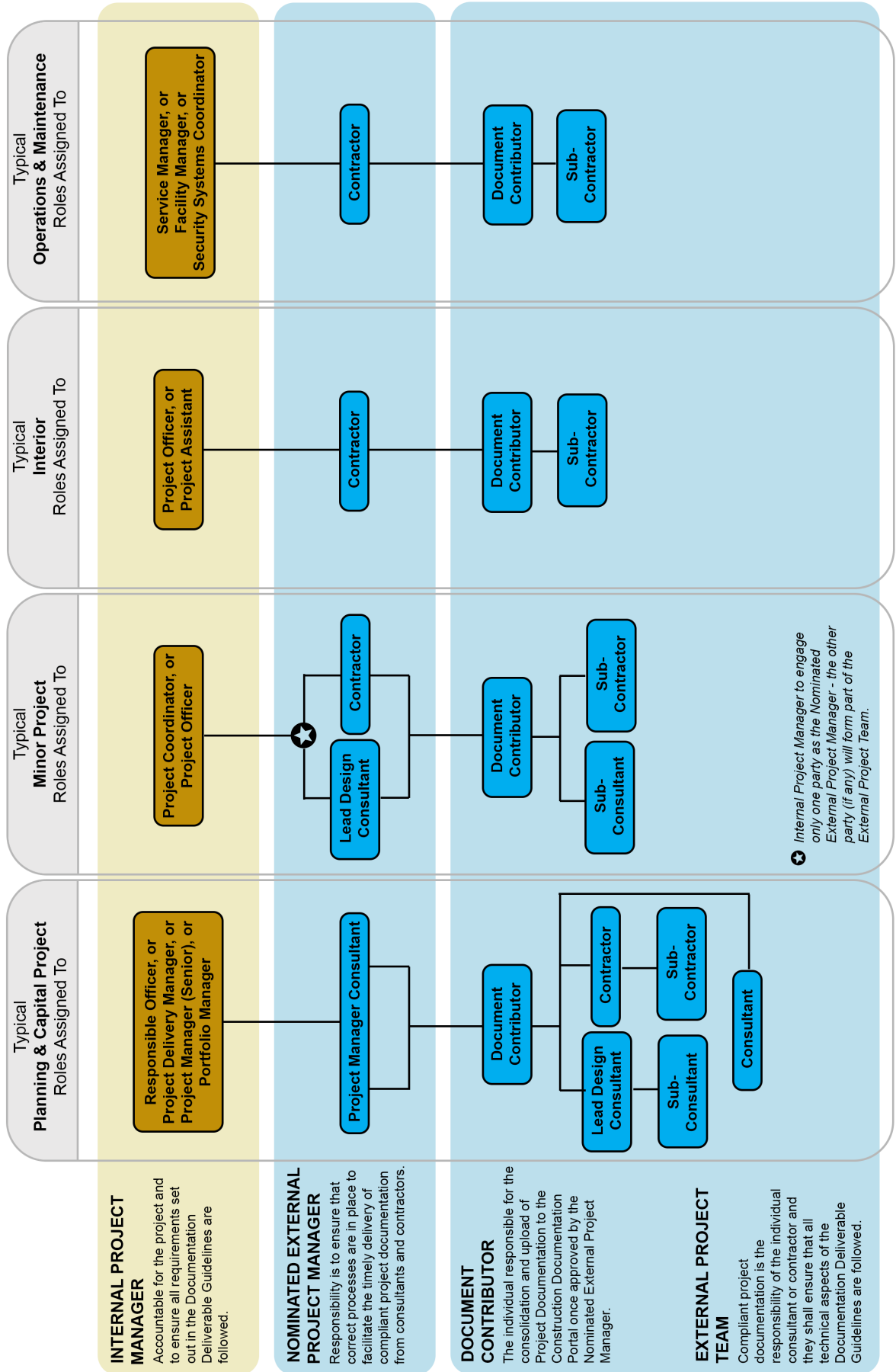


Figure 1 – Documentation Roles and Responsibilities

2.3 CONSTRUCTION DOCUMENTATION PORTAL

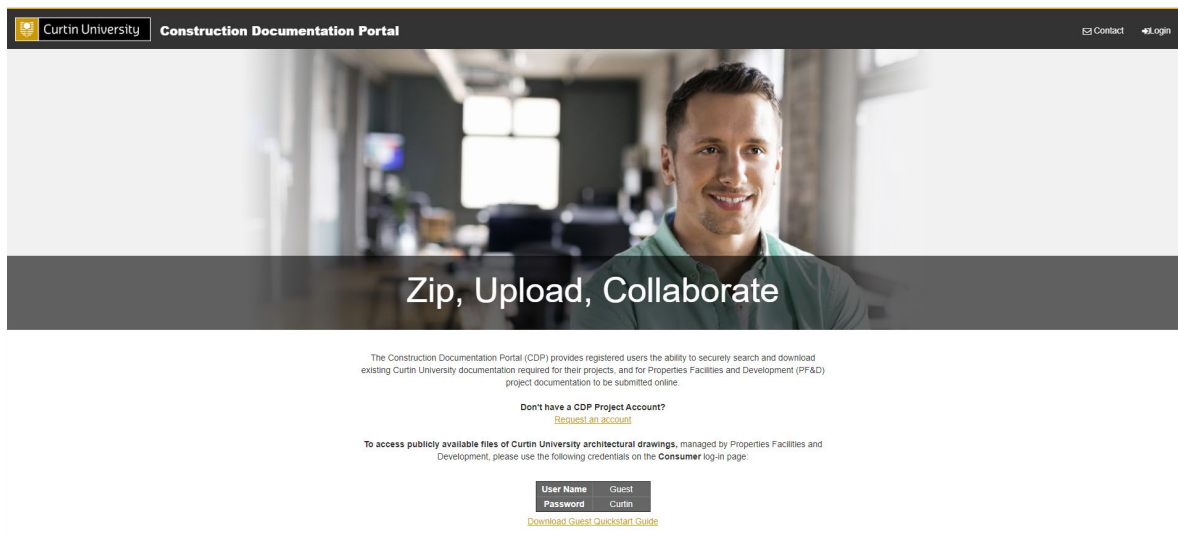
The Construction Documentation Portal (CDP) provides registered users with the ability to securely search and download existing Properties Facilities and Development documentation, and for project documentation to be submitted online.

The CDP can be accessed from any web browser using:

<https://cdp.curtin.edu.au/site/>

It is very important for Curtin Project Teams to familiarise themselves with this system, as all projects will require interaction with the CDP. A **Document Contributor** shall be nominated for each External Project Team as the individual responsible for the consolidation and upload of Project Documentation to the CDP, once approved by the Nominated External Project Manager.

The Document Contributor is encouraged to organise an induction session to the CDP via email to drawingservices@curtin.edu.au.



To log into the CDP, Curtin projects will require a **CDP Project Account** that must be requested by the Nominated External Project Manager and shared with the Document Contributor who forms part of the External Project Team. This can be done online from the CDP website.

Note: Only one account may be registered for each Curtin Project and therefore the Nominated External Project Manager shall determine whether they share the login information with the External Project Team or restrict access to the CDP to themselves.

2.4 OBTAINING EXISTING DOCUMENTATION

Curtin University makes all existing and historic project documentation available via the Construction Documentation Portal for planning and design on projects and requires the External Project Team to obtain these prior to commencement of work on all Curtin Projects.

