

Guidelines for using Building Information Modelling

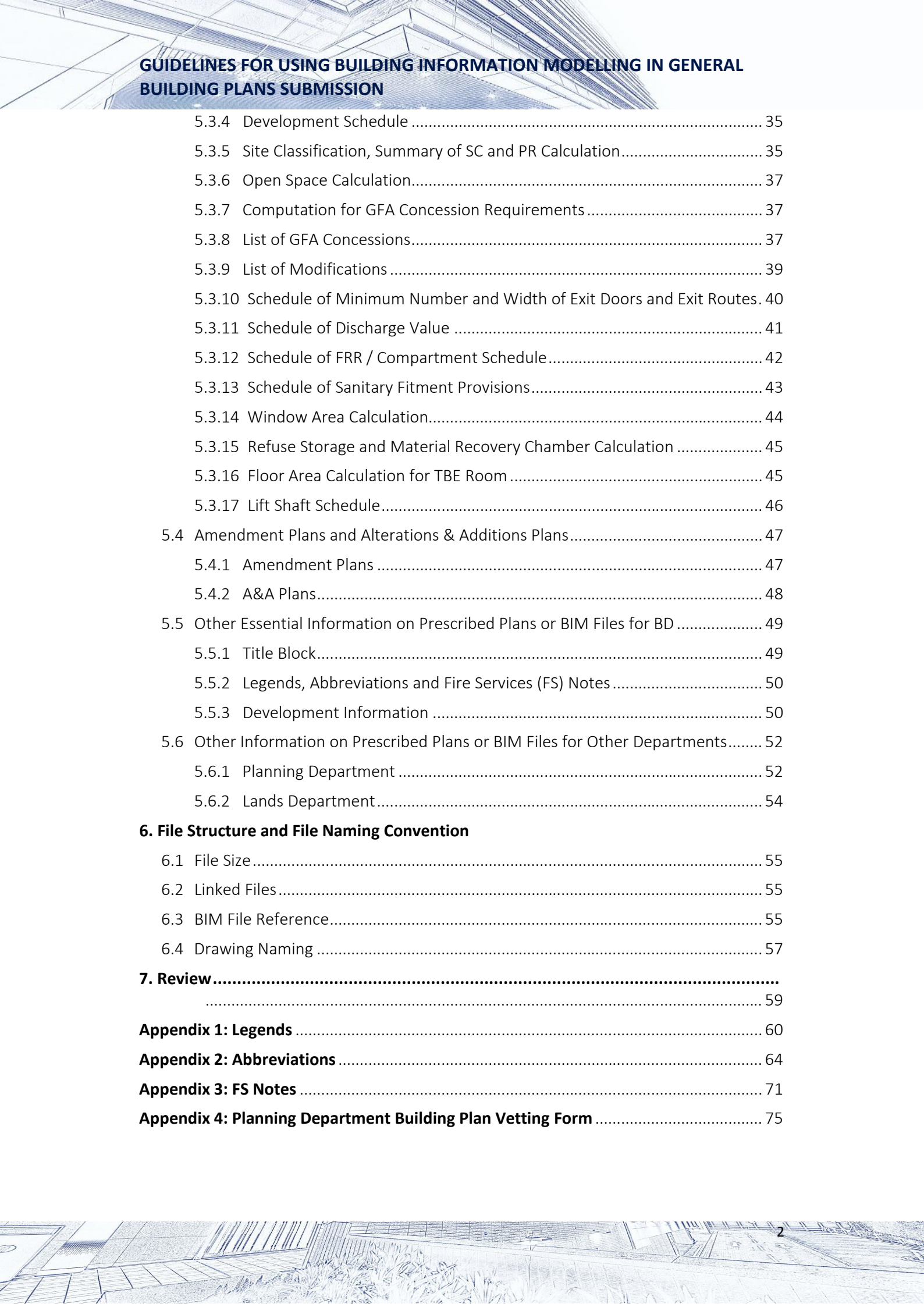
*in General Building Plans
Submission*

2019



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1. Background

Building Information Modelling (BIM) technology is identified as one of the key drivers to enhance the design, construction and project management in the construction industry. Buildings Department (BD) encourages Authorized Persons (APs), Registered Structural Engineers (RSEs) and Registered Geotechnical Engineers (RGEs) to consider adopting BIM in their building projects.

BD accepts the use of computer for calculating floor areas of buildings in the preparation of general building plans (GBP) submission. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) ADM-19 sets out the rules and pre-requisites regarding such computer use. If BIM technology is used in the preparation of GBP, this Guidelines for Using Building Information Modelling in General Building Plans submission (the Guidelines) should be followed.

2. Objectives

The Guidelines aim to set out:

- (a) General guidelines to facilitate APs in preparing GBP by BIM authoring software; and
- (b) Recommended good practices for the enhancement of submission standard.

While non-conformity with the Guidelines will not constitute a ground for disapproval of the plans, the Building Authority (BA) may not accept the BIM GBP electronic files for the mathematical calculation of areas depending on the degree of non-conformity.

3. Scope

The Guidelines cover the following:

- (a) BIM file submission requirements
- (b) Specification for native file
 - Technical requirements
 - Essential views for composing the prescribed plans
 - Essential schedules for composing the prescribed plans
 - Amendment Plans and Alterations & Additions Plans
 - Other essential information on prescribed plans or BIM files for BD
 - Other information on prescribed plans or BIM files for other departments
- (c) File structure and file naming convention

4. BIM File Submission Requirements

4.1 Introduction

This chapter describes the requirements on BIM GBP electronic files (BIM files) accompanying the submission of the prescribed GBP plans to the BA for the purposes of PNAP ADM-19.

4.2 Performance Requirements

- (a) All BIM files shall meet the following requirements:
 - (i) BO and all allied regulations;
 - (ii) Relevant codes of practice, PNAPs and circular letters issued by the BA; and
 - (iii) Relevant BIM sample templates (Revit or ArchiCAD) prepared by the BA.
- (b) Information contained in BIM files shall be identical to the information shown on the prescribed GBP plans. Prescribed plans submitted to the BA should be directly generated from the corresponding BIM model.
- (c) The Colour Code System as specified in Section 5.1.4 of the Guidelines for various building components and area diagrams shall be adopted.
- (d) Area diagrams should be shown with the corresponding halftone under laying floor plans for ease of verification.
- (e) All linear dimensions and area diagrams of the BIM file should be fit for verification to the extent that the accuracy of area calculations can be checked and mathematical errors, if any, can be identified.
- (f) The computation of all area diagrams on prescribed plans should be verifiable with the BIM software, both by selecting a pre-set zone / area and by specifying points to define what to measure.
- (g) All irrelevant data for statutory submission, such as lighting, reflected ceiling plan, building services provisions and the like shall be removed from the BIM file.

4.3 Administrative Requirements

- (a) The BIM files should be stored in a non-rewritable DVD-ROM in ISO/IEC 13346:1995 format (i.e. DVD format). Except otherwise agreed by the BA, all other electronic submission media are not acceptable.
- (b) Each BIM file should be limited to the size of 500MB. Each BIM file should contain 3D model, views, schedules, as well as the pre-set drawing sheets including plans, area diagrams, calculations, etc. for the production of the hardcopy of prescribed plans. The text file should be included in the DVD-ROM to describe the linked files' hierarchy structure.
- (c) BA currently accepts BIM native files created by (i) Revit version 2017 or later and (ii) ArchiCAD version 21 or later only. As BIM technology is fast developing, there may be add-ons assistant programs or in-house scripts used for enhancing automation in the BIM file production. Add-ons or other implanted automation may cause the submitted BIM file not usable by BD's standard Revit or ArchiCAD software. It is the APs' responsibility to ensure that the purposes of the BIM model are served, as elaborated in the Guidelines, without relying on add-ons or additional scripts.
- (d) The use of software, other than Revit and ArchiCAD, requires prior acceptance from the BA. As a general rule for such prior acceptance, the APs should submit at least one test sample together with the enabling software to the BA for installation and testing. For the avoidance of doubt, BA does not accept any web based BIM software.
- (e) Revit files should be saved in ".rvt" format and ArchiCAD files in ".pla" format only. All other lightweight, compressed or zipped file formats such as ".dwf", ".dwfx" and ".bimx" will not be accepted.
- (f) Drawing title blocks with drawing number, revision number, legends, site / project title, drawing title, etc. as detailed in Section 5.4.1 should be inserted in every drawing for identification purpose.
- (g) BIM files submitted in DVD ROM format should be self-contained and detached from the originating server. It shall be able to be opened on any standalone computer with the abovementioned software. All "X-Ref" files for the BIM model such as xlsx and pdf files should be stored in respective sub-folders in DVD ROM, and the link between all "X-Ref" files and BIM main file should be appropriately connected.

4.4 Level of Development

BIM technology enables the BIM model to contain geometrical and non-geometrical information as BIM elements. Geometrical information includes size, volume, location, orientation, etc. while non-geometrical information includes specifications, performance data, cost, etc.

BD notices various international organisations attempting to standardise BIM elements. One of the popular standards is the “Level of Development” (LOD), according to the American Institute of Architect. The LOD is classified into six categories namely LOD 100, LOD 200, LOD 300, LOD 350, LOD 400 and LOD 500. Reference on the LOD classification and specification may refer to <https://bimforum.org/>. As a general principle, APs are advised to adopt LOD 300 in the preparation of BIM files though on some occasions APs may adopt LOD below 300 (e.g. indication of E/M plants, exhausted ducts) or LOD above 300 (e.g. special design details).

5. Specification for Native File

The native file should contain the building proposal model and complete with all views, schedules, calculations and annotations essential for the production of the prescribed plans. All BIM submissions should adopt a unified modelling methodology, and the native file should be created in a standardised file structure.

5.1 Technical Requirements

5.1.1 Unit and Measurement

The model should use consistent unit and measurement across the project with default drawing units in millimetres (mm) with a precision rounded up to the nearest mm unit.

All floor areas and volumes should be presented in square metres (m²) and cubic metres (m³) respectively and rounded off to three decimal places.

All site areas should be rounded off to the nearest 0.1m² for site area less than 2,000m² and to the nearest 1m² for site area of 2,000m² or above in accordance with PNAP ADM-21.

5.1.2 Mathematical Modelling

All dimensions should be true dimensions generated automatically by the software. Numerical dimensions inputted manually in the BIM file are not acceptable.

5.1.3 Spatial Location and Co-ordination

The BIM origin point and orientation of the model should be based on the actual location of the development by referring two widely used Hong Kong geodetic horizontal and vertical control networks, namely the Hong Kong 1980 Grid System (HK 1980 Grid) and Hong Kong Principal Datum (HKPD).

The HK 1980 Grid and HKPD should be presented in metres corrected to three decimal places (i.e. (8XX,XXX.XXX mN, 8XX,XXX.XXX mE) and (X.XXX mPD). Negative sign should be added for negative mPD (i.e. – X.XXX mPD).

5.1.4 Colour Code System

This paragraph aims to introduce **two** colour code systems.

(a) ***Building material and description on floor plans***

PNAP ADM-9 specifies that every plan submitted for approval should be coloured to differentiate existing works from proposed new works. The preferred colour code as shown in Appendix A of PNAP ADM-9 should be adopted.

(b) ***Gross Floor Area (GFA) diagrams***

The preferred GFA colour code as described in Section 5.2.10 of the Guidelines should be adopted.

5.1.5 3D Model

The BIM files should contain a 3D computer model representing the proposal on the site with its immediate surroundings. The model includes data of building components externally and internally, such as internal partition walls, internal staircases, building façades, windows, projections, architectural features, etc.

The 3D model should be able to be rotated in all directions for checking, viewing, zooming in/out, etc. by utilizing the functions of BIM software to facilitate inspection of building components and virtual walk-through of the building model in the first-person view.



Figure 1 Example of View for 3D Model



Figure 2 Example of First-person View

5.2 Essential Views for Composing the Prescribed Plans

APs are recommended to set up the following views with sufficient information to demonstrate compliance with the BO and its regulations, relevant codes of practices, PNAPs and circular letters issued by the BA. For the verification of areas and dimensions as proposed in the prescribed plans using the submitted BIM file, the following views shall be included in the file composition.

