 

v2.0 – March 2016

**BIM Management Plan**

**Technical Appendix**

|  |  |
| --- | --- |
| Project Reference: |  |
| Project name: |  |
| Project address/location: |  |
| Brief project description: |  |
| Client: |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Revision | Date | Prepared by | Approved by | Comments |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**NATSPEC BIM Management Plan Template**

First published 2012

This edition: v2.0 March 2016

Publisher: Construction Information Systems Limited ABN 20 117 574 606

**Copyright**

This Document is protected by Copyright © 2016. You may use this Document for your own purposes. You may distribute this Document to other persons provided that you attribute the Document as having been generated by NATSPEC and that the document is available free of charge at [www.natspec.com.au](http://www.natspec.com.au/). Click on the ‘NATSPEC BIM’ logo.

**Disclaimer**

This Document is intended for use by professional personnel competent to evaluate the significance and limitations of its content and able to accept responsibility for the application of the material it contains.

NATSPEC and its contributors hereby disclaim all warranties and conditions with regard to this information and related graphics, including all implied warranties, fitness for a particular purpose, workmanlike effort, title and non-infringement. In no event shall NATSPEC be liable for any direct, indirect, punitive, incidental, special, or consequential damages or damages for loss of profits, revenue, data, down time, or use, arising out of or in any way connected with the use of the Document or performance of any services, whether based on contract, tort, negligence, strict liability or otherwise. NATSPEC disclaims any responsibility to update any information, including with respect to any new legal, business, or technology developments. If you are dissatisfied with any portion of the Document, or with any of these terms of use, your sole and exclusive remedy is to discontinue using the Document.

**Text formatting used in this NATSPEC Template**

The boxed green text is ‘Hidden text’ which serves as *Guidance* for the Template user. This is how it should appear:

|  |
| --- |
| *Guidance* text is not intended to be seen by the final recipients of the document and is turned off or deleted prior to the issue of the completed Template. As the *Guidance* is quite extensive, it can be useful to turn it off every now and again to see what the finished document will look like. |

To show this *Guidance* text in the document:

* **Word 2003** users: Go to the **Tools** menu, choose **Options** (last item), click on the **View** tab and make sure that **Hidden text** is ticked (under the **Formatting marks** heading).
* **Word 2007** users: Click on the **Office button**, choose **Word options** (last item), click on **Display** and make sure that **Hidden text** is ticked.
* **Word 2010** users: Go to **File** menu, choose **Options** (last item), click on **Display** and make sure that **Hidden text** is ticked.

If you still have problems viewing *Guidance*, please contact NATSPEC on 02 9321 7200.

Dark red text followed by: [complete/delete] indicates that information prompted by the text should be entered after the colon. If the wording of the item is not appropriate for the project, it can be edited to suit. If the item is not relevant, simply delete it.

Normal italicised text, *e.g. NATSPEC National BIM Guide* indicates the name of a document or standard.

Bold text, e.g. **Meeting schedule** indicates a cross reference to a Section, clause or schedule elsewhere in the document.

**Document references**

In this document:

* The ‘*BMP Template’* or ‘*Template*’ means the *NATSPEC BIM Management Plan Template*.
* The ‘*BIM Plan’* or ‘*BMP*’ means the *BIM Management Plan* (for a specific project).
* The ‘*National BIM Guide’* or ‘*Guide*’ means the *NATSPEC National BIM Guide*.

**Acknowledgements**

NATSPEC thanks the numerous individuals and organisations who contributed to the development of this document through material they provided and/or comments they made on drafts.

**Comments**

NATSPEC welcomes comments or suggestions for improvements to this document and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. NATSPEC also encourages users to share their experiences of applying it on projects with us. The input of industry stakeholders helps keep NATSPEC documents relevant to current practice and useful.

Contact us via email at [bim@natspec.com.au](mailto:bim@natspec.com.au).

TABLE OF CONTENTS

[1 Project Information 1](#_Toc445217295)

[1.1 Project details 1](#_Toc445217296)

[2 BIM Management 1](#_Toc445217297)

[2.1 BIM Management Plan overview 1](#_Toc445217298)

[3 Collaboration Procedures 1](#_Toc445217299)

[3.1 Information management 1](#_Toc445217300)

[3.2 Collaboration resources 1](#_Toc445217301)

[4 Modelling Requirements 1](#_Toc445217302)

[4.1 Model geographic location 1](#_Toc445217303)

[4.2 Discipline modelling standards 2](#_Toc445217304)

[4.3 Model quality control 2](#_Toc445217305)

[5 Model Structure, Sharing and Development 2](#_Toc445217306)

[5.1 Project object library 2](#_Toc445217307)

[5.2 Model structure 2](#_Toc445217308)

[5.3 Model exchange 4](#_Toc445217309)

[5.4 Drawing exchange 5](#_Toc445217310)

[5.5 Model development 5](#_Toc445217311)

[5.6 Model element responsibilities 5](#_Toc445217312)

[5.7 Model element responsibilities table 6](#_Toc445217313)

[5.8 Level of Development (LOD) 8](#_Toc445217314)

[5.9 LOD table 9](#_Toc445217315)

[5.10 LOD table (UniFormat alternative) 11](#_Toc445217316)

[5.11 Modelling permissions 14](#_Toc445217317)

[5.12 Modelling permissions table 14](#_Toc445217318)

[5.13 3D coordination (NBG clause 7.6.1) 16](#_Toc445217319)

[5.14 Clash detection schedule 16](#_Toc445217320)

[5.15 Clash detection colours 16](#_Toc445217321)

[6 Information Technology 17](#_Toc445217322)

[6.1 Data sharing 17](#_Toc445217323)

[6.2 Project software 18](#_Toc445217324)

[6.3 Software compatibility testing 18](#_Toc445217325)

[6.4 Software updating 18](#_Toc445217326)

[6.5 File exchange 18](#_Toc445217327)

[7 Deliverables 19](#_Toc445217328)

[7.1 Deliverables schedule 19](#_Toc445217329)

[7.2 Deliverables formats 19](#_Toc445217330)

[7.3 Submission response period 19](#_Toc445217331)

# Project Information

## Project details

Refer to the *BIM Management Plan Executive Summary* for details of:

* Project team members.
* Roles and responsibilities.
* Project goals.
* Project procurement.
* Project schedule.

If the clause titles in the *BIM Management Plan Executive Summary* have been changed, edit the list above to match them.

Amend the text to *BIM Management Plan* if using the Combined Template.

