
APPENDIX J

BIM EXECUTION

PLAN

TEMPLATE

DIGITAL GUIDANCE SUITE:
AOTEAROA | NEW ZEALAND 2023



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Guidance notes throughout this document are written in **red text**, these will need to be either revised or deleted prior to issue.

INTRODUCTION

To support BIM implementation on the **(project name)** project, **(consultant or contractor name)**, in conjunction with the **design and/or construction** team stakeholders, has developed the following BIM Execution Plan.

This BIM Execution Plan defines who is responsible for what in the BIM process, when in the process they are responsible for it, and how they will execute it. This BIM Execution Plan has been structured to provide a framework for the creation and progression of Building Information Models to meet clients' information requirements for the project and defines how information will be produced and managed during design delivery to support the following project outcomes:

Design:

- A reduction in errors and omissions during design through improved coordination
- Enhanced stakeholder engagement using static and interactive visualisations
- An accurate integration of the new design with the existing facility
- A consistent platform to house key information to be transferred into O&M
- Improved cost certainty during design
- Improved Safety in Design through using the 3D model to inform the SiD process

Construction:

- Reduced defects captured early during construction and commissioning phases
- All as-built information is provided shortly after Practical Completion (i.e. not delayed)
- Information captured is relevant to operational needs

Operation:

- Asset data made available at handover
- Accurate as-built documentation, including on location of critical assets

This BEP template can be used as a framework for the development of a BEP for specific construction project/s.

The BIM execution plan should be developed with reference to the [New Zealand BIM Handbook](#).

1— GENERAL

Project Information

PROJECT NAME	
PROJECT OWNER	
PROJECT ADDRESS/LOCATION	
PROJECT REFERENCE	

Key Project Contacts

ROLE	COMPANY NAME	CONTACT NAME	EMAIL
CLIENT REPRESENTATIVE			
PROJECT MANAGER			
QUANTITY SURVEYOR			
BIM MANAGER			
ARCHITECT			
ARCHITECT BIM LEAD			
STRUCTURAL ENGINEER			
STRUCTURAL BIM ENGINEER			
OTHER DESIGN LEADS			
OTHER BIM LEADS			

2— BIM VISION AND OBJECTIVES

BIM USES AND RESPONSIBLE PARTIES

The following BIM uses have been identified by (client, consultant, etc.) as being able to support the achievement of the project outcomes defined at the start of this document. The table defines the desired benefits of BIM for this project, how the benefits are to be achieved, the applicable BIM uses, and the party responsible.

BIM BENEFIT	ACHIEVED HOW?	BIM USES	RESPONSIBLE PARTY
Design Transparency: Provide a high degree of transparency of the overall design, improving coordination between stakeholders and improving delivery regarding time, cost, and quality. Supporting the delivery of briefed requirements.	All relevant data is contained within a Common Data Environment (CDE) for all key design information. The delivery team meets regularly to review and solve issues using BIM processes and tools.		
Design Quality: Improve design quality and reduce clashes and coordination issues prior to construction to reduce the number of Requests for Information (RFIs) and minimise the number of design-related issues.	The design geometry and data viewed through BIM tools are delivered in a consistent basis throughout the project, becoming the key source of design information for the wider project team. Where applicable, drawings are derived from 3D models. Reduction in number of site RFIs or delays caused by poor design coordination. Clashes on site minimised or eliminated by early identification and mitigation prior to Issued for Construction (IFC) documentation.		
Procurement & Construction: Improve the performance in procurement and construction through BIM processes.	Procurement of subcontractors is improved by issuing and demonstrating the scope of works through 3D models and extracts from BIM, including for quantity and cost estimations. Key temporary and permanent works planning and coordination issues on site can be identified and mitigated early for a more efficient construction process.		

BIM BENEFIT	ACHIEVED HOW?	BIM USES	RESPONSIBLE PARTY
Digitise the handover and completions process: Use BIM processes to facilitate the transfer of design and construction data to the Asset Management System (AMS).	Successful transfer of asset information to (client) at handover stage.		

3— ROLES AND RESPONSIBILITIES

PROPOSED BIM ORGANISATIONAL CHART

Insert org. chart as applicable to the project. Refer to the NZ BIM Handbook for an overarching example.

RACI MATRIX

Our proposed roles and responsibilities to meet the requirements of the EIR are detailed in the RACI matrix below. Where there is shared accountability or responsibility, this relates to decisions that require multiple layers of approval, such as: a design coordination issue that is picked up by the BIM manager that also requires approval from the engineering lead or the design manager. It is important that BIM is fully embedded in the design team, and this is why some items show shared responsibility and/or accountability.

