Hong Kong Housing Authority

Project-specific Building Information Modelling (BIM) Execution Plan (PxP)
For
[Insert Project Name]
[Contract No.]

Date: YYYY-MMM-DD
Ver. XX.X

Purple italic formatting contains instructions on how to fill out this PxP template.

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Guidance Notes:

Note 1 - Delete all notes in purple and italics.

Note 2 - To suit the project specific situation and requirements, author of this PxP may amend or adjust as appropriate the text contained between two brackets [ ].

Document Version

Version	Issue Date		Prepared By	Checked By	Approved By	Remarks
0	*[DD-MM-YYYY]*	Name				
		Signature				
1	*[DD-MM-YYYY]*	Name				
		Signature				
2	*[DD-MM-YYYY]*	Name				
		Signature				

Abbreviations

Abbreviation	Definition
4D	4-dimensional Construction Sequence Simulation
BIM	Building Information Modelling
BIMSP	BIM Services Provider
BIMST	BIM Service Team (of HA)
BIM SOW	BIM Scope of Works
CDE	Common Data Environment: agreed source of information for any given project or asset, for collecting, managing and disseminating each information container through a managed process. A CDE workflow describes the processes to be used and a CDE solution can provide the technology to support those processes. (Source: ISO 19650-1:2018)
CIC	Construction Industry Council
DCD	Development and Construction Division
EMD	Estate Management Division
GIS	Geographic Information System
HA	Hong Kong Housing Authority
HABIMSG	Housing Authority Building Information Modelling Standards and Guidelines
HKSAR	Hong Kong Special Administrative Region of the People's Republic of China
ICU	Independent Checking Unit (of HA)
LOD	Level of Development
LOD-G	Level of Graphics
LOD-I	Level of Information
MEP	Mechanical, Electrical and Plumbing
N/A	Not Applicable
PxP	Project-specific BIM Execution Plan
UU	Underground Utilities
WIP	Work in Progress

1 Introduction

This document, the Project-specific Building Information Modelling (BIM) Execution Plan (PxP), establishes the processes, workflow, BIM standard including minimum Levels of Development (LOD), Scope, Deliverable, tentative working programme and uses of BIM for the captioned project.

This PxP is applicable to *[Planning, Design, Construction, As-built, and/or Operations]* stages.

2 Project Information

2.1 General

Depending on project status, delete inapplicable rows as necessary.

End Client (Appointing Party)	Hong Kong Housing Authority
Client	*[Fill in if applicable, e.g. when author of this PxP is under a main contractor]*
Project Name	*[Input Project Name]*
Project Code	*[Input Project Code]*
Phase No.	*[Fill in if applicable]*
Development Type	*[Public Rental Housing, Subsidised-Sale Flats]*
Project Location	*[Input Project Address]*
Appointed Parties	
Project Manager (Lead Appointed Party)	*[Name of Project Manager]*
Design Architect	*[Name of Project Architect]*
Civil Engineer	*[Name of Project Civil Engineer]*
Structural Engineer	*[Name of Project Structural Engineer]*
Geotechnical Engineer	*[Name of Project Geotechnical Engineer]*
Building Services Engineer	*[Name of Project Building Services Engineer]*
Landscape Architect	*[Name of Landscape Architect]*
Quantity Surveyor	*[Name of Quantity Surveyor]*
BIM Consultant	*[Name of BIM Services Providers (BIMSPs)]*
Main Contractor	*[Name of Main Contractor]*
Project Description	*[Input Project Description]*

2.2 BIM Goals

State BIM Goals and descriptions. BIM Goals shall not deviate from project Agreement/Contract or its appendices.

The adoption of BIM technology aims to facilitate the *[Site Inception & Acceptance, Feasibility Study & Conceptual Layout, Master Layout & Project Budget, Detailed Design & Spec., Tender, Construction (Foundation, Demolition, Site Formation), Construction (Building)]* stage. The technology will be fully utilized in order to achieve the following objectives:

No.	BIM Goal	Description
1	*[Reduce Risks]*	*[Reducing risks and costs of projects as well as enhancing reliability and productivity throughout the project life-cycle from planning, design and construction to operation and maintenance stages]*
2	*[Enhance Coordination]*	*[Enhancing and improving the coordination amongst various stakeholders during the investigation, design, construction and operation phases of the Assignment; and]*
3	*[Constructability]*	*[Demonstration of constructability of the design]*
4	*[Input other BIM Goals if applicable]*	*[E.g. Improve Visualisation, Enable Digital Fabrication, Conduct BIM Quantity Take-off Trials, Conduct Asset Information Model Trials, etc.]*

2.3 BIM Scope of Works (SOW) and Services

Summarise BIM SOW as compliant with Agreement/ Contract.

The *[Designer/ Contractor]* shall adopt BIM to enhance and improve the design and coordination amongst various stakeholders for the *[Services / Works]*. The *[Designer/ Contractor]* shall ensure the *[design/ construction/ as-built]* model with accurate information and drawings shall be submitted to *[PTs/ CM]* for acceptance.

The *[design/ construction]* BIM shall show elements in a true representation of the actual conditions for checking critical dimensions for *[design/ construction]*. It shall be used to ensure that there are *[no spatial conflicts such as head-room problems to ensure constructability]*.

The *[Designer/ Contractor]* shall cooperate, work closely with and the stakeholders to ensure that the Works are carried out in full compliance with the *[scope of works/ contract documents]*. The *[Designer/ Contractor]* shall ensure that the BIM requirements are achieved and that the BIM are submitted on time. The *[Designer/ Contractor]* is required to resolve any modelling issues during the *[design/ construction]* stage and to ensure that the BIM are up-to-date and accurate.