# BIM Management

## BIM Management Plan overview

Refer to the *BIM Management Plan Executive Summary* for details of:

* Purpose of the BIM Management Plan.
* Application of the BIM Management Plan.
* BIM Management Plan development.
* Updating the BIM Management Plan.

If the clause titles in the *BIM Management Plan Executive Summary* have been changed, edit the list above to match them.

Amend the text to *BIM Management Plan* if using the Combined Template.

# Collaboration Procedures

## Information management

Collaborative information management procedures:

Describe project-specific procedures associated with the collaborative information management strategy or standards called up in the in the *BIM Management Plan* under **Information management**.

## Collaboration resources

Procedures for using collaboration resources:

Describe procedures associated with the use of each collaboration resources specified in the in the *BIM Management Plan* under **Collaboration resource providers**.

# Modelling Requirements

## Model geographic location

The Model Geo-reference Point for the project is:

|  |  |  |
| --- | --- | --- |
| **Location** | Longitude |  |
| Latitude |  |
| **Height Reference** | Australian Height Datum |  |
| **Grid datum** | Australian Geodetic Datum (GDA) |  |
| Local Grid Reference |  |
| **Project Datum** | (N/S) |  |
| **True North vs Project** | (deg) |  |
| **Reference Grid** |  |  |
| **Reference Survey** |  | |

3D grid model file reference:

Provide the model reference file number or a link to the file on the project server or on-line collaboration platform.

Amendments to the project spatial coordinates:

Record any changes to the spatial coordination (coordinates) of the master BIM file set at the beginning of the project. Only change with mutual consent of the team and the Client’s Project Manager. Record the changes and the name of the person responsible for implementing them (generally the BIM Manager – see *National BIM Guide* clause 4.2) in the meeting minutes.

Once the design coordinate system is agreed upon, convert any model(s) of existing buildings relevant to the project into the coordinate system used for each designed building. Delete the prompt if no changes have been made.

## Discipline modelling standards

Modelling standards:

Reference any standards specified by the client in the *Project BIM Brief* **Client-specified Reference Documents**. Describe any additional standards required. Adopt existing industry standards, e.g. ANZRS where possible. Another option is to adopt standards developed by team member organisations. See the [*Project BIM Guidelines Checklist*](http://bim.natspec.org/images/NATSPEC_Documents/Project_BIM_Guidelines_checklist_150907.doc).

Use of the *NATSPEC BIM Object/Element Matrix*:

Options include:

* As a reference for naming model object parameters.
* For recording information to be handed over for facility management purposes.
* For documenting information content of BIM models and responsibilities for planning and guidance purposes only.
* For documenting information content of BIM models and responsibilities for contractual purposes.

Model and drawing versioning:

Describe the rules for model and drawing versioning including numbering conventions. Detail procedures for notifying team members of changes to the model and methods for highlighting them.

Strategy for importing Program for Design (PFD) information:

Describe who will be responsible, when and how PFD information is to be imported into the model.

Where information is to be imported from applications such as Affinity, Codebook or dRofus, describe what measures will be taken to enable interoperability with the BIM software being used on the project. Describe procedures for making sure that parameters/properties in imported data schedules align with those attached to model objects.

List any standards or practice guidelines that will be adopted.

## Model quality control

Model quality control procedures:

Describe the model quality control procedures for the project including the procedures for disseminating, managing and updating them. Describe model checking, auditing, approval and sign-off protocols. Identify those responsible for these activities. Cross reference project modelling standards.

See *National BIM Guide* Part 10, *National Guidelines for Digital Modelling* clauses 1.3 & 2.1 and *BIM Project Execution Planning Guide* Chapter 5, Part 8.

# Model Structure, Sharing and Development

## Project object library

Library use protocols:

If it is agreed a project library will be required, describe rules for its users including management contacts, access rights and permissions.

## Model structure

Base, Discipline and Component Model establishment and management:

This clause describes the initial stages of model development in which models created by one party, e.g. a design consultant, provide the basis for the development of further models by another party, e.g. contractor or subcontractor. In this document the former are referred to as Base Models and the latter as Discipline Models. The term Control Model is sometimes used for the latest version of a Base Model authorised for use by other disciplines or parties.

Define the Base Models and Discipline Models to be produced. If required, define how they will be further broken down into Component Models (defined subsets of the model such as individual levels, sectors or zones). This can be summarised in the diagram below. Describe how models will be managed, e.g. model naming conventions and version control rules.

Model structure is summarised in the diagrams below.

Edit the diagrams to illustrate the relationships between Base, Discipline and Component Models. Enter descriptions of Base Models in each upper box and Discipline and/or Component Models in the boxes below them. Use the models’ full titles or abbreviations or codes based on the project’s model naming conventions. Provide a key to any abbreviations or codes.

Multiple diagrams are provided for illustrating models for different purposes or at different project milestones. Add or delete diagrams as required. Edit table headings to suit.

Refer to Microsoft Word Help for guidance on editing the diagrams.

|  |  |
| --- | --- |
| **Model 1** | **Model 2** |
|  |  |

Federated model management:

This clause describes the later stages of model development in which models created by a number of parties are combined into single models for the purpose of design visualisation and coordination, often using purpose-made software. In this document the former are referred to as Constituent Models and the latter as Federated Models.

Describe the form of the federated models, e.g. Discipline or Component Models and define the models to be produced. This can be summarised in the diagram below. Describe how models will be managed, including model naming conventions and version control rules.

See related topics in **SPECIFIC USES OF BIM, 3D coordination**.

Federated Model structure is summarised in the diagrams below.

Edit the diagram to illustrate the relationships between Federated Models and their Constituent Models. Enter descriptions of Federated Models in each upper box and Constituent Models in the boxes below them. Use the models’ full titles or abbreviations or codes based on the project’s model naming conventions. Provide a key to any abbreviations or codes.

Multiple diagrams are provided for illustrating models for different purposes or at different project milestones. Add or delete diagrams as required. Edit table headings to suit.

Refer to Microsoft Word Help for guidance on editing the diagrams.

|  |  |  |
| --- | --- | --- |
| **Model 1** | **Model 2** | **Model 3** |
|  |  |  |

## Model exchange

Requirement: Exchange model files with the BIM Manager at the intervals documented in the table below:

Edit this clause to refer to the Design BIM Manager or Construction BIM Manager, as appropriate. See *National BIM Guide* clauses 5.1 to 5.3.

Refer to **MODELLING REQUIREMENTS, Model quality control** for pre-exchange checking, approval and sign-off procedures.