5.2.1 Essential Views

The BIM file should contain the following views, if applicable, but not limited to:

- (a) Block/ Key plan
- (b) Floor plans
- (c) Sections
- (d) Elevations
- (e) Typical details
- (f) Emergency vehicular access (EVA) diagrams
- (g) Open space diagrams
- (h) Fire compartment diagrams
- (i) Site area and site coverage (SC) diagrams
- (j) GFA diagrams
- (k) Usable floor area (UFA) diagrams
- (l) Usable floor space (UFS) diagrams
- (m) Assessment of prescribed windows
- (n) Diagrams showing compliance with the Sustainable Building Design (SBD) Guidelines

5.2.2 Block / Key Plan

Block / Key plan scale not less than 1:500, should contain the following information, if applicable, but not limited to:

- Site boundary,
- Site area coloured in pink (recommended RGB: 255,218,236),
- Lot number,
- Specified streets for site classification,
- Boundary coordinates and dimensions (examples as illustrated in Section 5.3.3),
- Location of vehicular run-in/out,
- The extent of special areas (e.g. Scheduled Area, non-building area, green/yellow/brown/special areas under the lease), and
- North direction symbol.

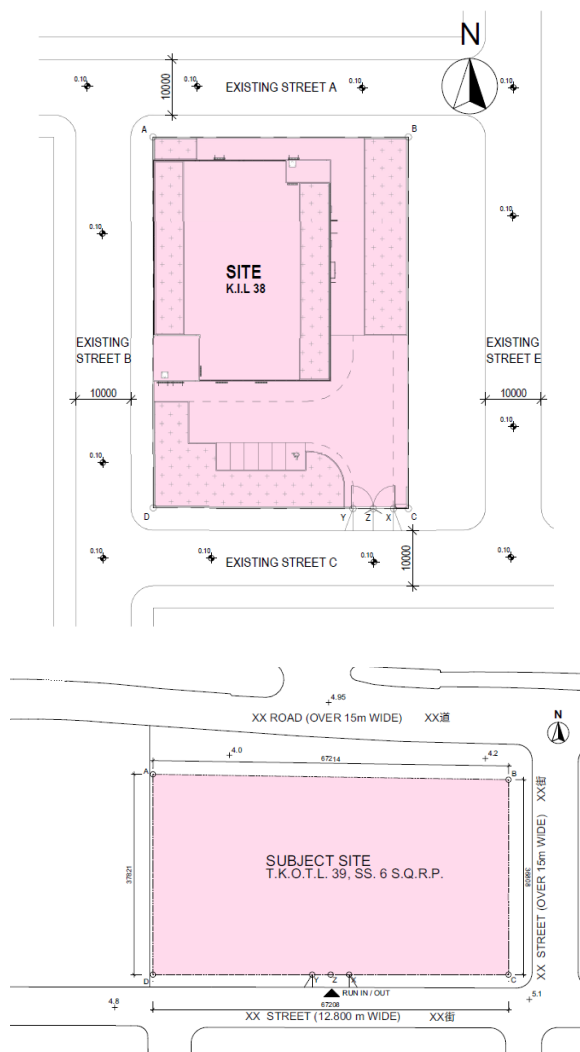


Figure 3 Examples of View for Block / Key Plan

5.2.3 Floor Plan

The floor plan should contain the following information, if applicable, but not limited to:

- (a) Demonstration of compliance with the BO and its regulations as well as the prescriptive requirements stipulated in various codes of practices, PNAPs and circular letters,
- (b) Grids and grid dimensions showing principal dimensions of the building, as well as the distance between structural columns,
- (c) Elevation and section marks for the corresponding view,
- (d) Wall thickness,
- (e) Room/space usage/building line above/door marks,
- (f) Dimensions showing the size of rooms, the width of corridors/staircases, etc.,
- (g) Indication with dimensions of architectural features, projections, cladding, curtain wall, if any, and
- (h) Colour code according to PNAP ADM-9.

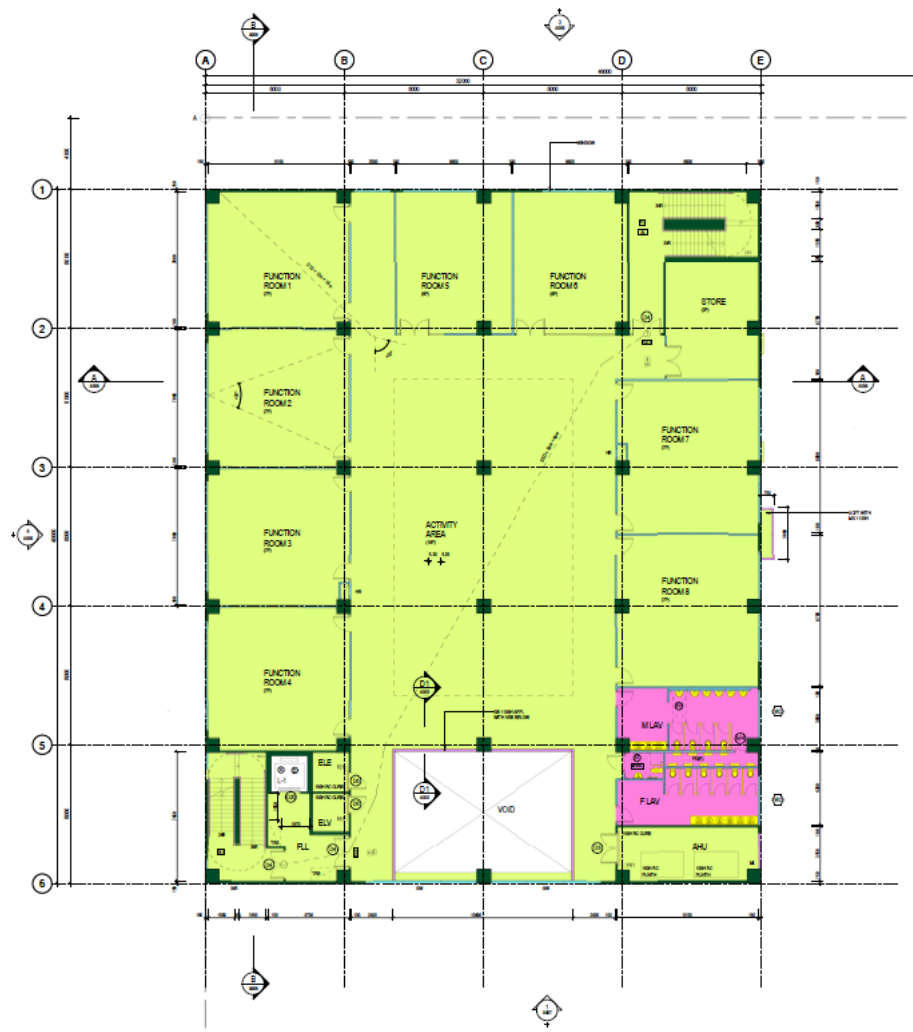
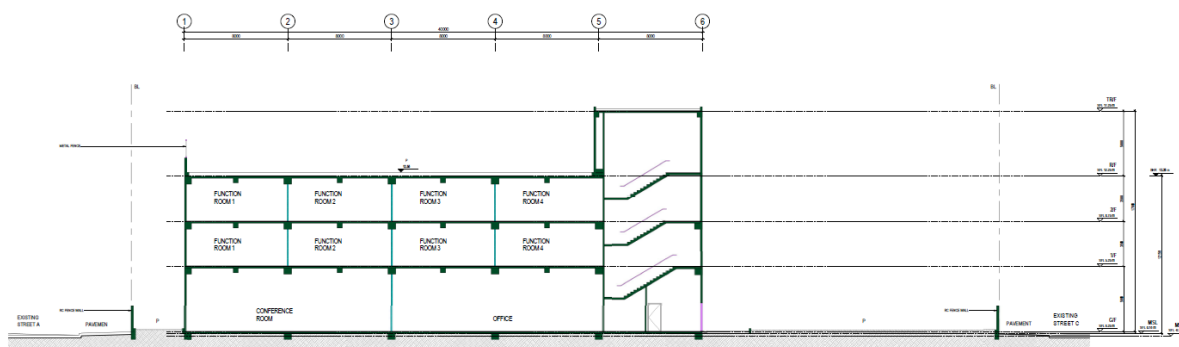
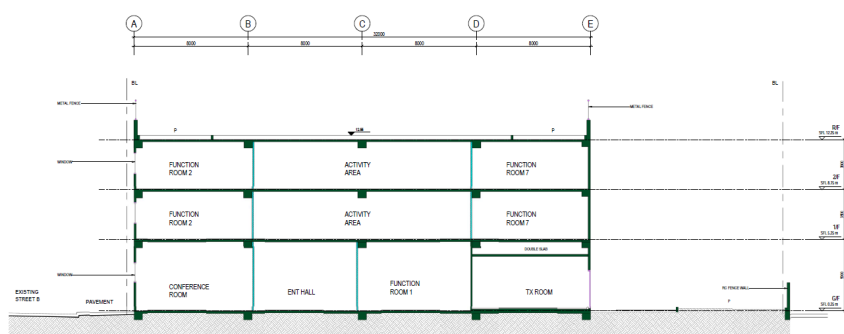


Figure 4 Example of View for Floor Plan

5.2.4 Section and Elevation

Section and elevation should contain the following information, if applicable, but not limited to:

- Grids and grid dimensions showing principal dimensions of the building as appropriate,
- Floor to floor height regarding structural floor levels,
- Each floor level in HKPD,
- Indication with dimensions of architectural features, projections, cladding and curtain wall, if any,
- Street levels adjoining to corresponding section/ elevation,
- Building height under the Building (Planning) Regulations (B(P)R) with reference to mean street level,
- Building height restriction limit (mPD) under statutory town plans and government leases as stipulated in Joint Practice Note (JPN) No. 5, and
- Colour code according to PNAP ADM-9.



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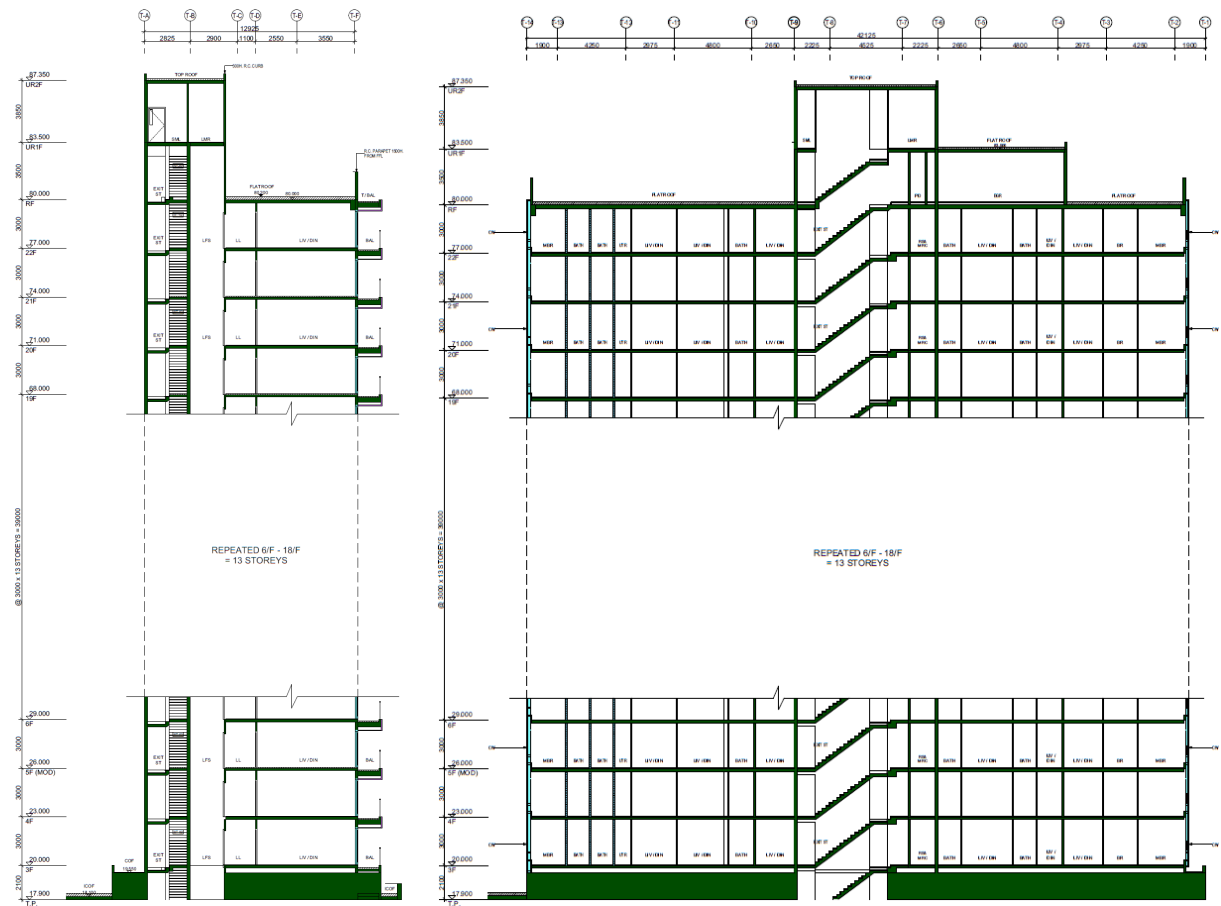


Figure 5 Examples of View for Section

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Figure 6 Examples of View for Elevation

5.2.5 Details

Details should contain the following information, if applicable, but not limited to:

- (a) Sufficient labelling to identify the location of details,
- (b) Sufficient labelling to identify typical and non-typical details, and
- (c) Sufficient critical dimensions, levels and design of building components in compliance with the BO and its regulations, relevant PNAPs and circular letters.