The Contractor shall use the BIM to develop the Contractor's design items in accordance with Preliminaries, including elements being manufactured for the Works. The Contractor shall also incorporate all design changes instructed by the CM into the BIM.

3 BIM Uses

3.1 BIM Uses and Tasks

Fill in Level 1 and Level 2 tables per the latest version of HABIMSG for both HA portion and government entrusted portion. Attach the tables as appendices.

Refer to *[Appendix I]* for Level 1 BIM Use Overview to BIM Uses definition and adoption by work stages.
Refer to *[Appendix II]* for Level 2 BIM Application Detail as quick reference.

4 BIM Management

4.1 Contact List

The contact point from design team would also serve as Disciplinary BIM Coordinator. At least three contacts shall be provided for BIM Consultant team (BIMSP): BIM Director, BIM Team Leader, BIM Modeller(s).

Role	Entity	Name	Position	Email	Tel. No.
Architectural					
Structural Engineering					
Building Services Engineering					
Landscape					
Civil Engineering					
Geotechnical Engineering					
Quantity Surveying					
Contractor *[Remove for Design PxP]*					
BIM Consultant *[Input BIMSP, if any]*			BIM Director		
			BIM Team Leader		
			BIM Modeller		

4.2 BIM Team Resources, Competency and Training

Provide table of planned training sessions, topics and trainer(s).
No. of session shall match Preliminaries Clauses.

Session	Category	Topic	Description	Duration
1.	*[e.g. Architectural Modelling and Drawing Production]*	*[e.g. Project start-up]*	*[e.g. How to use HA BIM Template to start a project; …]*	*[e.g. 4 hours]*
2.	*[e.g. Structural Modelling and Drawing Generation]*	*[e.g. Individual Discipline Input]*		*[e.g. 4 hours]*
3.	*[e.g. Collaboration with other disciplines]*	*[e.g. Interdisciplinary Coordination]*		*[e.g. 4 hours]*

4.3 BIM Personnel Change Management

State protocols for informing End Client, Client and PT when BIM personnel changes occur, including minimum notification lead time.

4.4 Standards Referenced

All projects shall prioritise its reference to the latest version of HABIMSG. The version of HABIMSG to be used as a baseline reference shall be the version in force at the time of tender out of the Consultancy Agreement or Works Contract. Exceptions and reasons shall be stated with other standards referenced listed below.

No.	Standard Name	Publisher	Year	Version	Justification for Referencing This Standard
1	Housing Authority BIM Standards and Guidelines	Housing Authority	*[2021]*	*[V2.1]*	Prevailing standard as stipulated by contract
2	Guidelines for using Building Information Modelling in General Building Plans Submission.	Buildings Department	*[2019]*	*[-]*	Prevailing standard as stipulated by contract

4.5 Information Management Assignment Matrix

Below is a matrix derived from ISO 19650's Assignment Matrix for reference and PTs / BIMSPs / PSPs / Contractors may customize to suit project specific requirement.

		Employer (Appointing Party)	Third Party	Leading Discipline (Appointed Party)	Other disciplines (Appointed Party)		
ISO Sec. Ref.	Task	HA		*[Name of Leading Discipline]*	*[Name of other discipline 1]*	*[Name of other discipline 2]*	*[Name of other discipline 3]*
5.1.1	Appoint individuals to undertake the information management function	*[R; A]*	N/A	*[I]*	*[I]*	*[I]*	*[I]*
5.1.2	Establish the project's information requirements	*[R; A]*	N/A	*[I]*	*[I]*	*[I]*	*[I]*
5.1.3	Establish the project's information delivery milestones	*[R; A]*	N/A	*[I]*	*[I]*	*[I]*	*[I]*
5.1.4	Establish the project's information standard	*[R; A]*	N/A	*[I]*	*[I]*	*[I]*	*[I]*

		Employer (Appointing Party)	Third Party	Leading Discipline (Appointed Party)	Other disciplines (Appointed Party)		
ISO Sec. Ref.	Task	HA		*[Name of Leading Discipline]*	*[Name of other discipline 1]*	*[Name of other discipline 2]*	*[Name of other discipline 3]*
5.1.5	Establish the project's information production methods and procedures	*[I]*	N/A				
5.1.6	Establish the project's reference information and shared resources	*[I]*	N/A				
5.1.7	Establish the project's common data environment	*[I]*	N/A				
5.1.8	Establish the project's information protocol	*[I]*	N/A				
5.2.1	Establish the appointing party's exchange information requirements	*[C]*	*[C]*				
5.2.2	Assemble reference information and shared resources	*[C]*	*[C]*				
5.2.3	Establish tender response requirements and evaluation criteria	*[I]*	N/A				
5.2.4	Compile invitation to tender information	*[I]*	N/A				
5.3.1	Nominate individuals to undertake the information management function	*[I]*	N/A				
5.3.2	Establish the delivery team's (pre-appointment) BIM execution plan	N/A	N/A				
5.3.3	Assess each task team capability and capacity	*[I]*	N/A				
5.3.4	Establish the delivery team's capability and capacity	*[I]*	N/A				