Refer to **INFORMATION TECHNOLOGY**, **Data sharing** for details of the IT system required to support model exchange,

| **Discipline** | Establishment | Schematic Design | Design Development | Contract Documentation | Construction | Facility Management |
| --- | --- | --- | --- | --- | --- | --- |
| Architectural |  |  |  |  |  |  |
| Structural |  |  |  |  |  |  |
| Mechanical |  |  |  |  |  |  |
| QS |  |  |  |  |  |  |
| Other |  |  |  |  |  |  |

This table gives each discipline an indication of the expected frequency of model exchange at each project phase so they can plan their resources. Add or delete disciplines and/or project phases as required. Identify files being exchanged, e.g. WIP.

Insert the required interval for each exchange, e.g. weekly, fortnightly, monthly, every Monday, on request of BIM Manager.

Edit the project phases to suit the BIM Management Plan (BMP) type and scope of service being provided, e.g. for a Design BMP, include only those phases from Establishment to Design development or Contract documentation.

Rather than trying to prescribe fixed intervals between exchanges, you may prefer to decide this on an as-needed basis at regular meetings. Alternatively, you could omit the table from the initial BMP and include it when available information allowed.

## Drawing exchange

Requirement: Exchange drawing files with the BIM Manager at the intervals documented in the table below:

Edit this clause to refer to the Design BIM Manager or Construction BIM Manager, as appropriate.

| **Discipline** | Establishment | Schematic Design | Design Development | Contract Documentation | Construction | Facility Management |
| --- | --- | --- | --- | --- | --- | --- |
| Architectural |  |  |  |  |  |  |
| Structural |  |  |  |  |  |  |
| Mechanical |  |  |  |  |  |  |
| QS |  |  |  |  |  |  |
| Other |  |  |  |  |  |  |

This table gives each discipline an indication of the expected frequency of drawing exchange at each project phase so they can plan their resources. Add or delete disciplines and/or project phases as required. Identify files being exchanged, e.g. Work in Progress (WIP).

Insert the required interval for each exchange, e.g. weekly, fortnightly, monthly, every Monday, on request of BIM Manager.

Edit the project phases to suit the BIM Management Plan (BMP) type and scope of service being provided, e.g. for a Design BMP, include only those phases from Establishment to Design development or Contract documentation.

Rather than trying to prescribe fixed intervals between exchanges, you may prefer to decide this on an as-needed basis at regular meetings. Alternatively, you could omit the table from the initial BMP and include it when available information allowed.

## Model development

Model development protocols:

e.g. Conform to *AIA Documents E203, G201, G202*. It is preferable to reference an existing standards or standards with agreed amendments than to include purpose-written text in this location.

See *BIMForum LOD Specification* for definitions of Levels of Development (LOD) for a number of model elements.

Describe if and how the **Model element responsibilities table**, **LOD table** and **Modelling permissions table** will be used.

## Model element responsibilities

Responsibilities: Model Element Authors (MEA) are responsible for the creation, editing and placement of the model elements assigned to them in the **Model element responsibilities table** for the duration of the periods shown.

Note: This clause and the **Model element responsibilities table** may not be considered necessary, depending on the complexity of the project and preferences of the project team. See *Guidance* associated with the table.

**Legend for Model element responsibilities table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **MEA discipline** |  |  | **MEA discipline** |
|  | Architecture |  |  | MEP |
|  |  |  |  |  |
|  | Structural |  |  | Other |

**Legend**: Use the colours shown or assign a tone or fill pattern to each discipline who will be a MEA for use with the **Model element responsibilities table**.

Using the **Model element responsibilities table**:

Apply the colours representing the MEA discipline to each Model element row to indicate the period for which they will be responsible for that element. For example, you can indicate that the architect will be responsible for locating loadbearing walls up to the end of Schematic Design and that the structural engineer would take prime responsibility for them from that point on by the application of colours in the ‘Walls – loadbearing’ row.

When completed, the table gives the appearance of a Gantt chart. Add or delete rows for model elements. Edit the project phases to suit the BIM Management Plan (BMP) type and scope of service being provided, e.g. for a Design BMP, include only those phases from Conceptual Design to Design development or Contract documentation. Add columns for additional project phases or subdivisions of phases, as required.

Note: This table can be used as a precursor to the **Modelling permissions table** and/or **LOD table**. That is, it can be used as an early planning tool to rough out overall team responsibilities before transposing them to these tables which contain more detail. For a simple project, or where the team has worked together on similar projects before, a Model element responsibilities table may be all that is required. Likewise, if the team is familiar with **Modelling permissions tables**, etc, they might start working on them directly without using this table as an intermediate step at all.