Typical examples for details required under various PNAPs include gas aperture, utility platform, balcony, A/C platform, curtain wall, non-structural prefabricated external wall, sunken slab, protective barrier, accessible toilet, tactile warning strips for escalators, projecting windows, acoustic windows, acoustic fins, vertical greening, cladding, vertical barrier at atrium, details of modular integrated construction, etc.

It is the common practice to use 2D details created by CAD, to complement the BIM model. CAD is also one of the acceptable computer softwares under Appendix F of PNAP ADM-19. BD is ready to accept the details produced by CAD or BIM provided that APs have clearly indicated the software in their GBP electronic files.

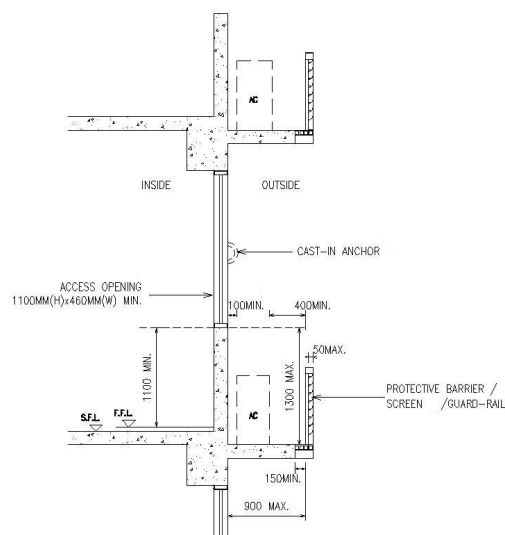


Figure 7 Example of View for Details

5.2.6 EVA Diagram

EVA Diagram should contain the following information, if applicable, but not limited to:

- (a) Demonstration of compliance with the Regulation 41D of the B(P)R, Part D of Code of Practice for Fire Safety in Buildings 2011 (FS Code) and PNAP APP-136 (such as calculation of the total perimeter of the building and length of major façade),
- (b) Principal dimensions showing the building perimeter and façade served by EVA as appropriate,
- (c) Demarcation of the EVA and the major façade, and
- (d) Corresponding schedule and calculation.

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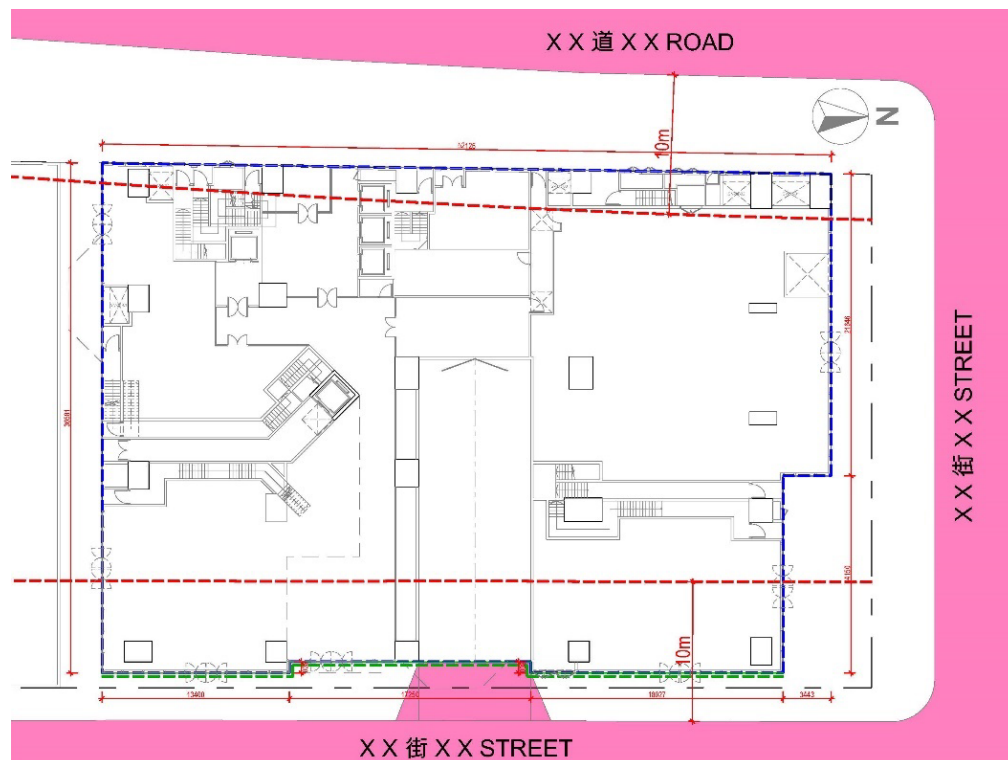
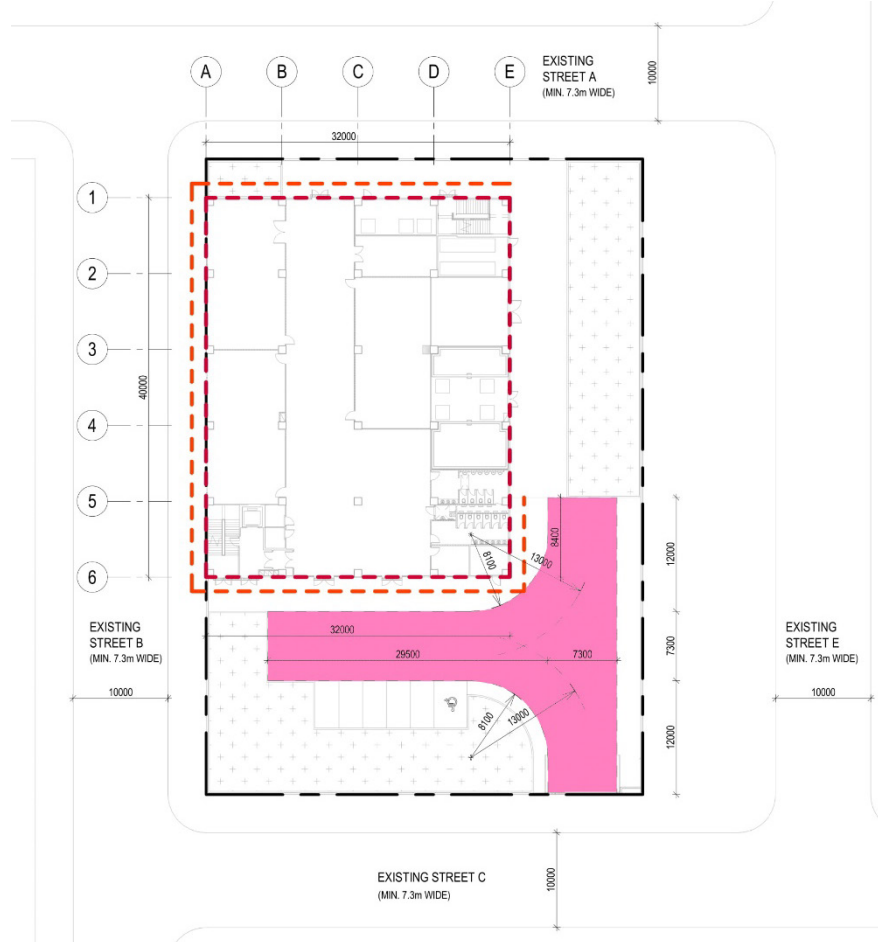


Figure 8 Examples of View for EVA

5.2.7 Open Space Diagram

Open Space Diagram should contain the following information, if applicable, but not limited to:

- (a) The location and dimensions of open space with reference to the site classification, and
- (b) Corresponding schedule and calculation.



Figure 9 Example of View for Open Space Diagram

5.2.8 Fire Compartment Diagram

Fire Compartment Diagram should contain the following information, if applicable, but not limited to:

- (a) Grids and grid dimensions as appropriate,
- (b) Essential dimensions and sufficient labelling to demarcate compartments,
- (c) Delineation of various compartments preferably with different colour,
- (d) Indication of compartments diagram with the corresponding halftone under laying floor plans as appropriate, and
- (e) Corresponding schedule and calculation.

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

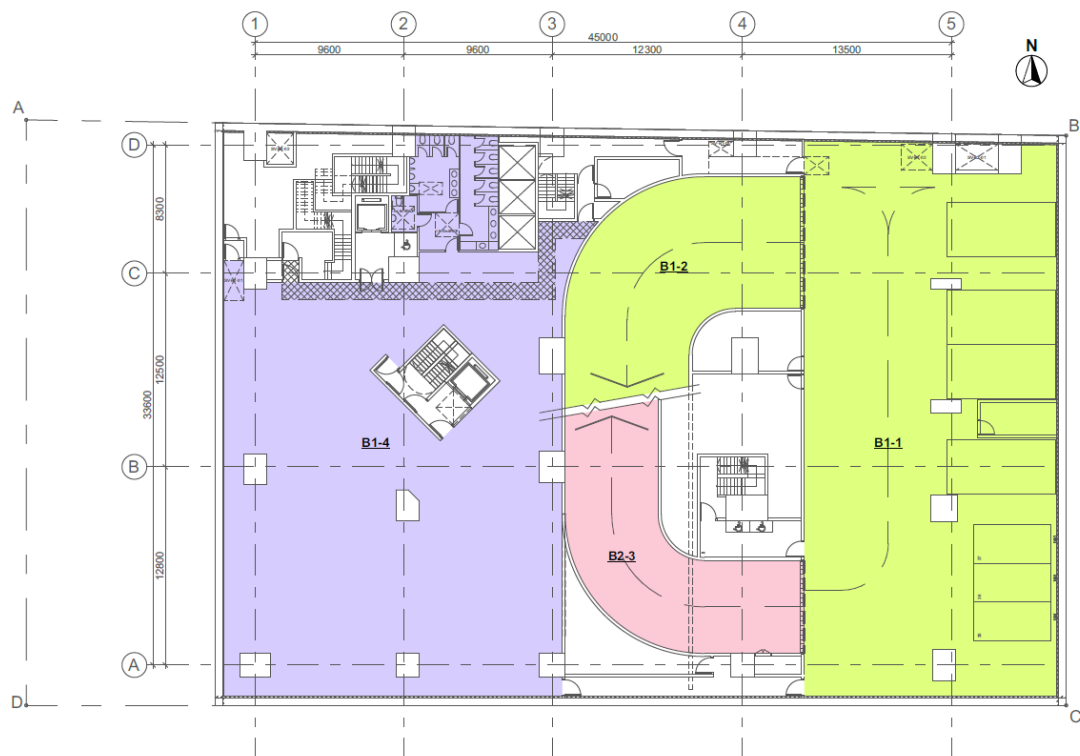


Figure 10 Examples of View for Fire Compartment Diagram

5.2.9 Site Area and SC Diagram

Site area and SC diagram should contain the following information, if applicable, but not limited to:

- Site boundary lines and dimensions as appropriate,
- Outlines of the roof covered area highlighting in colour or with explicit annotation and dimensions as appropriate,
- Sufficient labelling on different buildings with their corresponding roof covered area, and
- Corresponding schedule and calculation.

