Attachment 4 November 2024

**DIT Exchange Information Requirements (EIR)**

|  |  |
| --- | --- |
| Project Reference: | *DIT CONTRACT NUMBER* |
| Project name: | *DIT PROJECT NAME* |
| Project address/location: | *PROJECT ADDRESS* |
| SAMIS Asset Number | *0000* |
| Brief project description: | *OUTLINE PROJECT DESCRIPTION* |
| Appointing party: | *DEPARTMENT OF TRADE AND INFRASTRUCTURE (DIT)* |

|  |  |  |
| --- | --- | --- |
| Based on Version: V1 |  |  |
| Date: 30/5/2024 |  |  |

**DIT Exchange Information Requirements (EIR)**

March 2024

**Document references**

In this document:

* The ‘*EIR Template’* or ‘*Template*’ means the *NATSPEC Exchange Information Requirements (EIR) Template*.
* The ‘EIR’means theexchange information requirements for the nominated project.
* The ‘*BEP*’ means the *BIM Execution Plan* (for a specific project).
* The ‘*National BIM Guide’* or ‘*Guide*’ means the *NATSPEC National BIM Guide*.

**Document control**

This table is for listing the contacts who worked on the development of the EIR, and who can be contacted to answer queries about them. Indicate responsibilities for the development of the EIR in the ‘RACI’ column.

| Title/Role | Name | Company/  Organisation | Email | Tel. No. | RACI |
| --- | --- | --- | --- | --- | --- |
| Author | Ralph Hems | ODASA | [ralph.hems@sa.gov.au](mailto:ralph.hems@sa.gov.au) | 0413307943 | R |
| Owner | Lead Agency Representative | TBA | TBA |  | C |
| Appointing party representative | Project Manager | DIT | TBA |  | A |
| Information Manager | Ralph Hems | ODASA | TBA |  | I |

**Key to responsibilities for developing EIR.**

R Responsible for undertaking activity

A Accountable for activity completion

C Consulted during activity

I Informed following activity completion

Add or amend roles in the table as required. Those shown are examples only – customise to suit the project.

Role responsible for maintaining and updating EIR: Ralph Hems - ODASA [ralph.hems@sa.gov.au](mailto:ralph.hems@sa.gov.au)

Enter the role or individual/s responsible. Refer to required procedures for consultation, notification, review, approval, etc in **Technical,** **Project information production methods and procedures directory**.

**Version history**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version | Date | Amended by | Approved by | Comments |
| Rev 1 | September 2023 | RH |  | Draft |
| Rev 2 | November 2023 | RH |  | DCCIF Review Issue |

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# INTRODUCTION

EIR are prepared by the appointing party. EIR are the pieces of information required by them to support their decision making during the delivery phase and operational phases of assets. They are an aggregation of project information requirements (PIR) and asset information requirements (AIR).

The prospective lead appointing party allocates subsets of these information requirements to each appointed party as required when preparing the pre-appointment BIM Execution Plan (BEP).

EIR are structured around the level of information need required at each information delivery milestone and should be expressed in a way that enables them to be readily incorporated into appointments, e.g. grouping by discipline and/or trade.

Refer to AS ISO 19650.1, Section 5. and AS ISO 19650.2, Clause 5.2.1.

**Using this Template**

This EIR Template is designed specifically for developing EIR after AIR and PIR have been defined.

This Template includes prompts for eliciting EIR and provides a structure for organising them effectively.

See *Appendix D – Defining information requirements* for an explanation of its structure and instructions for its use.

# This EIR Document

## AS ISO 19650 alignment

This document is aligned with the requirements of the AS ISO 19650 series of standards and uses the terminology from them throughout. Refer to them for details of the requirements and definitions of terms

Definitions of terms can also be found on the ISO Online Browsing Platform (OBP): <https://www.iso.org/obp/ui>

Refer to Annex 6.2 Abbreviations, and *NATSPEC National BIM Guide -Appendix A- Glossary* for list of abbreviations used in this document.

A basic understanding of the concepts, principles and terminology found in AS ISO 19650 is crucial for making effective use of this template. See the *NATSPEC National BIM Guide* for an introduction to the subject.

## Purpose

As part of the Building Information Modelling (BIM) implementation across government the Department of Infrastructure and Transport (DIT) supports the implementation of BIM Stage 2 in accordance with ISO 19650-2 which includes compliance with AS ISO 19650-1, AS ISO 19650-2 (concepts, principles and project delivery) and AS ISO 19650-3 in terms of operational purposes.

The Stage 2 BIM maturity includes both manual and automated information management processes to generate a federated information model. The information model includes all information containers delivered by the BIM delivery teams in relation to the project including uses digital information technology, a Common Data Environment (CDE) and DIT BIM requirements for coordinated federation 3D models during the design and delivery phase of the project.

The BIM requirements stated in this EIR document are in support of the DIT project delivery requirements and are to provide consistency in the use of building information 3D modelling and to provide clear principles and processes for the management of building information.

Thisdocument defines the DIT Exchange Information Requirements (EIR) for the project and includes the following information requirements.

* Organisation information requirements (OIR) documenting DIT BIM information requirements
* Asset information requirements (AIR) documenting the general asset information requirements.
* Project information requirements (PIR) documenting the core and project specific BIM information requirements and the level of information need at each project milestone stage.

The Diagram below shows the DIT project and asset delivery process based on AS ISO 19650 and hierarchy of asset information requirements.

A diagram of a project

Description automatically generated

## Application

This EIRdocument forms part of the invitation to tender documentation provided by the appointing party (DIT) to prospective appointed parties (LPSC and Main Contractor).

The EIR document is to be read in conjunction with the Project Conditions of Contract and other tender briefing documents.

The EIR describes the information the prospective delivery team is required to deliver as part of the Project Implementation Process (PIP) Phases they are engaged for.

* Design BIM Team for Part 1, 2A and 2B – (Concept, Design Development and Documentation)
* Construction BIM Team for Part 3 (Construction).

## BIM Execution Plan

## 

The EIR requires the preparation of a project BIM Execution Plan, (BEP) submitted in response to the EIR as the primary tool of BIM management for both the Design Documentation and Construction stages of the project.

The BEP will outline the Delivery Team’s collaboration and communication strategy to be adopted for each stage of the BIM project including communication methodology, protocols, design coordination, information exchange meetings schedule and a detailed Responsibility and Roles Table, Information Delivery Plan and task information plans.

The Lead Professional Service Contractor (LPSC) leading the Design/Documentation BIM Team shall be responsible for creating and updating the Design Building Execution Plan (DBEP) with changes to the project occurring during the Design/Documentation Phase and include the requirements of the EIR and reference to the relevant sections of this document.

The Main Contractor for the Construction/Delivery BIM Team shall review and update the DBEP to create the Construction BIM Execution Plan (CBEP) with reference the relevant EIR requirements for construction and project completion requirements.

The BEP shall be based on the format of the NATSPEC BEP Template. [NATSPEC BIM - BIM Execution Plan Template](https://bim.natspec.org/documents/bim-management-plan-template) Any variation to the requirements of the EIR must be recorded within the BEP and approved by DIT BIM representative. Refer to Section 4.5 BIM Execution Plan for more detailed requirements of the BEP.

## Projects Requiring BIM

Noting that not all Delivery Teams are at the same level of BIM capability or maturity, the following BIM Capability Level Tiers have been identified by DIT Building Projects for capital works projects as follows:

1. BIM Tier 1 - Project value up to $5 million where the value of BIM is clearly demonstrable. (Small scale simple-conventional buildings)- 3D Modelling only if used)
2. BIM Tier 2 - Project value between $5 million to $15 million (Medium - medium scale / complexity buildings)
3. BIM Tier 3 - Project value between $15 million to $250 million (Large scale, complex buildings)
4. BIM Tier 4 - Project value in excess of $250 million (Large scale, complex buildings requiring specialist BIM applications)

It is important the tendering parties confirm the BIM Tier Level with the DIT BIM Representative prior to the submission of the Tender submission for the Design/Documentation and Construction phases of the project.

## BIM Tier Level Capabilities

For each BIM Tier the Lead Professional Service Contractors (LPSC) and Discipline Professional Service Contractors (DPSC) will be required to meet the following BIM Capabilities requirements as part of DIT Prequalification requirements.

**Summary of DIT Prequalification Level and Associated BIM Tier Capability Level**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DIT Prequal Levels | Description | Project Value | BIM Tier Level | Capability Level (ACIF) | Description (based on ACIF BIM Knowledge and Skills Framework) |
| **PSC Level 1** | Simple - conventional buildings, small scale | Up to the $5M | 1 | 1-2 | Practical application proficient with a general knowledge of ISO 19650 principles and concepts. |
| **PSC Level 2** | Medium - scale / complexity buildings | $5M to $15 M | 2 | 3 | Detailed knowledge and demonstrated proficiency and application of ISO 19650 principles and concepts |
| **PSC Level 3** | Complex - large scale, complex buildings | $15M to $250M | 3 | 4 | Detailed knowledge and demonstrated high proficiency and application of ISO 19650 on large scale complex projects and data information requirements. |
| Complex - large scale, complex buildings | > $250 M | 4 | 5 | Specialist /Authority level knowledge/theory with demonstrated expert proficiency and application of ISO 19650 of large scale very complex projects. |

*Note: Capability levels and descriptions based on the Strategic Forum for the Australasian Building and Construction Industry (ACIF) BIM Knowledge and Skills Framework (Introduction and BIM Knowledge and Skills Framework excel spreadsheet Descriptor*.

## Project Specific ,Commercial, Management and Technical sections

The following sections are based on the three aspects of producing information identified in AS ISO 19650.1

1. Introduction to EIR document
2. Section 1 -Project Details: Includes DIT Project Specific Details, required BIM applications and BIM deliverables for the project.
3. Section 2 Commercial: Includes DIT requirements for BIM information delivery and required BIM contract requirements for procurement.
4. Section 3 Management: Includes DIT required management processes to be adopted for the implementation of BIM.
5. Section 4 Technical: Incudes the DIT BIM Technical requirements or provisions that support the delivery and management of information.

Examples of options – adjust wording to suit project:

* This EIR document applies to the design phases only of the project, up to and including the handover of the AIM and/or PIM from the design team to the construction team.
* This EIR document applies to the construction phases only of the project, from the handover of the AIM and/or PIM from the design team to the construction team and up to and including the handover of models from the construction team to the operators of the completed built asset.
* This EIR document applies to the design and construction phases of the project, up to and including the handover of the AIM and/or PIM from the design and construction teams to the operators of the completed built asset.

The last option offers the most opportunities to realise the potential benefits of BIM.

**Design status**

A brief description of the point design development has reached at the time invitations to tender are issued, (e.g. functional brief, concept design, sketch design, developed design, contract documentation) will also give prospective appointed parties a clearer picture of the extent to which the design has been resolved, so they can assess the resources and risks associated with developing it further, without having to infer it from the details included in the EIR alone.

Include any additional information that provides context for EIR, e.g. project plan of work, program.

# SECTION 1 - Project Specific Details

## Project description

Outline description: Refer to the Department for Infrastructure and Transport (DIT) Project Brief and Conditions of Tendering documents for a full description of the project scope and general requirements.

* 1. **Project goals and objectives**

The appointing party’s goals and objectives for the implementation of BIM in accordance with AS ISO 19650 for this project are shown in the following **Project goals table**.

**Project goals table**

|  |  |  |  |
| --- | --- | --- | --- |
| **Priority** | **Goal description** | **Required Use of BIM** | **Measure of Success** |
| High | Improve design comprehension across the delivery team with stakeholder groups. | Use BIM collaboration and visualisation tools to provide continuous collaboration and coordination of design issues and solutions. | Reduced number of stakeholder design changes during the final documentation and construction stages. |
| High | Improve design decision making at critical project milestones to ensure design quality. | Embed BIM information management processes and principles of AS ISO 19650 and compliance to the EIR as milestone deliverable and BIM reporting | Reduced number of design and value management changes during the documentation stage. |
| High | Achieve a fully coordinated building information model for stakeholder signoff prior to commencement on-site. | Lead/discipline/trade BIM/s are required to use conflict and clash detection of all federated discipline models. | Reduced number of errors and omissions due to incomplete coordination. |
| High | Improve project specific Safety in Design Risk analysis | Safety in Design Risk Assessments and risks issues analysed through BIM at critical milestones. | Reduced number of Safety in Design residual risk items at handover. |
| High | Implementing of a project specific information management processes and coordination. | Provide a single common data environment (CDE) for all project information to be shared across all project work packages | Reduced number of request for information during construction. |
| High | Handover complete project information at completion of the construction works | Provide an review the an assessable as-built information dataset from the Construction Delivery Team. | Reduced number of requests for additional information due to incomplete project information submissions at Practical Completion. |
| Moderate | Establish project-specific key BIM deliverables and performance indicators (KPIs) to measure progress and project benchmarking. | Use of design BIM/s to inform cost planning, programming an project performance targets | Reduced number of noncompliance performance indicators KPIs. |
| Moderate | Enable lessons learnt review collectively on the use of BIM building information modelling and management | BIM Lessons Learnt sessions included as part of the post construction and post occupancy reviews process. | Reduced number of BIM issues on the BIM Lessons Learnt register. |

## BIM Application uses.

To support the above BIM project goals and objectives the following project specific BIM applications uses have been identified to be used as included in the **BIM Application uses table**.

The applications listed in the table correspond to those found in the *DIT Building Information Requirements G168* Guide and *NATSPEC National BIM Guide*, *Appendix C – BIM use & enabler descriptions* with reference to the appropriate clause reference number and appropriate DIT BIM Tier level.

The table provides a place for clients with established prerequisites for the use of BIM, e.g. institutional clients, to document them. For clients without prerequisites, it is recommended they seek professional guidance on the selection of BIM uses appropriate for the project.