## Model element responsibilities table

| **Model element** | **Project Phase** | | | | | | **Notes** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Conceptual Design | Schematic Design | Design Development | Contract Documentation | Construction | Facility management |
| **CO** | **SD** | **DD** | **CD** | **CN** | **FM** |
| **SPATIAL** |  |  |  |  |  |  |  |
| Site boundaries, setbacks |  |  |  |  |  |  |  |
| Grids |  |  |  |  |  |  |  |
| Levels |  |  |  |  |  |  |  |
| Zones |  |  |  |  |  |  |  |
| Spaces, rooms |  |  |  |  |  |  |  |
| **SITE** |  |  |  |  |  |  |  |
| Topography |  |  |  |  |  |  |  |
| Excavation |  |  |  |  |  |  |  |
| Stormwater |  |  |  |  |  |  |  |
| Services |  |  |  |  |  |  |  |
| Roads |  |  |  |  |  |  |  |
| Parking |  |  |  |  |  |  |  |
| Paths, paving |  |  |  |  |  |  |  |
| Walls, fencing |  |  |  |  |  |  |  |
| Soft landscaping |  |  |  |  |  |  |  |
| **SUBSTRUCTURE** |  |  |  |  |  |  |  |
| Footings |  |  |  |  |  |  |  |
| Retaining walls |  |  |  |  |  |  |  |
| Subsoil drainage |  |  |  |  |  |  |  |
| **STRUCTURE** |  |  |  |  |  |  |  |
| Floor structures |  |  |  |  |  |  |  |
| Beams |  |  |  |  |  |  |  |
| Shaft openings |  |  |  |  |  |  |  |
| Stair & ramp structures |  |  |  |  |  |  |  |
| Walls – load bearing |  |  |  |  |  |  |  |
| Columns |  |  |  |  |  |  |  |
| **ENCLOSURE** |  |  |  |  |  |  |  |
| Roofing |  |  |  |  |  |  |  |
| Cladding |  |  |  |  |  |  |  |
| Column claddings |  |  |  |  |  |  |  |
| Curtain walls |  |  |  |  |  |  |  |
| Windows |  |  |  |  |  |  |  |
| External doors, openings |  |  |  |  |  |  |  |
| **INTERIOR** |  |  |  |  |  |  |  |
| Partitions |  |  |  |  |  |  |  |
| Internal doors, openings |  |  |  |  |  |  |  |
| Ceilings |  |  |  |  |  |  |  |
| Flooring |  |  |  |  |  |  |  |
| Balustrading |  |  |  |  |  |  |  |
| **F, F & E** |  |  |  |  |  |  |  |
| Casework, joinery |  |  |  |  |  |  |  |
| Fixtures |  |  |  |  |  |  |  |
| Fittings |  |  |  |  |  |  |  |
| Equipment (non-service) |  |  |  |  |  |  |  |
| Furniture |  |  |  |  |  |  |  |
| Signage |  |  |  |  |  |  |  |
| **MECHANICAL** |  |  |  |  |  |  |  |
| Plant, equipment & fixtures |  |  |  |  |  |  |  |
| Ductwork |  |  |  |  |  |  |  |
| Pipework |  |  |  |  |  |  |  |
| Sensors and controls |  |  |  |  |  |  |  |
| Mechanical services in risers |  |  |  |  |  |  |  |
| **HYDRAULIC** |  |  |  |  |  |  |  |
| Plant, equipment & fixtures |  |  |  |  |  |  |  |
| Sanitary fixtures & floor wastes |  |  |  |  |  |  |  |
| Pipework – waste |  |  |  |  |  |  |  |
| Pipework – SW, downpipes |  |  |  |  |  |  |  |
| Pipework – supply |  |  |  |  |  |  |  |
| Fire services fixtures (FHR, etc) |  |  |  |  |  |  |  |
| Sprinkler heads |  |  |  |  |  |  |  |
| Pipework – fire services |  |  |  |  |  |  |  |
| Hydraulic services in risers |  |  |  |  |  |  |  |
| **ELECTRICAL** |  |  |  |  |  |  |  |
| Electrical fixtures |  |  |  |  |  |  |  |
| Power outlets |  |  |  |  |  |  |  |
| Switch & distribution boards |  |  |  |  |  |  |  |
| Cable trays, ducts |  |  |  |  |  |  |  |
| Lighting |  |  |  |  |  |  |  |
| Communications |  |  |  |  |  |  |  |
| Security |  |  |  |  |  |  |  |
| Electrical services in risers |  |  |  |  |  |  |  |
| **CONVEYING** |  |  |  |  |  |  |  |
| Lifts, escalators |  |  |  |  |  |  |  |

## Level of Development (LOD)

Collaborative model development: At each project milestone, Model Element Authors (MEA) are responsible for developing each Model Element to the Level of Development (LOD) shown in the **LOD table**.

For an overview of model development and Levels of Development (LOD) of model elements see *National Guidelines for Digital Modelling* clauses 1.6 & 1.7. See also *NATSPEC BIM Paper NBP 001: LOD and BIM* for an explanation of LODs.

**Legend for LOD table**

| **MEA** | Model Element Author | **LOD** | Level of Development |
| --- | --- | --- | --- |
| **A** | Architect | **100** | Conceptual |
| **C** | Contractor | **200** | Approximate geometry |
| **E** | Electrical Engineer | **300** | Precise geometry |
| **M** | Mechanical Engineer | **400** | Fabrication |
| **P** | Plumbing (Hydraulic) Engineer | **500** | As-built |
| **S** | Structural Engineer |  |  |

Two LOD tables are provided in this Template – USE ONLY ONE:

* The **LOD table** below which has a simplified list of model elements.
* The **LOD table (UniFormat alternative)** following it which organises model elements by UniFormat classification.

Note: If the **Model element responsibilities table** has been completed, transpose the MEA for each element at a given project phase to the relevant project milestone column in the **LOD table**. See the *Guidance* before the **Model element responsibilities table** which explains how they can be used together.

Using the **LOD table** (These instructions also apply to the UniFormat alternative):

Determine the LOD required for each Model Element at each project milestone, and the Model Element Author (MEA) responsible for developing it to that LOD. Record these decisions by inserting the appropriate abbreviations from the Legend in the cells of the table. Refer to *AIA Documents E203, G201, G202* and/or *BIMForum LOD Specification* for definitions of each LOD including authorised uses, model management protocols, responsibilities, etc. Any project-specific amendments to the definitions should be documented.

Modify the table to suit the requirements of the project. For example:

* Edit Model Elements to suit the project. Those listed can be merged for simple projects, or another classification scheme substituted as required, e.g. Revit Family categories, UniFormat. For the latter, use **LOD table (UniFormat alternative**).
* If more than one author will be developing an element, add additional rows and enter the LOD each will be responsible for.
* If two authors are required to collaborate closely in the development of an element throughout the project, e.g. an architect and a structural engineer coordinating door and window openings in structural walls, indicate this by entering the abbreviations for both in the same MEA cell, e.g. A + S.
* Subdivisions of LODs can be defined, e.g. LOD225, 250, 275, if more precise control of element development is required.
* Edit the project milestones to suit the BIM Management Plan (BMP) type and scope of service being provided, e.g. for a Design BMP, include only milestones within that phase. More milestones can be included to show a finer gradation of element development but be aware of the additional effort this entails. Focus on the LODs required at key handover points at the end of major project phases and work backwards only to the extent absolutely necessary. Defining LODs during conceptual and schematic design phases may be futile.
* Because of the limited space available for comments in the notes column it will generally be more effective to enter a note number in the cells and provide a separate numbered list of notes below the table.
* Shading or colour coding of LODs, MEAs or project phases can assist legibility of the matrix and interpretation of information.