		Employer (Appointing Party)	**Third Party**	**Leading Discipline (Appointed Party)**	**Other disciplines (Appointed Party)**		
ISO Sec. Ref.	Task	HA		*[Name of Leading Discipline]*	*[Name of other discipline 1]*	*[Name of other discipline 2]*	*[Name of other discipline 3]*
5.3.5	Establish the delivery team's mobilization plan	*[I]*	N/A				
5.3.6	Establish the delivery team's risk register	*[I]*	N/A				
5.3.7	Compile the delivery team's tender response	*[I]*	N/A				
5.4.1	Confirm the delivery team's BIM execution plan	*[I]*	N/A				
5.4.2	Establish the delivery team's detailed responsibility matrix	*[I]*	N/A				
5.4.3	Establish the appointed party's exchange information requirements	*[I]*	*[C]*				
5.4.4	Establish the task information delivery plan(s)	*[I]*	*[I]*				
5.4.5	Establish the master information delivery plan	*[I]*	*[I]*				
5.4.6	Complete appointed party's appointment documents	*[R; A]*	N/A				
5.5.1	Mobilize resources	*[I]*	N/A				
5.5.2	Mobilize information technology	*[I]*	N/A				
5.5.3	Test the project's information production methods and procedures	*[C]*	N/A				
5.6.1	Check availability of reference information and shared resources	*[C]*	N/A				
5.6.2	Generate information	*[I]*	N/A				

		Employer (Appointing Party)	**Third Party**	**Leading Discipline (Appointed Party)**	**Other disciplines (Appointed Party)**		
ISO Sec. Ref.	Task	HA		*[Name of Leading Discipline]*	*[Name of other discipline 1]*	*[Name of other discipline 2]*	*[Name of other discipline 3]*
5.6.3	Undertake quality assurance check	*[I]*	N/A				
5.6.4	Review information and approve for sharing	*[I]*	*[I]*				
5.6.5	Information model review	*[I]*	N/A				
5.7.1	Submit information model for appointed parties' authorization	*[I]*	N/A				
5.7.2	Review and authorize the information model	*[C]*	N/A				
5.7.3	Submit information model for appointing party acceptance	*[I]*	N/A				
5.7.4	Review and accept the information model	*[R; A]*	N/A				
5.8.1	Archive the project information model	*[I]*	*[I]*				
5.8.2	Capture lessons learned for future projects	*[R; A]*	*[I]*				

Key – R: Responsible for undertaking activity
A: Accountable for activity completion
C: Consulted during activity
I: Informed following activity completion
N/A: Not applicable for this project

Employer (Appointing Party) shall be HA.

Third Party is a party appointed by Appointing Party directly and not under Lead Appointed Party. Third Party, under authorisation of Appointing Party, may oversee information management functions such as CDE hosting, management and support. Therefore, Third Party may be consulted or informed on information management-related requirement establishment.

"Third Party" column may be deleted if N/A for this project.

4.6 BIM Workflow

Project BIM Workflow shall follow Overall Workflow Diagram of HABIMSG Quick Guide Level 3 (Q3).

Provide explanations for any deviation from workflows as outlined in HABIMSG Quick Guide Level 3 (Q3).

The BIM Workflows in Level 3 were mainly developed for design stages. They shall be served as reference for contractors to further develop the workflows made fit for the project conditions and requirements, and provide explanation in the Construction Stage BIM PxP.

4.7 LOD Responsibility Matrix

Fill in LOD Responsibility Matrix Template per the latest version of HABIMSG.

Refer to *[Appendix III]* for project-specific LOD Responsibility Matrix.

4.8 LOD Specifications

BIM data required within each model element should be specified as part of the Level of Development (LOD) Specification, which should follow latest adoption of the LOD definitions in HABIMSG Level 4 – Detail Guide.

Unless otherwise specified, HA currently adopts Hong Kong CIC BIM Standards, which contains prevailing LOD specifications under different publications (CIC BIM Standards for *Architectural and Structural Engineering, MEP and Underground Utilities)*

LOD-I specifications: BIM parameters / attributes may be considered as the information required for drawing production or for other BIM Use, shall be input in the model. Minimum requirement on parameters for each BIM element are specified in HABIMSG Level 4 – Detail Guide (Information Requirements).

4.9 Schedule of BIM Deliverables

Include full lifecycle of planned dates, actual dates and corresponding BIM deliverables per Project Agreement. Grey out past dates without deleting.

Remove inapplicable stages as appropriate.

Alternatively, a bar chart can be shown but actual dates shall not be omitted in the bar chart. This schedule shall be updated at every milestone.

No.	Milestone	Planned Start	Planned End	Actual Start	Actual End	BIM Deliverables
Feasibility Stage						
	DipCon					
	SPC					
	AAP					
	EAP					
Design Stage						
	PDRC(1)					
	PDRC(2)					
	DRP					
	BSDRP(1)					
	BSDRP(2)					

No.	Milestone	Planned Start	Planned End	Actual Start	Actual End	BIM Deliverables
	BC					
	DDRP(1)					
	DDRP(2)					
	ICU Submissions (GBP)					
	ICU Submissions (Foundation)					
	ICU Submissions (Superstructure)					
Tender Stage						
	Piling Tender Out					
	Building Tender Out					
Construction Stage						
	Combined Services Drawing (CSD) and Model					
	Combined Builders Work Drawing (CBWD) and Model					
	Individual Service (Shop) Drawing					
	As-built BIM Model and Data					

4.10 Approval of BIM Deliverables

Describe approval protocols – which team member is responsible for approval in more detail compared to items 5.7.2 and 5.7.4 of Section 4.5 – Information Management Assignment Matrix.

BIM Deliverables shall be submitted for approval by *[Responsible Department during design stage; PT during construction stage; or other responsible parties]*. Upon review, revisions shall be provided by responsible BIM author within *[10 working days; 20 working days]* for further review and endorsement.

4.11 Meeting Schedule

List regular meetings and milestone meetings.