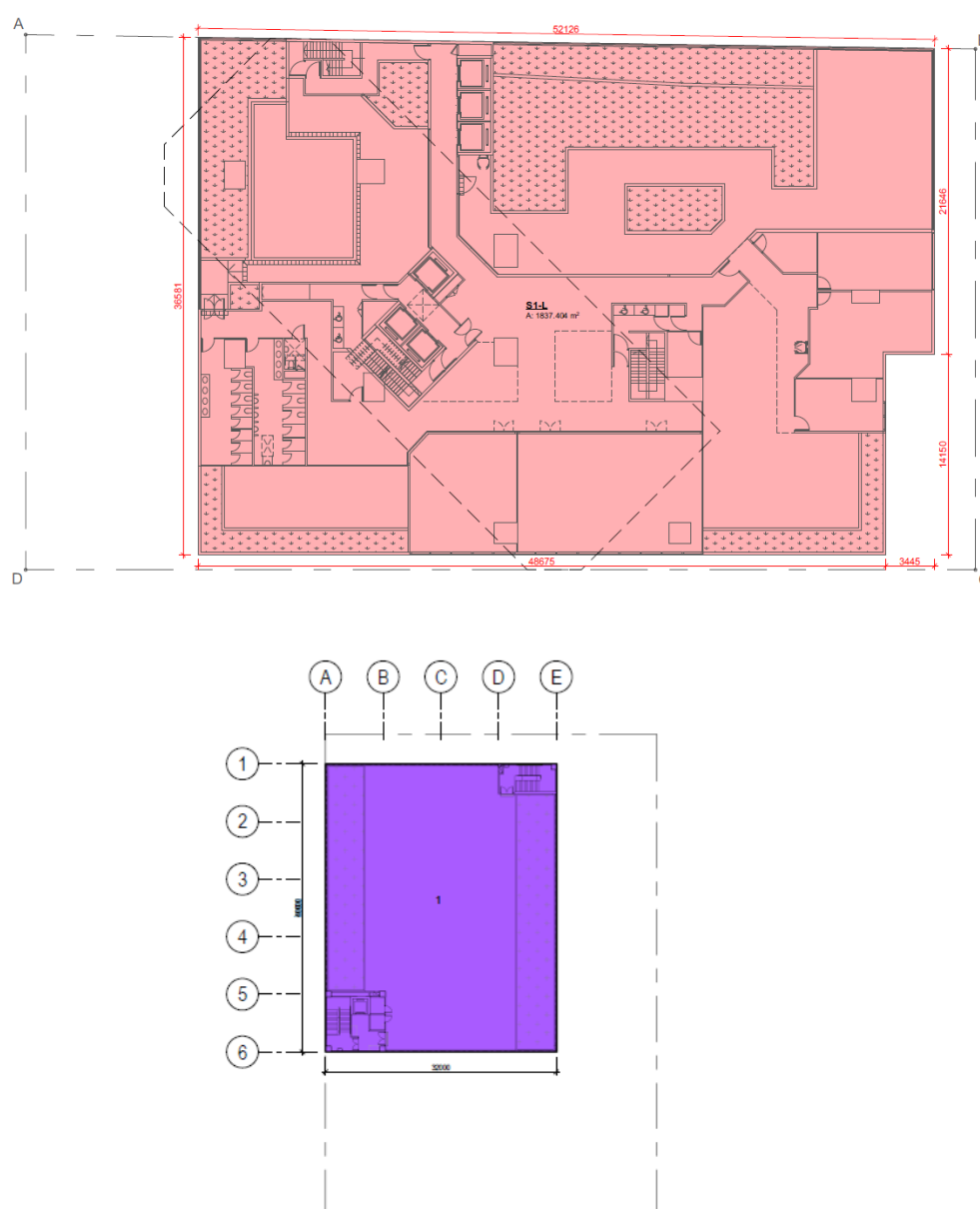


Figure 11 Examples of View for SC Diagram

5.2.10 GFA Diagram

GFA diagram should contain the following information, if applicable, but not limited to:

- (a) Grids and grid dimensions as appropriate,
- (b) Essential dimensions for layout design,
- (c) Adoption of colour code system as listed in Table 1 below,
- (d) Indication of GFA diagram with the corresponding halftone under laying floor plans,
- (e) Pre-set GFA zones / areas should be labelled appropriately and easily cross-referenced between the GFA diagrams and the corresponding schedule and calculation, and
- (f) Corresponding schedule and calculation.

Categories of GFA	Pre-defined Colour	RGB Colour System ¹
1. Accountable domestic GFA		ORANGE 255, 164, 25
2. Accountable non-domestic GFA ²		RED 227, 100, 102
3. Disregarded GFA NOT subject to the overall 10% cap		
a) Concession items specified in PNAP APP-151 (other than carpark, loading and unloading areas)		PURPLE 191, 000, 255
b) Carpark, loading and unloading areas and others		WOOD 222, 184, 135
4. Disregarded GFA subject to the overall 10% cap		
a) Concession items specified in PNAP APP-151		DEEP BLUE 30, 144, 255
b) Others		LIGHT BLUE 144, 214, 236

Table 1 Colour Code System for GFA diagrams

¹ Colours are constructed from the combination of red, green and blue colours.

² BA may treat a hotel development as a non-domestic building for the purpose of GFA calculation subject to the requirements as stipulated in PNAP APP-40.

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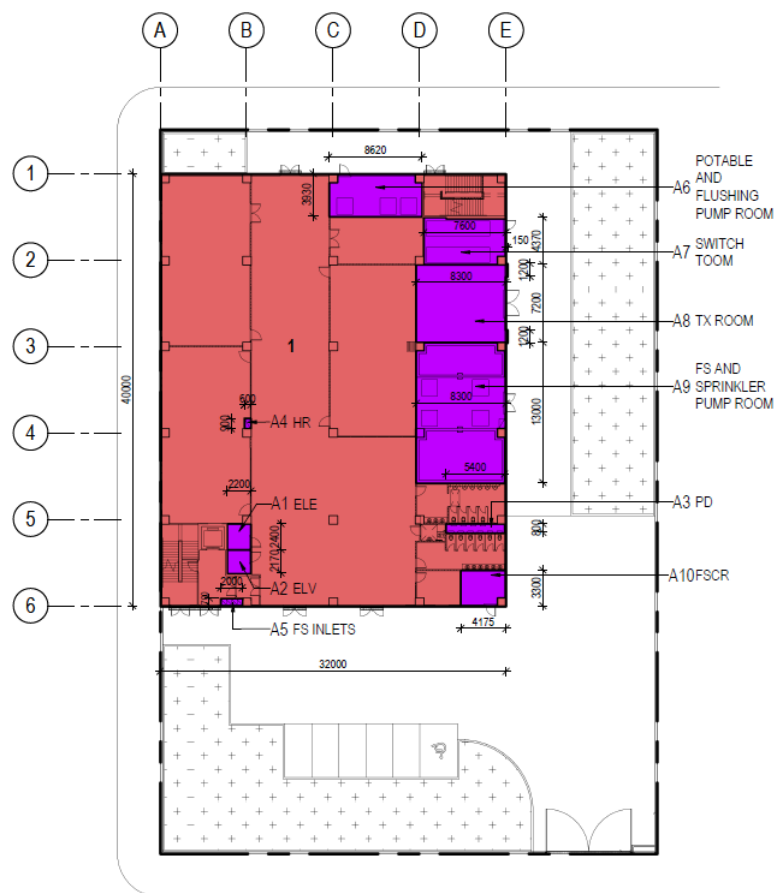


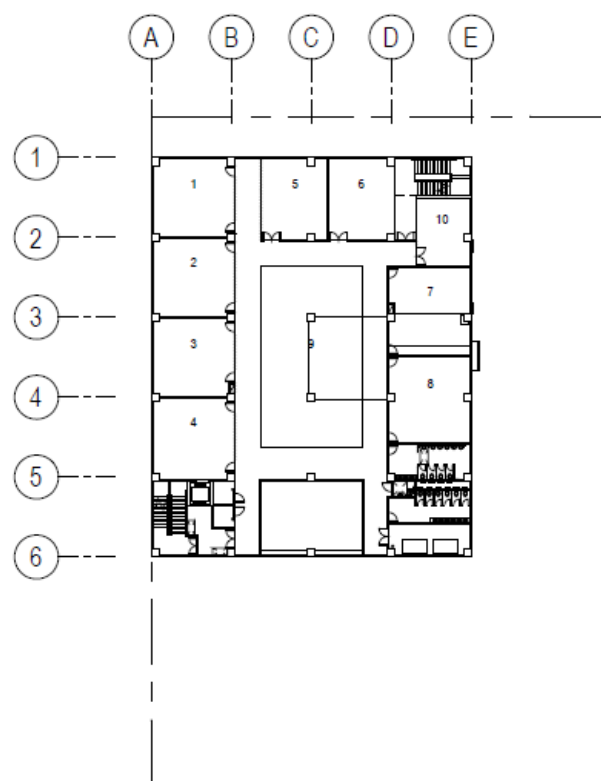
Figure 12 Examples of View for GFA Diagrams

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

5.2.11 UFA Diagram

UFA diagram should contain the following information, if applicable, but not limited to:

- (a) Grids and grid dimensions as appropriate,
- (b) Delineation of the aggregate UFA areas, either by colour or annotation, and
- (c) Corresponding schedule and calculation.



1/F DIAGRAM

1	FUNCTION ROOM 1	=	62 m ²
2	FUNCTION ROOM 2	=	63 m ²
3	FUNCTION ROOM 3	=	63 m ²
4	FUNCTION ROOM 4	=	66 m ²
5	FUNCTION ROOM 5	=	53 m ²
6	FUNCTION ROOM 6	=	53 m ²
7	FUNCTION ROOM 7	=	70 m ²
8	FUNCTION ROOM 8	=	70 m ²
9	ACTIVITY AREA	=	184 m ²
10	STORE	=	35 m ²
TOTAL			719 m ²

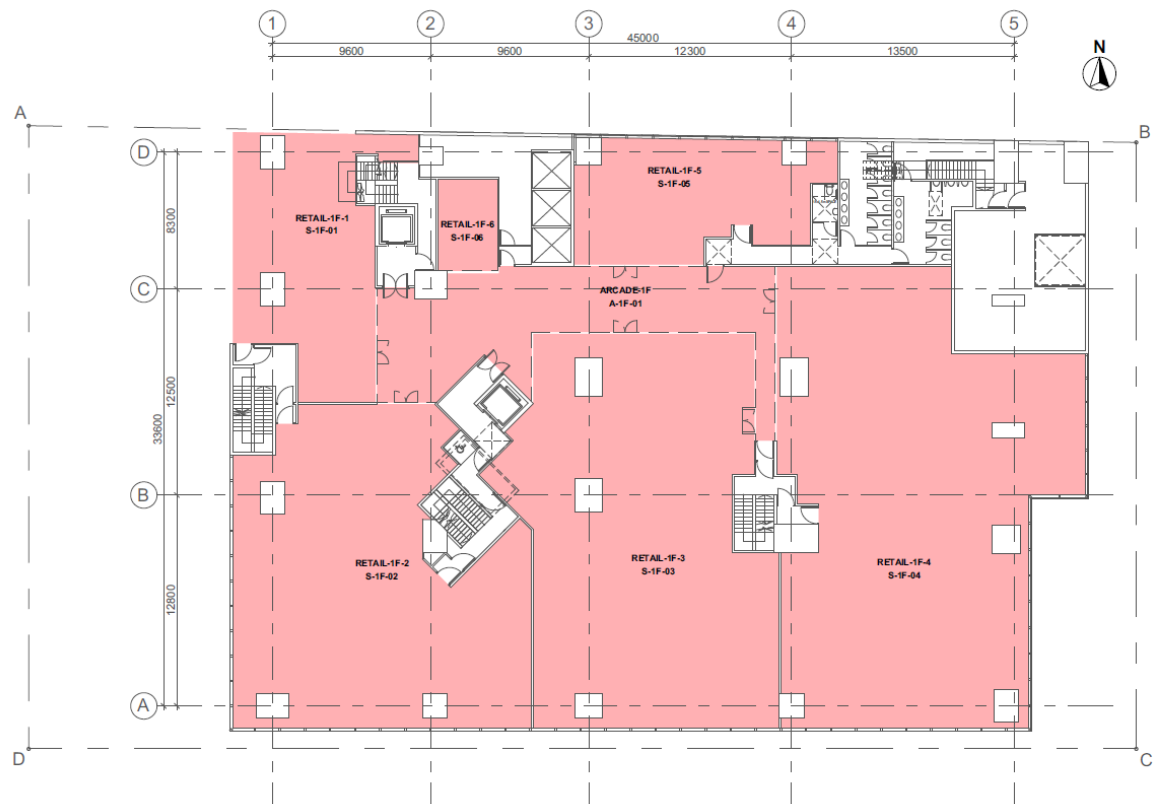


Figure 13 Examples of View for UFA Diagrams

5.2.12 UFS Diagram

UFS diagram should contain the following information, if applicable, but not limited to:

- (a) Grids and grid dimensions as appropriate, and
- (b) Delineation of the aggregate UFS areas, either by colour or annotation.

5.2.13 Assessment of Prescribed Windows

Prescribed window area diagram should contain the following information, if applicable, but not limited to:

- (a) Prescribed window areas,
- (b) Rectangular horizontal plan in critical locations,
- (c) Openable windows either shown on floor plans or elevations,
- (d) Provision of windows for habitable rooms, kitchens and offices,
- (e) Disposition of windows,
- (f) In case of using a performance-based approach, diagrams showing unobstructed vision area as defined under PNAP APP-130, and
- (g) Corresponding schedule and calculation.