## LOD table

| **Model Element** | **MEA** | Project Milestones | | | | | | Notes |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Milestone 1 | Milestone 2 | Milestone 3 | Milestone 4 | Milestone 5 | Milestone 6 |
|  |  |  |  |  |  |
| **SPATIAL** |  |  |  |  |  |  |  |  |
| Site boundaries, setbacks |  |  |  |  |  |  |  |  |
| Grids |  |  |  |  |  |  |  |  |
| Levels |  |  |  |  |  |  |  |  |
| Zones |  |  |  |  |  |  |  |  |
| Spaces, rooms |  |  |  |  |  |  |  |  |
| **SITE** |  |  |  |  |  |  |  |  |
| Topography |  |  |  |  |  |  |  |  |
| Excavation |  |  |  |  |  |  |  |  |
| Stormwater |  |  |  |  |  |  |  |  |
| Services |  |  |  |  |  |  |  |  |
| Roads |  |  |  |  |  |  |  |  |
| Parking |  |  |  |  |  |  |  |  |
| Paths, paving |  |  |  |  |  |  |  |  |
| Walls, fencing |  |  |  |  |  |  |  |  |
| Soft landscaping |  |  |  |  |  |  |  |  |
| **SUBSTRUCTURE** |  |  |  |  |  |  |  |  |
| Footings |  |  |  |  |  |  |  |  |
| Retaining walls |  |  |  |  |  |  |  |  |
| Subsoil drainage |  |  |  |  |  |  |  |  |
| **STRUCTURE** |  |  |  |  |  |  |  |  |
| Floor structures |  |  |  |  |  |  |  |  |
| Beams |  |  |  |  |  |  |  |  |
| Shaft openings |  |  |  |  |  |  |  |  |
| Stair & ramp structures |  |  |  |  |  |  |  |  |
| Walls – load bearing |  |  |  |  |  |  |  |  |
| Columns |  |  |  |  |  |  |  |  |
| Roof structures |  |  |  |  |  |  |  |  |
| **ENCLOSURE** |  |  |  |  |  |  |  |  |
| Roofing |  |  |  |  |  |  |  |  |
| Cladding |  |  |  |  |  |  |  |  |
| Column claddings |  |  |  |  |  |  |  |  |
| Curtain walls |  |  |  |  |  |  |  |  |
| Windows |  |  |  |  |  |  |  |  |
| External doors, openings |  |  |  |  |  |  |  |  |
| **INTERIOR** |  |  |  |  |  |  |  |  |
| Partitions |  |  |  |  |  |  |  |  |
| Internal doors, openings |  |  |  |  |  |  |  |  |
| Ceilings |  |  |  |  |  |  |  |  |
| Flooring |  |  |  |  |  |  |  |  |
| Balustrading |  |  |  |  |  |  |  |  |
| **F, F & E** |  |  |  |  |  |  |  |  |
| Casework, joinery |  |  |  |  |  |  |  |  |
| Fixtures |  |  |  |  |  |  |  |  |
| Fittings |  |  |  |  |  |  |  |  |
| Equipment (non-service) |  |  |  |  |  |  |  |  |
| Furniture |  |  |  |  |  |  |  |  |
| Signage |  |  |  |  |  |  |  |  |
| **MECHANICAL** |  |  |  |  |  |  |  |  |
| Plant, equipment & fixtures |  |  |  |  |  |  |  |  |
| Ductwork |  |  |  |  |  |  |  |  |
| Pipework |  |  |  |  |  |  |  |  |
| Sensors and controls |  |  |  |  |  |  |  |  |
| Mechanical services in risers |  |  |  |  |  |  |  |  |
| **HYDRAULIC** |  |  |  |  |  |  |  |  |
| Plant, equipment & fixtures |  |  |  |  |  |  |  |  |
| Sanitary fixtures & floor wastes |  |  |  |  |  |  |  |  |
| Pipework – waste |  |  |  |  |  |  |  |  |
| Pipework – SW, downpipes |  |  |  |  |  |  |  |  |
| Pipework – supply |  |  |  |  |  |  |  |  |
| Fire services fixtures (FHR, etc) |  |  |  |  |  |  |  |  |
| Sprinkler heads |  |  |  |  |  |  |  |  |
| Pipework – fire services |  |  |  |  |  |  |  |  |
| Hydraulic services in risers |  |  |  |  |  |  |  |  |
| **ELECTRICAL** |  |  |  |  |  |  |  |  |
| Electrical fixtures |  |  |  |  |  |  |  |  |
| Power outlets |  |  |  |  |  |  |  |  |
| Switch & distribution boards |  |  |  |  |  |  |  |  |
| Cable trays, ducts |  |  |  |  |  |  |  |  |
| Lighting |  |  |  |  |  |  |  |  |
| Communications |  |  |  |  |  |  |  |  |
| Security |  |  |  |  |  |  |  |  |
| Electrical services in risers |  |  |  |  |  |  |  |  |
| **CONVEYING** |  |  |  |  |  |  |  |  |
| Lifts, escalators |  |  |  |  |  |  |  |  |

## LOD table (UniFormat alternative)

This LOD table can be substituted for the previous one if you prefer to organise model elements by UniFormat classification.