**BIM Application uses table.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Required (Yes/No)** | **DIT**  **Clause No.** | **Use of BIM**  (Reference DIT BIM Requirements G168) | **BIM Tier Level** |
| *YES* | *8.1* | *Architectural (includes 3D base model)*  *Spatial and Material Design Models and Design Visualisation for Communication and Functional Analysis* | *ALL* |
| *YES* | *8.2* | *Structural Engineering (including seismic bracing if required for seismic important level IL4)* | *ALL* |
| *YES* | *8.3* | *Mechanical Systems (new and refurbished areas only) including all mechanical equipment and plant with required maintenance access hatches and clearances* | *ALL* |
| *YES* | *8.4* | *Electrical Systems (new and refurbished areas only) including fittings, equipment and cable trays, lighting internal and external, Wireless networks A/V, and Hearing augmentation systems as required including all required maintenance access hatches and clearances.* | *ALL* |
| *YES* | *8.5* | *Hydraulic and Fire Protection (new and refurbished areas only) including all required maintenance access hatches and clearances* | *ALL* |
| *YES* | *8.6* | *Acoustic Spatial Modelling by acoustic consultants (based on architectural 3D base models)* | *ALL* |
| *YES* | *8.7* | *Civil Engineering (only for areas affected by the proposed works)* | *ALL* |
| *YES* | *8.8* | *Existing Conditions including surrounding infrastructure and buildings affected by the new works* | *ALL* |
| *YES* | *8.9* | *Project Brief and Space Validation (verification of project brief, accommodation area schedule from 3D Model)* | *ALL* |
| *YES* | *8.10* | *Clash Detection/Coordination of conflict checking including existing equipment and building services affected by the proposed works)* | *ALL* |
| *YES* | *8.11* | *Energy Modelling (3D Base model and data for NCC Section J compliance)* | *ALL* |
| *YES* | *12.1 ,12.2* | *Asset Information Model Review (As required as part of the Completion Documents for Practical Completion/Handover/Commissioning Systems.)* | *ALL* |
| *YES* | *12.3* | *DIT Asset Information Requirements completion/Handover/Commissioning Systems.) and Lead Agency requirements (e.g. SA Health Completion Requirements.* | *ALL* |
| **Required (Yes/No** | **NBG Appendix C**  **Clause No.** | **Use of BIM**  (Reference NBG Appendix C) | **BIM Tier Level** |
| YES | 2.1 | Existing conditions modelling Topographical | Tier 2,3 & 4 |
| *YES* | *2.2* | *Cost management (Information from 3D base modelling)* | *Tier 2,3 & 4* |
| *YES* | *2.3* | *Phase planning (4D modelling)* | *Tier,3 & 4* |
| YES | 2.4 | Spatial programming | *Tier 2,3 & 4* |
| YES | 2.5 | Site analysis | Tier 2,3 & 4 |
| *YES* | *2.6* | *Design authoring* | Tier 2,3 & 4 |
| *YES* | *2.7* | *Design review* | Tier 2,3 & 4 |
| *YES* | *2.8* | *Structural analysis* | Tier 2,3 & 4 |
| *YES* | *2.9* | *Lighting analysis* | Tier 2,3 & 4 |
| *YES* | *2.10* | *Engineering analysis (mechanical, other)* | Tier 2,3 & 4 |
| *YES* | *2.11* | *Energy analysis* | Tier 2,3 & 4 |
| *YES* | *2.12* | *Sustainability analysis* | Tier 2,3 & 4 |
| *YES* | *2.13* | *Code validation ( Vbis or other codes as specified)* | *Tier 2,3 & 4* |
| *YES* | *2.14* | *3D coordination* | Tier 2,3 & 4 |
| *YES* | *2.15* | *Construction documentation* | Tier 2,3 & 4 |
| *YES* | *2.16* | *Site utilisation planning* | Tier 3 & 4 |
| *YES* | *2.17* | *Construction system design (virtual mock-up)* | *Tier 3 & 4* |
| *YES* | *2.18* | *Digital fabrication* | *Tier 3 & 4* |
| *YES* | *2.19* | *3D control and planning (digital layout)* | Tier 3 & 4 |
| *YES* | *2.20* | *Record modelling* | Tier 3 & 4 |
| *YES* | *2.21* | *Digital twins* | *Tier 3 & 4* |
| *YES* | *2.22* | *Asset management* | Tier 3 & 4 |
| *YES* | *2.23* | *Building maintenance management* | Tier 3 & 4 |
| *YES* | *2.24* | *Building systems performance analysis* | Tier 3 & 4 |
| *YES* | *2.25* | *Space management and tracking* | *Tier 3 & 4* |
| *YES* | *2.26* | *Emergency response planning (For IL4 post disaster)* | *Tier 3 & 4* |

*NATSPEC National BIM Guide Appendix C – BIM use & enabler descriptions* includes guidance on selecting appropriate BIM uses. It can also be used to help define their scope.

Specify the scope of use under each item in the table as required.

Recording of BIM Application use amendments: All amendments to the above table to be Included in the BEP and amendments table.

Other BIM applications recommend by the Design Team to meet the requirements of the project are to be noted in the BEP in a separate Additional BIM Uses table as follows;

**Additional BIM Uses table**

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Phase** | **Additional BIM Use** | **Implemented by** | **Reason for BIM Adoption** |
| Schematic Design |  |  |  |
| Concept Design |  |  |  |
| Design Development |  |  |  |
| Documentation |  |  |  |
| Construction/Fabrication |  |  |  |

## Project BIM deliverables

As stated in the DIT BIM Implementation Strategy a BIM deliverables selection assessment will be used to determine the specific project BIM deliverables for meet the project BIM objectives for each BIM Tier level.

The following Project BIM Deliverables table summarises the required BIM uses for the project and applicable BIM Tier level.

**Project BIM Deliverables table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PIP Phase** | **BIM Objectives** | **BIM Deliverables Description** *(to be delivered by LPSC BIM Manager)* | **BIM Tier Level** | **Format** | **DIT Ref**  **clause** |
| **5.0 LPSC/ DPSC Tender** | | | | | |
| 5.0 | BIM is procured and incorporated into project delivery | DIT EIR requirements included in Schedule 4 Conditions of Tendering to LPSC | ALL | pdf |  |
| **5.1 Concept Design** | | | | | |
|  | Compliance with EIR requirements | LPSC Design BIM Team to submit Design BEP based on DIT NATSPEC BEP Template for review and approval. | All | pdf |  |
| Clearer design Assumptions and Formation | Provide base 3D Massing Models and Functional Relationship Diagram.  Provide Options Assessment Matrix of all design options showing advantages and disadvantages of each option. | ALL | rvt, pdf | 8.1 |
| Clearer Design Definition | Provide BIM derived Concept Design documents including concept site plan, floor plans, roof plan typical sections, structural and building services layouts. Include schedule of external materials and finishes -Appendix to Concept Design Report | ALL | pdf | 8.1 to 8.8 |
| Improve stakeholder engagement with BIM design | Provide photo realistic walkthroughs, and flyovers for stakeholder and media presentations of preferred Design Option.  Provide 3D Adelaide Digital Model to be submitted for Planning Review Submissions | 2,3 & 4 | rvt  /pdf | 8.1 |
|  | BIM Design Review | BIM Execution Plan Status Report to be submitted as Appendix to the Concept Design Report for review as evidence of compliance with the EIR. | 2,3 & 4 | rvt  /pdf | 8.1 |
| **5.2 Design Development Pat 2A** | | | | | |
|  | Common Data Environment | Common Data Environment fully established for all Design team parties. | 2,3 & 4 | pdf | 8.1 to 8.8 |
| Open BIM formats enabled | IFC 2x3 TC1 (2.3.0.1) compliant | 2,3 & 4 | rvt | 8.1 to 8.8 |
| Safet in Design | Risk assessment of design elements identifying functional and safety risks and the measures proposed to mitigate them | 2,3 & 4 | rvt /  pdf |  |
| BIM Coordination | 3D’ federated’ Models to be used for conflict and clash detection. Evidence of coordination/ clash detection meetings to be included in preliminary BIM Status report | 2,3 & 4 | rvt | 8.10 |
| BIM Design Review  60% Documentation | Submit 3D BIM federated Models and Schedules of Finishes with 60% Documentation Review completion of Design Development Stage. | 2,3 & 4 | rvt /  nav | 8.1 to 8.8 |
| **5.3 Documentation Part 2B** | | | | | |
|  | Data structuring and information coordination in BIM | Schedule of Accommodation (SoA), drawings, schedules, AusHFG and HHS coding applied. | 2,3 & 4 | rvt /  pdf | 8.9 |
| Performance analysis requirements and verification | Performance 3D Modelling and analysis by specialist consultants to reference current 3D Base model and building seismic importance level for consistency of performance requirements, design assumptions and verification available through BIM | 2,3 & 4 | rvt /  pdf | 8.4 to 8.8 |
|  | Cost value management | QS use of design BIM/s to inform cost planning | 3 & 4 | rvt / pdf | 2.2 |
|  | Staging | Design Team use of BIM for assessing impact of staging, site access for separable portions of work.to reduce distortion to existing site operations. | 2,3 & 4 | rvt /  pdf | 2.4 |
|  | Specialist Consultants Design | Design Team use of specialist /expert consultant advice for design and documentation. | 3, 4 | rvt /  pdf | 2.5 to 2.12 |
|  | BIM Coordination | 3D Federated Model to be submitted and evidence of resolution of all outstanding conflict issues. with 90% Documentation Review. | 2,3 & 4 | rvt /  pdf | 8.10 2.14 |
| **Construction Tender (PIP** | | | | | |
|  | BIM Coordination | Include Updated BEP and BIM requirements in specification DIT General Requirements- Completion Documents section | ALL | pdf | Tender issue |
| **Construction Part 3 (PIP 5.4)** | | | | | |
|  | BIM is procured and incorporated into project delivery | Construction BEP to be submitted by the Construction BIM Team based on DBEP updated for the construction stage and reviewed by the Design Delivery Team | 2,3 & 4 | rvt / | EIR |
|  | Operational planning and staging | For large scale complex projects Construction Delivery Team to outline use of BIM for planning, staging and construction planning. | 3 & 4 | pdf | 2.3 |
|  | BIM Record - Project Information Model (PIM) | Continuous recording of data for record documents and PIM information during the Construction Stage. | 3 & 4 | rvt / | 2.20 |
|  | Specialist Contractor Design and Documentation | Construction Delivery Team use of specialist subconsultants for design and documentation of specialist building components. | 3 & 4 | pdf | 2.14 |
| **Practical Completion/Handover Part 3 (PIP 5.5.6)** | | | | | |
|  | Record Documents and Asset Information Model (PIM) | BIM record and completion documents in accordance with DIT Completion Documents Guide note and check list. | ALL | rvt, dwg, and pdf | 12.1 |
|  | Creation of Asset Information Model (AIM) | Delivery Team deliver Federated 3b BIM models (rvt /IFC compliant) in addition to as built documents and drawings (pdf/rvt) for the creation of AIM to enable asset lifecycle assessments. | ALL | rvt. | 12.2 and 12.3 |
| **Additional Lead Agency BIM Requirements Part 3 (PIP 5.5)** | | | | | |
| **SA Health Projects** | | | | | |
|  | Additional Asset Data information | Delivery Team/LPSC to deliver Appendix A and B data sheets in accordance with SA Health Project Completion Data Entry Template. Refer to User Manual for Data Entry Template (PC Data Entry Spreadsheet User Guide.pdf | 2, 3 & 4 | Excel spreadsheet xls | 2.22 |
| **Review -BIM Part 3 (PIP 5.6.3)** | | | | | |
|  | BIM Lesson Learnt | BIM PCR review to be included as a part of the PCR/POE lesson Leant review. | 2, 3 & 4 | pdf | 12.2 |

Priority: e.g. High, Medium, Low, 1, 2, 3, etc. Define numerical designations to make it clear what is meant by each.

Goal description: A brief description, e.g. Increase cost certainty. Refer to the goals described in the AIR and PIR when summarising them here..

Measures of success: Quantifiable if possible, e.g. reduced number of requests for information.

If goals are documented elsewhere, you may prefer to delete the table and reference the relevant document instead.

# SECTION 2 - Commercial

## Procurement strategy

The project procurement strategy is shown in the **Project procurement strategy table**.

**Project procurement strategy table**

|  |  |
| --- | --- |
| Project procurement strategy: | Design and Construct, Integrated Project Delivery |
| Contractor engagement: indicative date: | Stage 1: Early Contractor Involvement Contract  Stage 2: Managing Contractor Contract |

**Project procurement strategy**: e.g. Design Bid Build, Design and Construct, Integrated Project Delivery*.* If not yet decided, write ‘To be confirmed’.

The procurement strategy will determine if a single or multiple BIM Execution Plans (BEP) are required and when/how responsibilities are handed over. If the designer’s engagement is included with the contractor’s, the Design BEP and Construction BEP can be combined in one document.

If procurement details are documented elsewhere, you may prefer to delete the table and reference the relevant document instead.

Appointing party’s project procurement approach: Refer to DIT Condition of Tendering documents.

If this information has already been provided in the NATSPEC PIR Template, copy it here.

Outline the appointing party’s approach to project procurement to provide context for the items described in this document. This may not be applicable to those who have not procured projects before.

This can include details such as:

The priority given to types of project information.

In-house personnel currently responsible for project procurement, and their roles.

Current project procurement systems in place including software used for this purpose.

Extent of outsourcing of project procurement responsibilities and the scope of associated contracts.

Proposed approach to transitioning information and responsibilities from the design team to construction team where applicable.

If the project procurement approach has been described in the organisational information requirements (OIR), copy it to this location. If the organisation has a formal strategy or policy document, include it in the Annex and reference it here.

Appointing party’s asset management approach: Refer to the following:

* DIT Across Government Facilities Management Arrangements (AGFMA) [AGFMA - Department for Infrastructure and Transport - South Australia (dit.sa.gov.au)](https://dit.sa.gov.au/facilities_management)
* DIT Strategic Asset Management Information System (SAMIS) [SAMIS\_Asset\_Data\_Standard.PDF (dit.sa.gov.au)](https://www.dit.sa.gov.au/__data/assets/pdf_file/0004/639427/SAMIS_Asset_Data_Standard.PDF)

Appointing party’s FFE procurement approach: Refer to DIT Condition of Tendering documents

If this information has already been provided in the NATSPEC AIR Template, copy it here.

Outline the appointing party’s approach to asset management to provide context for the items described in this document.

This can include details such as:

* The priority given to asset information.
* In-house personnel currently responsible for asset management, and their roles.
* Current asset management systems in place including software used for this purpose.
* Where none exists: Proposed approach to asset management including how it will be resourced, e.g. staff, software, infrastructure.
* Extent of outsourcing of asset management responsibilities and the scope of associated contracts.
* Proposed approach to transitioning from an existing asset management system to a new one including data migration.

If the asset management approach has been described in the Organisational Information Requirements (OIR), copy it to this location. If the organisation has a formal Strategic Asset Management Plan (SAMP) or policy document, include it in the **Annex** and reference it here.

## Project team members

The contact details for key stakeholders who contributed to the development of the EIR are shown in the **Project team members table**.

**Project team members table**

| Role | Discipline | Name | Company/  Organisation | Email |
| --- | --- | --- | --- | --- |
| Appointing Party representative | DIT Project Manager | TBA | DIT Building Projects | TBA |
| Appointing Party representative | DIT BIM Representative | Ralph Hems | DIT/ ODASA | ralph.hems@sa.gov.au |
| Appointing Party representative | Lead Government Agency Representative | TBA | TBA | TBA |
| Appointed Party representative. | LPSC Contractor –  Design BIM Team Leader | TBA | TBA | TBA |
| Appointed Party representative. | Main Contractor. -Construction BIM Team Leader | TBA | TBA | TBA |

## Common data environment

Changing uses of BIM during the project alters the scope of service previously agreed and has contractual implications.

To reduce the risk of disputes, use this prompt to document the agreed method of recording changes to BIM uses and where they will be stored, e.g. the **Annex** of this document, the common data environment (CDE).

If this is covered by the terms and conditions of agreements or contracts, reference them here.

Add or amend roles in the table as required. Those shown are examples only – customise them to suit the project.

Confine contacts to those who need to be kept informed of changes in AIR or can answer queries about them.

If the details are extensive, you may prefer to include them in the **Annex** and reference it here.

Provision of common data environment (CDE): By the Lead Appointed Party. Refer to DIT Building Information Requirements (G168) for the technical implementation requirements, management expectations and commercial arrangements regarding ownership and responsibilities during and following project delivery.

For the Early Works and Construction phase the project a Common Data Environment shall be hosted and managed by the Contractor /Managing Contractor (MC). Throughout all phases of the project the appointing party shall have access to view BIM information and data for review and for BIM information (documents and data) to be exported to the appropriate Asset Management software.

*CDE Functional Requirements*: Refer to Annex B -DIT Building Information Modelling Requirements (G168)

A project CDE should have been established by the appointing party in conformance with AS ISO 19650.2, Clause 5.1.7. If this is the case, enter ‘By the appointing party’ at the prompt.

If the appointing party has not established a CDE, specify the technical implementation requirements, management expectations and commercial arrangements regarding ownership and responsibilities during and after project delivery.

Establishing a CDE prior to invitations to tender has the advantage of providing a single secure location for standards and project reference information that form part of the tender documentation. This is more effective and reliable than sending them individually to each prospective appointed party.

CDE access: Access to the Lead Professional Services Consultant (LPSC) DIT and Agency Representatives for the transfer of documents required by DIT project reviews and Project Completion (G181 and G182) guide note.

*Provide a link to the CDE.*

*Instructions for using the CDE*: The LPSC is encouraged to use electronic project collaboration tools such as document management and file sharing sites, reviewing tools, project communication websites, web meetings, and video conferencing.

A drawing and Model register will be managed and maintained by the CDE during all phases of the project.

* 1. **Project information delivery milestones schedule**

Project information should be continuously exchanged via the CDE throughout the life of the project to enable key decision making at critical project milestones.