Documents within the **MASTERS** folder are the current drawings that Curtin University manage and are compliant with the Curtin CAD standards, making them suitable for immediate use on project documentation.

Documents within the **Maintenance Manuals** folder are the current Operations & Maintenance Manuals that Curtin University manage, making them suitable for immediate use on project documentation.

The **As-constructed** folder is where historic project documentation submitted to Curtin University is stored and therefore is for reference only.

While all efforts are made to ensure that the information provided is accurate and up-to-date at the time of issue, the information is to be used as a guide only and shall not be treated as a substitute for obtaining appropriate advice or making prudent enquiries.

For all in-ground services located partially or completely below ground on Curtin University, a 'Dial Before You Dig' submission will be required using:

<https://www.1100.com.au/>

Curtin University will not issue any in-ground service data in AutoCAD.dwg format.

For further information on CDP Consumer matters please refer to:

- **Consumer User Guide:**
<https://properties.curtin.edu.au/local/docs/guides/CDP-Consumer-User-Guide-2019-10.pdf>

2.5 SCHEDULE OF DOCUMENTATION TO BE SUPPLIED

Curtin University uses the Construction Documentation Portal for all project documentation submissions. Project documentation is to be uploaded by the Document Contributor at the applicable project stages, as listed in the table below.

Please refer to:

- **Contributor User Guide:**
<https://properties.curtin.edu.au/local/docs/guides/CDP-Contributor-User-Guide-2019-10.pdf>

Multiple upload packages for a project submission will not be accepted unless discussed and approved on a project-by-project basis by Drawing Services (BSDP).