Update the RACI Matrix below to be specific to the project.

FUNCTIONS	ACTIVITIES & DELIVERABLES	CLIENT	CLIENT BIM ADVISOR (Where applicable)	BIM MANAGER (Design/ Construction)	DISCIPLINE BIM LEAD	MODEL ELEMENT AUTHOR
Project Information Management	Develop the EIR and the end uses of information	A/R	R	C	I	I
	Specify the Organisation Information Requirements and AIR	A/R	R	C	I	I
	Confirm Asset Information deliverables	A	R	C	C	I
	Confirm GIS deliverables	A	R	C	I	I
	Confirm information standards and procedures	A	R	C	C	I
	Set the requirements for the Common Data Environment CDE	A	R	R/C	C	I
	Set the requirements for project deliverables	A	R	R/C	C	I
	Lead BIM delivery on the project	C	A	R	R/C	R/C

KEY	R - Responsible for doing the activity	A - Accountable for activity completion	C - Consulted during activity	I - Informed following activity completion
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FUNCTIONS	ACTIVITIES & DELIVERABLES	CLIENT	CLIENT BIM ADVISOR (Where applicable)	BIM MANAGER (Design/ Construction)	DISCIPLINE BIM LEAD	MODEL ELEMENT AUTHOR
BIM Management, Coordination	Lead the development and updates of the Project-Specific BIM Execution Plan	A/R	R	C	I	I
	Develop information for procurement activities	A/R	R	C	I	I
	Facilitating the use of the project BIM Execution Plan	A	R	C	C	I
	Setup of Survey Control Model	A	R	C	I	I
	Coordination of federated models	A	R	C	C	I
	Lead model auditing and clash management process through design and construction	A	R	R/C	C	I
	Manage the coordination of as built/record modelling through handover	A	R	R/C	C	I
	Set up and manage the ongoing use of issue tracking tools in the BIM environment	C	A	R	R/C	R/C
Model Development and Design Management	Developing model files in accordance with the project BIM Execution Plan	I	C	C	A	R
	Modelling elements at the appropriate Level of Development as defined in the Project BIM Execution Plan	I	I	I	A	R
	Developing and validating as-built record model files in accordance with the project BIM Execution Plan	I	C	C	A	R
	Validating Levels of Model Development at each project design stage	I	C	C	A	R
	Communicating issues to Model Element Authors and leading issue resolution	I	I	A/R	C	C
	Implementing discipline-specific coordination and clash detection procedures	I	I	I	A	R
	Model transfer and version control	I	C/R	A	R	R
Collaboration and General Communication	Establish the Common Data Environment	I	A	R	C	C
	Set up and drive a culture of collaboration when using BIM processes and tools on the project	I	I	A/R	R/C	C
	Facilitate BIM meetings and workshops as required during the project	C	C	A/R	C	C
	Clearly communicate information to the BIM team, Project Managers and the Design Leads as required	I	I	A/R	C	C
	Communicate design coordination issues to project stakeholders	I	I	A/R	R/C	I
	Communicate as-built/record modelling issues and progress to project stakeholders.	A	R	C	I	I
Key Meetings	BIM Requirements Kick-Off	C	C	A/R	R/C	C
	BIM Execution Plan Workshop	C	C	A/R	R/C	C
	Internal Model Coordination	I	I	A/R	A/R	C
	BIM Coordination Review	I	I	A/R	R	C
	Issue Tracking Software workshop	I	I	A/R	R	C

KEY	R - Responsible for doing the activity	A - Accountable for activity completion	C - Consulted during activity	I - Informed following activity completion
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4— INFORMATION REQUIREMENTS

ASSET INFORMATION REQUIREMENTS

Insert the asset information requirements that will be delivered as part of the project.
Refer to the NZ BIM Handbook for further information

PROJECT INFORMATION REQUIREMENTS

Detail project information requirements as applicable to the project.