The key project milestones are to be complied with to enable DIT to review and monitor compliance with the EIR document at critical milestone stages as shown in the **Project information delivery milestones tables**

This table is for summarising key project dates. Make sure they do not conflict with those documented elsewhere. If a program is available, it may be preferable to append it or cross reference it rather than use the table.

**Project information delivery milestones table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PIP phase** | **Delivery Milestone** | **Date** | **Key Decision Date** | **Compliance Report** |
| 5.1  Concept  (Part 1) | Design BIM Execution Plan | 4 wks. | Design Startup Meeting. | BIM Execution Plan (BEP) created by the Delivery Team to be submitted to DIT for review and approval. |
| Development of Concept Design (5.1.5) | 1wk.\* | Concept Design Report | Report on the progress of the BEP outlining compliance and any variances. Report to be included as an Appendix to the Concept Report |
| 5.2  Design  (Part 2A) | 60% Documentation (Design Development)  Model and associated documentation | 1 wk.\* | End of Design Development | Report on the progress of the BEP outlining EIR, CDE compliance and conflict coordination status. Report and federated 3D model to be submitted as part of the 60% Documentation Review set. |
| 5.3 Documentation (Part 2B) | 90% Documentation  Model and associated documentation | 1 wk.\* | Pre-Tender Design Review | Report and federated 3D model to be submitted as part of the 90% Documentation with evidence of BIM coordination and all BIM conflicts resolved |
| 5.4  Tender  (Part 2B) | 100% Documentation  Model and associated documentation (if required) | 1 wk \*. | Tender / Contractor Issue | Report on overall status of the BEP deliverables and any remaining outstanding BIM issues still unresolved. |
| 5.5  Construction  (Part 3) | Construction BIM Execution Plan | 4 wks. | Construction Team startup meeting | Construction BIM Execution Plan (BEP) created by the Construction Delivery Team updating previous DBEP for construction. |
| Project Information Model  As-built Model and Associated Documentation | 1 wk \*. | Practical Completion | Report outlining compliance with the Construction BEP as part of the overall governance reporting. |
| 5.5.6  Practical Completion/ Handover  (Part 3) | Asset Information Model  DTI Final completion submission requirements | 1 wk \*. | Handover | Issuing of a ‘federated’ 3D Model and Project Data as an Asset Information Model (AIM) |
| 5.5.6  Post Occupancy | BIM Leason Learnt | 1 wk \* | Post Construction Review 3mths after PC | BIM lessons learnt session as part of the DIT Post Construction Review |

\*Weeks before the key decision point

Information handover procedure: Refer to DIT Project Completion (G181 and G82) requirements.

Note: For SA Health Projects there are additional requirements as stated in SA Health Project Completion and Data Requirements.

Describe the procedure for handing over the AIM and PIM to the appointing party including post-handover evaluations to confirm that their information requirements have been satisfied. Coordinate the procedures detailed in the AIR and PIR. Reference relevant standards such as *The Soft Landings Framework Australia and New Zealand* (CIBSE) as required.

Project information acceptance criteria: Conformance with the information requirements specified in this EIR document and the standards cited for each PIM and AIM element in **Technical**, **Standards and project reference information**.

Note: Other formats can be used subject to approval by DIT BIM representative.

* 1. **Existing conditions information**

Available existing conditions information: Refer to SAMIS Asset Register, hazardous materials register and maintenance reports.

Describe the existing conditions information that will be made available for prospective appointed parties, e.g. surveys, geotechnical reports, models, asset registers. Include it in the CDE (or tender resources) and reference it in the **Project reference information directory**. If none is available, enter ‘None’ at the prompt.

Describe the existing conditions information that will be made available for prospective appointed parties, e.g. surveys, geotechnical reports, models, asset registers. Include it in the CDE (or tender resources) and reference it in the **Project reference information directory**. If none is available, enter ‘None’ at the prompt.

Additional existing conditions modelling requirements: Model existing structures and functions associated with the project scope to enable a clear understanding of what is changing from the current state to the proposed design.

Refer to DIT Building Information Modelling Requirements G168 and Natspec BIM Guide *Appendix C – BIM use & enabler descriptions.*

Survey and modelling methods including integrate laser -scanned data 3D topographical surface modelling, photogrammetry and LIDAR data can also be used to provide a 3D model of the existing building and site features.

Reliance on or use of legacy data is entirely at the LPSC or Contractor’s risk, unless otherwise specified in the Contract Documents and requires site specific verification.

Specify any modelling of existing conditions required in addition to that provided by the Client. Refer to *Appendix C – BIM use & enabler descriptions* **2.1 Existing conditions modelling** for guidance on defining the scope of information required.

NOTE: This table should align with the delivery milestones and dates from the AIR and PIR prepared previously.

* Edit the table as required, e.g. add or delete delivery milestones, key decision points and/or project phases.
* Enter phase names or descriptions agreed for the project, e.g. Schematic design, Contract documentation.
* Enter descriptions of delivery milestones, key decision points. Number or designate as required.
* Enter lead times between delivery milestones, key decision points and the end of project phases in the ‘Weeks before’ columns.

See Appendix D – Defining information requirements for an example of a completed table.

Dates can be substituted for lead times if they have been determined.

Specify any modelling of existing conditions required in addition to that provided by the appointing party. Refer to *Appendix C – BIM use & enabler descriptions* **2.1 Existing conditions modelling** for guidance on defining the scope of information required.

## Asset and project information purposes

Information purposes: The purposes of the asset and project information required by the appointing party are shown in the **Asset and project information purposes table**.

**Asset and project information purposes table**

|  |  |
| --- | --- |
| Information purpose | Information requirements |
| **Design / Documentation** | |
| Regulatory compliance | Information to support essential services/fire safety measures certification |
| Design Review | All Information Models and associated documentation to enable suitable reviews and quality assurance process identified in this EIR. |
| Safety in Design Review | Coordination and risk assessment of design elements identifying functional and safety risks and the measures proposed to mitigate them. |
| Design Coordination | All Information Models by all disciplines to be federated into one 3D Model for 3D coordination both independently and collaboratively, using software identified by the Lead Appointed party. |
| Presentation Communication of design intent | Information Models and associated documentation to enable suitable ‘walk through’ flyovers ‘required to represent the design solution accurately to the Lead Agency and major stakeholders. |
| Documentation for Construction | All information models to be coordinated with all graphic and written information of the design including materials, products, systems and detailed specification of the required standards of quality to accurately set out and construct the works. |
| **Construction** | |
| Environmental Protection | Sedimentation control plans, vehicle decontamination/washdown areas, waste management plans, dust and noise control measures, tree protection measures. |
| Health and Safety | Risk assessments of materials and methods of construction and proposed mitigation measures including protection. Provisions for on-site first aid. Safe Work Method Statements. |
| Record modelling | Purpose of record modelling, scope, e.g. As-Designed model, As-Built model, accuracy requirements, verification procedures, responsibilities. |
| Record Completion Documents | Operational and Maintenance data for manuals, test certificates and essential services/fire safety measures certification and compliance requirements noted in DIT Project Completion Document requirements |
| Site Utilisation Planning for (confided sites | Location of site amenities, material and waste storage and stockpile areas, pick up and set down areas, access/exit paths, cranes, hoists, lifting paths, etc. |
| Phase Planning - 4D modelling for complex staging on confined sites | Work breakdown structure, scope, e.g., primary structural and enclosure elements only, structure, enclosure and services. Proposed method of linking the model to the construction program. |
| **Fabrication** | |
| Prefabrication and Shop Drawings | Coordinated graphic and written descriptions of components and assemblies adequate for off-site fabrication and site installation. |
| Specialist Design and Fabrication | Coordinated of specialist design and fabricated building components both graphic and written descriptions of components and assemblies adequate for off-site fabrication and site installation. |
| **Project Management – Appointing Party** | |
| Monitoring and Control | Progress reports including performance against cost, time and quality targets. |
| Risk Assessment Reviews | Risk analysis data for Risk Assessment Review. |
| **Asset Management/ Handover** | |
| Preventative Maintenance | Warranties and service agreements for nominated assets including their expiry date. |
| Strategic Asset Management | Building asset data for strategic asset planning. |

* Use this table to collate the contents of the **Asset information purposes table** from the AIR document and the **Project information purposes table** from the PIR document.
* Add or delete rows as required to include the information purposes selected for the project.
* Enter the details of the information required for each purpose in the ‘Information requirements’ column. Additional rows can be added for each individual requirement under each purpose if preferred.

The following resources can assist the definition of information requirements:

* *ABAB Asset Information Requirements Guide*, Appendix A includes a list of plain language questions (PLQ) that can be asked to prompt answers about the information required.
* *Victorian Digital Asset Strategy (VDAS) Guidance Appendix 3: Sample key decision points* provides examples of PLQ that can be asked at each stage of a project.
* *BS 8536-1* and *BS 8536-2 Briefing for design and construction* also include briefing checklists and PLQ useful for this purpose in Annexes A and G.

## Asset and project information models

Requirement: Deliver the elements of the asset and project information models described in the following clauses.

The delivery of the AIM and PIM may involve several different appointments at different stages of the project. Clearly defining AIR and PIR based on the appointing party’s information purposes will assist coordination and integration of their content.

### AIM and PIM integration strategies.

Requirement: Coordinate information included in each element of the AIM and PIM to minimise duplication and eliminate omissions and contradictions. Implement measures to integrate information to enable it to be used effectively for the purposes documented in **the Asset/ Project information purposes table**.

Duplication of information in multiple locations makes its management more difficult and prone to error. Adopting the ‘single’ source of truth’ principle reduces these risks. Applying metadata to digital information for attributes such as identity and classification enables it to be stored in one location and referenced from other locations (rather than duplicated) as required.

Information classification: Incorporate DIT Strategic Asset Management Information System (SAMIS) classification data in AIM and PIM information containers/files and model objects to enable the effective integration and management of information.

Classification data can be embedded in an information container/file naming convention or in metadata.

A container can be a model, a spreadsheet file, a database, an application, etc.

AIM and PIM integration measures: Appointed parties to include data requirements for lead agencies and DIT Completion Documents requirements in the Building Execution Plan (BEP).

Copy and merge the **AIM integration strategy** from the AIR document and **PIM integration strategy** from the PIR document or reference them here. See the AIR and PIR Templates for guidance.

If the appointing party does not have any specific requirements for achieving integration of the AIM and PIM, delete the prompt and request proposals from the prospective appointed parties.

## AIM and PIM deliverables.

Requirement: Provide the deliverables shown in the **AIM and PIM deliverables table**.

Timing: Provide the deliverables at the delivery milestones shown in the **Project information delivery milestones table**.

**Purpose of this table**

This table is used to collate the deliverables listed in the **AIM deliverables table** and **PIM deliverables table** required for each information purpose from the AIR and PIR documents consecutively. This is to identify every deliverable required prior to determining the level of information need of each at each information delivery milestone and recording them in the **AIM and PIM deliverables level of information need (LoIN) table**.

If preferred, deliverables can be collated directly in the last mentioned table rather than using the **AIM and PIM deliverables table** as an intermediate step.

If the AIR and/or PIR Templates have not been completed previously or it is considered necessary to make clear which deliverables are generated by each information purpose, include the clauses and tables here.

Note: The prospective lead appointed party may wish to add deliverables based on their own project information purposes when preparing their pre-appointment BIM Execution Plan.

**AIM and PIM information deliverables table.**

| AIM and PIM element | Information Purposes | | | |
| --- | --- | --- | --- | --- |
| Regulatory compliance: | Operations & maintenance | Budget Cost Management | Asset planning |
| **3D Models** |  |  |  |  |
| Architectural /Landscaping Structural /Civil |  | As-Built Federated model | All Schedules and Quantities |  |
| Building Services (MEP) |  | As-Built Federated model | All Schedules and Quantities |  |
| **Record Documents** | | | | |
| All contract drawings and Specifications. | As- Built drawings and performance solutions for NCC compliance | As- Built drawings All project schedules |  | Document Register |
| Site Plan | Incl. boundary setbacks easements and external exit routes | As- Built drawings |  | As- Built asset data |
| General Arrangements Floor Plans | Incl. fire compartments and exits | As- Built drawings |  | As- Built asset data |
| Reflected Ceiling Plans | Incl. emergency lighting and exit signs | As- Built drawings |  | As- Built asset data |
| Elevations | Incl. openings and forms of construction | As- Built drawings |  | As- Built asset data |
| Typical Sections | Include any confined spaces | As- Built drawings |  | As- Built asset data |
| Structural Layouts | ACERS compliance certificates | As- Built drawings |  | As- Built asset data |
| Building Services Layouts | Incl. fire hydrants booster fire tanks etc. | As- Built drawings |  | As- Built asset data |
| **Documents** | | | | |
| Authority approvals | All approved documentation & conditions of approval | Include all Essential safety items |  |  |
| Cost plans |  |  | BIM models and schedules. |  |
| Reports  Project progress reports | NCC compliance report. | Project progress reports | Project progress reports | Project progress reports |
| Construction program |  |  |  | Incl milestones and critical works path |
| Operational and maintenance (O&M) Manuals | Incl all regulatory certificates of compliance | Include product and material data sheets and test reports |  | Include all product warrantees |
| Warranties and service agreements | Include in O&M manuals | Include in O&M manuals |  |  |
| Product evidence of conformity | Certification and fire test reports  NCC Performance Reports | Include in O&M manuals |  |  |
| **Data (object-based)** | | | | |
| See Asset object property table | | | | |

* Add or delete rows under each AIM and PIM element for each item required and edit the descriptions to suit the project.
* Group deliverables by discipline or trade to simplify the task of incorporating them in project-related appointments.

### AIM and PIM deliverables formats.

Requirement: Provide deliverables shown in the **AIM and PIM deliverables table** in the formats shown in the **AIM and PIM deliverables format table**. Requests for alternative file formats to be approved b the DT BIM Manager.

**Purpose of this table**

This table is used to specify the file or physical format of deliverables shown in the **AIM and PIM deliverables table**.

See *Appendix D – Defining information requirements* for an example of a completed table.

If requirements for individual deliverable types vary significantly, the table can be combined with the **AIM and PIM deliverables table** to show details for each.

**AIM and PIM deliverables format table.**

| Deliverable | File type | Issue | Physical format | No. of copies \* |
| --- | --- | --- | --- | --- |
| Models | Native file format and IFC 2x3 or IFC 4 (Design Transfer) -rvt | Electronic transfer | Rvt, nav, | N/A |
| Drawings | Native file format and PDF/A | Electronic transfer and hard copies | Pdf readable A3/A1 | 2 |
| Documents | PDF/A | Electronic transfer and hard copies | A4 bound | 1 |
| Photographic images | JPEG | Electronic transfer | N/A | N/A |
| Videos, animations | MP4 | Electronic transfer | N/A | N/A |
| Data | Native file format and CSV | Electronic transfer | N/A | N/A |

\* Number of hard copies at handover for the operational phase of the asset. Minimum 2 hard copies.

Not sure If hard copies are required at other information delivery milestones, amend the text above to describe them.

If the number of hard copies required for each information delivery milestone differs, add additional columns with headers such as ‘No. of copies at Milestone 1’, ‘No. of copies at Milestone 2’, etc and enter the quantities required for each.

Specify the procedures for submitting hard copies of deliverables including the status of copies to be provided, e.g. record documentation only, the method of delivery and responsibilities. The details can be entered here or the relevant procedure included in the **Technical, Project information production methods and procedures directory** and referenced here.

If hard copies are not required under the contract or these requirements are specified elsewhere, delete the prompt.

## AIM and PIM deliverables level of information need.

Requirement: Provide deliverables at each information delivery milestone at the level of information need, and in the formats specified in the **AIM and PIM deliverables level of information need table**.

**Level of information need**

This template uses the concept of level of information need as described in *EN 17412-1:2020* (and *ISO/DIS 7817:2022*) *Building information modelling – Level of information need – Part 1: Concepts and principles*. See *Appendix D – Defining information requirements* clause 6 for commentary on the subject.