Deliverable	Stage	Format	Purpose	Submit
Design Drawings Architectural floor plans with furniture layout ¹	Concept Design	PDF	<ul style="list-style-type: none"> • Approval of building no. • Appointment and approval of room numbers. 	Email
Construction Drawings All consultants' drawings & space schedule ^{2 3}	Tender/Issued for Construction	DWG, PDF, EXCEL	<ul style="list-style-type: none"> • Preliminary review of Curtin CAD Standards • Update Curtin Maps • Spatial & Timetabling Management 	CDP
In-ground Services Survey Data All in-ground services survey data inc. asset attributes forthcoming being installed on site ³	Construction	DWG, EXCEL	<ul style="list-style-type: none"> • Update MASTER in-ground services • Commissioning support • Update DBYD records 	Email
As-constructed Documents All consultants' drawings and documents inc. evacuation diagrams, in-ground services, manuals & space schedule ^{3 4}	Practical Completion	DWG, PDF, EXCEL	<ul style="list-style-type: none"> • Record keeping • Final review of Curtin CAD Standards • Update MASTER drawings & documents • Update operation & maintenance documents 	CDP
Final Documents Variations after Practical Completion (if any), Maintenance Logs & Green Star Certification ³	Project Close	DWG, PDF, EXCEL	<ul style="list-style-type: none"> • Update MASTER drawings & documents to reflect DLP changes • Update operation & maintenance documents 	CDP

1. Architectural floor plans with furniture layouts for the approval of building and room numbering are not required to comply with the Curtin CAD Standards.
2. Drawing Services shall request the current architectural floor plans and site plan at any stage for spatial/map updates and these ad hoc drawings are not required to comply with the Curtin CAD Standards.
3. Refer to the relevant section for the deliverable format.
4. At Practical Completion, ALL Construction Drawings are to be updated to reflect any changes during construction and to be clearly revised to 'As-Constructed' stage.

Note: All project documentation at the Tender/Issued for Construction and As-constructed stages will go through a Curtin CAD Standard compliance check by Curtin University. Failure to comply with the Curtin CAD Standard at the As-constructed stage will require a complete re-submission.

3 BUILDING, STRUCTURE & ROOM NUMBERS

3.1 REQUESTING NEW BUILDING AND STRUCTURE NUMBERS

All buildings and structures for Curtin University require a unique number assigned to them. If the project requires a new building or structure number, the Nominated External Project Manager can request this electronically by issuing current site plans and floor plans in PDF format via email to drawingservices@curtin.edu.au.

3.2 APPROVAL OF ROOM NUMBERING

All rooms, circulation spaces, service cupboards/ducts, external spaces and interstitial spaces shall be numbered in accordance with Curtin University requirements. To ensure this, architectural floor plans with furniture layouts shall be provided to Drawing Services in PDF format at the concept design stage for approval of the unique room numbers.

Please ensure the use of each space is nominated on the plan so that the appropriate prefix can be assigned to the room numbers.

Prefix Code	Space	Definition
C	Circulation	A fully enclosed space used predominantly for horizontal and vertical circulation, including corridors, stairwells, ramps, etc.
D	Data	A space used to accommodate data and telecommunications infrastructure and equipment.
E	Electrical	A space used to accommodate electrical services infrastructure and equipment.
F	Fire	A space used to accommodate fire services infrastructure and equipment.
L	Lift	A space used for association with a lift, including the lift shaft, lift motor room, etc.
M	Mechanical	A space used to accommodate mechanical services infrastructure and equipment (typically referred to as plant rooms).
P	Plumbing	A space used to accommodate hydraulic services infrastructure and equipment, including gas services.
V	Void	An open, partially or fully enclosed space that is unusable.

Approval of project room numbers shall be coordinated by the Nominated External Project Manager by issuing current floor plans in PDF format via email to drawingservices@curtin.edu.au.

4 CURTIN CAD STANDARD

Curtin University recommends consultants and contractors use AutoCAD for the project documentation. Where another CAD system is used, it shall be the responsibility of the consultant or contractor to ensure the Curtin CAD Standard requirements can be met prior to commencement of work.

To reduce efforts made towards compliance at project submission stages, the External Project Team shall obtain the Master Drawings via the CDP and use these as a base for all drawings and documentation. These drawings are compliant with the Curtin CAD standards and suitable for immediate use on project documentation.

Alternatively consultants and contractors can use the Curtin DWG template as a base drawing to include the correct CAD requirements and title blocks. For use with other CAD systems, the template can be converted by the external project team to suit.

The Curtin DWG template package including blocks and symbols is available online at:

<http://properties.curtin.edu.au/local/docs/guidelines/DWGTemplatesBlocks.zip>

4.1 DRAWING FORMAT

All drawings issued to Curtin University shall be in DWG format compliant with AutoCAD 2010 or earlier and be accompanied by an identical PDF version of the same drawing.