| Model Element by CSI UniFormatTM classification | | | MEA | Project Milestones | | | | | | Notes |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Milestone 1 | Milestone 2 | Milestone 3 | Milestone 4 | Milestone 5 | Milestone 6 |
|  |  |  |  |  |  |
| A SUBSTRUCTURE | |  |  |  |  |  |  |  |  |  |
| A10 Foundations | A1010 | Standard foundations |  |  |  |  |  |  |  |  |
|  | A1020 | Special foundations |  |  |  |  |  |  |  |  |
|  | A1030 | Slab on grade |  |  |  |  |  |  |  |  |
| A20 Basement construction | A2010 | Basement excavation |  |  |  |  |  |  |  |  |
|  | A2020 | Basement walls |  |  |  |  |  |  |  |  |
| B SHELL | |  |  |  |  |  |  |  |  |  |
| B10 Superstructure | B1010 | Floor construction |  |  |  |  |  |  |  |  |
|  | B1020 | Roof construction |  |  |  |  |  |  |  |  |
| B20 Exterior enclosure | B2010 | Exterior walls |  |  |  |  |  |  |  |  |
|  | B2020 | Exterior windows |  |  |  |  |  |  |  |  |
|  | B2030 | Exterior doors |  |  |  |  |  |  |  |  |
| B30 Roofing | B3010 | Roof coverings |  |  |  |  |  |  |  |  |
|  | B3020 | Roof openings |  |  |  |  |  |  |  |  |
| C INTERIORS | |  |  |  |  |  |  |  |  |  |
| C10 Interior construction | C1010 | Partitions |  |  |  |  |  |  |  |  |
|  | C1020 | Interior doors |  |  |  |  |  |  |  |  |
|  | C1030 | Fittings |  |  |  |  |  |  |  |  |
| C20 Stairs | C2010 | Stair construction |  |  |  |  |  |  |  |  |
|  | C2020 | Stair finishes |  |  |  |  |  |  |  |  |
| C30 Interior finishes | C3010 | Wall finishes |  |  |  |  |  |  |  |  |
|  | C3020 | Floor finishes |  |  |  |  |  |  |  |  |
|  | C3030 | Ceiling finishes |  |  |  |  |  |  |  |  |
| D SERVICES | |  |  |  |  |  |  |  |  |  |
| D10 Conveying | D1010 | Elevators and lifts |  |  |  |  |  |  |  |  |
|  | D1020 | Escalators and moving walks |  |  |  |  |  |  |  |  |
|  | D1030 | Other conveying systems |  |  |  |  |  |  |  |  |
| D20 Plumbing | D2010 | Plumbing fixtures |  |  |  |  |  |  |  |  |
|  | D2020 | Domestic water distribution |  |  |  |  |  |  |  |  |
|  | D2030 | Sanitary waste |  |  |  |  |  |  |  |  |
|  | D2040 | Rainwater drainage |  |  |  |  |  |  |  |  |
|  | D2090 | Other plumbing systems |  |  |  |  |  |  |  |  |
| D30 HVAC | D3010 | Energy supply |  |  |  |  |  |  |  |  |
|  | D3020 | Heat generating systems |  |  |  |  |  |  |  |  |
|  | D3030 | Cooling generating systems |  |  |  |  |  |  |  |  |
|  | D3040 | Distribution systems |  |  |  |  |  |  |  |  |
|  | D3050 | Terminal and package units |  |  |  |  |  |  |  |  |
|  | D3060 | Controls and instrumentation |  |  |  |  |  |  |  |  |
|  | D3070 | Systems testing and balancing |  |  |  |  |  |  |  |  |
|  | D3090 | Other HVAC systems & equipment |  |  |  |  |  |  |  |  |
| D40 Fire protection | D4010 | Sprinklers |  |  |  |  |  |  |  |  |
|  | D4020 | Standpipes |  |  |  |  |  |  |  |  |
|  | D4030 | Fire protection specialties |  |  |  |  |  |  |  |  |
|  | D4090 | Other fire protection systems |  |  |  |  |  |  |  |  |
| D50 Electrical | D5010 | Electrical service and distribution |  |  |  |  |  |  |  |  |
|  | D5020 | Lighting and branch wiring |  |  |  |  |  |  |  |  |
|  | D5030 | Communications and security |  |  |  |  |  |  |  |  |
|  | D5090 | Other electrical systems |  |  |  |  |  |  |  |  |
| **E EQUIPMENT & FURNISHINGS** | | |  |  |  |  |  |  |  |  |
| E10 Equipment | E1010 | Commercial equipment |  |  |  |  |  |  |  |  |
|  | E1020 | Institutional equipment |  |  |  |  |  |  |  |  |
|  | E1030 | Vehicular equipment |  |  |  |  |  |  |  |  |
|  | E1090 | Other equipment |  |  |  |  |  |  |  |  |
| E20 Furnishings | E2010 | Fixed furnishings |  |  |  |  |  |  |  |  |
|  | E2020 | Moveable furnishings |  |  |  |  |  |  |  |  |
| F SPECIAL CONSTRUCTION & DEMOLITION | | |  |  |  |  |  |  |  |  |
| F10 Special construction | F1010 | Special structures |  |  |  |  |  |  |  |  |
|  | F1020 | Integrated construction |  |  |  |  |  |  |  |  |
|  | F1030 | Special construction systems |  |  |  |  |  |  |  |  |
|  | F1040 | Special facilities |  |  |  |  |  |  |  |  |
|  | F1050 | Special controls & instrumentation |  |  |  |  |  |  |  |  |
| F20 Selective build. demo | F2010 | Building elements demolition |  |  |  |  |  |  |  |  |
|  | F2020 | Hazardous components abatement |  |  |  |  |  |  |  |  |
| G BUILDING SITEWORK | |  |  |  |  |  |  |  |  |  |
| G10 Site preparation | G1010 | Site clearing |  |  |  |  |  |  |  |  |
|  | G1020 | Site demolition and relocations |  |  |  |  |  |  |  |  |
|  | G1030 | Site earthwork |  |  |  |  |  |  |  |  |
|  | G1040 | Hazardous waste remediation |  |  |  |  |  |  |  |  |
| G20 Site improvements | G2010 | Roadways |  |  |  |  |  |  |  |  |
|  | G2020 | Parking lots |  |  |  |  |  |  |  |  |
|  | G2030 | Pedestrian paving |  |  |  |  |  |  |  |  |
|  | G2040 | Site development |  |  |  |  |  |  |  |  |
|  | G2050 | Landscaping |  |  |  |  |  |  |  |  |
| G30 Site civil/mech. utilities | G3010 | Water supply & distribution systems |  |  |  |  |  |  |  |  |
|  | G3020 | Sanitary sewer systems |  |  |  |  |  |  |  |  |
|  | G3030 | Storm sewer systems |  |  |  |  |  |  |  |  |
|  | G3040 | Heating distribution |  |  |  |  |  |  |  |  |
|  | G3050 | Cooling distribution |  |  |  |  |  |  |  |  |
|  | G3060 | Fuel distribution |  |  |  |  |  |  |  |  |
|  | G3090 | Other civil/mechanical utilities |  |  |  |  |  |  |  |  |
| G40 Site electrical utilities | G4010 | Electrical distribution |  |  |  |  |  |  |  |  |
|  | G4020 | Site lighting |  |  |  |  |  |  |  |  |
|  | G4030 | Site communications and security |  |  |  |  |  |  |  |  |
|  | G4090 | Other electrical utilities |  |  |  |  |  |  |  |  |
| G50 Other site construction | G5010 | Service tunnels |  |  |  |  |  |  |  |  |
|  | G5090 | Other site systems and equipment |  |  |  |  |  |  |  |  |

## Modelling permissions

Rules: Model Element Authors (MEA) are permitted to act on the model elements assigned to them in the **Modelling permissions table**, only to the extent indicated.

**Legend for Modelling permissions table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Y** | May change | **N** | May not change | **P** | May change with permission from the MEA and BIM Manager. |
| **MEA** | Model Element Author | **C/M** | Copy/monitor | **CHK** | Check for changes (manually only) |

**Legend**: Amend ‘BIM Manager’ to ‘Design BIM Manager’ or ‘Construction BIM Manager’ to suit the project procurement strategy.

Using the **Modelling permissions table**:

**Model element**: Replace ‘**Element**’ with the required model element group, e.g. Grids, walls, floors. Then under each element replace ‘Action’ with the typical model editing actions associated with each element, e.g. change thickness, add openings.