Concept Design

#	INFORMATION PURPOSE	3D MODEL	VISUALISATION	2D.PDF DRAWINGS/ SKETCH	2D.DWF DRAWING FILES	TABULAR DATA (.XML)	DIGITAL DOCUMENTATION
1	Concept design optioneering						
2	Concept design cost estimate						
3	Client review and concept design approval						
4							
5							

Preliminary Design

#	INFORMATION PURPOSE	3D MODEL	VISUALISATION	2D.PDF DRAWINGS/ SKETCH	2D.DWF DRAWING FILES	TABULAR DATA (.XML)	DIGITAL DOCUMENTATION
1	Preliminary design coordination						
2	Preliminary design cost estimate						
3	Client review and preliminary design approval						
4							
5							

Developed Design

#	INFORMATION PURPOSE	3D MODEL	VISUALISATION	2D.PDF DRAWINGS/ SKETCH	2D.DWF DRAWING FILES	TABULAR DATA (.XML)	DIGITAL DOCUMENTATION
1	Safety in Design review						
2	Developed design coordination						
3	Developed design cost estimate						
4	Client review and Developed design approval						
5							

Detailed Design

#	INFORMATION PURPOSE	3D MODEL	VISUALISATION	2D.PDF DRAWINGS/ SKETCH	2D.DWF DRAWING FILES	TABULAR DATA (.XML)	DIGITAL DOCUMENTATION
1	Safety in Design review						
2	Detailed design coordination						
3	Detailed design cost estimate						
4	Client review and Detailed design approval						
5							

Construction/Fabrication Design

#	INFORMATION PURPOSE	3D MODEL	VISUALISATION	2D.PDF DRAWINGS/ SKETCH	2D.DWF DRAWING FILES	TABULAR DATA (.XML)	DIGITAL DOCUMENTATION
1	Vendor integration						
2	Construction/ Fabrication design coordination						
3	On-site Safety in Design review						
4							
5							

Handover

#	INFORMATION PURPOSE	3D MODEL	VISUALISATION	2D.PDF DRAWINGS/ SKETCH	2D.DWF DRAWING FILES	TABULAR DATA (.XML)	DIGITAL DOCUMENTATION
1	Asset Information System population						
2	O&M integration						
3	Commissioning						
4	Client review and Developed design approval						
5							

GRAPHICAL INFORMATION REQUIREMENTS (LOD)

Typically, the following Levels of Development will apply to the project at each phase in accordance with the ticks in the table below. For further detail on the Levels of Development for specific elements, refer to [Appendix 'X'](#). (Insert appendix as required)

DESIGN										CONSTRUCTION				OPERATION	
Concept Design		Prelim. Design		Developed Design		Detailed Design		Construction Issue		Shop Drawings and Fabrication Modelling		As-built Drawings and Modelling		Asset/Facilities Management Model	
100	✓	100	✓	100	-	100	-	100	-	100	-	100	-	100	-
200	-	200	✓	200	✓	200	-	200	-	200	-	200	-	200	-
300	-	300	-	300	✓	300	✓	300	✓	300	-	300	-	300	✓
350	-	350	-	350	-	350	-	350	-	350	✓	350	✓	350	✓
400	-	400	-	400	-	400	-	400	-	400	✓	400	✓	400	✓

INFORMATION SECURITY

This section should contain specific client or project requirements for information security. It could include:

- Details of any specific security briefings that are required to be completed
- Access rights for information stored in the CDE
- The use of a cloud-hosted CDE platform vs an on-premises CDE platform

The use of the hyphen character should be avoided as it can cause errors when the name is used within formulas, for example calculating quantities or bills of materials, due to the hyphen also representing the mathematical subtraction symbol.

MODEL NAMING CONVENTION

To ensure consistency, model file naming will be as follows:

Insert client requirements if applicable

The naming convention is required to be followed by the prospective design consultants and/or construction contractor as it will allow for easy identification of the authoring discipline, the authoring party, and the asset to which the information relates.

6— INFORMATION DELIVERY

SCHEDULE OF MILESTONE INFORMATION EXCHANGES AND DELIVERABLES

The following table details the requirements for key project milestone information exchanges and deliverables.

PROJECT STAGE	BIM MILESTONE	DATE	MILESTONE EXCHANGE/ DELIVERABLES
Concept Design	Client review and concept design approval	Refer to Project Programme	Concept design sketches
Prelim. Design	Client review and preliminary design approval		Preliminary design drawings Preliminary design models Schedules
Developed Design	Client review and developed design approval		Developed design drawings Developed design models Schedules
Detailed Design	Issued for construction		Detailed design drawings Detailed design models Schedules
Fabrication	Shop drawings and fabrication		Fabrication drawings Fabrication models Schedules

SCHEDULE OF DESIGN DEVELOPMENT INFORMATION EXCHANGE FORMATS

The following table details the file format for model exchanges to support ongoing design development and coordination. Design models are to be issued as (file format) format so that collaboration can occur in **(collaboration platform)**.