4.2 DRAWING SHEET LAYOUTS

Do not combine multiple buildings or floor levels on a drawing sheet. Do not have multiple sheets in a DWG file. Do not merge PDF drawing files together. Evacuation Diagrams and Survey Data are the only exceptions to this requirement.

4.3 DRAWING FILE NAMING

All drawing files shall consist of the following format, as detailed in Appendix A.

Campus	Location	-	Discipline	DWG Type	Level	Sequential No
52	B013	-	A-	FP	01	01

4.4 DRAWING MODEL SPACE AND PAPER SPACE

All real size geometry shall be drawn in Model Space with one drawing unit equal to one millimetre except for any survey data, where one drawing unit may equal one metre. Borders, title blocks and legends shall be completed in Paper Space.

4.5 POSITION OF BASE DRAWING

All floor levels for a multistorey building or structure shall be offset and positioned identically on separate drawings with an orientation based on WCS X=0 Y=0 Z=0 as the insertion point. Supplied Master drawings shall contain correct building positions.

4.6 DRAWING LINETYPES AND TEXT STYLES

All linetypes and text styles shall follow common industry practices, shall be created using standard out-of-the-box formats and have no unique customisation.

4.7 DRAWING LAYERS

The layers format shall match the Curtin DWG template or follow a similar hierarchal and logical naming structure. All entities/geometry shall be drawn on an appropriate layer and shall preserve all layer settings as 'ByLayer'.

4.8 DRAWING BLOCKS AND SYMBOLS

Curtin University provides a set of standard blocks and symbols to use for project documentation in DWG format. For use with other CAD systems, the blocks and symbols can be converted to suit.

4.9 DRAWING EXTERNAL REFERENCES

Bind all external references into the DWG file before the project documentation is submitted to Curtin University. Raster images shall not be included in the DWG files.

4.10 DRAWING TITLE BLOCK

All drawings shall be produced using the Curtin University title block and all attributes completed accurately in full. The Curtin Project attributes for each drawing shall be determined in discussion with the Responsible Officer and shall be consistently applied throughout.

4.11 DRAWING LEGENDS

A drawing legend shall be provided with the project documentation for each discipline containing symbols or abbreviations, even if those used are Curtin University-supplied standard blocks.

4.12 DRAWING READINESS

The final drawings are to be saved in Paper Space with all unused layers, linetypes, text styles etc. purged from the drawing. Any additional data not shown within the defined title block border on Paper Space shall be deleted and the sheet 'zoomed-to-extents'.

5 OPERATION & MAINTENANCE MANUALS

The Operation & Maintenance Manual (O&MM), is a document that is developed and compiled during the construction phase of a project and shall contain essential information regarding the operation and maintenance of the building's various systems and equipment. All O&MMs shall be prepared by the appropriate consultant for each of the technical disciplines/asset types and compiled by the Nominated External Project Manager. They are then submitted to Curtin University at Practical Completion Stage via the Construction Documentation Portal by the Document Contributor. Refer to *Section 2.5 Schedule of Documentation* to be supplied.

Each O&MM for Curtin University shall be obtained via the Construction Documentation Portal and are live documents specific to a discipline/asset type and covers a singular building or structure only. All O&MMs use the same formatted template and shall be amended to reflect the changes required for the project scope only. Do not remove or alter any sections not relevant to the project as the amended document will be used to supersede the existing O&MM on the Construction Documentation Portal.

The template includes (but is not limited to):

