 

v2.0 – March 2016

Construction BIM Management Plan

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

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| Revision | Date | Prepared by | Approved by | Comments |
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**NATSPEC BIM Management Plan Template**

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Bold text, e.g. **BIM 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’,* ‘*Guide*’ or *‘BMP’* means the *NATSPEC National BIM Guide*.

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**Comments**

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# Project Information

## General 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.

Align the items listed above with those in the *BIM Management Plan Executive Summary*.

# 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.

Align the items listed above with those in the *BIM Management Plan Executive Summary*.

# Collaboration Procedures

## Collaborative information management

Collaborative information management strategy:

Options include:

* Reference the *Collaborative Information Management Standard* included in the *Project BIM Brief* **Client-specified** **Reference Documents**; or
* reference *National BIM Guide* clauses **6.2 Collaboration Standards** and **6.3 Management of Standards**; and
* describe how the requirements set out in these clauses will be addressed.

Note any amendments to the collaboration procedures included in the *National BIM Guide* or the nominated *Collaborative Information Management Standard*. See *BIM Project Execution Planning Guide* Chapter 5, Part 6.

## Meeting schedule

Meetings will be held as shown in the table below.

Refer to the *BIM Management Plan Executive Summary* for details of the BIM meeting strategy.

| Meeting type | Frequency | Convenor | Participants |
| --- | --- | --- | --- |
| Client BIM briefing |  |  |  |
| Consultants BIM kick-off meeting |  |  |  |
| Modeller BIM Management Plan induction meeting |  |  |  |
| Model coordination meeting |  |  |  |
| Modelling progress review |  |  |  |
| BIM Management Plan review |  |  |  |

Include only meetings specifically about BIM-related matters. Coordinate with other project meetings scheduled elsewhere.

**Meeting**: Add or delete 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.

**Participants**: e.g. Project Architect, Design BIM Manager.

The date of the next meeting, its location, agenda, etc can all be agreed beforehand.

See *BIM Project Execution Planning Guide* Chapter 6 for suggested agendas for the initial series of meetings.

**Participants**: e.g. Project Architect, Design BIM Manager.

## Model coordination meetings

Model coordination meetings will be conducted by the following means. They correspond to those found in the NATSPEC National BIM Guide, and can be identified by the clause and subclause reference number.

| Required (Yes/No) | Clause No. | BIM coordination meetings conducted: | Provided by: |
| --- | --- | --- | --- |
|  | 6.5 a. | In a suitably equipped room at a location agreed by the BIM Team. |  |
|  | 6.5 b. | In a BIM Coordination Room. |  |
|  | 6.5 c. | Using web conferencing. |  |

Note any amendments to the wording of the *National BIM Guide* clauses noted in the table. Include the whole amended clause.

If coordination facilities are not required, i.e. if only the last option is selected, delete the **Coordination facilities** clause.

## Collaboration resources

The details of the project’s collaboration resources are documented in the table below.

| Collaboration resource | Details | Provided by: |
| --- | --- | --- |
| Wide Area Network (WAN) |  |  |
| Online project collaboration system |  |  |
| Online document management system |  |  |
| Common Data Environment (CDE) |  |  |

**Details:** e.g. Online document management system: Aconex

Common Data Environment (CDE): Refer to BS 1192 and PAS 1192-2 for details.

**Provided by:** e.g. Client.

If collaboration resources or their providers will change between design and construction phases, document the changes here, including responsibilities and procedures for migrating information from one system to another.

Refer to *BIM Management Plan Technical Appendix* for procedures for using resources.

## Coordination facilities

The details of the project’s coordination facilities are documented in the table below.

| Item | Details |
| --- | --- |
| Room |  |
| Equipment | Computer:  Software:  Display:  Smartboard/Interactive whiteboard: |

**Room:** e.g. address, location, room number, dimensions. Consider attaching a location plan and/or a room plan showing thelayout of equipment.

**Equipment:**

* **Computer:** Nominate manufacturer and model or provide specification, e.g. processor speed, hard drive size, RAM, graphics card, to run all software required and handle expected file sizes efficiently.
* **Software:** e.g. operating system, BIM authoring software, CAD software, model review software, e.g. Navisworks in versions necessary to open agreed file types.
* **Displays:** e.g. LED monitor, Ultra-short-throw projector. Nominate manufacturer and model or provide specification.
* **Smartboard/Interactive whiteboard:** Nominate manufacturer and model or provide specification. Include multi-colour pens for mark-ups.