Meeting Type	Project Stage	Frequency	Participants	Description
BIM Kick-off Meeting	*[e.g. DipCon]*	One time on *[DD-MMM-YYYY]*		
ICU Submission Preparation	*[e.g. PDRC(1)]*	Bi-weekly starting *[DD-MMM-YYYY]*		

4.12 WIP BIM File Exchange Schedule

List BIM WIP file exchange timing.
Use abbreviation (e.g. AR, SE, BSE, LA, CE, GE, BIMSP…) for Author and Receiver.

BIM File Type	Author	Receiver	Frequency	File Format
AR Model Files			*[Weekly, Bi-weekly, Monthly] starting [DD-MMM-YYYY] OR one time on [DD-MMM-YYYY]*	
SE Model Files				
BSE Model Files				
ICU Drawing Files				
Construction-stage BIM Model Files				
CSD/ CBWD Drawing in Construction Stage				

5 BIM Infrastructure

5.1 Hardware Specifications

Hardware specifications shall be equivalent to or better than Agreement's / Contract's minimum requirements.

Operating System:	*[e.g. Microsoft® Windows 10 (or newer) Professional Edition 64-bit Operating System]*
CPU Type	*[e.g. Intel or AMD CPU, equivalent or better than Core i9-9900k CPU @3.6GHz]*
Memory:	*[e.g. 64 GB RAM]*
Disk Space	*[e.g. 1TB SSD + 2TB HDD free disk space]*
Video Card:	*[e.g. NVIDIA® Quadro RTX 4000 graphics card or equivalent]*
LCD Monitor:	*[e.g. Video Display 1,920 x 1,080 with true colour]*
Media:	*[e.g. DVD9 or USB key]*
Pointing Device:	*[e.g. Mouse or 3Dconnexion® compliant device]*
Browser:	*[e.g. Microsoft® Edge / Google Chrome]*
Connectivity:	*[e.g. Internet connection for communication with Project Teams]*

5.2 Software Use

DCD latest working version software shall be used to deliver the project. Upon completion of as-built model, an additional set of model(s) upgrade to the latest version that is available in the market shall be provided.

Software	Version	Purpose	Native Format
[Please Specify]	DCD Latest version	Model Authoring *[list disciplines, e.g. AR, SE, BSE, LA, QS, LS, CE, GE]*	*[Please Specify]*
[Please Specify]	DCD Latest version	Model Authoring *[list disciplines, e.g. LS, CE, GE]*	*[Please Specify]*
[Please Specify]	DCD Latest version	Model Review, 4D Simulation	*[Please Specify]*
[Please Specify]	*[Please Specify]*	Simulation Video Viewer	*[Please Specify]*
[Please Specify]	*[Please Specify]*	Document/ Report/ Drawing Reader	*[Please Specify]*
[Please Specify]	*[Please Specify]*	Data Exported from BIM Files	*[Please Specify]*
[Others, please specify]	*[Please Specify]*	*[E.g. Software or plugins for trial projects for Quantity Surveying, etc.]*	*[Please Specify]*

5.3 Software Upgrade

Software upgrade shall be executed within *[15, 30]* working days upon receipt of written request from *[PT/CM]*. Premature upgrade of individual discipline(s) is not allowed.

5.4 Exchange Formats

In addition to file formats listed in *[Section 5.2 – Software Use]*, the following exchange formats shall be provided at each milestone:

	Native Formats	Exchange File Formats
Models	*[Please Specify]*	*[Please Specify]*
Clash Reports	*[Please Specify]*	*[Please Specify]*
Drawings	*[Please Specify]*	*[Please Specify]*
Final Drawing Format	*[Please Specify]*	*[Please Specify]*
Phase Planning (4D Modelling)	*[Please Specify]*	*[Please Specify]*

5.5 Common Data Environment (CDE)

PSPs shall establish a BIM collaboration and information sharing methodologies and workflows according to the requirement under PSP agreement. If PSP decides to respond to the requirement by adopting a CDE, the propose CDE shall be specified here.

Contractors shall propose appropriate CDE according to the requirement under the Works contract preliminaries specifications.

[ProjectWise] / [other CDE as proposed] is the project-specific CDE.

PT / BIMSP / PSP / Contractor shall use *[ProjectWise Desk Version #10.00.02.265] / [other CDE as proposed]*

List additional provisions as applicable, such as version/ revision control, security protocols, user management, access control, BIM collaboration methodology and workflow, model information sharing, project archive, etc.

5.6 Data Security and Backup Protocols

Describe data backup frequency, method and any additional data security protocols.

Data will be backed up *[weekly, bi-weekly]* to a secure local server location by *[BIM Coordinator; other responsible party; automatic mechanism (please describe)]*.

6 BIM Setup

6.1 Model Template

Refer to HABIMSG Q3-01 and D3.1, state names and versions of template(s) used for each discipline.

HA BIM Template shall be used to create models.