PURPOSE/USE	DETAILS	FORMAT
Design Models	(Software platform) for design authoring and ongoing coordination purposes	
Federated (Coordination) Model	(Software platform) for detailed coordination and clash-detection purposes	
Documents	Model Description Documents, Model Audit Reports, Model Review Checklists	

DESIGN DEVELOPMENT BIM EXCHANGE FREQUENCY

Models are to be shared weekly on **(day and time)** via the project CDE. The following table details the frequency of model exchanges to support ongoing design development and coordination

DISCIPLINE	CONCEPT DESIGN	PRELIMINARY/ DEVELOPED DESIGN	DETAILED DESIGN	CONSTRUCTION
Architectural	Fill column as needed	Fill column as needed	Fill column as needed	Fill column as needed
Structure	-	-	-	-
Mechanical	-	-	-	-
Hydraulic	-	-	-	-
Electrical	-	-	-	-
Fire	-	-	-	-
Fabrication	-	-	-	-

7— TECHNICAL - COLLABORATION

COMMON DATA ENVIRONMENT

Insert the CDE requirements, including workflow and access, that will be adopted during the delivery of the project. Refer to the NZ BIM Handbook for further information.

SCHEDULE OF BIM MEETINGS

We have identified the following BIM meetings for the project.

MEETING TYPE	FACILITATOR	PROJECT STAGE	FREQUENCY	REQUIRED ATTENDEES
KICK-OFF MEETING	BIM Manager	Project Kick-off	One off	All
ONGOING BIM EXECUTION PLANNING	BIM Manager	As required	As required	BIM Manager, BIM Coordinator, Discipline BIM Leads
3D DESIGN REVIEWS	Design Lead, Discipline BIM Lead	Preliminary, HAZOP and Detailed Design	Aligned with design team meetings	Full design team
BIM COORDINATION MEETING (VISUAL)	BIM Manager	Preliminary Design	TBC	Full design team
BIM COORDINATION MEETINGS	BIM Manager	Detailed Design	Fortnightly	Full design team

8— TECHNICAL - MODELLING

SOFTWARE VERSIONS

The software versions that will be used for the duration of the project are as follows:

SOFTWARE	VERSION	DISCIPLINES INVOLVED

SPECIFIC SOFTWARE REQUIREMENTS

Insert specific software requirements that will be adopted during the delivery of the project.

FEDERATED MODEL STRUCTURE

Insert a diagram showing the federated model structure that will be adopted during the delivery of the project. Refer to the NZ BIM Handbook for an example.

MEASUREMENT AND COORDINATE SYSTEM

Insert details of the coordinate system and applicable survey control points that will be adopted during the delivery of the project.

MODELLING FOR COST ESTIMATION

Information exported from the design intent models will be provided to the quantity surveyor to support the traditional estimation process when required, drawings will take precedence for the purpose of costing.

The intention of this approach is to add value through the provision of additional information to support the estimate.

To schedule as much information as possible from the models, in addition to following the NZIQS Australia and New Zealand BIM Best Practice Guidelines for modelling, the following are required:

- Staging to be demarked in model objects e.g. demolished, new build, existing
- Typical details/bays/typical sections (items replicated but modelled in only one area) are to be excluded from the export
- The cost manager is to be included in all review processes throughout design progression
- Items such as connections/walls to be demarked with 2D detail references
- Any placeholder items to have indicative specifications and sizes included in the object
- 2D sheets linked to the 3D model
- Any major changes to the design are to be made in the model rather than solely on the 2D drawings

QUANTITY SURVEYOR RESPONSIBILITIES

The quantity surveyor is ultimately responsible for the accuracy of the estimate, including making allowance for all non-modelled construction costs such as (but not limited to) design complexity, constructability, material supply, waste, and non-modelled specified items. The quantity surveyor is also responsible for all costs and other allowances such as (but not limited to) preliminaries, margins, escalation, procurement, contingencies, consents, consultant costs and other client-side costs.

MODEL QUALITY CONTROL CHECKS

The following checks should be performed to assure quality within models and information, eliminate errors, and achieve desired project outcomes.

These checks are intended to be carried out internally by the discipline BIM lead.

CHECK	DEFINITION	RESPONSIBLE PARTIES	PROJECT STAGE	FREQUENCY
Visual check	See that there are no unintended model components, and the design intent has been followed			
Interference check	Detect problems in the disciplines model, where two components clash, including soft and hard			
Model integrity checks	Ensure integrity of the model aligns with BIM uses and a client’s BIM-specific modelling and documentation requirements and standards, as set out in the model standards			
Design review	Ensure ongoing development of the model aligns with the client objectives			
Authoring software warnings				

MODEL EXCLUSIONS

Insert details of any model exclusions.