If coordination facilitiesor their providers will change between design and construction phases, document the changes here, including responsibilities and procedures for relocation.

# Modelling Requirements

## Model geographic location

Requirement: Before modelling commences, the surveyor shall establish a Model Geo-reference Point. Refer *National BIM Guide* clause 10.3 Model Geographical Location. Align all models with the Model Geo-reference Point documented in the *Technical Appendix*.

A Model Geo-reference Point is a point used to associate locations in the model with those in the real world. It is a generic term for various terms used in different modelling applications, e.g. Project Base Point in Revit. Define the Model Geo-reference Point’s position relative to a physicalSurvey Point marked on site. 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.)

Strategy for aligning models with the Model Geo-reference Point:

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.

Site set-out point establishment:

Describe the strategy for communicating to the contractor the location and significance 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.

## Discipline modelling standards

Strategy for establishing modelling standards:

Describe the strategy for establishing modelling standards which are to be included in the *Technical Appendix*. 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. Consider how the *NATSPEC BIM Object/Element Matrix* is to be used.

## Model quality control

Strategy for establishing model quality control measures:

Describe the strategy for establishing model quality control measures including standards and procedures which are to be included in the *Technical Appendix*.

# Model Structure, Sharing and Development

## Project object library

Library establishment strategy:

If it is agreed a project library will be required, describe how it will be established and hosted, and who will be responsible for the tasks involved.

Library management strategy:

Describe how content will be added and managed and object quality maintained. Describe management responsibilities, access rights and permissions. Coordinate with protocols for users included under **Project object library** in the *Technical Appendix.*

## Model sharing protocols

Model sharing and federation protocol establishment:

Describe the strategy for establishing model sharing and federation protocols for the project which are to be included in the *Technical Appendix*.

## Design Model and Existing Conditions Model handover

Clauses included in this section assumes a Design Model and Existing Conditions Model will be provided. Existing Conditions Models include those describing existing site conditions, structures, services, buildings and temporary works. If non-BIM methods have been used to deliver the project during the design phase, relevant material from the *Design BIM Management Plan Template* can be used to document how these models can be developed from available information.

Agree what Design Model handovers will be required, e.g. to the construction team only, to the construction team and to the Client as a ‘For Record’ or ‘As Designed’ model at completion. If the latter case applies, coordinate and cross reference this entry with **Facilities Management/As-built models**.

Strategy for migrating the model(s) used for design/documentation to those used for construction:

Outline procedures for migration, including handover and sign-off protocols and identify those responsible. Address how this can be done effectively with the minimum effort.

Note any amendments to the procedures described in the Design BIM Management Plan.

Acceptance of Design Models and Existing Conditions Models for construction:

If the permissible uses of Design Models and Existing Conditions Models have been defined, confirm their acceptance and have all parties using the models sign-off on them.

If the permissible uses of Design Models and Existing Conditions Models have not been defined, assess the models and define limitations of their use. Summarise what uses they can, and cannot, be relied on for during the construction phases of the project. Reference contract documents as appropriate.

Agree any remedial measures needed to make them conform to the project’s modelling and quality standards.

## As-built Model handover

Strategy for updating and coordinating changes made during construction into the final BIM model deliverable files:

Describe who will be responsible and how the model is to be updated and coordinated. Outline procedures for capturing changes, incorporating them in the model and verifying their correctness, including sign-off protocols.

Coordinate and cross reference this entry with **Facilities Management/As-built models**.

Permissible uses of As-built Models:

Define the status of information in As-built Models. Summarise what it can, and cannot, be relied on for during the operational phases of the project, e.g. records only, facilities management. Reference contract documents as appropriate.

# Specific Uses of BIM

## Project requirements

The uses of BIM applicable to the project, including the scope of their application, are described in the following clauses. Relevant *NATSPEC National BIM Guide* (NBG) clause numbers are shown in brackets.

Edit the following Section to reflect the uses for BIM on the project recorded in the *Project BIM Brief* (Delete uses not listed there).They are listed in the same order as those in the *Project BIM Brief* and the relevant *National BIM Guide* (NBG) clause number is given for each.