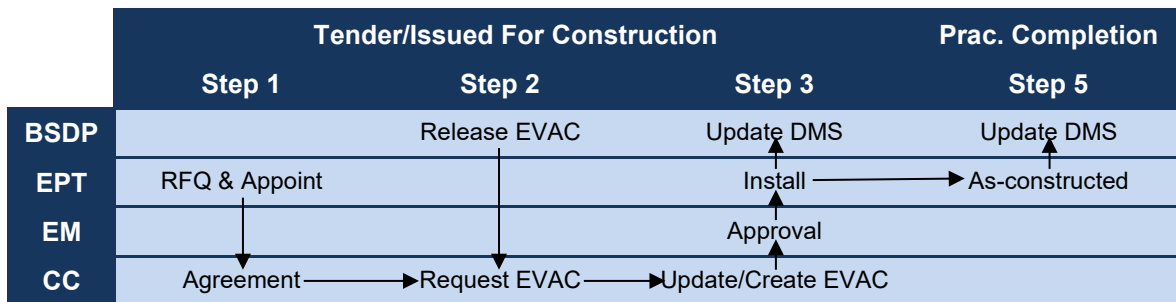
1. *FM Asset Register (Excel spreadsheet)*
2. *O&MM Template (Word document)*
 - 2.1. *Cover Sheet*
 - 2.2. *Table of Contents (including figures and tables)*
 - 2.3. *Document authorisation and revision control*
 - 2.4. *Section 1 – Building/Facility Specific Information*
 - 2.4.1. *High level description of facility (Basis of design, operation and control)*
 - 2.4.2. *High level description of process/function*
 - 2.4.3. *Hazards identification*
 - 2.5. *Section 2 – Operations Manual*
 - 2.5.1. *Detailed description of operations process*
 - 2.5.2. *Operating Procedures*
 - 2.5.3. *Process flows (include flow charts or reference to drawings)*
 - 2.5.4. *Operation monitoring and control (e.g. modes of operation, sequences, interlocks and alarms)*
 - 2.5.5. *Troubleshooting Guides*
 - 2.5.6. *Technical Data Sheets*
 - 2.6. *Section 3 – Maintenance Manual*
 - 2.6.1. *Maintenance Plans/Schedules*
 - 2.6.2. *Assets/Components maintenance plans*
 - 2.6.3. *Recommended Spare Parts/Spare Parts schedule*
 - 2.6.4. *Work Method Statements (include JSA, JSEA, SWI, Safety Procedures where available)*
 - 2.7. *Section 4 – Commissioning*
 - 2.7.1. *Witness testing and training*
 - 2.7.2. *Commissioning/Asset Handover forms*
 - 2.7.3. *List of suppliers*
 - 2.8. *Section 5 – Technical Reports, Specifications, Certificates and Warranties*
 - 2.8.1. *Technical Specifications*
 - 2.8.2. *Certificates*
 - 2.8.3. *Warranties*

Each O&MM template, once completed, shall be converted from a Word document to a PDF document and both file formats submitted, together with the FM Asset Register, which shall remain as an Excel spreadsheet via the CDP.

Note: Operation & Maintenance Manuals created outside of this process will not be accepted by Curtin University.

6 EVACUATION DIAGRAMS

Having Evacuation Diagrams located throughout a building is one of the most important pieces of information for any guests, visitors or staff. The purpose of these diagrams is to provide the occupants with information on how to evacuate the building if an emergency, such as a fire, should occur. All Evacuation Diagrams shall be prepared following the process below. They are then submitted to Curtin University at Practical Completion Stage via the Construction Documentation Portal by the Document Contributor, refer to *Section 2.5 Schedule of Documentation* to be supplied.



- Step 1. At the beginning of project documentation, the External Project Team (EPT) shall engage a CAD Consultant (CC) from the preferred list of organisations to document the Evacuation Diagrams. (Refer to Appendix B)
- Step 2. The CAD Consultant (CC) shall then coordinate with Drawing Services (BSDP) for the latest MASTER Architectural floor plans to be released via the Construction Documentation Portal (CDP) and compare these to the External Project Team's (EPT) project documentation, making any adjustments as required.
- Step 3. The CAD Consultant (CC) shall then update or create the Evacuation Diagrams and then issue them to the External Project Team (EPT) and Drawing Services (BSDP). The External Project Team (EPT) shall then coordinate with Curtin University Emergency Management (EM) for the approval and installation of the Evacuation Diagrams.
- Step 4. Once the project has been taken through to Practical Completion the Evacuation Diagrams in AutoCAD DWG and PDF format are then included with the 'As-constructed Documents' that are submitted to Drawing Services (BSDP) via the Construction Documentation Portal (CDP).

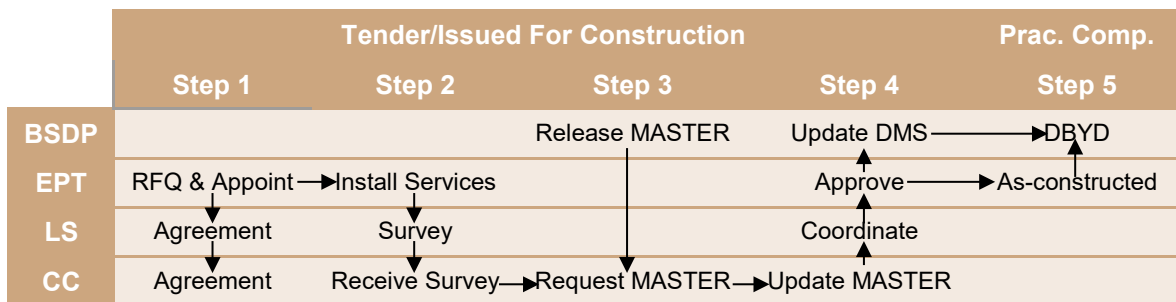
Each floor level will have a separate AutoCAD DWG file containing multiple drawings sheets for the required Evacuation Diagrams on that level. The PDF files must remain separate for each drawing sheet though, as per the Curtin CAD Standards.