9— TECHNICAL - MODEL COORDINATION

MODEL COORDINATION STRATEGY

Insert details of the project model-coordination and clash-detection strategy, including workflow diagrams.

INTERNAL COORDINATION REVIEW

Each discipline will be responsible for implementing an internal coordination review system and carrying out self-reviews at regular intervals as appropriate for the discipline and the design effort being expended at that project stage.

Coordination issues identified that require input from other parties will be raised at the following design meeting at the latest. However, it is considered preferable to maintain open lines of communication and resolve issues directly via phone, email, or web conferencing. The design meeting can then be used to inform the wider design team of the proposed solution and ensure there are no unforeseen issues.

Issues identified because of internal coordination reviews may be entered into issue-tracking software as user-generated issues, if not already present.

COORDINATION MEETINGS

The following table details the coordination meetings across each stage of the project.

MEETING TYPE	FACILITATOR	PROJECT STAGE	FREQUENCY	REQUIRED ATTENDEES
Fill column as required	Fill column as required	Fill column as required	Fill column as required	Fill column as required

MODEL COORDINATION MATRIX

Insert details of the model coordination matrix and tolerances.

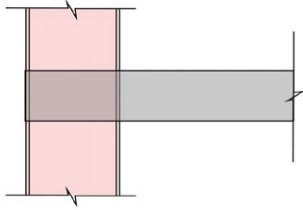
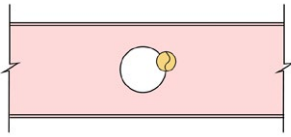
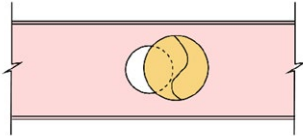
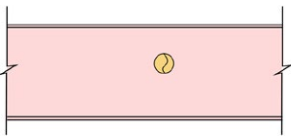
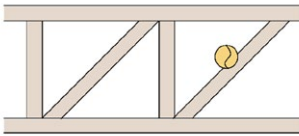
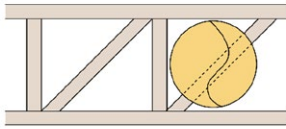
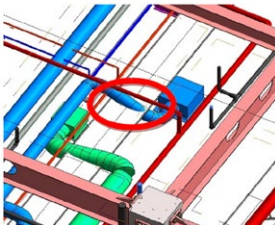
Refer to [Appendix B](#) of the NZ BIM Handbook for further information.

CLASH TYPES

Insert details of what 'clashes' are real clashes and what will be 'ignored'.

A building's example is shown below.

The following table outlines the proposed approach to the identification of 'clashes' and whether these items are coordinated.

DESCRIPTION	CLASH EXAMPLE	CONSIDERED COORDINATED?
Structural Column and Floor		Yes (modelling artifact - not a real clash)
Structural beam penetration and pipework	 Pipe fits penetration but not aligned in model	Yes (can be resolved during the shop drawing process or on site)
	 Pipe does not fit penetration	No (cannot be resolved during the shop drawing process or on site)
	 No penetration provided (no detail in 2D details either)	No
Truss member and services	 Duct clashes with truss diagonal; however, spatially fits	Yes (can be resolved during the shop drawing process or on site)
	 Duct does not fit truss member	No (cannot be resolved during the shop drawing process or on site)
Clash of flexible duct and tray		Yes (not considered a clash as the flexible duct can be moved on site)

ISSUE MANAGEMENT AND TRACKING

Insert details of the process for tracking and resolving BIM issues. Consider including:

- Software used
- Issue priority rating
- Issue filtering

10— APPENDICES

Consider including the following as appendices to the BIM Execution Plan.

- **Level of Development** – detailing the model-element authors and levels of development for the project
- **Issue Management** – detailing the workflow for the issue-management process
- **CDE Workflow** – detailing the workflow for using the Common Data Environment
- **Master Information Delivery Plan** – detailing the project-wide BIM deliverables list, responsible parties, and deadlines
- **Shared Resources** – detailing which shared resources are available and applicable to the project
- **Clash Matrix** – detailing which elements will be coordinated with one another, the priority of the issues, and the tolerances between different element types/disciplines

NOVEMBER 2023

The New Zealand BIM handbook.

This document is one of a suite of documents forming the New Zealand BIM Handbook. You can download or view the remaining documents here:

<http://www.biminnz.co.nz/nz-bim-handbook>