**Purpose of this table (below)**

This table is used to specify the level of information need of model, drawing and document deliverables at each information delivery milestone. The level of information need of individual model objects is covered separately in later clauses.

To start this process, collate deliverables from the AIR and PIR documents in the ‘AIM and PIM element’ column.

This approach is suggested because many items will be required for more than one purpose at any given milestone.

Note: The prospective lead appointed party may wish to add deliverables based on their own project information purposes when preparing their pre-appointment BIM Execution Plan.

**AIM and PIM deliverables level of information need (LoIN) table.**

| AIM and PIM element | LoIN at end of Design Development (DD) | Discipline | LoIN at end of  Documentation | Discipline | LoIN at Pre-construction Procurement | Discipline | LoIN at end of handover from construction to operation | Discipline |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Models \*** | | | | | | | | |
| Architectural  Structural/Civil | 3D federated models | A  S | As-Designed Federated model | A  S | ‘Reference only’ As-Designed Federated model for Construction | A | As-built federated 3D Models used for construction as Record Document | C |
| Building  Services (MEP) | 3D federated models | MEP | As-Designed Federated model | MEP | Include in above | A | As-Built 3D model | C |
| **Drawings** | | | | | | | | |
| Site plan | DD layouts | A | Final layouts incl. finishes | A | Set Out Plan | A | As-Built plan | C |
| Floor plans | DD layouts incl. fire exits | A | As-Designed incl. FF&E | A | For construction plans | A | As-Built plans | C |
| Reflected ceiling plans | Prelim. layouts incl. exit signs | A | As-Designed incl. FF&E | A | For construction plans | A | As-Built plans | C |
| Elevations | DD design | A | As-Designed elevations | A | For construction elevations | A | As-Built elevations | C |
| Structural layouts | DD design | S | As-Designed layouts | S | For construction layouts | A | As-Built layouts | C |
| MEP layouts | DD design | M | As-Designed layouts | M | For construction layouts | A | As-Built layouts | C |
| **Documents** | | | | | | | | |
| Authority approvals | DA Conditions of approval | A | NCC performance-based approvals | A | As per previous Milestone | A | NCC Occupancy certificates, completion documents | C |
| Schedules | DD schedules | A | As-Designed schedules | A | For construction schedules | A | As-Built schedules | C |
| Specifications | DD edition or prelim spec. | A | As-Designed specification | A | For construction specification and schedules | A | As-Built amended specification | A |
| Cost plans | Elemental cost plan | Q | Updated Cost estimates | Q | Pre-tender cost estimate | Q | Final project cost summary | Q |
| Reports | NCC analysis report. | A | As-Designed NCC compliance | A | As per previous Milestone | A | Project progress reports | C |
| Construction program | Preliminary program | A | Updated program | A | Initial construct. program | C | Construction time summary | C |
| O&M manuals | N/A |  | Specification of requirements | A | As per previous Milestone | C | Approved O&M manuals | C |
| Warranties & service agree. | N/A | - | Certification and fire test reports. | A | As per previous Milestone | C | Signed warranties | C |
| Product evidence | N/A |  | As per previous Milestone | A | As per previous Milestone | C | As per previous Milestone | C |
| Authority approvals | DA Conditions of approval | A | BC or CC Cond. of approval | A | As per previous Milestone | A | Occupancy certificates | C |
| Schedules Materials and Finishes | DD material schedules | A | As-Designed schedules | A | For construction schedules | A | As-Built schedules | C |
| **Data (object-based)** | | | | | | | | |
|  | **See Asset object alphanumeric Level of Information Need (LoIN) table** | | | | | | | |

\* *Refers to virtual 3D models as a whole**, i.e., not individual model object/elements.*

* Collate all deliverables shown in the **AIM and PIM deliverables table** in the ‘AIM and PIM element’ column. (It may be simpler to copy the whole table and edit the header row to match this table.)
* Add columns as required for each milestone listed in the **Project information delivery milestones table**.
* Enter the level of information need details for each item at each milestone. Refer to *EN 17412-1* for the aspects used to specify level of information need.

There are three common methods for defining level of information need:

* Descriptive: Describing level of information need at one or more stages of the project lifecycle. For many deliverables such as drawings, few of the descriptions in common use, e.g. conceptual, design development, are well defined. Their application can be highly subjective and they are open to widely varying interpretations which can lead to misunderstandings and disputes.
* Industry specification: Referencing an industry specification, e.g. BIMForum Level of Development (LOD) Specification. They provide greater certainty than descriptive methods.
* Asset definition: Defining the level of information need for each asset (object) individually is the most complete method. It is generally more time-consuming than the other methods but documents such as the USACE Minimum Modelling Matrix can be used to streamline the definition of LOD for many assets.

Some of the aspects that can be used to specify level of information need include:

* For models: Use a description of the model’s overall level of information need, e.g. massing model, concept model, construction model, as-built model. The level of information need for individual model objects is specified elsewhere in the relevant LOD Table, Descriptive modelling specification or Object properties table. See the prompt (red text) for this purpose below.
* For drawings: Use standard descriptions such as concept, sketch, preliminary working, construction and as-built drawings. Drawing scale can also be used as an indicator of the level of detail needed. If considered necessary, reference documents that describe documentation expectations for each type, e.g. *RIBA Plan of Work*, *RIBA Job Book*, *BSRIA BG 6 A Design Framework for Building Services*.
* For documents: Use descriptions such as outline, preliminary draft, construction to indicate the general development status of a document or specify the scope and content required.
* For data: This applies to object-based information. The level of information need for individual model objects is specified separately in the **Asset object alphanumeric level of information need table**.
* For other deliverable types, e.g. non object-based data, images, audio-visual presentations, animations: Use descriptions best suited to the general nature of the deliverable, e.g. scope of subject matter, resolution, run time.

**Discipline**

* Indicate responsibilities for providing each deliverable by entering the acronym for the relevant party from the following **Key to disciplines** in the ‘Discipline’ column. Disciplines are shown as an example. Amend the descriptions and acronyms to suit the project.

**Key to disciplines**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| A | Lead PSC-Architecture | J | Civil Engineer | P | Plumbing/Hydraulic engineering |
| C | Contractor | K | Subcontractor | Q | Quantity surveying |
| CL | Civil engineering | L | Landscape architecture | M | Mechanical Engineer |
| E | Electrical engineering | N | Fire engineering | S | Structural engineering |
| F | Facilities/Asset Management | O | Other disciplines |  |  |

## Spatial object level of information need

Requirement: At each information delivery milestone include the properties in spatial objects shown in the **Spatial object level of information need table**.

Note: A schedule of spaces/spatial objects has not been included in this template because spaces are usually documented elsewhere. Also, the properties required will usually apply to all spatial objects.

**Purpose of this Table**

The **Spatial object property table** specified all the spatial object properties required for information purposes. After including those properties in the table below, use it to show at which information delivery milestone they should be provided. This approach is suggested because many properties will be required for more than one purpose at any given milestone.

The level of information need for spatial objects is implied by the properties required at each milestone, i.e. a numerical scale or external metric is not used.

**Spatial object level of information need table.**

| **Property category** | **Generic property name** | **Description** | **Required at end Part 2A**  **Design Dev.** | **Discipline** | **Required at end Part 2B Doc.** | **Discipline** | **Required at end of Const.** | **Discipline** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3D Federated Model | (LOD) | Level of development | 200+ | A | 300 | A | 300-350 | A |
| General ID & description | Space ID | Room No-SAMIS |  | A |  | A |  | A |
| Space name  (Room Name) | Room Name |  | A |  | A |  | A |
| Designation/ Reference/ Mark | Code for cross referencing. |  | A |  | A |  | A |
| Location | Zone | SAMIS Building number and Name |  | A |  | A |  | A |
| Storey or level | Level Number |  | A |  | A |  | A |
| Geometrical quantities | Height, length, width, floor area, volume | All Dimensions |  | A |  | A |  | A |
| Function | Functional classification | Grouping of similar spaces (e.g. Admin) |  | A |  | A |  | A |
| Occupancy | NCC classification | NCC building Classification |  | A |  | A |  | A |
| Maximum No. of occupants | Max number of Occupants for NCC classification |  | A |  | A |  | A |
| Design occupancy load | Number of occupants space design for. |  | A |  | A |  | A |
| Surface finishes | Floor finish, Wall finish, Ceiling finish | Description of all surface finishes. |  | A |  | A |  | A |
| Maintenance | Maintenance frequency |  |  |  |  |  |  | C |
| Condition | Condition rating |  |  |  |  |  |  | F |
| Condition assessment date |  |  |  |  |  |  | F |

* Copy the properties from the **Spatial object property table** into this table. (It may be simpler to copy the whole table here, change the ‘Information purpose 1, 2, 3, ….’ headings to ‘Required at Milestone 1, 2, 3, ….’, and clear the checked or filled cells before reusing them to indicate which properties are required at each milestone.
* Add columns as required for each milestone listed in the **Project information delivery milestones table**.
* Indicate the properties required for each information purpose by adding a tick, symbol or fill to the cells.
* If preferred, N/A can be added to cells to make it clear an item is not required.

This table specifies the properties applicable to ALL spatial objects. If different property sets are required for particular groups or classes of spatial objects, subdivide the table into the groups or classes and specify the properties for each.

**Discipline**

* Indicate responsibilities for including the required properties in spatial objects and entering values for them by entering the acronym for the relevant party from the following **Key to responsibilities** in the ‘Responsibility’ column. Disciplines are shown as an example. Amend the descriptions and acronyms to suit the project.
* If responsibilities for properties have been documented already, review them when they are collated in this table to ensure there are no gaps, inconsistencies or contradictions.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Key to disciplines**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | A | Lead PSC Architecture | J | Civil Engineer | P | Plumbing/Hydraulic engineering | | C | Contractor | K | Subcontractor | Q | Quantity surveying | | CL | Civil engineering | L | Landscape architecture | P | Project management | | E | Electrical engineering | N | Fire engineering | S | Structural engineering | | F | Facilities/Asset Management | O | Other disciplines |  |  | |  |  |  | |  |

## Physical asset classes included in the AIM.

Requirement: The Facilities Manager Service Provider (FMSP) under the Across Government Facilities Management Agreement (AGFMA) with identify and record the physical asset classes in the asset information model (AIM) are shown in the **AIM physical asset classes table**.

It is not necessary or cost-effective to schedule out every asset class or type found in a project for the purposes of the EIR. This information is usually adequately documented elsewhere. The suggested approach is generally only to schedule asset classes that require regular maintenance, e.g. chillers in the **AIM physical asset classes table**. (This means that the contents of the table will effectively be the same as those found in the table of the same name in the AIR Template.)

Refer to the guidance in the AIR Template.

**AIM physical asset classes:** By FMSP under AGFMA Contract.

| Asset class ID | Asset class |
| --- | --- |
| SAMIS ASSET ID | Refer to Strategic Asset Management Information System (SAMIS) Data Hierarchy  Asset class ID codes from the Virtual Building Information System (VBIS). |

Copy the **AIM physical asset classes table** to this EIR document from the AIM Template or reference it here.

Data source: Refer to Strategic Asset Management System (SAMIS) Asset Data Standards and AGFMA agreements.

Copy the data source reference from the AIR and/or PIR document.

### Physical asset object alphanumeric level of information need

Requirement: At each information delivery milestone include the alphanumeric properties in physical asset objects shown in the **Asset object alphanumeric level of information need table**.

Timing: Include sets of properties at the delivery milestones shown in the **Project information delivery milestones table**.

Two alternative tables for documenting level of information need are provided:

* Asset object alphanumeric level of information need table
* Asset object shared properties responsibility matrix

Select one and amend the text above accordingly.

**Purpose of this Table**

The **Asset object property table** identified all the asset object properties required for information purposes. After including those properties in the table below, use it to show at which information delivery milestone they should be provided. This approach is suggested because many properties will be required for more than one purpose at any given milestone.

This table is intended for recording the **alphanumeric** aspects of level of information need – refer to the next clause for geometrical aspects.

The level of information need for asset objects is implied by the properties required at each milestone, i.e. a numerical scale or external metric is not used.

**Asset object alphanumeric level of information need table.**

| **Property category** | **Generic property name** | **Description** | **Required at end Part 2B Doc.** | **Discipline** | **Required**  **end of Construction** | **Discipline** |
| --- | --- | --- | --- | --- | --- | --- |
| General ID & description | Asset ID Name | Asset Designation Code (MEP equipment schedules) |  | Z |  | Z |
| Designation/ Reference/ Mark | Description of Asset  (MEP equipment schedules) |  | Z |  | Z |
| Location | Space ID /Name | Designation code applied to for coordination and cross referencing |  | Z |  | Z |
| Parent system or assembly | System ID/Name | Unique room number / designation  (MEP equipment schedules) |  | Z |  | F |
| Classification or category | Asset class. or category | Asset classification system (SAMIS hierarchy) |  |  |  | F |
| Asset type: Fixed or moveable | Fixed or Movable (FFE equipment schedules if project supplied) |  | Z |  | K |
| Manufacture & supply | Make / Manufacturer | Specified  (MEP equipment schedules) |  | Z |  | K |
| Product /Model Number | Specified  (MEP equipment schedules) |  | Z |  | K |
| Serial number |  |  |  |  | K |
| Acquisition date |  |  |  |  | K |
| Barcode/QR Code. |  |  |  |  | F |
| Warranties | Warranty start /end date | Specified and Received warranties |  | Z |  | C |
| Warranty conditions | Specified and Received warranties |  | Z |  | C |
| Life cycle & maintenance | Maintenance frequency | Maintenance Schedule DLP |  |  |  | C |

* Copy the properties from the **Asset object property table** from the AIR and PIR documents into this table. (It may be simpler to copy the whole table/s here, change the ‘Information purpose 1, 2, 3, ….’ headings to ‘Required at Milestone 1, 2, 3, ….’, and clear the checked or filled cells before reusing them to indicate which properties are required at each milestone).
* Add columns as required for each milestone listed in the **Project information delivery milestones table**.
* Indicate the properties required for each milestone by adding a tick, symbol or fill to the cells.
* If preferred, N/A can be added to cells to make it clear an item is not required.

This table specifies the properties applicable to ALL asset objects. If different property sets are required for particular groups or classes of asset objects, subdivide the table into the groups or classes and specify the properties for each.

**Discipline**

* Indicate responsibilities for including the required properties in asset objects and entering values for them by entering the acronym for the relevant party from the following **Key to disciplines** in the ‘Responsibility’ column.
* Disciplines are shown as an example. Amend the descriptions and acronyms to suit the project.
* If responsibilities for properties have been documented already, review them when they are collated in this table to ensure there are no gaps, inconsistencies or contradictions.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Key to disciplines**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | A | Architecture | J | Civil Engineer | P | Plumbing/Hydraulic engineering | | C | Contractor | K | Subcontractor | P | Project management | | F | Facilities/Asset Management | Z | Multiple Disciplines |  |  | |  |

The table below is an alternative to the **Asset object level of information need table**. Indicate the discipline responsible for adding properties to asset objects at each phase of a project by inserting a symbol or fill in the appropriate cell.

Add or delete phases in the header row as required. The discipline codes shown are examples only. Amend as required.