Changing uses of BIM during the project changes the scope of service previously agreed and documented, and has contractual implications. To reduce the risk of disputes, manage changes in conformance with the terms and conditions of agreements and contracts and keep a cumulative record of agreed changes in a constant location, e.g. the *Project BIM Brief*. Agree where they will be recorded during the development of the *Project BIM Brief.*

Each edition of the *BIM Management Plan* should highlight changes agreed since the issue of the previous edition.

The *National Guidelines for Digital Modelling (NGDM)* and *BIM Project Execution Planning Guide (BPEPG)* could assist you to complete the prompts. References to relevant clauses are provided for this purpose.

## Modelling existing conditions (NBG clause 7.1.1)

Methods for modelling existing conditions:

e.g. Modelling based on laser scanned point cloud information. Specify the Levels of Development (LOD) of Model Elements required. See *BIMForum LOD Specification* for definitions of LOD for a number of model elements. Reference guidelines and/or standards to be adopted, e.g. GSA *BIM Guide 03,* ASTM E57 3D file format (Refer ASTM E2807). Refer to the *Project BIM Brief* for details of the extent of existing conditions to be modelled, what is to be modelled and the level of detail required. If not already defined in the *Project BIM Brief*, define them here.

See *National Guidelines for Digital Modelling* clause 3.1.1 and *BIM Project Execution Planning Guide* Appendix B, Item 25.

## Quantity take-off and cost planning – 5D (NBG clause 7.5)

Approach to quantity take-off and cost planning:

Define the scope of quantity take-off and cost planning, e.g. quantities and cost only, 5D.

Specify the element and/or Bill of Quantities classification system to be used, e.g. UniFormat, ACMM, ASMM, Quantity Surveyor Identifier (QSID). Nominate the software to be used.

See *National Guidelines for Digital Modelling* clause 3.5 and *BIM Project Execution Planning Guide* Appendix B, Item 24.

## 3D coordination (NBG clause 7.6.1)

Minimum requirements: Conform to the *NATSPEC National BIM Guide*.

Model coordination strategy:

Describe the overall approach to model coordination. A coordination strategy encompasses more than clash detection alone, e.g. agreeing general zones for services, structure and penetrations before detail design begins. Explain what you trying to achieve at each stage in the process to advance the development of the design. “Resolve problems, not clashes”.

If using BIM for clash detection, describe procedures including the obligations of those involved, workflows to be used, timing, reporting processes and formats, status tracking (New, Active, Resolved, etc), resolution and sign-off. It is preferable to reference existing standards and formats for these processes, e.g. [*BIM Collaboration Format*](http://www.buildingsmart-tech.org/specifications/bcf-releases) (BCF),

Refer to the **Clash detection schedule~~s~~** in the *Technical Appendix* which can be used to detail the order in which items are to be coordinated.

See *National Guidelines for Digital Modelling* clause 3.6 & Appendix 1 and *BIM Project Execution Planning Guide* Appendix B, Item 11.

Clash detection rules, sets and colours: Refer to *Technical Appendix.*

## Construction system design (NBG clause 7.6.2)

Strategy for construction system design:

Purpose of using BIM for this, e.g. for planning by the contractor only, for communicating with subcontractors to improve constructability, productivity or safety. Describe what will be modelled, e.g. temporary built works, scaffolding, including level of detail and method of communication.

See *National Guidelines for Digital Modelling* clause 3.6 and *BIM Project Execution Planning Guide* Appendix B, Item 8.

## Digital fabrication (NBG clause 7.6.3)

Strategy for digital fabrication:

Identify elements to be digitally fabricated. Specify documentation and file formats to enable digital fabrication. Outline collaboration arrangements between the contractor, fabricators, designers and modellers to maximise its value.

See *National Guidelines for Digital Modelling* clause 3.6 and *BIM Project Execution Planning Guide* Appendix B, Item 9.

## Planning construction scheduling and sequencing – 4D (NBG clause 7.6.4)

Strategy for planning construction scheduling and sequencing:

Explain the purpose of using BIM for this, e.g. for planning by the contractor only, for building occupants. 4D can even be used for conceptual design to show massing during the progressive development of a multi-stage project. Describe what will be modelled, e.g. temporary built works, scaffolding, including level of detail and method of communication, e.g. animated models. Detail who will be given 4D information. Describe the method of linking the model to the project program. Reference guidelines to be adopted, e.g. *GSA BIM Guide 04*. See *National Guidelines for Digital Modelling* clause 3.6 and *BIM Project Execution Planning Guide* Appendix B, Item 23.