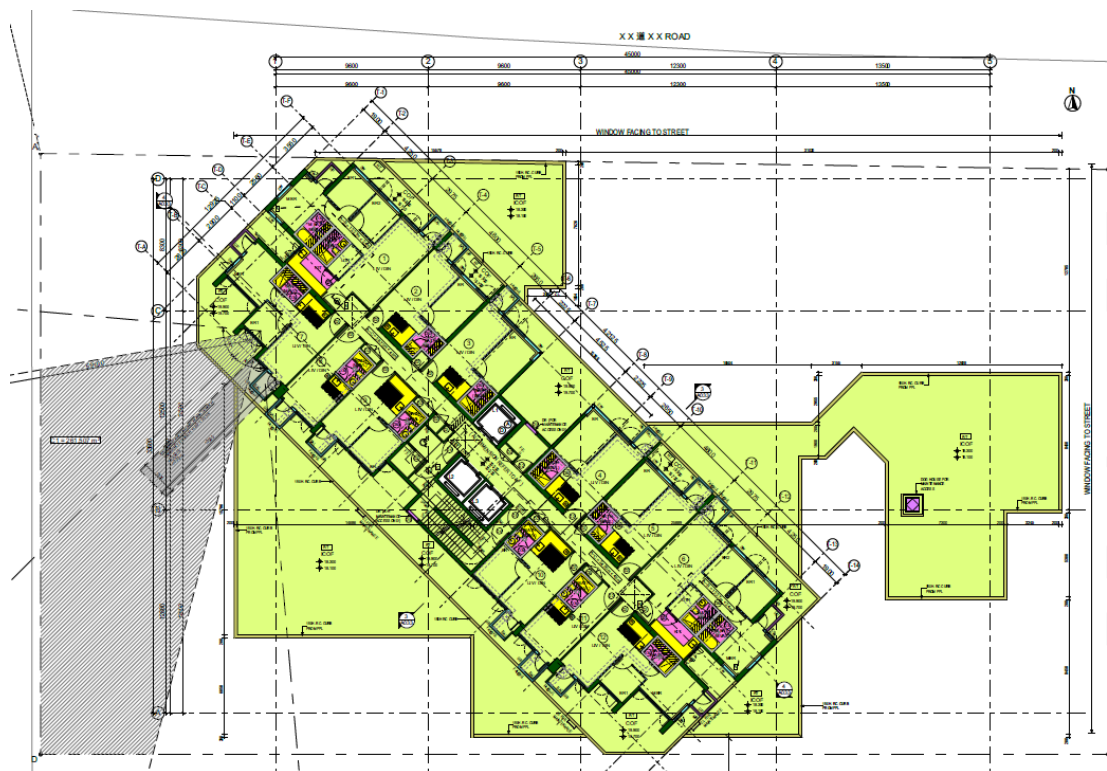


Figure 14 Example of View for Prescribed Window Provisions

5.2.14 Diagrams Showing Compliance with the SBD Guidelines

The diagrams should contain the following information, if applicable, but not limited to:

- (a) Demonstration of compliance with building separation, building setback and provision of site coverage of greenery according to PNAP APP-152, and
- (b) Site coverage of greenery areas should be identifiable to the extent that BD can differentiate the distribution of uncovered greenery areas and green features such as water features in primary and non-primary zone according to PNAP APP-152.

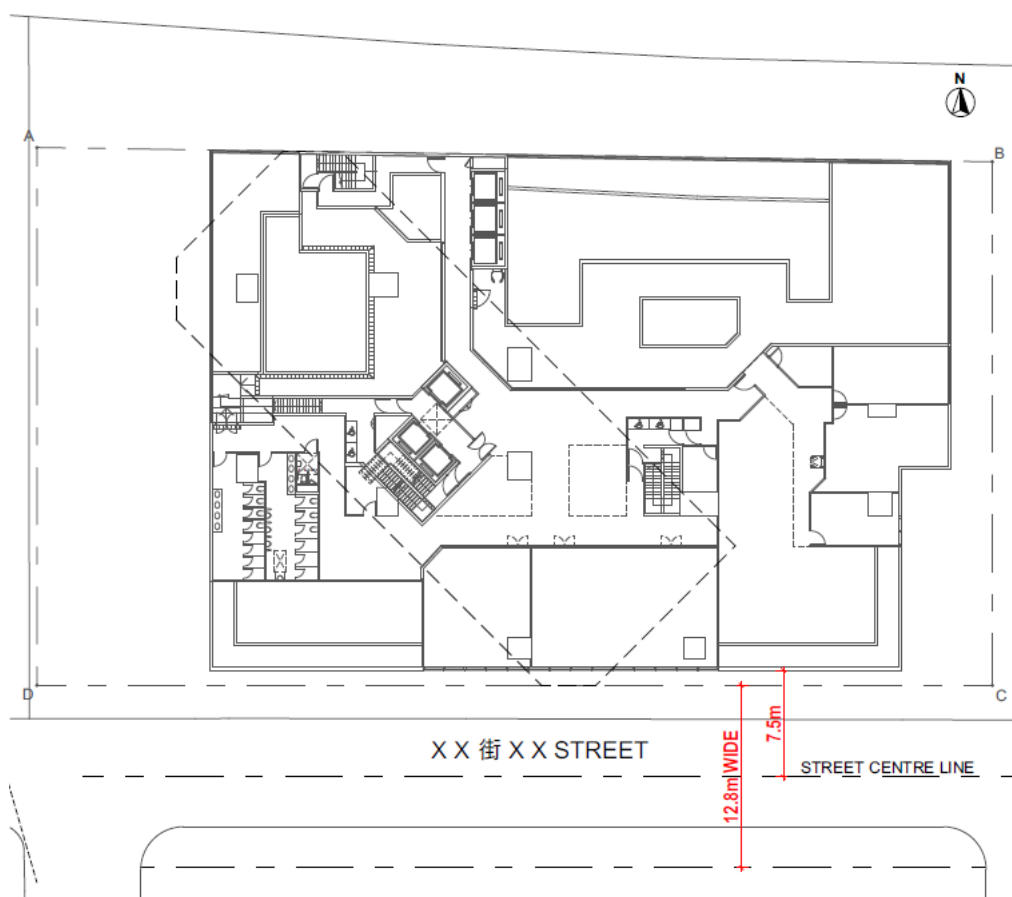


Figure 15 Example of View for Building Setback Diagram under SBD Guidelines

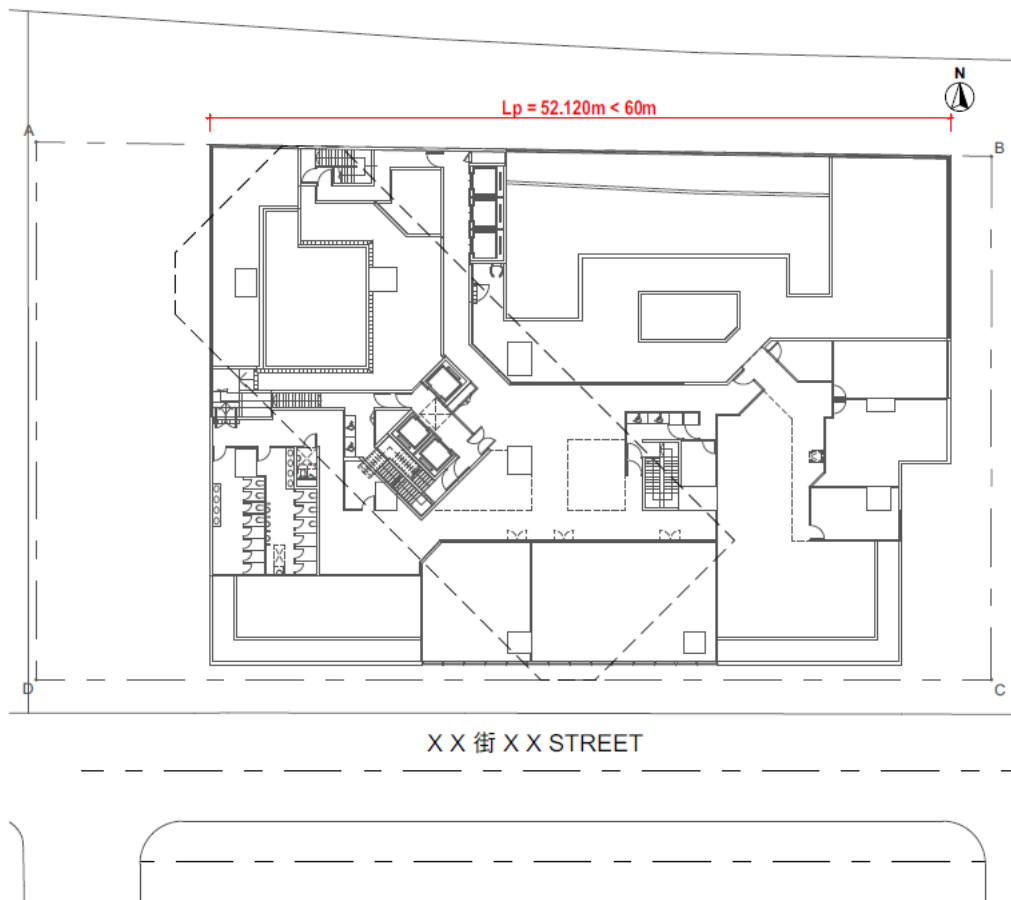


Figure 16 Example of View for Building Separation Diagram under SBD Guidelines

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

5.3.1 List of Drawings

A list of drawings should be provided.

DRAWING LIST		
DRAWING NUMBER	REV.	DRAWING TITLE
A001	A	BLOCK PLAN, NOTES AND LEGEND
A002	A	G/F PLAN
A003	A	1/F PLAN
A004	A	2/F PLAN
A005	A	R/F PLAN
A006	A	SECTIONS A AND B
A007	A	ELEVATIONS 1 AND 2
A008	A	ELEVATIONS 3 AND 4
C001	A	SITE COVERAGE, PLOT RATIO AND DEVELOPMENT SCHEDULE
C002	A	GFA DIAGRAMS AND CALCULATIONS
C003	A	SC DIAGRAM AND CALCULATION AND GFA CONCESSION SUMMARY
C004	A	UFA DIAGRAMS AND CALCULATIONS
C005	A	COMPARTMENT DIAGRAMS AND CALCULATIONS
C006	A	EVA SERVED FACADE DIAGRAMS AND CALCULATIONS
C007	A	SCHEDULES
C008	A	SUSTAINABLE BUILDING DESIGN GREENERY AREA CALCULATIONS

DRAWING LIST				
	Drawing No.	Drawing Title	Size	Rev.
1	A001	SITE PLAN AND NOTES	A1	-
2	A002	TYPICAL DETAIL	A1	-
3	A003	BASEMENT 2 FLOOR PLAN	A1	-
4	A004	BASEMENT 1 FLOOR PLAN	A1	-
5	A005	GROUND FLOOR PLAN	A1	-
6	A006	FIRST FLOOR PLAN	A1	-
7	A007	SECOND FLOOR PLAN	A1	-
8	A011	THIRD FLOOR PLAN	A1	-
9	A012	TYPICAL FLOOR PLAN (4/F TO 22/F)	A1	-
10	A013	MAIN ROOF PLAN	A1	-
11	A014	LIFT MACHINE LEVEL PLAN	A1	-
12	A015	TOP ROOF PLAN	A1	-
13	A021	TOWER ELEVATION A	A1	-
14	A022	TOWER ELEVATION B	A1	-
15	A023	TOWER ELEVATION C	A1	-
16	A024	TOWER ELEVATION D	A1	-
17	A031	PODIUM SECTION 1-1	A1	-
18	A032	PODIUM SECTION 2-2	A1	-
19	A033	TOWER SECTION	A1	-
20	C041	CALCULATIONS	A1	-
21	C042	SCHEDULE	A1	-
22	C051	CALCULATIONS (1)	A1	-
23	C052	CALCULATIONS (2)	A1	-
24	C053	CALCULATIONS (3)	A1	-
25	C054	CALCULATIONS (4)	A1	-
26	C055	CALCULATIONS (5)	A1	-
27	C056	CALCULATIONS (6)	A1	-
28	C061	FIRE COMPARTMENT DIAGRAMS & CALCULATIONS (1)	A1	-
29	C062	FIRE COMPARTMENT DIAGRAMS & CALCULATIONS (2)	A1	-
30	C063	FIRE COMPARTMENT DIAGRAMS & CALCULATIONS (3)	A1	-
31	C071	SUSTAINABLE BUILDING DESIGN DEMONSTRATION DIAGRAMS & CALCULATIONS	A1	-
32	C072	GREENERY DIAGRAMS & CALCULATIONS	A1	-
33	C073	E.V.A. PLAN DIAGRAMS & CALCULATIONS	A1	-

Figure 18 Examples of Drawing List

5.3.2 Site Area Calculation

All site areas should be rounded off to the nearest 0.1m^2 for site area less than $2,000\text{m}^2$ and to the nearest 1m^2 for site area of $2,000\text{m}^2$ or above in accordance with PNAP ADM-21.