Note: Consultant Costs associated with the Evacuation Diagram process are part of the project scope.

Note: Evacuation Diagrams amended or created outside of this process will not be accepted by Curtin University.

7 IN-GROUND SERVICES

In-ground services are any assets such as pipes and cables, located (completely or partially) below ground at Curtin University. The capturing of in-ground services in accordance with Australian Standard 5488-2013 is crucial in keeping Curtin’s MASTER In-ground Services Data current, which in turn is published to Dial Before You Dig. All changes made to in-ground services assets, such as installation of new, removal or making redundant, shall have in-ground services data prepared following the process below. It is submitted to Curtin University at Construction Stage via email and at Practical Completion Stage via the Construction Documentation Portal by the Document Contributor, refer to *Section 2.5 Schedule of Documentation to be Supplied*.



- Step 1. At the beginning of construction the External Project Team (EPT) shall engage a Licensed Surveyor (LS) to survey the in-ground services and a CAD Consultant (CC) from the preferred list of organisations to update the MASTER In-ground Services Data (Refer to Appendix B).
- Step 2. Once the in-ground services have been installed but before they are backfilled, the External Project Team (EPT) shall have the Licensed Surveyor (LS) conduct a survey compliant with Curtin University requirements and AS 5488-2013 and complete the Survey Attribute Data Sheet (Refer to Appendix C). The in-ground services survey data is then sent to the CAD Consultants (CC) to update Curtin’s MASTER In-ground Services Data.
- Step 3. The CAD Consultant (CC) shall then coordinate with Drawing Services (BSDP) for the latest MASTER In-ground Services Data to be released via email and compare these to the Licensed Surveyor’s (LS) in-ground services survey data.
- Step 4. The CAD Consultant (CC) shall then update Curtin’s MASTER In-ground Services Data to include the in-ground services survey data and coordinate any issues with the Licensed Surveyor (LS). The CAD Consultant (CC) then issues them to the External Project Team (EPT) for approval and Drawing Services (BSDP) to supersede the previous MASTER In-Ground Services Data.
- Step 5. Drawing Services will update DBYD with every receipt of updated MASTER In-Ground Services Data. Once the project has been taken through to Practical Completion, the in-ground services survey data in AutoCAD DWG is then included with the ‘As-constructed Documents’ that are submitted to Drawing Services (BSDP) via the Construction Documentation Portal (CDP).

Note: Consultant Costs associated with the in-grounds services process are part of the project scope.

Note: Any installation of in-ground services outside of this process will not be shown on Curtin University’s MASTER In-Ground Services Data.

The Space Data Schedule is a spreadsheet developed to identify each space of the building and provide the associated asset information required for Curtin University. This information is used to facilitate the timetabling and scheduling of our facility together with data required for TEFMA reporting. The Space Data Schedule shall be prepared by the Lead Design Consultant and approved by the Nominated External Project Manager. It is then submitted to Curtin University via the Construction Documentation Portal by the Document Contributor at the required stages, refer to *Section 2.5 Schedule of Documentation to be Supplied*.

The Space Data Schedule shall be completed and submitted using the Space Data Schedule template (Excel spreadsheet) which is available online at:

<https://properties.curtin.edu.au/working-with-us/guidelines/space-data-schedule/>

The Space Data Schedule shall be completed and submitted at Tender/Issued for Construction Stage, revised during construction and then re-submitted at Practical Completion together with the 'As-constructed' documentation.

The template is not to be modified or altered in any way. Refer below for further explanation of schedule requirements:

- **Floor No.** – Curtin Floor Level (refer to drop-down in template)
- **Room No.** – Unique Room Identifier (as taken from MASTER drawings, or approved by Curtin University)
- **Room Name** – Name of Room (as used on door/room signage – leave blank if no specific room name)
- **Area (m²)** – Area in two decimal metre squared (e.g. 13.06 m²)
- **No. Workstations/Max. Capacity** – per room
- **TEFMA Room Category** – refer to room categories in template
- **TEFMA Room Type** - refer to room types in template
- **Organisational Unit Allocation** – refer to organisational units in template
- **Room Configuration Category** - refer to room configurations in template
- **Room Configuration Type** - refer to room configurations in template
- **Occupants** – Name of occupants if known (e.g. John Smith, Jane Smith).