**Arch, Struct, MEP**: Insert ‘MEA’ in the appropriate cell to indicate the Model Element Author responsible for each element at each project phase, For example, insert ‘MEA’ in the cell at the intersection of the ‘Element’ row and the ‘Arch’ columns to indicate that the architect is the MEA for that element. Add C/M or CHK (See the Legend above) in the other cells in the ‘Element’ row, as required, to assign these permissions to other disciplines. Then enter ‘Y’, ‘N’ or ‘P’ (See the Legend above) in the ‘Action’ cells to assign editing permissions to each discipline.

Colour coding cells and/or the fonts can make the table easier to read, e.g. green for ‘Y’, red for ‘N’, yellow for ‘P’, blue for ‘MEA’.

Edit the project phases to suit the BIM Management Plan (BMP) type and scope of service being provided, e.g. for a Design BMP, include only those phases from Conceptual Design to Design development or Contract documentation. Add columns for additional project phases or disciplines, and additional rows for elements and actions, as required.

Note: If the **Model element responsibilities table** has been completed, transpose the MEA for each element at a given project phase into the **Modelling permissions table** so they are aligned. See the *Guidance* before the **Model element responsibilities table** which explains how they can be used together.

## Modelling permissions table

| **Model element** | **Schematic design** | | | **Design Development** | | | **Contract Documentation** | | | **Notes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Arch | Struct | MEP | Arch | Struct | MEP | Arch | Struct | MEP |  |
| **SPATIAL** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **SITE** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **SUBSTRUCTURE** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **STRUCTURE** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **ENCLOSURE** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **INTERIOR** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **F, F & E** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **MECHANICAL** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **HYDRAULIC** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **ELECTRICAL** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| **CONVEYING** |  |  |  |  |  |  |  |  |  |  |
| **Element** |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |
| Action |  |  |  |  |  |  |  |  |  |  |

## 3D coordination (NBG clause 7.6.1)

Minimum requirements: Conform to the *NATSPEC National BIM Guide* and the procedures documented in the BIM Management Plan.

Clash detection rules:

Describe modelling rules for clash detection purposes including elements excluded from the clash sets, clashes to be supressed/ignored, e.g. power outlets in walls, clearance tolerances, attributes attached to elements necessary to make clash rules work, e.g. penetrations in partitions, and definition of service zones and associated rules.

Clash selection sets: Conduct clash detections between sets of elements in the order shown in the schedule below.

It may not be possible to define all clash detection sets in detail when drafting the initial BIM Management Plan (BMP) at project inception. If they cannot be defined in any meaningful way, postpone inclusion of clash detection schedules until a later revision of the BMP.

## Clash detection schedule

Using the **Clash detection schedule**:

* Substitute the names of the pairs of disciplines to be coordinated for the headings ‘Discipline A’ and’ Discipline B’, e.g. ‘Structural’ and ‘Mechanical’. The abbreviations used for the Model Element Authors in the **LOD Table** can also be used for this purpose. Provided a legend for the abbreviations adjacent the schedules if considered necessary.
* In each row under these headings enter descriptions of specific Model Elements within the discipline models that are to be checked for clashes, e.g. Beams, Supply air (ducts), All.
* Copy the schedule for each Clash Set as required and renumber, e.g. Clash Set 2, Clash Ref. No. 2.01, 2.02, 2.03, etc.
* The Clash Ref. No. can be cited in reports, or the **Clash detection schedule** can be used for reporting purposes by adding additional columns for results and comments.

Show completion dates for each Clash Set on the project program to place them in context and facilitate reference.

|  | Clash Set 1 | | |
| --- | --- | --- | --- |
| **Clash Ref. No.** | Discipline A | vs | Discipline B |
| 1.01 |  |  |
| 1.02 |  |  |
| 1.03 |  |  |

## Clash detection colours

Requirement: Unless another system has been specified in the *Project BIM Brief* assign the following colours to Model Elements in models being combined for clash detection:

**Clash detection colours**

| **Element** | **Colour name**  **(ACI No.)\*** | | **Hexadecimal** | **RGB** | | | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **R** | **G** | **B** |
| Architecture |  | White (7) | #FFFFFF | 255 | 255 | 255 |  |
| Structural Steel |  | Maroon | #800000 | 128 | 0 | 0 |  |
| Concrete – load-bearing |  | Gray (ACI Light Gray 9) | #808080 | 128 | 128 | 128 |  |
| Concrete – non load-bearing |  | HTML Light Gray | #D3D3D3 | 211 | 211 | 211 |  |
| HVAC Equipment |  | Gold | #FFD700 | 255 | 215 | 0 |  |
| HVAC Supply Duct/Diffuser |  | Blue (5) | #0000FF | 0 | 0 | 255 |  |
| HVAC Return Duct/Diffuser |  | Magenta (6) | #FF0FF | 255 | 0 | 255 |  |
| HVAC pipe |  | Gold | #FFD700 | 255 | 215 | 0 |  |
| Electrical Equipment |  | Dark Yellow | #DAA520 | 218 | 165 | 32 | HTML Golden Rod shown |
| Electrical Conduits |  | Light Yellow | #FFFFE0 | 255 | 255 | 224 |  |
| Communications Conduit |  | Light Blue | #87CEFA | 135 | 206 | 250 | HTML Light Sky Blue shown |
| Electrical Cable Tray |  | Dark Orange | #FF8C00 | 255 | 140 | 0 |  |
| Electrical Lighting |  | Yellow (2) | #FFFF00 | 255 | 255 | 0 |  |
| Plumbing Water |  | Cyan (Turquoise 4) | #00FFFF | 0 | 255 | 255 | Same as HTML Aqua |
| Plumbing Sewer |  | Magenta (6) | #FF0FF | 255 | 0 | 255 |  |
| Plumbing Storm Drain |  | Green | #008000 | 0 | 128 | 0 |  |
| Fire Protection |  | Red (1) | #FF0000 | 255 | 0 | 0 |  |
| Pneumatic Tube |  | Dark Green | #006400 | 0 | 100 | 0 |  |
| Equipment (Medical) |  | Light Green | #90EE90 | 144 | 238 | 144 |  |
| Medical Gas |  | Light Green | #90EE90 | 144 | 238 | 144 |  |
| Security Systems |  | Orange | #FFA500 | 255 | 165 | 0 |  |
| Fire Alarm |  | Fuchsia | #FF00FF | 255 | 0 | 255 |  |

\* Names or numbers in brackets are AutoCAD Color Index (ACI) names and numbers,

i.e. 1: Red, 2: Yellow, 3: Green, 4: Turquoise, 5: Blue, 6: Magenta, 7: White, 9: Light Gray.

|  |  |
| --- | --- |
|  | ACI 8: Dark Gray (R65-G65-B65) does not appear in this table. |

# Information Technology

## Data sharing

System for hosting, transfer, and access of data between technical disciplines:

Describe the proposed system. Options include:

* Shared file server.
* Online collaboration system, e.g. Aconex, Buzzsaw, ProjectCentre.
* Web based file sharing system, e.g. Box, Dropbox.