**Asset object shared properties responsibility matrix.**

= Designed intent

= Confirmed

| **Property category** | **Generic property name** | **Data type** | **Responsibility** | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Design** | | | | | | **Construction** | | | | **FM** |
| **A** | **S** | **CL** | **M** | **E** | **P** | **C** | **K1** | **K2** | **K3** | **F** |
| **General ID & description** | Asset ID | Text |  |  |  |  |  |  |  |  |  |  |  |
| Asset name | Text |  |  |  |  |  |  |  |  |  |  |  |
| Designation (for references) | Text |  |  |  |  |  |  |  |  |  |  |  |
| **Location** | Space ID | Text |  |  |  |  |  |  |  |  |  |  |  |
| Space name | Text |  |  |  |  |  |  |  |  |  |  |  |
| **Parent system or assembly** | System ID | Text |  |  |  |  |  |  |  |  |  |  |  |
| System name | Text |  |  |  |  |  |  |  |  |  |  |  |
| **Classification or category** | Asset class or category | Text |  |  |  |  |  |  |  |  |  |  |  |
| Asset type: Fixed/moveable | Text |  |  |  |  |  |  |  |  |  |  |  |
| **Manufacture & supply** | Make / Manufacturer | Text |  |  |  |  |  |  |  |  |  |  |  |
| Product / Model number | Text |  |  |  |  |  |  |  |  |  |  |  |
| Product / Model name | Text |  |  |  |  |  |  |  |  |  |  |  |
| Serial number | Text |  |  |  |  |  |  |  |  |  |  |  |
| Acquisition date | Text |  |  |  |  |  |  |  |  |  |  |  |
| Barcode | Text |  |  |  |  |  |  |  |  |  |  |  |
| **Warranties** | Warranty start date | Text |  |  |  |  |  |  |  |  |  |  |  |
| Warranty end date | Text |  |  |  |  |  |  |  |  |  |  |  |
| Warranty identifier | Text |  |  |  |  |  |  |  |  |  |  |  |
| **Life cycle & maintenance** | Expected Life | Text |  |  |  |  |  |  |  |  |  |  |  |
| Maintenance frequency | Text |  |  |  |  |  |  |  |  |  |  |  |
| **Condition** |  | Text |  |  |  |  |  |  |  |  |  |  |  |

**Discipline**

* Indicate responsibilities for providing each deliverable by entering the acronym for the relevant party from the following **Key to disciplines** in the ‘Responsibility’ column. Disciplines are shown as an example. Amend the descriptions and acronyms to suit the project.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Key to disciplines**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | A | Architecture | S | Structural Engineer | P | Plumbing/Hydraulic engineering | | C | Contractor | K | Subcontractor 1,2,3 | CL | Civil Engineering | | CL | Civil engineering | E | Electrical Engineering | F | Facilities/Asset Management | |  |

### Physical asset object geometrical level of information need

Requirement: Provide physical asset object geometrical properties at each information delivery milestone at the level of information need specified.

Asset object geometrical level of information need reference: Included in AGFMA contract FMSP requirements

If it is decided to define the geometrical level of information need or Level of Development (LOD) of asset objects at this point in the project, enter a reference to the applicable document and its location at the prompt, e.g. Level of Development (LOD) Table, Minimum Modelling Matrix, Descriptive Modelling Specification.

If the document is included in the **Annex** or **Project information standards directory**, then refer to it at the prompt.

# SECTION 3 – Management

# Information management requirements

The following table outlines the information management requirements roles and responsibilities as described in AS ISO 19650 to support the application of building Information management.

**Information Management functional requirement**

| Role  Organisation | Phase | Responsibilities |
| --- | --- | --- |
| Information Management Lead  DIT /Lead Agency | Procurement | * Review and confirm the submitted BEP document against the EIR requirements * Assess delivery team’s capability and capacity * Review delivery team’s risk register * Review the responsibility matrix against BEP and EIR * Review the task information delivery plans and Master Information Delivery Plan |
| Delivery (Part 1,2,3 | * Provide access to reference information and shared resources * Review and accept the deliverables against the EIR requirements * Manage and check compliance of project CDE with EIR requirements |
| Handover and Completion | * Review Asset and Project information model * Attendance at BIM Information management review workshop and BIM Lessons Learned for future BIM projects |
| BIM Design Delivery Team  Appointed Party-LPSC | Delivery (Part 1,2,3 | * Development, coordination and publishing of the BEP * Confirmation and distribution of the model common reference point / origin to all team members * Determine the project BIM georeferenced point(s), and monitor alignment of all discipline models to this point * Coordinating team file management * Define team responsibilities for provision of information at each project stage in alignment with the EIR * Provide lead BIM Coordination for the Design Team to enable early integration and coordination of design models. * Assembly of federated design models for coordination meetings * Facilitating design coordination meetings * Facilitate meetings with discipline BIM Coordinators * Facilitating the use of federated design models in design coordination / clash detection meetings and providing detection reports based on the identification of hard and soft clashes. * Confirm that the design deliverables specified in the contract are provided in the formats specified. * QA reviews of coordinated models (each discipline is still expected to conduct their own QA review of their discipline models prior to issue) * Provide reports at milestone issues commencing during the Design / Schematic Part 2A phase to record value/lessons learnt * Report on the delivery and achievement of the BIM Objectives and Deliverables including reviews and any coordination issues. |
| BIM Construction Delivery Team  Appointed Party-Contractor | Delivery  (Part 3) | * Development, coordination and publishing of the Construction BEP * Confirmation and distribution of the model common reference point / origin to all team members * Coordinating construction team file management * Establishing standards and procedures for the delivery of BIM by the construction team in line with the EIR * Assembly of federated design models for coordination meetings * Facilitating the use of trade models in construction phase clash detection / coordination meetings * Monitoring compliance of trade models with Construction BEP standard and EIR * Coordinating / facilitating the delivery of the As constructed BIM data by the construction team * Facilitating communication between the design team and the construction team * Confirm that the design deliverables specified in the contract are provided in the formats specified. * Confirm that data outputs are provided as specified * QA reviews of coordinated models |
| Information Management Review | Completion | All BIM Team members to participate in BIM Information Management and Lesson Learnt BIM Workshop. DIT BIM Representative to Chair and provide report to all participants.  Purpose to improve BIM delivery and information management. |

**Information Management Delivery.**

The following **Information Management Delivery** Table summarises the information management requirements for the various stages of the project.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project BIM Deliverables Level of Information Need** | | | | | | | | | | | |
| Item | Project Initiation | Schematic Design | BEP Review | Concept Design | Concept Design Review | Design Development | 60% Doc Review | Documentation | 90% Doc Review | Construction | Completion Doc Review |
| 5.1 | Design Startup | |  |  |  |  |  |  |  |  |  |
|  |  | BEPReview | 1 |  |  |  |  |  |  |  |  |
| 5.2 | Schematic Design  3D Massing Models | | |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Stakeholder Presentations | Options Assessment Matrix |  |  |  |  |  |  |  |  |
|  |  |  | 3D Model Indicative Layouts |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| 5.1 | Concept Design Part 1  Planning 3D Model | | | | |  |  |  |  |  |  |
|  |  | PreliminarySafety in Design Risk Ass |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Presentation 3D Model |  |  |  |  |  |  |  |
|  |  |  |  | BIM Review Report |  |  |  |  |  |  |  |
|  |  |  |  | Concept Design Docs | 1 |  |  |  |  |  |  |
| 5.2 | Design Development Part 2A  CDE Design/**Development** | | | | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | BIM planning and design meeting | IFC Set up |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | BIM Coordination |  |  |  |  |  |  |  |
|  |  |  |  |  |  | 60% DD BIM Status Report | 1 |  |  |  |  |
| 5.3 | Documentation Prt 2B | | | | | | | | |  |  |
|  |  |  |  |  |  | CDE Documentation |  |  |  |  |  |
|  |  |  |  |  | BIM Coordination of ‘Federated’ 3D Model |  |  |  |  |  |  |
| Safety in Design Residual Risk |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | Schedule of Accommodation |  |  |  |  |
|  |  |  |  |  |  |  | QS BIM cost planning |  |  |  |  |
|  |  |  |  |  |  | Performance Requirements |  |  |  |  |  |
|  |  |  |  |  |  | 90% Doc BIM Status Report |  |  | 1 |  |  |
| 5.5 | Construction Part 3  Record Docs | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | BIM Const Reports |  |  | 1 |
| 5.5 | Practical Completion /Handover | | | | | | | | | | |
|  |  |  |  |  |  |  |  | Completion Docs |  |  | 1 |
| 5.5 | Additional Lead Agency Requirements | | | | | | | | | |  |
|  | SA Health Completion requirements  SA Health Data Requirements  1 | | | | | | | | | | |
| 5.6 | Post Construction  Project Review- BIM lesson learnt | | | | | | | | | |  |
|  |  |  |  |  |  |  |  |  |  |  | 1 |

BIM Project Milestone 

## Information quality assurance

Information quality assurance requirements:

All information containers within the common data requirement to be easily identified and located to enable reporting on level of quality and intended at each project milestone and ensures information is suitably secured, and protected against unauthorised access, information loss or corruption, degradation and where practicable, obsolescence.

The following checks will be carried out at the intervals noted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Check** | **Definition** | **Responsible** | **Software** | **Frequency** |
| EIR Compliance Check | Audit overview of BEP conformances | Design Team BIM Mangers | N/A | Monthly and completion of each Design Phase / critical milestone |
| Visual Review | Confirm there are no unintended model elements and that the design intent has been followed | Design Team BIM Mangers | BIM Authoring | Ongoing and prior to data exchange |
| Standards check | Confirm BIM/CAD standards have been followed | All parties | BIM Authoring | Ongoing |
| Model integrity check | Confirm that BIM model has no undefined, incorrectly defined, or duplicated elements | All parties | BIM Authoring | Ongoing and prior to information exchange |
| Interference check | General high-level review of model elements utilising design models to minimise clashes. | Design Team BIM Mangers | BIM coordination | Fortnightly, prior to information exchange |
| Cross Check | Review other consultants’ models and advise on quality and clashes with own discipline in a timely manner. | All parties | BIM Authoring | Following information exchange |
| Authoring software warnings | Review and minimise, warnings generated by the authoring software. | Model element author Task Team BIM Coordinators | BIM Authoring | Ongoing and prior to information exchange |
| Data Integrity Validation | Ensure parameters and coding used are consistent between disciplines to facilitate data extraction for schedules and reports. | Task Team BIM Coordinators | BIM Authoring | Ongoing |
| BEP Compliance | High level audit of BEP conformances. | Design Team BIM Manager | N/A | Monthly and completion of each Design Phase |

**Describe the measures required for assuring the quality of information. Include measures relating to the Common Data Environment (CDE) under CDE management.**

**If the appointing party does not have existing quality assurance requirements for asset information, they may choose to request proposals from tenderers for consideration. In this instance, delete the following text about quality assurance standards.**

**Quality assurance standards:** Conform to the standards documented in **Technical, Standards and project reference information**.

**Technical, Standards and project reference information.**

|  |  |
| --- | --- |
| **Document title** | **Required /Recommended**  **(Y/N)** |
| AS ISO 19650:1 and2: 2019 - Organization and Digitization of Information about Buildings – Concepts and Principles, Delivery Phase of the Assets | Required |
| ISO 19650–5:2020 - Organization and Digitization of Information about Buildings – Security-minded approach to information management | Recommended |
| BS EN ISO 8717:2021 Building Information Modelling – Level of Information Need Concepts and principles | Required |
| AS-NZS ISO 9001:2019 - Quality Management Systems - Requirements | Recommended |
| ISO/IEC 27001:2022 Information Security, Cybersecurity and Privacy protection – Information Security Management Systems - Requirements | Recommended |
| BIM Forum LOD Specification LOD Spec current published version (i.e. 20202 Part I 2022-12-31.) | Required |
| ANZRS (Australian and New Zealand Revit Standards) Management | Required |
| BIM-MEP AUS - Services Content Standards | Recommended |
| DIT Specification and Guide Notes | Required |
| NATSPEC National BIM Guide | Required |
| SA Health Project Completion Requirements and Guide Notes (SA Health Projects | Required |
| VBIS Classification - Services | Recommended |
| SAMIS Asset Data Standard | Required |
| Australian Health Facility Guidelines BIM Requirements (AusHFG) | Required |

Edition and version of the above standards are current published version.

## Information security and privacy

Information security requirements:

All information generated during the project shall comply with ISO 19650-5 regarding information security requirements.

DIT minimum data security requirements are defined below and shall apply to all project stages:

* Protection of any commercially sensitive and/or personal data/information, as required, in compliance with ISO 19650–5:2020.
* Information to be shared within members of the delivery team only, unless delegated and approved by DIT.
* All project communication and information exchanges to be conducted through the common data exchange (CDE).
* In performing the data requirements of the EIR that no part of the Data is corrupted, deleted or subjected to unauthorised access or use and that no errors are introduced into the Data.

Data Security Plan:

* The LPSC and Contractor must establish, implement and maintain a Data Security Plan for the management of requirements for the digital security of the Project. The Data Security must detail the Project specific needs of confidentiality, integrity, and accessibility with the consequences of any loss or unauthorised release of the information.

In addition to the above requirements a review of data security requirements must be in place at all critical milestone stages of the project.

Describe the measures required for ensuring the security and privacy of asset information including governance protocols and responsibilities. This includes but is not limited to technical measures, authorisation processes for access, levels of access, security classification of information, privacy and IP protection measures and procedures in the event of breaches.

Reference the relevant sections of the appointing party’s existing security policies and strategies, security management plans and security breach/incident management plans if available.

Include measures relating to the Common Data Environment (CDE) under **CDE management**.

AS ISO 19650.5 specifies the principles and requirements for security-minded information management. It addresses the steps required to create security strategies, security management plans, etc (but does not provide them ready-made).

## CDE management

CDE standards and procedures:

The LPSC as the appointed party is to establish, host and manage a Common Data Environment (CDE) as a software or online tool that facilitates the management and exchange of information in line with ISO19650 for the Schematic Design and Design Documentation phases.

For the Early Works and Construction phase the project a Common Data Environment shall be hosted and managed by the Construction Contractor. Throughout all phases of the project the appointing party shall have access to view BIM information and data for review and for BIM information (documents and data) to be exported to the appropriate Asset Management software.

The CDE is to include the following base functional requirements:

• Customisable permissions controls.

• Approval and verification controls.

• Ability to archive information.

• Automatic notifications to aid collaborative CDE workflows.

• Ability for information containers to transition between states (WIP shared publishing and archive.

• Ability to configure enforceable naming rules to suit ISO 19650 and project’s information standard.

• Ensure all information containers have a “unique ID” (file name) without duplication.

• Ability to configure and assign attributes (Status, Revision, Classification) to each information container to suit ISO 19650 and project’s information standard.

• Provide an audit trail capture with automatic capture of user’s name and date when information container transitions between states.

• Provide issuing and transmittals to issue information to stakeholders.

• Include a version control and check in checkout system.

• Capability to manage architecture, engineering, and construction software programs and file formats.

• Ability to integrate with other CDEs and business systems through direct integrations, with program interface and/or customisation.

• Security protections should be industry best practice in IT security: two factor authentication, data encryption, data recovery and redundancy.

The Lead BIM Design Team is encouraged to use electronic project collaboration tools such as document management and file sharing sites, reviewing tools, project communication websites, web meetings, and video conferencing.

BIM Data to be supplemented with IFC2x3 as certified by BuildingSmart alliance (http://www.buildingsmart-tech.org/certification/ifc-certification-2.0/ifc2x3-cv-v2.0-certification/participants) and deliver information in support of ISO19650 and the application of OpenBIM standards.

Describe the measures required to maintain the security and integrity of the CDE. Include applicable standards and procedures in in the **Project information standards directory** and **Project information production methods and procedures directory**.

Incorporate details of these measures in the instructions for using the Common Data Environment (CDE) at **Commercial**, **Common Data Environment**.

If the appointing party does not have existing requirements for management of the CDE, they may choose to request proposals from tenderers for consideration.

## Project meetings

It is a requirement of the EIR that there is constant collaboration and communication across all the BIM Design and Construction Teams.

Requirements: The meetings required by the appointing party are shown in the **Meetings schedule**.

**Purpose of this schedule**

This schedule is to show only the meetings required by the appointing party for their decision making and management purposes. The prospective appointed party may propose additional meetings for their own purposes in the pre-appointment BEP.

Include only meetings specifically about BIM and information management-related matters.

Coordinate with any other project meeting requirements documented elsewhere.