Site Area Calculations:	
IL XXX S.A	XXX.X m^2
IL XXX S.B	XXX.X m^2
IL XXX S.C	XXX.X m^2
Total :	X,XXX.X m^2

Figure 19 Example of Site Area Calculation

5.3.3 List of Coordinates

A list of coordinates with bearings and distances should be provided as appropriate. Distances and coordinates should be provided to the nearest 0.001 of a metre without rounding off the figures. Bearings should be provided in the format of degrees-minutes-seconds ($\text{dd}^\circ \text{mm}' \text{ss}''$) to the nearest 1 second without rounding off the figures.

BOUNDARY COORDINATES Hong Kong 1980 Grid Coordinates		
POINT	E (m)	N (m)
A	8xxxxx.xxx	8xxxxx.xxx
B	8xxxxx.xxx	8xxxxx.xxx
C	8xxxxx.xxx	8xxxxx.xxx
D	8xxxxx.xxx	8xxxxx.xxx

BOUNDARY COORDINATES & DIMENSIONS:				
LOT NO. : IL XXX S.A				
POINT	DISTANCE	BEARING	NORTH (m)	EAST (m)
A	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	8xxxxx.xxx	8xxxxx.xxx
B	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	8xxxxx.xxx	8xxxxx.xxx
Q	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	8xxxxx.xxx	8xxxxx.xxx
C	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	8xxxxx.xxx	8xxxxx.xxx
D	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	8xxxxx.xxx	8xxxxx.xxx
E	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	8xxxxx.xxx	8xxxxx.xxx
P	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	8xxxxx.xxx	8xxxxx.xxx
F	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	8xxxxx.xxx	8xxxxx.xxx
CURVE DATA:				
SDE	ARC LENGTH (m)	RADIUS (m)	ANGLE	
CD	xxx.xxx	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	
DE	xxx.xxx	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	
FA	xxx.xxx	xxx.xxx	$\text{dd}^\circ \text{mm}' \text{ss}''$	

Figure 20 Examples of List of Coordinates

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

5.3.4 Development Schedule

Development schedule should be provided.

Development Schedule

A. LOCATION & LOT NO: Subject Site

B. SITE AREA : 2507.730 m² (approx)

C. HEIGHT OF BUILDING

Block	No. of Storeys	Proposed Height of Building	Height Restrictions under Lease	Special Condition Referred	AP's Confirmation (Dwg No.)
1					

D. LEASE REQUIREMENTS

Items	Proposed	Required / Permitted under Lease	Relevant Departments	Special Condition Referred	AP's Confirmation (Dwg No.)
1 User					
2 Type of Building					
3 Gross Floor Area					
4 Site Coverage					
5 Building Separation					
6 Building Setback					
7 Greenery Requirement					
8 Design and Disposition / Design Disposition and Height		(Please refer to the aspects that will be generally considered under DDH/DD clause stated in the LAO)			
9 Carpark					
10 loading and Unloading Requirements					
11 Vehicular Access					
12 Caretaker's - Office Accommodation					
- Quarters					
13 Owners' Corporation and Owners' Committee office					
14 Recreational Facilities					
15 Non-building Area (e.g. Drainage Reserve Area and Waterworks Reserve Area, etc)					
16 Formation Areas (e.g. Green, Yellow etc.)					
17 Tree Preservation					
18 Landscaping					
19 Other Special Requirements under Lease (e.g. footbridge, open space provision)					

Figure 21 Example of Development Schedule

5.3.5 Site Classification, Summary of SC and PR Calculation

Demonstration of compliance with the following should be provided:

- Regulations 18A, 19, 20, 21 and 23 of the B(P)R, such as information in supporting the proposed site classification, site area and PR, and
- Calculation of permitted PR by residual method under Regulation 21(2) of the B(P)R for composite building, if applicable.

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

SITE COVERAGE & PLOT RATIO CALCULATION (UNDER BO)

SITE AREA		=	2507.730	s.m.	
CLASS OF SITE		=	C		
HEIGHT OF BUILDING		=	75.05 m		
			[80 m (MAIN ROOF LEVEL) - 4.95 m (MAIN STREET LEVEL)]		
PERMITTED DOMESTIC SITE COVERAGE (OVER 61 m)		=	40%		
PROPOSED DOMESTIC SITE COVERAGE (OVER 61 m)	(REFER C053)	=	511.531	s.m.	
		=	511.531 / 2507.73 s.m. x 100 %		
		=	20.398 % < 40 %		
PERMITTED NON-DOMESTIC SITE COVERAGE (NOT EXCEEDING 15m)		=	100 %		
PROPOSED NON-DOMESTIC SITE COVERAGE (NOT EXCEEDING 15m)	(REFER C056)	=	1837.404	s.m.	
		=	1837.404 / 2507.73 s.m. x 100 %		
		=	73.27 % < 100 %		
PERMITTED NON-DOMESTIC PLOT RATIO (BPR)		=	15		
PERMITTED DOMESTIC PLOT RATIO (BPR)		=	10		
PROPOSED DOMESTIC G.F.A.		=	9998.301	s.m.	
PROPOSED NON-DOMESTIC G.F.A.		=	4000.484	s.m.	
PROPOSED NO. OF UNITS		=	240	UNIT	
ACTUAL G.F.A. OF DOMESTIC		=	9998.301	s.m.	
ACTUAL PLOT RATIO OF DOMESTIC		=	9998.301 s.m. / 2507.73 s.m		
		=	3.987 < 10		
PERMISSIBLE PLOT RATIO FOR NON- DOMESTIC	(10 - 3.987) x 15 / 10	=	9.020		
ACTUAL G.F.A. OF NON-DOMESTIC		=	4000.484 s.m. / 2507.730 s.m.		
		=	1.596 < 9.020		
OPEN SPACE REQUIRED :					
(CALCULATION REFER DWG. NO. C056)					
1 / 4 OF DOMESTIC ROOF OVER AREA		=	511.531 s.m. x 0.250		
		=	127.883 s.m.		
ACTUAL OPEN SPACE PROVIDED		=	715.319 s.m. > 127.883 s.m.		

SITE COVERAGE AND PLOT RATIO CALCULATION

UNDER BUILDINGS ORDINANCE

BUILDINGS DEPARTMENT B(P)R REFER

CLASS OF SITE	:	C
USE CLASSIFICATION	:	ASSEMBLY
SITE AREA	:	3082 m ²
BUILDING HEIGHT	:	17.50 m
PERMISSIBLE SITE COVERAGE (SC)		
NON-DOMESTIC SC	:	97.5 %
PERMISSIBLE PLOT RATIO (PR)		
NON-DOMESTIC PR	:	5.8
PROPOSED SITE COVERAGE AREA	:	1280.000 m ²
PROPOSED SITE COVERAGE	:	1280.000 m ² / 3082.000 m ² x 100 % = 41.531 %
PROPOSED NON-DOMESTIC GFA	:	3519.081 m ²
PROPOSED NON-DOMESTIC PLOT RATIO	:	3519.081 m ² / 3082.000 m ² = 1.142

Figure 22 Examples of SC and PR Calculation

5.3.6 Open Space Calculation

- (a) Open space diagram and its disposition.
- (b) Calculation of required / provided open space.

OPEN SPACE REQUIRED :

(CALCULATION REFER DWG. NO. C056)

1 / 4 OF DOMESTIC ROOF OVER

AREA	=	511.531 s.m.	x	0.250
	=	127.883 s.m.		
	=	715.319 s.m.	>	127.883 s.m.

Figure 23 Example of Open Space Calculation

5.3.7 Computation for GFA Concession Requirements

- (a) Pre-requisites under PNAP APP-151 and 152, if applicable, should be provided.

5.3.8 List of GFA Concessions

- (a) Table showing all GFA concession items under Appendix A of PNAP APP-151 and Appendices G and H of PNAP ADM-2 should be provided, and
- (b) Exempted GFA without ceiling cap and GFA subject to 10% cap under PNAP APP-151 should be provided.

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

Summary of GFA Concessions							
Item	Function of Rooms / Areas	Floor				No Cap	Subject to overall cap under APP-151
		G/F	1/F	2/F	R/F		
Disregarded GFA under Regulation 23(3)(b) of the Building (Planning) Regulations (B(P)R)							
1	Carpark and loading/unloading area excluding public transport terminus	-	-	-	-	-	-
Plant rooms and similar services							
2.1	Mandatory feature or essential plant room, area of which is limited by respective PNAP or regulation, such as lift machine room, TBE room, refuse storage chamber, etc.	-	-	-	-	-	-
2.2	Mandatory feature or essential plant room, areas of which is NOT limited by any PNAP or regulation, such as room occupied solely by FSI and equipment, meter room, transformer room, potable and flushing water tank, etc.	255.597	11.134	11.134	11.134	288.999	-
2.3	Non-mandatory or non-essential plant room, such as A/C plant room, AHU room, etc.	-	26.190	26.190	-	-	52.380
Disregarded GFA under Regulation 23A(3) of the B(P)R							
3	Area for picking up and setting down persons departing from or arriving at the hotel by vehicle	-	-	-	-	-	-
4	Supporting facilities for a hotel	-	-	-	-	-	-
Green Features under Joint Practice Notes (JPNs)							
5	Balcony for residential buildings	-	-	-	-	-	-
6	Wider common corridor and lift lobby	-	-	-	-	-	-
7	Communal sky garden	-	-	-	-	-	-
8	Communal podium garden for non-residential buildings	-	-	-	-	-	-
9	Acoustic fin	-	-	-	-	-	-
10	Wing wall, wind catcher and funnel	-	-	-	-	-	-
11	Non-structural prefabricated external wall	-	-	-	-	-	-
12	Utility platform	-	-	-	-	-	-
13	Noise barrier	-	-	-	-	-	-
Amenity Features							
14	Counter, office, store, guard room and lavatory for watchman and management staff, Owners' Corporation Office	-	-	-	-	-	-
15	Residential recreational facilities including void, plant room, swimming pool filtration plant room, covered walkway etc serving solely the recreational facilities	-	-	-	-	-	-
16	Covered landscaped and play area	-	-	-	-	-	-
17	Horizontal screen/covered walkway, trellis	-	-	-	-	-	-
18	Larger lift shaft	-	-	-	-	-	-
19	Chimney shaft	-	-	-	-	-	-
20	Other non-mandatory or non-essential plant room, such as boiler room, SMATV room	-	-	-	-	-	-
21	Pipe duct, air duct for mandatory feature or essential plant room	4.320	4.320	4.320	-	12.960	-
22	Pipe duct, air duct for non-mandatory or non-essential plant room	-	-	-	-	-	-
23	Plant room, pipe duct, air duct for environmentally friendly system and feature	-	-	-	-	-	-
24	High headroom and void in front of cinema, shopping arcade etc. in non-domestic development	-	-	-	-	-	-
25	Void over main common entrance (prestige entrance) in non-domestic development	-	70.700	-	-	-	70.700
26	Void in duplex domestic flat and house	-	-	-	-	-	-
27	Sunshade and reflector	-	-	-	-	-	-
28	Minor projection such as A/C box, window sill, projecting window	-	-	-	-	-	-
29	Other projection such as air-conditioning box and platform with a projection of more than 750mm from the external wall	-	-	-	-	-	-
Other Items							
30	Refuge floor including refuge floor cum sky garden	-	-	-	-	-	-
31	Covered area under large projecting/overhanging feature	-	-	-	-	-	-
32	Public transport terminus (PTT)	-	-	-	-	-	-
33	Party structure and common staircase	-	-	-	-	-	-
34	Horizontal area of staircase, lift shaft and vertical cut solely serving floor accepted as not being accountable for GFA	-	-	-	-	-	-
35	Public passage	-	-	-	-	-	-
36	Covered set back area	-	-	-	-	-	-
Bonus GFA							
37	Bonus GFA	-	-	-	-	-	-
Additional Green Features under JPN							
38	Buildings adopting Modular Integrated Construction	-	-	-	-	-	-
Total :						301.959	123.080
Total Accountable GFA :							3519.081
% of GFA concession :							3.498%