Explain how the technical specification of the Information Technology (IT) system matches the size and complexity of the project.

Strategy for establishing and managing the Information Technology (IT) system:

Include who will be responsible for setting up and maintaining the IT system and providing access to the Design/Construction Team and various project stakeholders. Include proposed program.

Outline the strategy for model exchange and handover. Address issues such as permitted uses, access rights, security provisions, data backup and data restoration in the event of system failures.

## Project software

Software: The software to be used by each discipline for specific BIM uses on the project is as follows:

| **Discipline** | **BIM use** | **Software** | **Version** | **File format** |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Discipline**: e.g. architectural, structural, MEP.

**BIM use**: e.g. cost estimating, energy analysis. For a simpler table: delete the ‘Discipline’ column, change the heading ‘BIM use’ to ‘Model’ and enter model names in the cells, e.g. structural.

**Software**: Full proprietary name of software.

**Version**: e.g. build number, release number or date.

**File format**: The file format the discipline will use to exchange data with others, e.g. .bcfXML ([BIM Collaboration Format](http://www.buildingsmart-tech.org/specifications/bcf-releases) XML), .dgn (Microstation Design File), .dxf (Drawing Exchange Format), .ifc (Industry Foundation Classes), .nwc (Navisworks Model File), .pln (ArchiCAD Project File), .rvt (Revit Model File), .smc (Solibri Model Checker). Coordinate details with **DELIVERABLES**, **Deliverables formats**.

Refer to *Project BIM Brief* **Client-specified software file formats** for the client’s requirements. Also refer *National BIM Guide* clauses 9.1 and 10.1.

## Software compatibility testing

The purpose of this testing is to identify problems or limitations with compatibility before fully deploying software on the project. If the project team has used the same software together before without issues and consider testing unnecessary, they can choose to delete this clause and the testing schedule.

Requirement: Test BIM software that will exchange files on the project for compatibility and record the results in the table below.

| **Software application 1** | **Software application 2** | **Test date** | **Notes** |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Software application 1 and 2**: Name and version, or build number of software applications being tested for compatibility.

**Test date**: DD/MM/YY.

**Notes**: Results of testing (compatible or incompatible) and relevant comments such as qualifying remarks, limitations, testing protocols used.

Show compatibility testing dates on the project program to place them in context and facilitate reference.

If testing reveals incompatibilities, establish methods, including acceptable workarounds, for resolving them.

## Software updating

Strategy for updating software:

The strategy for updating software needs to be arrived at by consensus of the whole project team. Record the agreed strategy here, e.g. within 30 days of a new release by the vendors, for the duration of the project.

Outline procedures for coordinating updates throughout the project team, and members’ roles and responsibilities in this.

Outline procedures for ensuring the ongoing compatibility of the different software applications throughout the project.

Issues to be addressed:

* Backward compatibility of software releases.
* The upgrade process for archived files created with previous software releases.

## File exchange

File exchange strategy:

It is preferable to reference existing protocols or standards, e.g. BS 1192, nominated office manual, or agree amendments to them than writing protocols from scratch. Include procedures for archiving. Open standards such as IFC offer the advantage of greater longevity for this purpose.

Outline procedures for promptly resolving, with those affected, any exchange issues that might arise.

# Deliverables

## Deliverables schedule

Requirement: Provide deliverables as documented in the table below.

| **Item** | **Date/event/phase** | **Description** | **Features included** | **Resolved** | **Recipient** |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Item**: e.g. Progress Model 1, As-built model, Printed drawings, Physical model. Differentiate between Work in Progress (WIP), Shared or Published items. Refer to BS 1192 for an explanation of terms.

**Date/event/phase**: Date, program milestone, contractual event, project phase, e.g. DD/MM/YY, Practical Completion, Design Development.

**Description**: Additional information as required, e.g. information type codes from BS 1192, size, e.g. A1, scale, e.g. 1:100, and quantity, e.g. 6 copies.

**Features included**: e.g. load bearing structures only, spaces without furnishings, window construction details.

**Resolved**: Yes or No. This shows if an item is expected to be fully resolved at a given time and helps set priorities. Codes such as status codes from BS 1192 can also be used to indicate expectations.

**Recipient**: e.g. client, contractor.

Conform to the client’s submission instructions. Align with project program. See *National BIM Guide* clause 10.10.

Show delivery dates on the project program to place them in context and facilitate reference.

## Deliverables formats

Digital deliverable file formats:

In addition to the native file formats, provide deliverables in the formats specified in clause 2.5 of the *NATSPEC National BIM Guide*, e.g. List or schedule formats, including version, here. Coordinate with the software listed in **INFORMATION TECHNOLOGY, Project software** or simply reference the clause here.

Physical deliverables formats:

Specify format, e.g. printed drawings, physical models, size, e.g. A1, and quantity, e.g. 6 copies.

List or schedule items here or incorporate this information in the **Deliverables schedule**.

## Submission response period

Period in which the deliverables recipient has to advise the deliverables author/s of non-compliance with documented requirements:

Generally specify the number of working days. Alternatives include the time before a program date or event such as a meeting.

**REFERENCED DOCUMENTS**

**The following documents are incorporated into this BIM Management Plan by reference:**

National BIM Guide 2011 NATSPEC

Project BIM Brief 2016 NATSPEC

**The following documents are mentioned only in the *Guidance* text:**

ANZRS\_V3 2012 Australian and New Zealand Revit Standards

AIA Document E203 2013 American Institute of Architects Building Information Modeling and Digital Data Exhibit

AIA Document G201 2013 American Institute of Architects Project Digital Data Protocol Form

AIA Document G202 2013 American Institute of Architects Project Building Information Modeling Protocol Form

BCF 2014 BIM Collaboration Format. See [www.buildingsmart-tech.org/specifications/bcf-releases](http://www.buildingsmart-tech.org/specifications/bcf-releases)

BS 1192 2007 Collaborative production of architectural, engineering and construction information - Code of Practice

ISO 22263 2008 Organization of information about construction works - Framework for management of project information

LOD Specification 2015 BIMForum LOD Specification

NBP 001 2013 NATSPEC BIM Paper: LOD and BIM

NGDM 2009 National Guidelines for Digital Modelling by the Cooperative Research Centre (CRC) for Construction Innovation

UniFormat 2010 Building Element Classification System