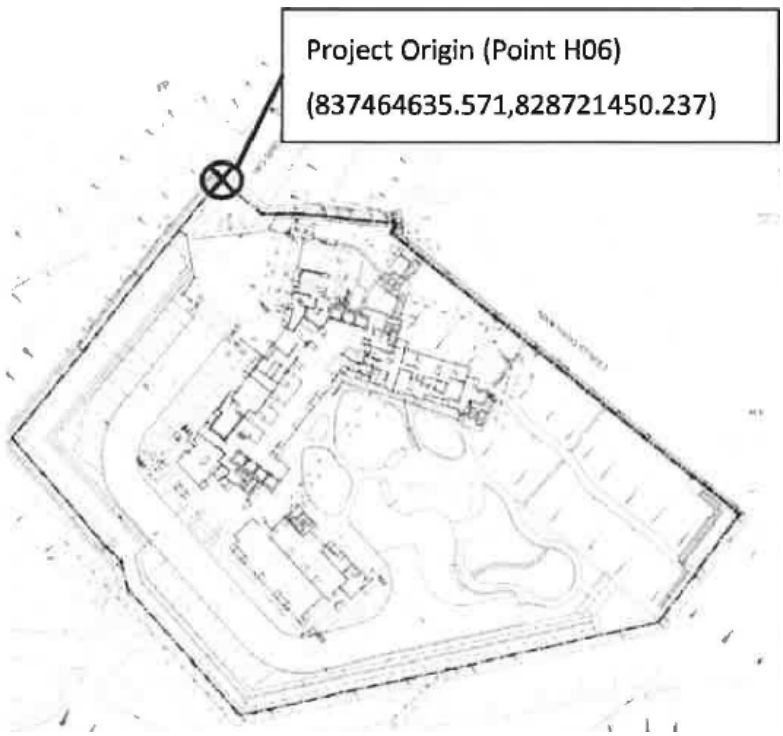
6.2 Model Coordinates

Refer to D.MET-4.2 & 4.3 of D3.4 Model coordinates shall follow the latest version of HABIMSG. State any deviations and rationale. Clearly state relationship between True North and Project North.

Survey Point or Project Base Point coordinate is as follows:
Survey Point coordinate:
Northing: *[##########.0mm]*
Easting: *[##########.0mm]*
Elevation: *[0.0mm]*

Project Base Point coordinate:
Northing: *[##########.0mm]*
Easting: *[##########.0mm]*
Elevation: *[0.0mm-Propose GF Level]*
Angle to True North: *[###.000]* degrees

Provide a site plan below with model coordinates highlighted and labelled such as the image below.



6.3 Grid Line

Refer to D.MET-4.2 of D3.4 Survey point, project base point and grid shall follow the latest version of HABIMSG. State any deviations and rationale.

The site plan below shows Project-specific Grid Line arrangement.

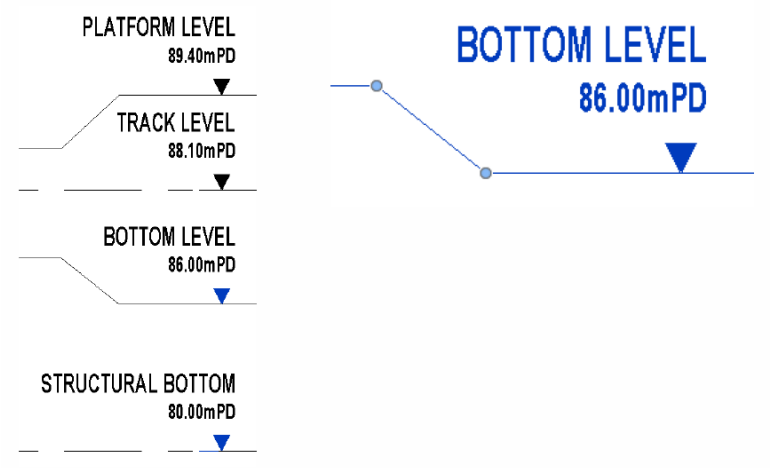
Provide a site plan below with model coordinates highlighted and labelled.

6.4 Level

Refer to D.MET-4.4 of D3.4 state project-specific level.

The project-specific level is set per image below:

Provide a screen capture of level settings such as the image below.

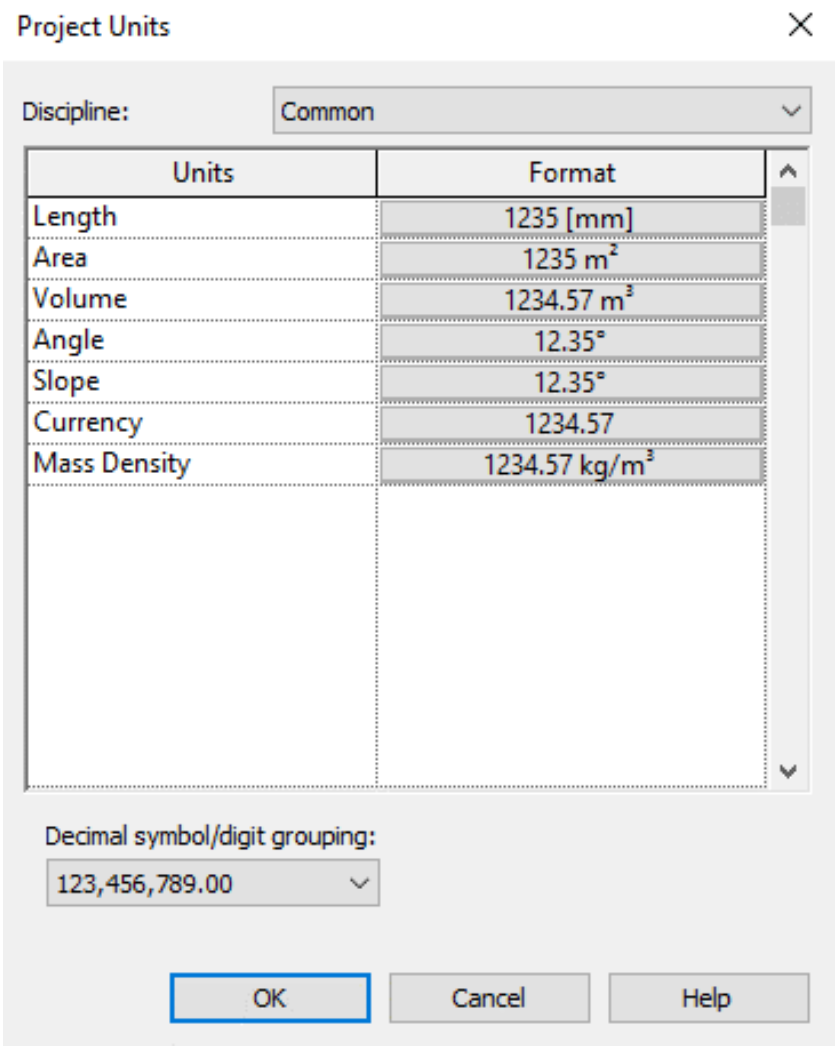


6.5 Modelling Units

Refer to D.MET-4.1 of D3.4 Modelling units shall follow the latest version of HABIMSG.