**Meetings schedule**

| Meeting type | Frequency | Purpose | Chairperson | Participants |
| --- | --- | --- | --- | --- |
| BIM Design Team Meetings | 2 weeks | BIM Coordination and workflows Design Development and Documentation | Design Team BIM Manager | Lead Agency, Design team and DIT representative |
| BEP Review | As required at least monthly. | Review of the BEP progress and associated workflows | DIT BIM representative | Lead Agency, Design team and DIT representative |
| EIR /BEP Review | At the end of each project stage. | To review the EIR document and initiate the BEP | DIT BIM representative | Lead Agency, Design team and DIT BIM representative |
| BIM Construction coordination meetings | 2 weeks | BIM Coordination and workflows Construction | Construction BIM Manager | Lead Agency, Design Team Construction Team BIM managers and DIT representative |
| Information Management Workshops | 4 weeks | Review data management and transfer for design and construction activities for integration at handover. | DIT/Lead Agency BIM Representative | Lead Agency, Design Team Construction Team BIM managers and DIT representative |
| Completion /Handover | At Practical Completion | Review project data transfer for Completion Documents BIM Federated Models and Asset Data | DIT BIM representative | Lead Agency, Design Team Construction Team BIM managers and DIT representative |
| Post Construction | 6 months after PC | Review BEP and BIM lessons learnt | DIT BIM representative | All |

**Communication and Collaboration Requirements**

The LPSC is expected to use electronic project communication software and tools (i.e., file sharing sites, reviewing, document management, shared review tools, web meetings and video conferencing for communication and collaboration purposes to the BIM Team members and other stakeholders and Lead Agency representatives.

**Record of Meetings**

The LPSC is to keep written evidence and records of all coordination and clash detection meetings issues raised and actions required as evidence that all coordination issues have been resolved for 100% documentation issue. The use of BIM clash detection software and automated dashboards are to be used as reference only and not replace formal written reporting.

**Meeting type**: Add meeting types as required.

**Frequency**: e.g. weekly, fortnightly, monthly, 1st Tuesday of each month. If required, this column can be subdivided into project phases to show different frequencies at each.

**Chairperson**: e.g. appointing party’s representative. If a specific person is nominated, also include their project role.

**Participants**: e.g. Information Manager, lead appointed party’s representative.

## BIM Execution Plan

The EIR identifies specific information to include in the BEP. The BEP will cover but not be limited to the following:

* Project information (Lead Agency, Facility Name, project address/location, project description)
* Project stages (including modelling existing assets) and nominated start/end dates (schedule of BIM activities including milestones and submittals)
* Specify relevant industry and agree DIT asset data with the Lead Agency Asset/Facilities Manager which will be used in the execution of BIM for the project.
* Objectives and goals are aligned to DIT EIR with specific benefits realisation metrics defined.
* Specific uses of BIM aligned to this EIR for DIT uses and nominate any contractor or design uses of BIM
* Identify the entire Delivery Team including all Appointed Parties, including proposed parties not yet appointed (contractor, steel fabricator etc)
* A high-level responsibility matrix (roles and responsibilities) of all BIM delivery Team members
* Processes of communicating to DIT the design, reviews and user group/stakeholder sign off.
* Communication and collaboration strategies between the Delivery Team (including contractor), the BIM Manager and the DIT Project Manager
* Information delivery plan (what data will be authored, at what stage and in which system) and any classification/asset data structures to be used.
* Model development requirements (if LOD is used, a LOD Matrix)
* Level of Information need requirements (LOIN) such as critical AIR
* File, SAMIS asset coding, room and naming conventions (nomenclature)
* The model sharing methodology as agreed between information managers/BIM Managers.
* The organisation of the Common Data Environment (CDE) and protocols for its use. (Frequency of model exchanges, acceptable file formats for exchange and protocols for issuing models, (e.g. checks required prior to sharing).
* The proposed 3D BIM ‘federation’ strategy to be adopted for coordination and clash detection.
* Required elements, processes and management techniques required for coordination tasks.
* Methodology for quality assurance, data quality plan and validation of BIM files, project-wide
* Schedule of Software and hardware selections, file format, file exchange requirements and ICT infrastructure proposed to be used.
* E.g. based on the current *NATSPEC BEP Template*. If this is not used, outline the proposed content at the prompt. Other tendering requirements can be documented in the tender response requirements. The *NATSPEC Tendering requirements Template*, which includes a place to document tender evaluation criteria, can be used for this purpose.

# SECTION 4 -Technical

## Software

**Open standards**: To facilitate the exchange of information between project team members and ensure the long-term access to project data, all model authoring software is required to be buildingSMART IFC 2x3 TC1 (2.3.0.1) compliant and BCF (BIM Collaboration Format)

Amend the text above if prospective appointed parties can demonstrate their software can conform to later releases of IFC, e.g. IFC 4 Add2.

Non-IFC compliant software other than model authoring software: Where data needs to be exchanged between any non-IFC compliant software proposed for the project, demonstrate how exchange will be achieved.

**Proposed software**: Alignment of software versions across the team is required to avoid compatibility issues and all software proposed for the project is to be clearly stated in the BEP

**Software compatibility testing**: Prior to mobilisation, test software for compatibility and demonstrate that the information exchanges between software proposed for the project can be achieved.

## Software file formats

Only software file formats required by DIT or the Lead Government Agency (i.e. to be compatible with their systems) are included in the Software file format table. Determine the software required to deliver them during the development of the BIM Execution Plan.

Upgrades to subsequent versions of the software after commencement of the project will be subject to agreement by the project team and DIT.

**Software file format table**

| **Discipline** | **BIM use** | **Software –(current version)** | **Primary format** | **Software format** |
| --- | --- | --- | --- | --- |
| Architecture | Design authoring | Autodesk Revit | Rvt, | IFC |
| 3D coordination | Autodesk Navisworks Freedom  BIM 360 | Rvt | IFC, BCF |
| Space and equipment | dRofus | rvt outputs to pdf or xlsx | xlsx |
| Specifications | NatSpec | Word document | pdf |
| Structural | Design authoring | Autodesk Revit | rvt | rvt |
| Structural /Seismic analysis | Autodesk Revit /specialist | rvt | BDF |
| Civil | Design authoring | Autodesk AutoCAD  Autodesk Civil 3D /12D | Dwfx | IFC |
| Landscaping | Design authoring | Autodesk AutoCAD /Revit | Dwfx / rvt | IFC |
| MEP  Mechanical, Electrical, Plumbing, Fire Engineering | Design authoring – | Autodesk AutoCAD /Revit | rvt | IFC |
| Energy analysis |
| Lighting analysis |
| ICT | Design authoring | Autodesk Revit | rvt | IFC |
| Cost Manager | Cost Planning and estimates | ROSS 5D , CostX | IFC | Dwf, Dwfx |
| All | Design Review | Autodesk Design Review Navisworks Freedom | Dwfx, nwd | IFC |

## IT infrastructure

Requirement: Provide IT infrastructure for the project including hardware, network, communication, management and support provisions including back-up systems in the event of disruptions.

IT capacity and performance: As required for the information delivery documented in the BIM Execution Plan.

## Collaboration Resources

Requirement: Provide collaboration resources necessary for the information delivery documented in the BIM Execution Plan.

If a CDE has not been established by the appointing party, describe the implementation proposed in response to the requirements specified in the under **Commercial**, **Common data environment**.

## Coordination facilities

Provision of coordination facilities: The Appointed Party will provide project coordination facilities including meeting room and video conferencing equipment.

If any project coordination facilities including rooms and equipment will be provided by the appointing party, document them here. If no facilities are proposed, enter ‘By lead appointing party’, or similar, at the prompt.

## Coordination

Requirement: Make sure all construction models have been spatially coordinated to eliminate clashes between model elements and information has been coordinated to eliminate contradictions and inconsistencies, and that all cross references are correct.

Coordination requirements: By the appointed party

Describe the measures required for assuring the coordination of models and information. Alternatively, include applicable standards and procedures in in the **Project information standards directory** and **Project information production methods and procedures directory** and reference them here.

If the appointing party does not have existing standards and procedures for information quality assurance and coordination, they may choose to request proposals from tenderers for consideration.

## Model geographic location

Requirement: Establish a Model Geo-reference Point before modelling commences. Align all models with the Model Geo-reference Point documented in the BIM Execution Plan.

A Model Geo-reference Point is a point used to associate locations in the virtual model with those in the physical world. It is a generic term for various ones used in different modelling applications, e.g. Project Base Point in Revit.

The Model Geo-reference Point’s position is defined relative to a physical Survey Point marked on site. It is important to select locations that can be preserved throughout the construction period. (It is possible the Model Geo-reference Point will be disturbed during construction but its position can be determined relative to the Survey Point.)

If the Model Geo-reference Point has been established prior to tender, replace the above text with the details of the Point. A table for specifying them is included in the *NATSPEC BIM Execution Plan (BEP) Template*.

Site set-out point establishment procedure: The appointed party (LPSC) is to define the Model Geo-reference Point and Survey Point for the purpose of aligning construction set-out on site with the model.

Describe the procedure for communicating to the contractor the location of the Model Geo-reference Point and Survey Point for the purpose of aligning construction set-out on site with the model and contract documentation. Alternatively, include it in the CDE and reference its location in **Technical,** **Project information production methods and procedures directory**.

Strategy for aligning models with the Model Geo-reference Point: The contractor shall confirm the Model Geo-reference Point and/or 3D grids provided to the Lead Appointed Party (LPSC) prior to construction.

E.g. Model Geo-reference Point and/or 3D grids provided by BIM Manager. If models created by different modelling applications are to be shared, outline procedures for aligning them to the same Model Geo-reference Point.

## Asset identification

**Requirement**: Asset identification will be by the Facilities Manager Service Provider (Across Government Facilities Management Agreement (AGFMA) of all assets with the unique SAMIS code for the purpose of identification and to facilitate the cross referencing of information about assets in different information locations and formats within the PIM.

## Model object and property naming

**Open standards**: To facilitate the reliable exchange of information, use buildingSMART Industry Foundation Classes (IFC) naming conventions for model objects and object properties.

Minimum requirements: Include the IFC designations IFC Element Type and Predefined Type in all model element objects.

## Standard and project reference information

The *Open BIM Object Standard (OBOS)* provides guidance on creating and naming BIM objects and their properties to facilitate the reliable exchange of information between modellers using different applications.

The NATSPEC BIM Properties Generator includes a list of objects with their IFC designations and property sets.

Standards and project reference information location: In accordance with AS ISO 19650-2, Clause 5.1.7 a single secure location for these resources to be established as part of the electronic Data management System EDMS.

Include a link to an online repository, common data environment (CDE) or a description of a location. Ideally, a CDE or single secure location for these resources should be established prior to invitations to tender. Refer to AS ISO 19650-2, Clause 5.1.7. This is more effective and reliable compared to sending them individually to each prospective appointed party.

### Information standards

See *Appendix D – Defining information requirements* for examples of standards and project reference information.

Information for the project: Conform to the information standards and information management standards listed in the **Project information standards directory**.

**Project information standards directory**

| Document title | Edition / version | Date |
| --- | --- | --- |
| DIT Corporate file structure. kNet for Record DocumentsAS ISO 19650. DIT | NA | NA |

Edit to include all specific information standards required for the project by the appointing party’s organisation. Refer to AS ISO 19650.2 clause 5.1.4. Give preference to international, national or industry standards, e.g. AS ISO 19650.

Standards can cover topics such as:

* Requirements associated with information exchanges.
* Schema for structuring and classifying information.
* Methods for assigning level of information need.
* Standards relevant to the use of information during the operational phase of the asset.

The project’s information standards determine the organisation of information containers within the CDE.

### Information production methods and procedures

Information production for the project: Conform to the requirements of the documents listed in the **Project information production methods and procedures directory**.

**Project information production methods and procedures directory**

| Document title | Edition / version | Date |
| --- | --- | --- |
| Require alignment of BIM with DIT Digital Engineering Policy  PC-EDM5 Digital Engineering | V2 | Aug 2022 |

Edit to include all specific information production methods and procedures required for the project by the appointing party’s organisation. Refer to AS ISO 19650.2 clause 5.1.

They can cover topics such as:

* The capture of existing asset information.
* The generation, review or approval of new information.
* The security or distribution of information.
* The delivery of information to the appointing party.
* Information acceptance criteria.

### Reference information

Requirement: Take into consideration the information listed in the **Project reference information directory** when producing information for the project.

**Project reference information directory**

| Document title | Edition / version | Date |
| --- | --- | --- |
| DIT Project Brief | kNet reference | Current |
| DIT Electronic Documents | BPIMS | Current |
| Lead Agency Data Requirements | KNet reference | Current |
| Design for Government Handbook | BPIMS | Current |
| SAMIS Asset Registers | SAMIS | Current |

Edit to include all available information useful or relevant to prospective appointed parties when tendering and throughout the project. Its provision avoids potential duplication of effort and excessive contingency costs for risks. Refer to AS ISO 19650.2 clause 5.1.6.

It can include information about:

* The brief.
* Planning and construction approval documentation.
* The site.
* Adjoining assets and utilities.
* Existing assets.
* Guidance material.
* Exemplars of project deliverables, etc.

### Shared resources

Requirement: Take into consideration, or use as directed, the resources listed in the **Project shared resources directory**.

**Project shared resources directory.**

| Document title | Edition / version | Date |
| --- | --- | --- |
| Electronic Documents - 3D and 2D DIT Title Blocks | BPIMS | Current |
| AusFHG BIM resources | [BIM Resources | AusHFG (healthfacilityguidelines.com.au)](https://healthfacilityguidelines.com.au/content/bim-resources) | Current |
| Natspec BIM Portal and Properties Generator | [NATSPEC BIM - NATSPEC BIM Properties Generator](https://bim.natspec.org/tools/properties-generator) | Current |

Edit to include information or resources that promote consistency of information and facilitates its exchange.

Refer to AS ISO 19650.2 clause 5.1.6.

It can include:

* Templates for BEP, TIDP, MIDP, etc.
* Templates for documents, drawings and models.
* Style libraries for text, lines, hatch, etc.
* Object libraries including 2D symbols and 3D objects.

# ANNEX A

## References

* ISO 19650 Guidance Part D: Developing information requirements UK BIM Framework 2022
* Open BIM Object Standard (OBOS) NATSPEC & Masterspec NZ 2018
* ABAB Asset Information Requirements Guide ABAB 2018
* AS ISO 19650: BIM services; Organization of information about construction works — Information management using building information modelling.