## Communication of construction scheduling and sequencing – 4D (NBG clause 7.6.5)

Strategy for communication of construction scheduling and sequencing:

See *Guidance* for previous item.

## Site utilisation planning (NBG clause 7.6.6)

Strategy for planning site utilisation:

Explain the purpose of using BIM for this, e.g. for planning by the contractor only, for communicating with site personnel to improve productivity or safety. Describe what will be modelled, including level of detail and method of communication. Outline collaboration arrangements between the contractor, site personnel, designers and modellers to maximise its value.

See *National Guidelines for Digital Modelling* clause 3.6 and *BIM Project Execution Planning Guide* Appendix B, Item 7.

## Lift planning (NBG clause 7.6.7)

Strategy for lift/erection planning:

Note: This describes using models in the planning of lifting and erection operations to improve on-site efficiency and safety.

Describe what will be modelled, including level of detail and method of communication. Outline collaboration arrangements between the engineer, contractor and site personnel to maximise its value.

See *National Guidelines for Digital Modelling* clause 3.6 and *BIM Project Execution Planning Guide* Appendix B, Item 10.

## Facilities Management/As-built models (NBG clauses 7.7.1 & 7.7.2)

Strategy for integration of Facility Management information:

**As-built models**

Note: As-built models do not necessarily contain information suitable for FM purposes.

Define the type of As-Built model required. For example:

* As documented plus approved changes during construction.
* As surveyed (on site by scanning, etc.).
* As commissioned. (One of the above plus commissioning data).

Define the data required for FM purposes. *GSA BIM Guide 08* defines model types and three scopes of data (Tier 1, 2 and 3).

State the purpose for which the model is to be used and define the dimensional accuracy required. See *USIBD Level of Accuracy (LOA) Specification Guide.*

**FM data**

The strategy for the collection of FM data at construction stage will be shaped by decisions made earlier in the project, e.g.:

* **Scenario 1 – FM information has been provided as specified:** In this instance have the client confirm that this still meets their requirements. If not, determine what their revised requirements are and agree an appropriate response.
* **Scenario 2 – FM information, if provided is incomplete, poorly structured or not in a preferred format:** In this instance, establish with the client how available information can be consolidated, updated, corrected and supplemented to meet their requirements.

Whichever approach is decided it should be agreed and documented.

Describe the standard or format for integrating FM information, e.g. Construction Operations Building Information Exchange (COBie). Describe the method of recording and exchanging information, e.g. spreadsheets, COBie compliant software. Describe who will be responsible and outline procedures for capturing and recording information and verifying its correctness, including sign-off protocols. *The COBie Guide* specifies common requirements applicable to all projects using COBie and an appendix for documenting client-specific requirements.

See *National Guidelines for Digital Modelling* clause 3.7 and *BIM Project Execution Planning Guide* Appendix B, Items 1 – 4 and 6.

**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:**

ACMM Various Australian Institute of Quantity Surveyors Australian Cost Management Manual

ANZRS\_V3 2012 Australian and New Zealand Revit Standards

ASMM Ed. 5 1990 Australian Institute of Quantity Surveyors Australian Standard Method of Measurement

ASTM E2807 2011 Standard Specification for 3D Imaging Data Exchange

AIQS Book of Areas Australian Institute of Quantity Surveyors Book of Areas

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

BPEPG 2009 BIM Project Execution Planning Guide by the Computer Integrated Construction Research Program (CIC) at the Pennsylvania State University (PSU)

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

The COBie Guide 2013 The Constructions Operations Building Information Exchange (COBie) Guide v05

GSA BIM Guide 03 2009 3D Laser Scanning v1.0

GSA BIM Guide 04 2009 4D Phasing v1.0

GSA BIM Guide 08 2011 Facility Management v1.0

LOA Specification 2014 U.S. Institute of Building Documentation (USIBD) Level of Accuracy (LOA) Specification Guide

LOD Specification 2015 BIMForum LOD Specification

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

PAS 1192-2 2013 Specification for information management for the capital/delivery phase of construction projects using building information modelling

UniFormat 2010 Building Element Classification System