Below screen capture shows units used in this project.

Provide a screen capture of modelling units such as the image below.



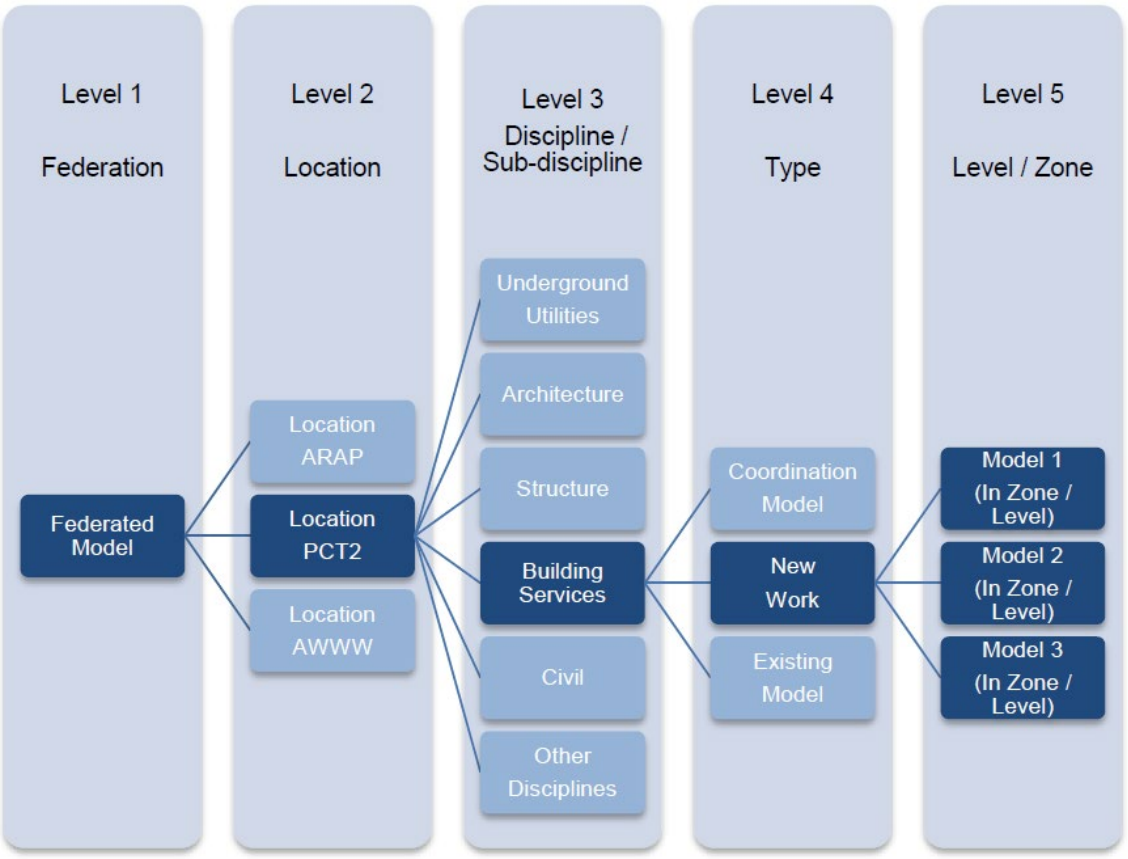
6.6 Federation

Refer to D3.2 provide a federation tree diagram showing the federation structure and relationship between files. See example below.

Federation map below shows project-specific BIM file federation structure.

Provide a federation tree diagram similar to the example diagram below:

Example [Design Stage / Construction Stage]:



6.7 Drawing Sheet Templates

The following table lists the scales for this project associated drawing type(s) and template(s):

Scale	Description
[1:100]	*[Input template name and description]*
[1:500]	*[Input template name and description]*
[1:1000]	*[Input template name and description]*

ProjectWise (PW) link on drawing sheet templates can be found via this link:

Discipline	ProjectWise Location Path
Architectural (ARCH)	*pw:\\PRDDRGS15:drgms_dcd\Documents\HD Library\BIM\HA BIM Resources\4. HA Project Model Templates\Arc*
Structural (SE)	*pw:\\PRDDRGS15:drgms_dcd\Documents\HD Library\BIM\HA BIM Resources\4. HA Project Model Templates\Str*
Building Services (BSE)	*pw:\\PRDDRGS15:drgms_dcd\Documents\HD Library\BIM\HA BIM Resources\4. HA Project Model Templates\MEP*

6.8 Annotation, Dimensions, Abbreviations and Symbols

There shall be no deviations from annotation, dimensions, abbreviations and symbols as specified in the latest version of HABIMSG.

Annotation style can be further inputted by PT based on individual project and the latest version of HABIMSG. State deviations and rationales if applicable.

6.9 Colour Scheme

Colour scheme of submission shall follow the colour standard requirement as stipulated in PNAP ADM-19.