For further assistance on how to complete the Space Data Schedule template please contact Space Management via email at SpaceManagement@curtin.edu.au.

Note: Space Data Schedules created outside of this process will not be accepted by Curtin University.

Green Star assesses the sustainable design, construction and operation of buildings, fit-outs and communities. The Green Star Certification provides information regarding the operation and maintenance of the building, education studies and information for future projects. The Green Star Certification shall be prepared by a Green Star-accredited professional and approved by the Nominated External Project Manager. It is then submitted to Curtin University at Project Close Stage via the Construction Documentation Portal by the Document Contributor, refer to *Section 2.5 Schedule of Documentation to be Supplied*.

For every round of certification issued to the Green Building Council of Australia and the final approval, a consolidated document must be submitted to Curtin University. Each document shall follow the same format and provide the required information where relevant or leave that section blank.

1. *Cover Sheet*
2. *Table of Contents (including figures and tables)*
3. *Document authorisation and revision control*
4. *Section 1 – General*
 - 4.1. *Green Star Calculations*
 - 4.2. *Green Star Submission Notification*
 - 4.3. *Green Star Submission Requirements*
 - 4.4. *Project Review*
 - 4.5. *Credit Summary*
5. *Section 2 onwards – Category of Credits (One section per category)*
6. *Appendices*
 - 6.1. *Appendix 1 – Reference Documents*
 - 6.2. *Appendix 2 – Received Documents*

Once all the information has been collated for a round of certification or final approval, it shall be merged into a single PDF document following the above format. These documents are then issued to the External Project Team to submit at the Project Close Stage.

Note: Green Star Certification created outside of this process will not be accepted by Curtin University.

APPENDIX A DRAWING FILE NAMING

All drawing files shall consist of the following format.

Campus	Location	-	Discipline	DWG Type	Level	Sequential No
52	B013	-	A-	FP	01	01

CAMPUS (2 CHARACTERS)

Identifies the Campus and shall use the following characters as applicable.

Designator	Campus	Remarks
01	Bentley	Including Technology Park and Environs
02	Muresk	
03	Kalgoorlie	Including WASM and Agricola College
04	Shenton Park	
05	Perth City	
06	Joondalup	
07	Albany	
08	Esperance	
09	Geraldton	
41	Margaret River	
42	Cockburn	
43	Midland	
52	Other	

If the project requires a new campus number, the Nominated External Project Manager can request this electronically by issuing current site plans and floor plans in PDF format via email to drawingservices@curtin.edu.au.

LOCATION (3–5 CHARACTERS)

Identifies the building number, structure or site, for example:

- B109 = Building 109
- S52 = Structure 52
- SITE = Non-building site drawing

HYPHEN (1 CHARACTER)

Between the Location and Discipline is always the hyphen sign (-)

DISCIPLINE (2 CHARACTERS)

Identifies the Discipline and shall use the following characters as applicable.

Designator	Discipline	Remarks
A-	Architectural	Architects Drawings
AV	Audiovisual	Audiovisual Drawings
C-	Civil	Civil Engineers Drawings
E-	Electrical	Electrical Engineers Drawings
EV	Evacuation	Evacuation Diagrams
F-	Fire Services	Fire Engineers Drawings
G-	General	General Site Plan, Grids, Misc.
H-	Hydraulics	Hydraulic Engineers Drawings
I-	Interiors	Interior Design Drawings
iR	Irrigation	Irrigation Design Drawings
L-	Landscaping	Landscape Architects Drawings
M-	Mechanical	Mechanical Engineers Drawings
Rw	Acoustic	Acoustic Engineers Drawings
SC	Security	Security Contractor Drawings
S-	Structural	Structural Engineers Drawings
T-	Telecommunications	External Telecommunication Drawings
V-	Survey	Licensed Survey Drawings
VT	Vertical Transport	Lift Drawings

DRAWING TYPE (2 CHARACTERS)

Identifies the Drawing Type and shall use the following characters as applicable.