GFA CONCESSION SUMMARY (PNAP ADM-2 APPENDIX H)																			
BUILDING NAME	TOTAL APPROVED DOMESTIC & NON-DOMESTIC GROSS FLOOR AREA (GFA) (m ²)	DISREGARDED GFA UNDER B(P)R 23(3)(b)						DISREGARDED GFA UNDER B(P)R 23A(3)				EXEMPTED GFA UNDER JPN 1 & 2				EXEMPTED GFA			
		CARPARK AND LOADING / UNLOADING		PLANT ROOM AND SIMILAR SERVICES				HOTEL		GREEN FEATURES				AMENITY FEATURES AND OTHER EXEMPTED ITEMS				BONUS GFA	
		AREA (m ²)	%	AREA (m ²)		%		AREA (m ²)	%	AREA (m ²)	AREA (m ²)	%		AREA (m ²)	AREA (m ²)	%	AREA (m ²)	%	
		A	B	C=B/A	D	D #	E=(D-D#)/A	F	G=F/A	H	H #	I=(H+H#)/A	J	J #	K=(J+J#)/A	L	M=L/A	N=DE+H#*J#	O=N/A
BUILDING INFORMATION MODELLING	3519.081	1-	0		2.1-	0	2.3-	52.380		3-	0		16-	0	14-	0			
					2.2-	288.999			4-	0			17-	0	15-	0			
										8-	0	6-	0						
										9-	0	11-	0		21-	12.960	18-	0	
										10-	0	12-	0		23-	0	19-	0	
										13-	0	*			24-	0	20-	0	
															28-	0	22-	0	
															29-	0	25-	70.700	
															30-	0	26-	0	
															31-	0	27-	0.000	
															32-	0	*		
															33-	0	*		
															34-	0	*		
	SUB-TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TOTAL	3519.081	0	0%	288.999	62.380	0.701%	0%	6%	0%	0%	0%	12.060	70.700	2.377%	0%	0%	123.080	3.498%

Figure 24 Examples of the Lists of GFA Concession Items and Areas

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

5.3.9 List of Modifications

List of modifications as stated in Appendix A3 of PNAP ADV-33 should be provided.

MODIFICATIONS / EXEMPTIONS GRANTED and AMENDMENT TO LOCATION (if any) IN THE CURRENT SUBMISSION				Permit No.			
				Date of Modifications Granted			
Description	Condition	Location with Modification/Exemption Granted	Date of Submission	Month	10	02	01
				Year	13	14	16
				Rev.	A	C	F
1	Building (Construction) Regulation 35 Permission of the level of an internal floor to be less than 150mm above the level of the external ground (PNAP APP-125)	1. Additional drainage channels, each with at least 2 no. of drainage outlets are to be provided and shown on plan and	(i) All entrances on level 1		#	√	√
		2. A fall, not less than 1:80, on the flat roof or external ground sloping away from the adjoining internal/usable floor area is to be maintained.	(ii) All exits on level 1		#	√	Δ
2	Building (Planning) Regulations 20 & 21 Exclusion of projections from site coverage & plot ratio calculations (PNAP APP-19, 67 & 156)	-	All architectural features at level 3,4,5,6,7,8 & 9		X	#	Δ
3	Building (Planning) Regulation 36 Omission or reduction in standard of natural lighting and ventilation to rooms containing a soil or waste fitment (PNAP ADM-2)	1. Mechanical means of Ventilation to be provided in the building is capable of supplying fresh air at the rates stipulated in Annex 1 of PNAP ADM-2. 2. Compliance with the requirements set out in Annex 2 for the fresh air intake	(i) Lavatories and pantry on level 1 to 9		#	√	Δ
			(ii) Cafeteria, sick room and cleaner's room on level 1 to 3		#	√	Δ
			(iii) Commercial Kitchen on level 3		#	x	x
			(iv) Commercial Kitchen on level 4		#	√	x

Legend : # First Granted √ Still Applicable X Not Applicable

Δ Amendment to the location of the exemption/modification previously granted. Depending on the extent of the amendment, new Form BA16 and BD 106 may be required.

Figure 25 Example of List of Modifications

5.3.10 Schedule of Minimum Number and Width of Exit Doors and Exit Routes

- (a) Demonstration of compliance with Regulation 41(1) of B(P)R in the context of Clause B8.1 of FS Code, and
- (b) Use, occupancy factor, the required / provided number and width of the exit doors and exit routes should be provided.

PROVISIONS OF EXIT DOORS & EXIT ROUTES FROM ROOM, FIRE COMPARTMENT OR STOREY													
LOCATION	USE CLASSIFICATION	TYPE OF ACCOMMODATION	TOTAL USABLE FLOOR AREA (m ²)	FACTOR REPRESENTING s.m. OF UFA PER PERSON	TOTAL CAPACITY PER FLOOR (PERSON)	MAX. NO OF EXIT DOOR / ROUTE (FROM STOREY)		MIN. TOTAL WIDTH (mm)		MIN. WIDTH OF EACH (mm)			
						REQ.	PRO.	EXIT DOOR REQ.	EXIT ROUTE REQ.	EXIT DOOR REQ.	EXIT ROUTE REQ.		
B2F	7	CARPARK	1558.596	30	52	2	2	1750	1800	2100	850	900	1050
B1F	7	CARPARK	861.170	30	29								
	4b	RETAIL-B1	565.800	3	189								
		ARCADE-G1	141.475		48								
		RETAIL-G1	123.112		42								
	4b	RETAIL-G2	204.717	3	69								
		RETAIL-G3	383.443		128								
		RETAIL-G4	175.408		59								
		RETAIL-G5	39.995		14								
		TOTAL OCCUPANCY FOR G/F SHOPS & ARCADE			TOTAL = 360 P.								
		ARCADE-1F	127.551		43								
		RETAIL-1F-1	121.932		41								
	4b	RETAIL-1F-2	286.062		96								
		RETAIL-1F-3	333.218	3	112	2	4	3000	4200	3000	4200	1050	1050
		RETAIL-1F-4	406.547		136								
		RETAIL-1F-5	98.547		33								
		RETAIL-1F-6	20.069		7								
		TOTAL OCCUPANCY FOR 1/F SHOPS & ARCADE			TOTAL = 468 P.								
		RECREATIONAL FACILITIES :											
	-	LOUNGE AREA 2	20.072	3	7								
	-	LOUNGE AREA 1	17.787	3	6								
	4a	FUNCTION ROOM	106.430	10	11								
	5d	GYM	59.897	3	20	2	4	1750	4200	2100	4200	850	1050
		OUTDOOR SWIMMING POOL	64.688	3	22								
	-	OCO	19.986	-	4 (SAV)								
		TOTAL OCCUPANCY FOR 2/F SHOPS & ARCADE			TOTAL = 70 P.								
		FLAT 1 - 12 (TOTAL = 12 FLATS)	261.690	4.5	TOTAL = 59 P.	2	2	1750	1800	2100	2100	850	1050
TOWER 3/F - 22/F (TOTAL = 20 S.)	1b				TOTAL = 59 P.								
REMARKS : 1. ALL PLANT ROOM TAKE LARGEST AREA OF EACH FLOOR, ROOM AREA AS INDICATED ON PLAN 2. FOR CLASSIFICATION 8, IF THE NET FLOOR AREA OF A ROOM DOES NOT EXCEEDING 100m ² , THE OCCUPANT CAPACITY IS CONSIDERED TO BE ZERO.													

Figure 26 Examples of Schedule of Minimum Number and Width of Exit Doors and Exit Routes on Each Floor

5.3.11 Schedule of Discharge Value

- (a) Demonstration of compliance with Regulation 41(1) of B(P)R in the context of Clause B12 of FS Code, and
- (b) The capacity of storeys served by stair, number of storeys, width and number of stairs provided, discharge value, etc. should be provided.

DISCHARGE VALUES (DV) (SPRINKLER PROTECTED BUILDING)							
FLOOR	TOTAL CAPACITY TO BE SERVED BY STAIRCASE (PERSONS)	S-1 (1500 WIDE) 1/F TO 2/F = 2				S-2 (1500 WIDE) 1/F TO 2/F = 2	
2/F	84	84	/	2	42	84	/ 2 42
1/F	76	76	/	2	38	76	/ 2 38
TOTAL DISCHARGE VALUE OF STAIR	160	80				80	
PERMISSIBLE DISCHARGE VALUE OF STAIR	1302	651				651	

Figure 27 Example of Schedule of Discharge Value

5.3.12 Schedule of FRR / Compartment Schedule

- Demonstration of compliance with Regulation 90 of the Building (Construction) Regulations and Part C of the FS Code such as fire compartment area / volume calculations, and
- Use, compartment area / volume, FRR required, minimum dimensions of elements of construction, etc. should be provided.

LOCATION	TYPE OF ACCOMMODATION	USE CLASSIFICATION	COMPARTMENT OF BUILDING		FIRE RESISTANCE (MINIMUM DIMENSION OF ELEMENTS OF CONSTRUCTION)	MINIMUM DIMENSION OF ELEMENTS OF CONSTRUCTION					
						R.C. SLAB		R.C. BEAM		R.C. COLUMN	
			FLOOR AREA (m ²)	VOLUME (m ³)		THICKNESS	CONCRETE COVER TO REINFORCEMENT	THICKNESS	CONCRETE COVER TO REINFORCEMENT	THICKNESS	CONCRETE COVER TO REINFORCEMENT
B2F & B1F	CARPARK	7	NOT EXCEEDING 10000	NOT EXCEEDING 7000 FOR F.S.D.	240 / 240 / 240	170	55* (simply supported) 45* (continuous)	80* (simply supported) 60* (continuous)	35	450	180
B1F	RETAIL	4b	NOT EXCEEDING 2500	NOT EXCEEDING 7000 FOR F.S.D.	240 / 240 / 240	170	55* (simply supported) 45* (continuous)	80* (simply supported) 60* (continuous)	35	450	180
G/F - 1/F	RETAIL & ARCADE	4b	NOT EXCEEDING 2500	NOT EXCEEDING 7000 FOR F.S.D.	60	100	20 (simply supported) 20 (continuous)	30 (simply supported) 30 (continuous)	25	200	75
2/F	RFF	5a	NOT EXCEEDING 2500	NOT EXCEEDING 7000 FOR F.S.D.	60	100	20 (simply supported) 20 (continuous)	30 (simply supported) 30 (continuous)	25	200	75
TOWER (G/F - 22/F)	EACH FLOOR DOMESTIC FLATS	1	NOT LIMITED	NOT LIMITED	60	100	20 (simply supported) 20 (continuous)	30 (simply supported) 30 (continuous)	25	200	75
BASEMENT, PODIUM & TOWER	ALL EAM ROOMS	8	-	-	120	125	35 (simply supported) 25 (continuous)	50* (simply supported) 40 (continuous)	35	300	100

REMARKS:

- * Reinforcement consisting of expanded metal lath or a wire fabric not lighter than 0.6kg/m² with 2mm diameter wire at not more than 100mm centers or a continuous arrangement of links not more than 200mm centers shall be incorporated in the concrete cover at a distance not exceeding 20mm from the face.
- * All floors transformer rooms, switch rooms, pump rooms, the rooms, lift machine rooms, emergency generator rooms and all electrical and special hazards rooms, tower roof lift machine room, pump rooms, wall & floor adjoining to the required staircases wall thickness 180mm cover to steel 25mm, floor thickness 170mm cover to steel 55mm*.
- The special hazard room's or floors which adjoining to the exit staircase to be of 240/240 minutes F.R.R.
- Slab between B1F carpark and G/F should have an F.R.R. of less than - / 240 / 240.

Figure 28 Example of Schedule of FRR for Elements of Construction

5.3.13 Schedule of Sanitary Fitment Provisions

- (a) Demonstration of compliance with Part II of the Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations,
- (b) The location, associated use, total UFA and capacity per floor,
- (c) The number of persons with gender, and
- (d) Required / provided sanitary fitments.