PT can assign their custom colour for the purpose of model review and clash detection. CAD Standards for DCD provides reference of colour on different elements of each discipline.

7 Collaboration Procedures

This section describes how PT / BIMSP / PSP various disciplines, Consultants, Contractor and BIM Consultant interact.

7.1 Collaboration Workflow

Describe how PT / BIMSP / PSP / Contractor or responsible parties for BIM authoring coordinate with others.

Describe also intradisciplinary coordination or collaboration within teams (e.g. between General Contractor and Sub-contractors).

If any deviation from HABIMSG Level 3 (Q3), attach a workflow diagram in similar format.

See below for the project-specific collaboration workflow diagram.

7.2 Clash Management

Describe how PT / BIMSP / PSP / Contractor or responsible parties carry out the Clash Management.

The clash matrix, clash rules and corresponding tolerance is listed in this section.

All disciplines shall be included. Include sub-disciplines when applicable.

See table below for the project-specific clash matrix:

Location:	ARCHITECTURE								STRUCTURE						PL		EL			FS/WP		ACMV		
	ARC WALL	ARC FLOOR	CEILING	HEADROOM	DOOR	CURTAIN WALL	WINDOW	STAIRCASE	STR WALL	STR FLOOR	STR FOUNDATION	COLUMN	BEAM	STAIRCASE	PIPE	EQUIPMENT	CABLE TRAY	DUCT (TRUNKING)	EQUIPMENT	PIPE	EQUIPMENT	DUCT	PIPE	EQUIPMENT
ARC WALL	20	0	10	-	0	0	0	0	0	0	-	10	0	0	300	0	200	80	0	300	0	200	300	0
ARC FLOOR	-	0	0	-	0	0	0	0	0	0	-	0	0	0	500	0	50	20	0	180	0	140	200	0
CEILING	-	-	2	-	2	2	1	0	0	0	-	10	1	0	100	0	21	0	0	200	0	0	0	0
HEADROOM	-	-	-	-	-	-	-	10	-	-	-	-	1	10	200	0	10	5	0	200	0	10	20	0
DOOR	-	-	-	-	0	0	0	0	0	0	-	2	0	0	5	0	6	0	0	0	0	0	0	0
CURTAIN WALL	-	-	-	-	-	0	-	0	0	0	-	0	5	0	10	-	-	-	-	-	-	-	-	-
WINDOW	-	-	-	-	-	-	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0
STAIRCASE	-	-	-	-	-	-	-	0	0	0	-	0	0	0	5	0	0	0	0	0	0	0	0	0
STR WALL	-	-	-	-	-	-	-	-	0	0	5	0	0	0	100	0	80	0	0	180	0	100	150	0
STR FLOOR	-	-	-	-	-	-	-	-	-	0	2	0	0	0	500	0	50	20	0	180	0	140	20	0
STR FOUNDATION	-	-	-	-	-	-	-	-	-	-	10	0	2	-	-	-	-	-	-	-	-	-	-	-
COLUMN	-	-	-	-	-	-	-	-	-	-	-	0	0	0	5	0	0	0	0	0	0	0	0	0
BEAM	-	-	-	-	-	-	-	-	-	-	-	-	0	0	150	0	0	0	0	0	0	0	0	0
STAIRCASE	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0
PIPE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	20	10	8	0	30	0	80	100	0
EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0
CABLE TRAY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	15	5	10	0	30	25	0
DUCT (TRUNKING)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	2	5	0	20	10	0
EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0
PIPE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	0	150	200	0
EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0
DUCT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	100	0
PIPE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	0
EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

8 BIM File Naming

Adopt HA BIM Naming Standard as compliant with the latest version of HABIMSG. State reasons if there are any deviations.

8.1 Model Naming

Project-specific Model Naming is as followed:

Field	1		2		3		4		5		6		7
HA Customization	**Job Number**		**Phase**		**Author**		**Building Type**		**Level/ Zone**		**Model Code**		**Custom Description**
No. of Characters in HA Standard	4		2		3		2-4		2-3		2		1-8

Justify deviations from HABIMSG, if any.

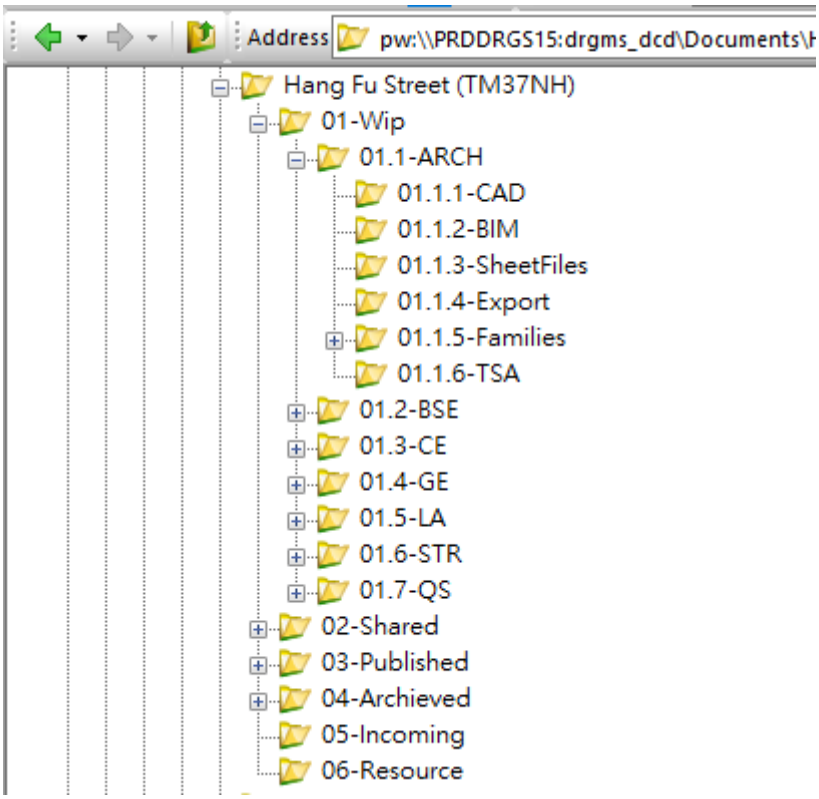
Provide a Model File List as Appendix:

See table below for the project specific BIM models and corresponding description:

Model Name	Description

8.2 Folder Naming and Folder Structure

In addition to folder naming, add a folder structure description similar to the example below.



Justify deviations from HABIMSG, if any.

8.3 BIM Object (Family) Naming

In accordance with HABIMSG, family naming format shall be as followed:

<Category> - <Functional Type> - <Originator> - <Descriptor 1> - <Descriptor 2>

Actual examples of families used in this project include:

Family	DOR-SGL-HAA-Wood-w_Louver.rfa	Descriptions
Functional Type*	**DOR**-SGL-HAA-Wood-w_Louver.rfa	A Door, DOR is the short form of the functional type "**door**"
Sub-Type*	DOR-**SGL**-HAA-Wood-w_Louver.rfa	A Single Door, SGL is the short form of the sub-type "**single**"
Originator	DOR-SGL-**HAA**-Wood-w_Louver.rfa	HAA is the short form of the **Housing Authority Architecture**. It can be replaced by the name of the creator in short form of three characters.
Descriptor 1 #	DOR-SGL-HAA-**Wood**-w_Louver.rfa	A door is made of **Wood** (Material). An optional descriptive text.
Descriptor 2 #	DOR-SGL-HAA-Wood-**w_Louver**.rfa	A door is built **with Louver**. This text further describes the Family
File Extension	DOR-SGL-HAA-Wood-w_Louver.**rfa**	**R**evit **F**amily File Extension

Justify deviations from HABIMSG, if any.

8.4 Naming of Drawing Generated from BIM

Naming of drawings generated from BIM shall follow HA's *Document and Drawing Naming Protocols*.

Justify deviations if any.

9 Quality Control

9.1 Quality Control Workflow

[Design] Establish Quality Assurance Plan to ensure appropriate checks on information and data accuracy, and demonstrate quality control checking has been done. Based on Level 3 Workflow of Quality Control in the latest version of HABIMSG, propose a project-specific quality control workflow diagram.

[Construction] Establish Quality Assurance Plan to ensure appropriate checks on information and data accuracy, and demonstrate quality control checking has been done. The BIM Workflow in Level 3 are mainly for design stage. Contractors shall further develop the workflow, which fits with the project conditions, based on the existing Workflow of Quality Control in Quick Guide Level 3 (Q3). and provide explanation in the Construction Stage BIM PxP.

Project-specific quality control checks are as followed:

Checks	Definition	Responsible Party	Software / reference document	Frequency
Standards Check	Check that the models have been created in compliance with the prevailing HA BIM modelling standards, rules and guidelines	*[e.g. BIM Manager or BIM Modeller]*	*[Please Specify]*	Once Every 2 weeks
Model Check	Check and validate that the information is align with drawings project team provided	*[e.g. BIM Manager or BIM Modeller]*	*[Please Specify]*	Once a week
Drawing Check	All drawing produced from models meet the submission requirement	*[e.g. BIM Manager or BIM Modeller]*	*[Please Specify]*	Once a week
Dataset Validation	Ensure that the datasets are populated with correct data	*[e.g. BIM Manager or BIM Modeller]*	*[Please Specify]*	Once Every 2 weeks
BIM Checklist	Documents the quality assurance for the BIM deliverables including BIM models and drawings etc,	*[e.g. BIM Manager]*	*HA BIM Checklist (xlsx)*	Each deliverable submission
[Construction Stage] Asset Attributes	Ensure that the asset information is entered into models and asset template *[COBie worksheets or other tools to be used]*	*[e.g. BIM Manager or BIM Modeller]*	*[Please Specify]*	*[Please Specify]*

9.2 BIM Checklist

Refer to *[Annex ANN-1.2 HA BIM Quality Assurance (QA) Checklist]* – BIM checklists for project-specific BIM quality assurance checks.

Use HABIMSG Annex ANN-1.2 HA BIM Quality Assurance (QA) Checklist as the basis, attach project-specific BIM Checklist here or as an appendix.

10 Asset Management (if applicable)

Describe methodology and process to convert Project Information Model into Asset Information Model. Delete if Asset Management is not a required BIM Use.
This section is only applicable to trial projects with AM scope. Delete section if inapplicable.

The BIM model will be used for maintenance scheduling and asset management in construction stage or O&M stage. *[COBie worksheets or other tools to be used], which are containing the attribute information of model elements, will be exported from BIM models for asset management. For the details of attribute information for some model elements at respective LOD, it should be referred to [Appendix # - input appendix number and title]* from HA EMD on Asset Code Naming. The Contractor should coordinate with HA EMD team to define the attributes which are not specified in HA EMD on Asset Manual and propose for CM's approval.

All attributes of HA's assets should be classified into *[two]* types, common attributes and specific attributes. The attributes for asset management should be incorporated in the BIM elements or models as shared parameters.

Common Attributes include:

- Asset Code
- CAT Code
- Location Code

All HA's assets should contain these *[three or other number] common attributes.*