Designator	Drawing Type	Designator	Drawing Type
AC	Air conditioning (HVAC) Schematic	LT	Lighting
BP	Block Plan	LV	Low Voltage
BW	Builders Work	MA	Operation & Maintenance Manual
CM	Communication	ME	Mechanical Electrical
CP	Ceiling Plan	PA	Partition Plan
CS	Cover Sheet	PK	Parking
DB	Distribution Boards	PP	Power
DG	Diagrams/Images	PW	Potable Water
DN	Drainage	RI	Reinforcement
DP	Demolition	RL	Room Layout
DT	Details	RP	Roof Plan
DW	Detection/Warning	RW	Road Work
EL	Elevation	SA	Safety
EM	Emergency Lighting	SC	Section
EQ	Equipment	SD	SCADA
ER	Earthing	SF	Slab & Footing
EW	Earthworks	SH	Schedule/GANTT
FP	Floor Plan	SK	Sketch
FS	Fire Sprinklers	SL	Single Line Diagram
FU	Furniture	SM	Schematic
GA	General Arrangement	SP	Site Plan
GN	General Notes & Legend	SR	Stormwater
GS	Gas	SS	Suspended Slab/Structural Slab
HC	Heating & Chilled	SW	Sewage
HV	High Voltage	SV	Survey
JN	Joinery	WW	Wastewater
KP	Key Plan/Location Plan		

LEVEL (2 CHARACTERS)

Identifies the Level and shall use the following characters as applicable.

Designator	Level
00	All Building or No Level
01	Level 01
02	Level 02
03	Level 03
04	Level 04
05	Level 05
06	Level 06
07	Level 07
08	Level 08
09	Level 09
10	Level 10

Designator	Level
B1	Basement Level 01
B2	Basement Level 02
B3	Basement Level 03
B4	Basement Level 04
B5	Basement Level 05
M1	Mezzanine on Level 01
M2	Mezzanine on Level 02
M3	Mezzanine on Level 03
M4	Mezzanine on Level 04
M5	Mezzanine on Level 05

SEQUENTIAL NUMBERS (2 CHARACTERS)

If all preceding characters are the same then assign a sequential number to the file.

For example – 01 through to 99

APPENDIX B REGISTER OF CAD CONSULTANTS

The organisations identified below are Curtin University's preferred CAD Consultants that can provide services to the relevant Nominated External Project Manager to update Evacuation Diagrams and MASTER In-ground Services Data (DBYD).

Company Name	Address	Primary Contact	Contact Email	Phone No
CaddWest Bureau	1/21 Rowe Ave, Rivervale WA 6103	Michael Coles	michael@advancedspatial.com.au	(08) 9367 2888
		Stuart Gray	stuart@advancedspatial.com.au	
		Xin Ying Lim	lim@advancedspatial.com.au	
Parametric	63/102 Railway St, West Perth WA 6005	Kandace Bowles	kandace.bowles@parametric.com.au	(08) 9322 5344
		Shaun Miller	Shaun.Miller@parametric.com.au	
Perth Cadcentre	2/4 Sarich Way, Bentley WA 6102	Lester Fildes	lester@perthcad.com.au	(08) 9470 7700
		Morgan Healy	Morgan@perthcad.com.au	
		Ross de Boer	ross@perthcad.com.au	
The Drafting Lab	6/7 Gympie Way, Willetton WA 6155	Lester Mulder	lester@tdlab.com.au	0400 219 966

APPENDIX C IN-GROUND SERVICES SURVEY DATA

All in-ground services survey data shall include:

1. AutoCAD DWG drawings as follows:

- Drawing units shall be in millimetres or metres.
- Drawings shall use real world coordinate systems, in particular the Perth Coastal Grid (PCG94) coordinate system derived from GDA94 (Geocentric Datum of Australia).
- Sites outside the PCG94 region are to use the relevant Project Grid Parameter, such as Kalgoorlie; Goldfields Grid (GOLD94).
- Provide levels true to the Australian Height Datum (AHD).
- Where possible, ensure all drawings are showing north up the page.
- Survey tolerance is to conform to AS 5488 Australian Standard "Classification of Subsurface Utility Information (SUI)".
- All new in-ground services shall be surveyed to Quality Level 'A'.
- Where possible, in-ground services shall not be backfilled prior to the survey data being collected. Use paint marks to identify which pipes can be buried for large construction projects, such as after collecting pipe invert levels and x,y locations.
- Use industry standard linestyles, colours and attributes to identify all services shown and delineate between existing and new services. Provide a legend of all services and symbols.
- If a CCTV inspection was carried out, provide a digital video file and reference to drawing using maintenance hole reference points as an example, and advise of any defects to Infrastructure Management.

2. In-ground Services Survey Attribute Data Sheet:

- Provide survey attribute data to the requirements of the In-ground Services Survey Attribute Data Sheet and include the Entity Handle of the object within AutoCAD.
- The survey attribute data that is nominated to be captured outside of the DWG drawing shall be captured in the In-ground Services Survey Attribute Data Sheet (Excel format) located here:

<https://properties.curtin.edu.au/working-with-us/guidelines.cfm>