## Abbreviations

|  |  |  |
| --- | --- | --- |
| **Abbreviation** | **Description** | **Reference** |
| AGFMA | Across Government Facilities Management Arrangements | [*AGFMA - Department for Infrastructure and Transport - South Australia (dit.sa.gov.au)*](https://www.dit.sa.gov.au/facilities_management) |
| AIM | Asset Information Model | [*NBG2022 Appendix A (natspec.org)*](https://bim.natspec.org/images/NATSPEC_Documents/NATSPEC_National_BIM_Guide_Appendix_A_-_Glossary_2022-10_Web.pdf) |
| AIR | Asset Information Requirements | *NBG2022 Appendix A (natspec.org)* |
| AM | Asset Management | *NBG2022 Appendix A (natspec.org)* |
| AMS | Asset Management system | *NBG2022 Appendix A (natspec.org)* |
| AP | Appointing Party | *NBG2022 Appendix A (natspec.org)* |
| AusHFG | Australasian Health Facility Guidelines | [*AusHFG (healthfacilityguidelines.com.au)*](https://healthfacilityguidelines.com.au/) |
| BEP | BIM Execution Plan | *NBG2022 Appendix A (natspec.org)* |
| BIM | Building Information Modelling | *NBG2022 Appendix A (natspec.org)* |
| CDE | Common Data Environment | *NBG2022 Appendix A (natspec.org)* |
| MC | Main Contractor |  |
| DIT | Department of Infrastructure and Transport |  |
| DPSC | Discipline Professional Services Contractor |  |
| DIT BP | DIT Building Projects |  |
| EIR | Exchange Information Requirements | *NBG2022 Appendix A (natspec.org)* |
| ECI | Early Contractor Involvement |  |
| FM | Facility Management |  |
| FMSP | Facility Management Service Provider |  |
| IFC | Industry Foundation Classes |  |
| LAP | Lead Appointed Party | *NBG2022 Appendix A (natspec.org)* |
| LOIN | Level of Information Need | *NBG2022 Appendix A (natspec.org)* |
| LOD | Level of Development | *NBG2022 Appendix A (natspec.org)* |
| Lol | Level of Information | *NBG2022 Appendix A (natspec.org)* |
| LPSC | Lead Professional Services Contractor |  |
| MC | Main Contractor |  |
| MIDP | Master Information Delivery Plan | *NBG2022 Appendix A (natspec.org)* |
| MVD | Model View Definitions |  |
| NATSPEC | National Building Specification | *NBG2022 Appendix A (natspec.org)* |
| OIR | Organisational Information Requirements | *NBG2022 Appendix A (natspec.org)* |
| PIM | Project Information Model | *NBG2022 Appendix A (natspec.org)* |
| PIR | Project information Requirements |  |
| PSC | Professional Services Contractor |  |
| RDS | Room Data Sheet |  |
| RLS | Room Layout Sheet |  |
| SAMIS | Strategic Asset Management Information System |  |
| TDS | Technical Data Sheets |  |
| TIDP | Task Information Delivery plan | *NBG2022 Appendix A (natspec.org)* |

# ANNEX B

# Building Information Modelling REQUIREMENTS (G168) (Align to AS ISO 19650:1 and 2)

The Building Projects (BP) division in the Department for Infrastructure and Transport (DIT) has implemented the application of Building Information Modelling (BIM) for nominated projects outlined in the DIT BIM Implementation Process (P042).

This document outlines the revised BIM project implementation process with alignment to the concepts and principles described in AS ISO 19650 :1 *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling*.

The BIM Information Requirements noted in this document form the Project Information Requirements (PIR) and Asset Information requirements (AIR) with core and project specific BIM requirements for Building Projects based on the National Specification System of Australia [(NATSPEC) National BIM Guide](http://bim.natspec.org/index.php/natspec-bim-documents/national-bim-guide) (NBG) aligned to AS Iso 19650:1 and 2

The terms, definitions and Acronyms included in this document are based on NATSPEC National BIM Guide - Appendix A Glossary.

# General BIM 3D Model Requirements

## Building Information Model

The BIM shall include all geometry and physical characteristics needed to describe the design and construction work. All drawings ,schedules and data required for assessment, review, tender and construction shall be extractions from the project 3D BIM model.

Geometry included in the BIM model shall be as per the BIM Forum – Level of Development Specification (current edition) definitions for the relevant LOD. The BIM model shall include full description of element as part of the relevant specification and schedules.

## Lead Professional Service Contractor Requirements

The Lead Professional Service Contractors (LPSC) shall follow the guidelines and requirements detailed in the EIR and DIT BIM Requirements documents for BIM related services.

The LPSC shall use BIM authoring software or discipline specialty 3D software. Models shall be created that include all geometry and physical characteristics needed to describe the design and construction work.

Drawings, schedules and data required for assessment, review, bidding and construction shall be extractions from this model. Software shall be capable of interfacing with all Discipline Professional Service Contractors (DPSC) BIM authored software.

In all cases, the building and infrastructure systems are to be modelled to a level that allows the team to accurately verify clearances, analyse conflicts/clashes and properly coordinate the work with all other aspects of the project to the accuracy specified in the BIM Forum - LOD Specification (current edition) relevant to the stage of the project.

It is a requirement of the EIR that a Building Information Modelling Execution Plan (BEP) based on the NATSPEC BIM Execution (Management) Plan Template is required to be created for the project as the primary tool of BIM management.

The BEP is to outline the collaboration and communication strategy to be adopted for each stage of the BIM project including communication methodology, protocols, design coordination and information exchange meetings schedule.

The BEP is to include the delivery teams detailed responsibility matrix for all members of the Design BIM Team and the Information Delivery Plan and Task Information Plans to achieve the requirements of the EIR.

## Discipline Professional Service Contractor Requirements

Mechanical, electrical, plumbing, fire protection and civil engineers shall use BIM authoring software or discipline specialty 3D software. Models shall be created that include all geometry and physical characteristics needed to describe the design and construction work.

Drawings, schedules and data required for assessment, review, bidding and construction shall be extractions from this model. Software shall be capable of interfacing with all Discipline Professional Service Contractors (DPSC) BIM authored software.

In all cases, the building and infrastructure systems are to be modelled to a level that allows the team to accurately verify clearances, analyse conflicts/clashes and properly coordinate the work with all other aspects of the project to the accuracy specified in the BIM Forum - LOD Specification 2020 relevant to the stage of the project.

The DPSC shall follow the requirements detailed in the EIR and DIT BIM Requirements

## BIM Authoring Software

The LPSC shall use one or a combination of the following BIM Authoring software for DIT projects:

* AutoDesk Revit Architecture
* AutoDesk Structure
* AutoDesk Mechanical, Electrical and Plumbing (MEP).

Building Projects will consider other software products subject to their capabilities, features and benefits to the State.

Note: other BIM software may be used for analysis, specialty design, and other project needs.

## Common Data Environment (CDE) Collaboration Tools and IFC compliance

The LPSC as the appointed party is to establish, host and manage a Common Data Environment (CDE) as a software or online tool that facilitates the management and exchange of information in line with ISO19650:2 for the Schematic Design and Design Documentation phases.

For the Early Works and Construction phase the project a Common Data Environment shall be hosted and managed by the Managing Contractor (MC). Throughout all phases of the project the appointing party shall have access to view BIM information and data for review and for BIM information (documents and data) to be exported to the appropriate Asset Management software.

The CDE is to include the following base functional requirements:

* Customisable permissions controls.
* Approval and verification controls.
* Ability to archive information.
* Automatic notifications to aid collaborative CDE workflows.
* Ability for information containers to transition between states (WIP shared publishing and archive.
* Ability to configure enforceable naming rules to suit ISO 19650 and project’s information standard.
* Ensure all information containers have a “unique ID” (file name) without duplication.
* Ability to configure and assign attributes (Status, Revision, Classification) to each information container to suit ISO 19650 and project’s information standard.
* Provide an audit trail capture with automatic capture of user’s name and date when information container transitions between states.
* Provide issuing and transmittals to issue information to stakeholders.
* Include a version control and check in checkout system.
* Capability to manage architecture, engineering, and construction software programs and file formats.
* Ability to integrate with other CDEs and business systems through direct integrations, with program interface and/or customisation.
* Security protections should be industry best practice in IT security: two factor authentication, data encryption, data recovery and redundancy.

The LPSC is encouraged to use electronic project collaboration tools such as document management and file sharing sites, reviewing tools, project communication websites, web meetings, and video conferencing.

BIM Data to be supplemented with IFC2x3 as certified by BuildingSmart alliance (<http://www.buildingsmart-tech.org/certification/ifc-certification-2.0/ifc2x3-cv-v2.0-certification/participants>) and deliver information in support of ISO19650 and the application of OpenBIM standards.

## BIM 3D Modelling Process

## Model Design Quality

The LPSC shall establish and use in-house modelling quality control guidelines and exchange protocols in accordance with ISO19650-2. Specification for information management for the capital/delivery phase of construction projects using building information modelling) and include them in the BEP.

This may include but is not limited to:

* Use of element and component objects.
* Maintenance of parametric linkages within the model at all times.
* All 2D Deliverables such as 2D details should be derived from, relate to, and be fully coordinated with the 3D model. Do not modify 2D deliverables so they contradict or conflict with the base 3D model set out or dimensions.
* All other documents should be submitted in compliance with contract requirements.
* Extraction of all drawing views from the BIM model (disconnected 2D files should not be used).
* Use of correct object definitions for modelling “generic” objects should not be used - it may look right but will not be right for scheduling, analysis, or interoperability with other software). Where ‘generic’ model category families are used they should be clearly noted and represent the design intent, satisfy the relevant Level of Model Development (LOD) and associated Information data to enable seamless transition to specific objects and ensure relevant data transfer.
* Practice of efficient and accurate modelling, i.e., eliminate object overlap, correctly close wall intersections etc. - the model needs to both look right and be right.
* Use of industry accepted, DIT or Lead Agency defined standards (i.e., AusHFG’s for SA Health) for objects and spaces.
* Use of appropriate and interoperable viewing, checking and output file formats.
* Use of appropriate model checking tools to confirm the validity and accuracy of files and adherence to modelling standards before submission.
* Use of appropriate open standards and IFC compliant software.
* Where intelligent objects are not available, items to be modelled as a “concept object” conforming closely in length, width, height, specified data and accurately located.

## Objectives and Application

7.1. **Design Phase (Part 1 Concept)**

The LPSC may use any method to begin the design process but shall be using a BIM authored or 3D model(s) by completion of the concept design phase. All information needed to describe the concept design shall be graphically or numerically included in and derived from these models.

The LPSC to use analysis tools, static images and interactive 3D walkthroughs and flyovers (photorealistic quality) to describe the design concepts and response to the ‘Principles of Good Design’ issued by the Office for Design + Architecture.

The Level of Model Development (LOD) as detailed in the BIM Forum LOD specification describing the level of completeness to which a model element is developed with associated content requirements for this phase of the BIM model is as follows:

* LOD 100 Concept Model: overall building massing indicative of area, height, volume, location, and orientation to be modelled in 3D or represented by other object data.
* LOD 200 Presentation: Modelled elements to enable suitable ‘walk through ‘required to represent the design solution effectively or in some detail to the major stakeholders.
* If a 3D model is to be submitted as part of the Planning Submission refer to clause 13.16 *3D Adelaide Digital Model* for details of requirements for Metropolitan Adelaide.
* 3D Model (Revit rvt) and BIM report to be submitted for review as part of the Concept Design review.

7.2. **Design Development Phase (Part 2A Design Development)**

The LPSC shall develop a BIM during the design development phase. Parametric links shall be maintained within the models to enable automatic generation of all plans, sections, elevations, custom details and schedules as well as 3D views.

The LOD describing the level of completeness to which a model element is developed with associated content requirements for this phase of the BIM model is as follows:

* LOD 200 Approximate Model Geometry: model elements are modelled as generalised assemblies accurate in terms of quality, size, shape, location, and orientation.

All information needed to describe the detailed design shall be graphically or numerically included in and derived from these models only.

3D ‘Federated’ BIM Model (Revit rvt) and BIM Report to be submitted for review including 3D PDFs (Acrobat Pro) for BIM 360, Navisworks or similar as part of the Design Development review (60% Documentation).

**7.3 Documentation Phase (Part 2B Documentation)**

The LPSC shall continue development of their BIM created in the design development phase.

The LOD describing the level of completeness to which a model element is developed with associated content requirements for this phase of the BIM model is as follows:

* LOD 300 Accurate Geometry: The quantity, size, shape, location, and orientation of the element as designed can be measured directly from the model without referring to non-modeled information such as notes or dimension callouts. The project origin is defined, and the element is located accurately with respect to the project origin.
* LOD 350 Accurate Geometry: (for Seismic IL4) Parts necessary for coordination of the element with nearby or attached elements are modeled. These parts will include such items as supports and connections required for Seismic IL4 assessment requirements for non-structural components (e.g. suspended ceilings) as required by the EIR requirements.

The BIM model shall contain all information needed to describe all the detailed documentation requirements and include the following BIM requirements:

3D BIM Model (Revit rvt) and BIM Report to be submitted for review including a 3D PDFs (Acrobat Pro) for BIM 360, Navisworks or similar as part of the Documentation Review (90 % Documentation).

**7.4. Construction Phase (Part 3)**

The LPSC shall continue to update the BIM model with additional information from the Contractor /Managing Contractor (MC) as part of a Project Information Model (PIM).

The LOD describing the level of completeness to which a model element is developed with associated content requirements for this phase of the BIM model is as follows:

* LOD 300-350 Accurate Geometry: Parts necessary for coordination of the element with nearby or attached elements are modeled. These parts will include such items as supports and connections. The quantity, size, shape, location, and orientation of the element as designed can be measured directly from the model without referring to non-modeled information such as notes or dimension callouts.

The Project Information BIM Model shall contain all information needed to describe all the detailed documentation requirements and include the following BIM requirements.

The Project Information BIM Model to be submitted for review as part of the record documents as required by the DIT Completion Documents.

## Requirements for BIM 3D Modelling

The following core BIM requirements apply to all BIM 3D modelling and represent the core BIM requirements and current best practice in the creation of BIM 3D Models.

## Architectural

Model the following architectural elements to a level that defines the design intent and accurately represents the detailed design solution:

* Architectural base 3D model to the relevant LOD as required by the BIM Forum LOD Specification 2020 including all building elements such as internal walls, ceilings, doors, and windows inclusive of fire compartments (to be determined and provided by fire safety engineers) such as fire doors and walls.
* Architectural site plan (also see section [8.7 Civil Engineering](#_Civil_Engineering) below).
* General paving and associated landscaped areas and other external elements typically included on site drawings to show the scope of site works.
* Existing conditions to the extent required to define the scope of the new works.
* Interior and exterior soffits, overhangs, and sun control elements.
* Floor, ceiling, and roof systems including appropriate structural items listed below if not provided by the structural engineer and integrated into the architectural model for coordination and document generation as noted for some structural elements up to LOD100 in the BIM Forum LOD Specification 2020
* Suspended ceiling systems, floor tiles and other horizontal elements 50mm or thicker (may be part of a composite element or assembly).
* Roof, floor, and ceiling slopes, if needed, should be modelled.
* Lift core, stairs, ramps including handrail and balustrades.
* Built-in joinery, shelving and other fixed interior architectural elements.
* Workstations, fixed benches, fixtures, and equipment included in the scope of the project and required to be integrated into the architectural model for coordination and document generation.
* Any required clearance zones for access, door swings, service space requirements and other operational clearances for equipment to be modelled and checked for conflicts with other elements.
* The 3D architectural BIM model and data to be utilized for third party software modelling and simulation (thermal simulation, energy calculations, natural and artificial lighting calculations, acoustic simulations etc.) to be incorporated into model elements for performance verification.

## Structural Engineering

Model the following structural elements:

* Structural engineering base 3D steel framing model of both existing and new structural framing including secondary sub framing to support ceilings, bulkheads door and window openings.
* Foundations such as: concrete slabs (including any rebates), footings and piers inclusive of approximate modelling to meet LOD 200 requirements.
* Framing such as: steel columns, floor joists and steel beams (with correct shape size and fixings).
* Precast concrete elements (hollow core precast may be modelled as a slab)
* Suspended floors need to be modelled to show overall thickness of floor systems (individual framing members need not be modelled)
* Timber trusses (include webs for visual purposes)
* Load bearing walls (masonry, concrete, cold-formed steel, wood)
* Overall thickness of lightweight steel and timber stud walls.

## Mechanical Systems

Model the following mechanical services:

* Mechanical services base 3D model including all mechanical equipment, fans, compressors, pipes, thermostats, and control sensors.
* Duct distribution system including supply, return, exhaust, relief, and outside air ductwork modelled to outside face dimension or duct insulation (whichever is greater).
* Diffusers, grilles, louvers, hoods, radiant panels, perimeter units, wall units.
* Pipes sized at and over 50mm outside diameter, include any insulation in model.
* Other operational clearance must be modelled as part of the Heating, Ventilation and Air-Conditioning (HVAC) equipment and checked for conflicts with other elements. Including all ceiling, wall and other access hatches required for maintenance of the air conditioning system.
* Dust extraction, electronic paint, and welding bay exhaust systems to technology workshop areas.

## Electrical

Model the following electrical elements:

* Electrical services base 3D model including all electrical equipment, lights, power, data and telephone points and conduit trays.
* Transformers (external and internal) and other equipment relating to power supply.
* Main and distribution panels and switchgear including access clearances.
* Outlets, switches, junction boxes to be modelled to the extent only required for showing location.
* Lighting to include all fixed internal and external lighting. Any data utilized in lighting simulation and modelling to be incorporated into model elements for performance verification.
* Coordinated power, data, communications connection points for other discipline services items.
* Any other electrical equipment required for conflict checking.

## Hydraulic and Fire Protection

Model the following plumbing and fire protection elements:

* Hydraulic and fire services base 3D model including all hydraulic and fire equipment, sanitary fixtures, pipework, vents, fire equipment (sprinklers and hydrants), waste and vent pipes.
* Active fire protection systems including fire/ fire compartments, fire doors and walls, smoke detectors and alarms.
* Piping sized at and over 30mm outside diameter, including any insulation.
* Roof and floor drains, sumps, grease arrestors, tanks, water treatments and other major items.
* Sanitary fixtures to include taps, sinks, toilet fixtures, water tanks, floor sinks.
* Coordinated water service and waste connection points for other discipline services items.
* Fire protection sprinkler lines, sprinkler heads, standpipes, hydrants, fire department connections, risers including valve clearances.
* Clearance zones for access, service space requirements, valve clearances and other operational clearances must be modelled as part of the plumbing and fire protection system and checked for conflicts with other elements.
* Data to be utilized for third party software modelling and simulation (energy calculations, acoustic simulations etc.) to be incorporated into model elements for performance verification.

## Specialist Equipment

Model the following specialty consultant elements to correct size and location:

* Equipment provided or specified by specialist consultants (i.e. Vertical Transport)
* Connection points for power, data, communications, water service and waste, gas, steam, or other needed utilities.
* Extent of specialist consultant modelling shall be coordinated with the LPSC.
* Clearance zones for access, doors swings, service space requirements, controls and other operational clearance must be modelled as part of the equipment and checked for conflicts with other elements.

## Civil Engineering

Model the following civil engineering elements:

* Civil engineering base 3D topographical model including all paved areas, retaining walls, stairs, and ramps.
* Landscaping elements are only required to be modelled to the extent required in the site works plan to show area of planting raised beds, parking islands, pools / ponds / other water features, terraces and other items not included elsewhere in the model.
* Stormwater management structures, pump stations, manholes and other major items that impact on the overall project understanding or which may become project design constraints. The model should include the site and surrounding areas that contribute to the site’s draining system and any adjacent roadways.
* All items must be geo-referenced such that all elements can be viewed as an overlay in the BIM model on a Geographic Information System (GIS) correctly always positioned in the correct location.

## Existing Conditions

The LPSC’s shall model all existing conditions including topography (including geotechnical conditions) buildings, structures and utilities to provide a basis for the design of new work on site an include of all areas affected by the proposed new and refurbishment works. The extent of modelling beyond the affected areas and the information required will be determined based on project needs.

Existing building and services alignments and tolerances shall be verified with onsite measurement tools such as laser scanning to provide an accurate model of the existing building conditions.

## Project Brief and Space Validation (Lead Agency Data Requirements Guidelines, Room Data sheets, Schedules of Accommodation)

The LPSC shall use the BIM authoring software (ie dRofus or other approved by DIT) for detailed Schedules of Accommodation, identifying all rooms proposed for the project including the area, number of and function of each room. The following shall be developed from the BIM model:

* Gross floor area and room area measured to the inside face of wall objects to Australasian Health Facility Guidelines (AusHFG).
* Room data information including net areas, material types and finishes and all fixtures, fittings and built ins.
* Lead Agencies may have additional data requirements such as SA Health “Completion Documents and Data Requirements” as identified in the Project Brief including.
* Lead Agency Data Requirements Guidelines (Guidelines for SA Health Project Completion Requirements Final).
* Project Completion Data Entry Template (PROJECT COMPLETION FORM (projectname)\_blank Final.xlsm); and
* User Manual for Data Entry Template (PC Data Entry Spreadsheet User Guide.pdf).

## Conflict Checking

The LPSC is to use conflict checking (clash detection) software for the design development and documentation phase of the work. The LPSC is to provide evidence and verify that all conflicts and clashes within the BIM 3D models and associated schedules have been resolved as part of the written BIM report for 90% Documentation review at the completion of the Documentation Phase.

## Energy Modelling and Analysis

The LPSC’s are to use the BIM data and CDE for all relevant energy modelling information as a verification tool for the energy modelling and simulation software rather than manually creating the data separate to the BIM.

Building elements and building services need to be appropriately modelled as required for Energy simulation software is to be used to analysis and model the thermal performance of building envelopes and HVAC systems, to verify their conformance with building energy standards and optimise them to reduce life cycle costs. Spaces, building elements and building services need to be appropriately modelled for this purpose

### 8.12 Topographic and Property Line Surveying

Surveys shall be provided in electronic format and minimally include 3D topographic information including paving and retaining walls. The file(s) shall be in a format that allows for importing into the LPSC’s BIM authoring software.

### 8.13 Acoustic Modelling

The LPSC is to supply the base 3D BIM model (rvt file) for use in acoustic performance analysis to verify the Design Standard for acoustic requirements and reverberation performance.

The CDE is expected to host all relevant acoustic data (internal noise sources, element reverberation and element insulation) for acoustic modelling purposes for verification purposes including any third-party acoustic modelling and simulation which is undertaken for the project.

### 8.14 Planning/ Area Massing Modelling

For any feasibility and planning studies Massing Modelling shall indicate site capacity, general orientation, access points and 3D functional relationships as part of preliminary investigations and planning.

### 8.15 Analysis and Checking Tools

The LPSC is encouraged to analyse the design using software that interacts with the model in order to refine daylighting, natural ventilation, acoustic separation, code issues and design issues.

The LPSC is encouraged to use quantity take-off features of the BIM and 3D tools coupled with unit costs to assist in construction cost control. The 3D BIM model to be provided in the required format and coding to enable use by the cost consultant estimating software.

When cost estimation is selected as a BIM use for the project, the appointed QS or pre-construction estimator should provide an input to the BEP to enable models to be developed in accordance with the requirements of the QS/estimator software requirements.

Unit rates and pricing from suppliers during schematic design development and documentation phase for specific elements (services etc.) are to be included in element data for ease of construction cost calculation.

### 8.16 3D Adelaide Digital Model and Planning Review Submissions

The South Australian Department of Planning Transport and Infrastructure (DIT) has a digital 3D model of Adelaide to assist the Design Review as part of the Development Assessment process.

The LPSC may be required as noted in the Project Brief to submit a 3D digital model of the proposed building works to DIT to assist in the Design Review process at the development application stage for government projects within the Adelaide Metropolitan area.

Modelling specification and requirements are outlined in the following DIT Advisory Note- 3D Adelaide Digital Model Submissions SA Planning Portal.

### 8.17 Asset Management Requirements

In addition to the above BIM requirements there are also specific asset management requirements outlined in DIT Project Completion, Lead Agency Completion Documents and Across Government Facilities Management Agreements (AGFMA) information documents for the project completion phase.

## Additional Project Specific BIM Requirements

In addition to the core BIM requirements outlined above, additional BIM requirements are required to be included in the BIM model when undertaking major large scale and complex projects which have additional project specific requirements. .

The Project EIR will identify these additional project specific BIM applications to be included in the BIM Application Project Specific BIM Uses Table with reference to DIT BIM Requirements stated I this documents and the NATSPEC [National BIM Guide](https://bim.natspec.org/documents/natspec-national-bim-guide), **(**NBG) and Appendix C- *BIM use & enabler descriptions* describing these requirements in more detail*.*

# Contract Requirements

## BIM Project Reviews

The Department of Infrastructure and Transport (DIT) Building Projects directorate has a Project Review process for all major government building construction projects as outlined in Project Review (G29) available from BPIMS.

As part of the Project Review process the following BIM Project Reviews are required to be included as part of the project review process as evidence of the completion of each project BIM deliverable at the completion of the following PIP phases.

* Concept Design - (Part 1 Documentation phase – Concept Design) LPSC to submit by the LPSC for review prior to commencement of the Concept Report to enable a final BEP to be submitted as an appendix to the Concept Design Report. The BEP will detail how the BIM requirements will be executed, monitored, and controlled to the requirements of the BIM Brief.

Following the review, the LPSC team will update the BEP in accordance with the comments received, responses provided and any subsequent agreement arising.

* Design Development (Part 2A Documentation phase – at 60% completion) LPSC to submit a written BIM review report stating the BIM deliverables (where applicable) have meet the BIM Management Plan requirements with the project review documentation.
* Documentation (Part 2B Documentation phase – at 90% completion) LPSC to submit with the documentation review documents a written BIM report as evidence of completed BEP BIM deliverables. The report should state the current progress and any outstanding BIM works (modelling and associated data) and provide clash detection reports showing all clashes and conflicts have been resolved. Any variance from the BEP and Project BIM brief is to be included in the Design Variance or Project Departures Schedule for review.

## Tender Documentation

The LPSC shall continue development of the BIM or 3D model(s) created in the design development phase. Parametric links are to be maintained within the respective models to enable automatic generation of all plans, sections, elevations, custom details, schedules and 3D views. All information needed to describe the implementation (construction) documents shall be graphically or alphanumerically included in and derived from these models only. Specifications are not required to be linked in the BIM.

With submittal of final documentation, the LPSC shall submit the final model(s) in native application's format and validated IFC. Any future changes to, or extractions from, the model(s) will be the responsibility of the party making the changes.

The LPSC shall make all submittals in accordance with the BEP.

All contract drawings to still comply with the [Electronic Documentation Requirements (G65)](http://www.bpims.sa.gov.au/bpims/library/showLibrary.do?libType=project&searchText=electronic).

### BIM Model Templates

DIT 3D model drawing sheets and templates must be used for all contract drawings. Download from [Buildings - Asset and Contract Documents - Department for Infrastructure and Transport - South Australia (dit.sa.gov.au)](https://www.dit.sa.gov.au/contractor_documents/asset_drawings)

The preferred size of documents is A1 (B1, A2, A3, and A4 are also acceptable to suit project).

### BIM Model Registration

3D BIM models are to include all contract drawings, which must be registered with Plan Services before tender submission. A DIT Drawing Number will be supplied which must be entered in the title block. The Plan Officer must be informed of any changes to DIT Drawing Numbers or Drawing Title after initial registration. Extra drawing numbers can be supplied on request, please inform the Plan Officer of numbers not used.

### Save as

Ensure that the file is saved with the contract number as the file name (i.e. 2889-A-2024. rvt) for construction documents.

### Tender Submission

Revit (.rvt) and IFC files are required on CD , DVD or other approved electronic document formats by DIT and include all registered drawings that form part of the contract documents.

Contract documentation requirements for tender will still require .dwg and .pdf files of all contract documents to be issued and should be derived from and match the sheet list included in the 3D BIM model.

### Tender Phase

The LPSC shall update the 3D BIM model with all addendums, accepted alternates and/or value enhancement proposals.

## Construction Phase

### Record Documents

The LPSC’s and DPSC’s shall update their respective 3D BIM model(s) int a ‘federated 3D Model and include any project recorded changes, relevant instructions, changes and RFI responses during the construction phase based upon information provided by the Contractor /Managing Contractor.

The Contractor / Managing Contractor (C /MC) shall commutatively comply the record documents and maintain the full Project Information Model and all data and information required by the DIT Project Completion Documents (G178), Completion Requirements for Building projects (G182) and Lead Agency Completion Requirements.

The Contractor / Managing Contractor MC will be responsible for management of the record documents and Project Information Model (PIM)

### Contract Completion and Handover

As per the DIT EIR project BIM requirements, the C/MC shall be responsible for updating the BIM/PIM for review by the LPSC. If data is required to be reintroduced to the design models for the purposes of handover, the MC must ensure that the Revit Element Id field is provided for all rows of data to be introduced to the Revit models. If this field cannot be provided, data will need to be linked separately to the BIM models, and the MC is responsible for manual addition of Element Id. Both the Design and Construction BIM Delivery teams as authoring parties will be responsible for assessing accuracy of linked data to BIM models.

For spatial and scope changes during construction, the Construction BIM delivery team must as a minimum requirement communicated back to the respective BIM model authors with clear instructions (ie dimensioned and noted changes) for capturing in the handover models.

Where changes cannot be clearly communicated in such a manner, 3D point cloud survey format will be required in order for model authors to reconcile these changes.

Changes will not be made to the handover model for any changes introduced by the MC during construction unless it is clearly directed and communicated back to responsible BIM authoring parties in a timely manner for the purpose of updating of models.

The BIM Design Team as authoring parties will not be expected to provide a onsite survey in order to assess model discrepancies between designed and the construction as-built models

The LPSC’s shall update of their respective 3D BIM models with any project recorded changes and provide monthly updates on any changes.

All disciplines are to update their respective BIM models and drawings to reflect relevant instructions, changes and RFI responses during the construction phase including any additional information provided by the C/MS..

### Practical Completion

In accordance with Building Projects Completion Requirements for Building Projects (G182) 14 days prior to the Date of Practical Completion (or the equivalent) of the construction contract (or separable portions) , the LPSCs shall review the Contractor supplied Project Information BIM Model (rvt or IFC compliant file per discipline) including all rvt, pdf, dwg and files and associated data as part of the Completion Documents.

Following the LPSC’s review of the full completion documents the Contractor is to include any required amendments or updates and issue to Lead Agency and DIT for final review.

Upon final review by Lead Agency and DIT the CMC is to supply to the DIT Project Review Officer, dwg and rvt (if used) and pdf files of all Record Drawings for architectural, civil, structural and building services engineering disciplines to enable a full “Federated” BIM model (PIM), with all reference drawings, is to be submitted in original authored software, IFC compliant and .rvt files as an Asset Information Model (AIM)

### Delivery

Deliver to the Project Manager, Building Projects.

Department of Planning and Infrastructure

Level 13 83 Pirie Street,

Adelaide SA 5000

GPO Box 1533 Adelaide SA 5001

# Reference Documents

The following related documents are available for download from the Building Project Information website

* DIT Exchange Information Requirements (EIR) (G xxx)
* DIT Building Information Modelling-Core Brief (232)
* DIT Building Information Modelling-Project Specific Brief (231)
* Completion Requirements for Building Projects (G182)
* Electronic Documents Requirements (G65)
* Project Review (G29)

National BIM Guide Documents are available from the NATSPEC Building Information Modelling Portal at <https://bim.natspec.org/documents/natspec-national-bim-guide>

# Contact

For further information contact:

**Ralph Hems**

Senior Architect DIT Principal BIM Advisor

Phone: T 8 7133 2930 M 0413 307 943

Email: [ralph.hems@sa.gov.au](mailto:ralph.hems@sa.gov.au)

**Document Amendment Record**

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| --- | --- | --- | --- | --- | --- |
| **REVISION** | **CHANGE DESCRIPTION** | **DATE** | **PREPARED** | **REVIEWED** | **APPROVED** |
| A | Draft for Review | 30/7/2023 | Ralph Hems |  |  |
| B | Update comments | 11/11/2024 | Ralph Hems |  |  |

**Document Status**

|  |  |  |  |
| --- | --- | --- | --- |
| **DOCUMENT REGISTER** | | | |
| **Action** | **Name and Position** | **Signature** | **Date** |
| **Prepared By:** | Name: Ralph Hems  Title: Senior Architect -  DIT Principal BIM Advisor |  | \_\_\_/\_\_\_/\_ |
| **Reviewed By:** | Name:  Title: |  | \_\_\_/\_\_\_/\_\_\_ |
| **Reviewed By:** | Name:  Title: |  | \_\_\_/\_\_\_/\_\_\_ |
| **Reviewed By:** | Name:  Title: Director Building Projects |  | \_\_\_/\_\_\_/\_\_\_ |
| **Approved By:** | Name:  Title: |  | \_\_\_/\_\_\_/\_\_\_ |