LOCATION		TYPE OF ACCOMMODATION	SCHEDULE OF SANITARY FITMENT										MARK ③ INCLUSIVE DISABLED TOILET																			
			TOTAL USABLE FLOOR AREA (m ²)		T24/25/26 REPRESENTING 5.m. OF UFA PER PERSON		CAPACITY (PERSONS)		RATIO				MALE TO FEMALE				W.C. PAN				BATH				URINAL				BATH / SHOWER			
									TOTAL		MALE		FEMALE		MALE		FEMALE		MALE		FEMALE		MALE		FEMALE		MALE		FEMALE			
1/F	RETAL-B1		189	P.	1:1.5	76	113	1	3	2	①	1	3	1	①	1	3	-	-	-	-	-	-	-	-	-	-					
	LOUNGE-G1		48																													
	RETAIL-G1		66																													
	RETAIL-G2		66																													
	RETAIL-G3		128																													
	RETAIL-G4		59																													
	RETAIL-G5		14																													
	ARC405-1F		43																													
	RETAL-1F-1		41																													
	RETAL-1F-2		96																													
2/F	RETAL-1F-3		112																													
	RETAL-1F-4		136																													
	RETAL-1F-5		33																													
	RETAL-1F-6		7																													
	RETAL-1F-7		7																													
	RETAIL-1F-8 FACILITIES		6																													
	LOUNGE AREA 2		7																													
	LOUNGE AREA 1		6																													
	MPXR		11																													
	GYM		20																													
3/F	OUTDOOR SWIMMING POOL		22																													
	OCO		4																													
(FOR RESIDENTIAL TOWERS)																																
TOWER 1F - 22/F	DOMESTIC FLAT NO.1		56.793	4.5	9 P.	-	-	-	-	1	2	1	1	2	1	1	1	1	2													
	RETAIL-1F-2																															

Figure 29 Example of Schedule of Sanitary Fitment Provisions

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

5.3.14 Window Area Calculation

- Required window area assessment under Regulations 30, 31 and 36 of the B(P)R,
- Provided window area calculation, and
- Use, UFA, required / provided openable area, required / provided window area should be provided.

FLAT	USE (EACH FLOOR)	U.F.A. (s.m.)	PRO. LIGHTING AREA (W) x (H) x 80% (s.m.)	REQ. LIGHTING U.F.A. (1/10)	PRO. OPENABLE AREA (W) x (H) x 80% (s.m.)	REQ. OPENABLE AREA U.F.A. (1/16)	REMARK
1 & 6	LIV / DIN	19.853	1.371 x 1.375 x 80% =	1.508	1.371 x 0.950 x 80% =	1.241	
	*BATH 1	2.940	1.229 x 1.350 x 80% =	1.327	0.750 x 1.350 x 80% =	0.810	(1/10)
			Total =	2.835 >	Total =	1.852 >	
	MBR	7.176	0.600 x 1.375 x 80% =	0.660	0.600 x 0.950 x 80% =	0.456	
	*M BATH	2.940	1.000 x 1.350 x 80% =	1.080	0.650 x 1.350 x 80% =	0.702	(1/10)
			Total =	1.740 >	Total =	1.158 >	
2 & 5	BR1	4.882	2.100 x 1.375 x 80% =	2.310 >	0.700 x 0.950 x 80% =	0.532 >	
	BR2	4.882	2.100 x 1.375 x 80% =	2.310 >	0.700 x 0.950 x 80% =	0.532 >	
	KIT	4.650	1.000 x 1.200 x 80% =	0.960	1.000 x 1.200 x 80% =	0.960	
	UTR	2.100		0.210		0.210	(1/10)
			Total =	0.960 >	Total =	0.960 >	
				1.284	0.700 x 0.950 x 80% =	0.532	
3 & 4	LIV / DIN	12.839	0.821 x 1.375 x 80% =	0.903	0.700 x 0.950 x 80% =	0.532	
	O KIT	2.280	1.229 x 1.350 x 80% =	1.327	0.750 x 1.350 x 80% =	0.810	
	*BATH	2.798		0.280		0.280	(1/10)
			Total =	2.230 >	Total =	1.342 >	
	BR	7.679	2.150 x 1.375 x 80% =	2.365 >	0.700 x 0.950 x 80% =	0.532 >	
				0.758	0.700 x 0.950 x 80% =	0.532 >	
7 & 12	LIV / DIN	12.134	0.971 x 1.375 x 80% =	1.068	0.700 x 0.950 x 80% =	0.532	
	O KIT	2.377	1.079 x 1.350 x 80% =	1.165	0.750 x 1.350 x 80% =	0.810	
	*BATH	2.888		0.289		0.289	(1/10)
			Total =	2.233 >	Total =	1.342 >	
	BR	7.624	2.150 x 1.375 x 80% =	2.365 >	0.700 x 0.950 x 80% =	0.532 >	
				0.752	0.700 x 0.950 x 80% =	0.532 >	
8 & 11	LIV / DIN	12.542	0.646 x 1.200 x 80% =	0.620	0.646 x 1.200 x 80% =	0.620	
	O KIT	2.522	1.229 x 1.350 x 80% =	1.327	0.750 x 1.350 x 80% =	0.810	
	*BATH	2.940		0.294		0.294	(1/10)
			Total =	1.947 >	Total =	1.430 >	
	MBR	7.768	1.400 x 1.375 x 80% =	1.540 >	0.700 x 0.950 x 80% =	0.532 >	
	BR1	4.410	1.400 x 1.200 x 80% =	1.344 >	1.400 x 1.200 x 80% =	1.344 >	
9 & 10	LIV / DIN	12.224	1.246 x 1.200 x 80% =	1.196	1.246 x 1.200 x 80% =	1.196	
	O KIT	1.710	1.229 x 1.350 x 80% =	1.327	0.750 x 1.350 x 80% =	0.810	
	*BATH	2.940		0.294		0.294	(1/10)
			Total =	2.523 >	Total =	2.006 >	
	LIV / DIN	11.119	0.700 x 1.200 x 80% =	0.672	0.700 x 1.200 x 80% =	0.672	
	O KIT	3.585	1.229 x 1.350 x 80% =	1.327	0.750 x 1.350 x 80% =	0.810	
9 & 10	*BATH	2.888		0.289		0.289	(1/10)
	BR	5.913	1.850 x 1.200 x 80% =	1.776 >	0.700 x 1.200 x 80% =	0.672 >	

FLOOR	USE	AREA	NOTIONAL AREA	REQUIRED			PROVIDED	
				10% OF WINDOW AREA	10% OF OPENABLE AREA	6.25% OF OPENABLE AREA	WINDOW AND OPENABLE AREA	WINDOW MARK
G/F TO 2/F	F LAV	25 m²	-	2.500 m²	2.500 m²		1.5H x 2.8 m x 0.8 = 3.36 m²	W2
G/F TO 2/F	M LAV	27 m²	-	2.700 m²	2.700 m²		1.5H x 2.8 m x 0.8 = 3.36 m²	W2
G/F	OFFICE	129 m²	-	12.900 m²		8.063 m²	1.35H x 6.3 m x 2 x 0.8 = 13.608 m²	W1
2/F	FUNCTION ROOM 8	70 m²	2.25m² x 2 = 4.5m²	0.450 m²		0.283 m²	1.5H x 2.8 m x 0.8 = 3.36 m²	W3

Figure 30 Examples of Schedule of Window Area Calculation

5.3.15 Refuse Storage and Material Recovery Chamber Calculation

- Required / provided facilities for refuse storage and material recovery as stipulated in Regulation 3 of the Building (Refuse Storage and Material Recovery Chambers and Refuse Chutes) Regulations and PNAP APP-35, and
- Total UFS, required / actual refuse storage and material recovery chamber should be provided.

REFUSE STORAGE & MATERIAL RECOVERY CHAMBER NET FLOOR CALCULATION

(CALCULATION REFER DWG. NO. C051)

TOTAL U.F.S. OF NON-DO C-051

B1/F	RETAIL	=	565.800	s.m.
G/F	RETAIL & ARCADE	=	1068.150	s.m.
1/F	RETAIL & ARCADE	=	1393.926	s.m.
2/F	RESIDENT'S RECREATIONAL FACILITIES	=	211.173	s.m.
		SUB-TOTAL :	=	3239.049 s.m.

TOTAL U.F.S. OF DOMESTIC

3F ~ 22F	300.138	s.m. (EACH FLOOR) x	20	STOREYS	=	6002.760	s.m.
SUB-TOTAL :					=	6002.760	s.m.

REQUIRED MIN. RS&MRC AREA FOR DOMESTIC	=	6002.760 s.m. / 347	=	17.300 s.m.
REQUIRED MIN. RS&MRC AREA FOR NON-DOMESTIC	=	3239.049 s.m. / 925	=	3.502 s.m.
		TOTAL :	=	20.802 s.m.

ACTUAL REFUSE STORAGE & MATERIAL RECOVERY CHAMBER	=	35.835 s.m.	>	20.802 s.m.
---	---	-------------	---	-------------

Figure 31 Example of Refuse Storage and Material Recovery Chamber Calculation

5.3.16 Floor Area Calculation for TBE Room

- Demonstration of compliance with Regulation 28A of the B(P)R and PNAP APP-84, and
- Assessment of required floor areas and number of units.

CALCULATION AREA OF T.B.E. ROOM

UNDER PNAP APP-84

(CALCULATION REFER DWG. NO. C051)

TOTAL NO. OF UNIT :	=	240	UNIT
ACTUAL T.B.E. ROOM PROVIDED (FOR DOMESTIC)	=	27.970	s.m. [24 s.m. (min.) ~ 31 s.m. (max.)]
ACTUAL T.B.E. ROOM PROVIDED (FOR NON-DOMESTIC)	=	27.098	s.m. [22 s.m. (min.) ~ 28 s.m. (max.)]
TOTAL U.F.S. OF NON-DOMESTIC	=	3239.049	s.m.

Figure 32 Example of Floor Area Calculation for TBE Room

5.3.17 Lift Shaft Schedule

- (a) Lift shaft schedule for the purpose of GFA concessions under PNAP APP-89 should be provided.

LIFT SHAFT AREA					
AREA NO.		(S.M.) ①		STOREYS ②	TOTAL ③=① x ②
LT-1	LFS	4.725	2F~22F	21	99.23
LT-2	LFS	4.410	2F~22F	21	92.61
LT-3	LFS	4.410	GF~22F	23	101.43
		13.545			293.265

Figure 33 Example of Lift Shaft Schedule

5.4 Amendment Plans and Alterations & Additions Plans

This chapter describes some modelling requirements, particularly to amendment plans and alterations & additions (A&A) plans.

5.4.1 Amendment Plans

After the approval of the first set of plans, either general building plans (GBP) to a new building or A&A plans to an existing building, it is not uncommon that APs would revise their design and submit amendment plans afterwards. To process the amendment plans using BIM software, the following practices should be adopted:

- (a) The portion of floor layouts, sections, elevations with amendments should be shown, either by colouring or highlighting with annotation for easy identification. The remaining areas without amendments should be shown in black colour (recommended RGB: 0,0,0) and white colour (recommended RGB: 255,255,255).
- (b) Revised figures in schedules / tables arising from amendments should be indicated in red colour or the revised figures with red underlines (recommended RGB: 204,0,51). Other figures without revision should be shown in black colour (recommended RGB: 0,0,0).
- (c) In case a new schedule / table is added in the amendment plans, the new schedule / table should be enclosed by a red closed-loop (recommended RGB: 204,0,51).
- (d) In general, deletion of approved works in the amendment plans should be shown in blue dotted lines (recommended RGB: 0,63,255). However, APs on some occasions may opt not to follow this practice where revision involves multiple blue dotted lines in the same locality and thus cause confusion to the readers.
- (e) Section 5.2.10 introduces the new colour code system for GFA diagram. It creates unnecessary workload to the APs if BA requests the coloured GFA diagram in the amendment plans reflecting the revision only. Under such circumstances, BA accepts the full-colour GFA diagram in the amendments plans. APs are required to revise GFA figures in the schedule/table according to section 5.4.1(b) and 5.4.1(c) above.
- (f) The above practices are applied to 2D view only. Application of the practices in the 3D model is not necessary at this stage.

5.4.2 A & A Plans

In preparing the A&A plans to an existing building, it is not uncommon the original approved plans of the existing building is drawn by the AutoCAD or Microstation software. It may not be viable to build up a 3D model by BIM for the whole building if the proposed A&A works are minor or localised. To process the A&A plans using BIM software, the following practices should be adopted:

- (a) Building up a BIM model solely for A&A portion is generally sufficient. However, APs are encouraged to show the whole building in 3D graphics for extensive A&A works such as wholesale conversion of an industrial building.
- (b) 2D plan views of the non-submission area should be inserted and shown on 2D sheet views with clear indication of the extent of A&A works.
- (c) The floor layouts, sections, elevations with A&A works should be shown, either by colouring or highlighting with annotation for easy identification. The remaining areas without A&A works should be shown in black (recommended RGB: 0,0,0) and white colour (recommended RGB: 255,255,255).
- (d) Revised figures in schedules / tables arising from A&A works should be indicated in red colour or the revised figures with red underlines (recommended RGB: 204,0,51). Other figures without revision should be shown in black colour (recommended RGB: 0,0,0).
- (e) In case a new schedule / table is added in the A&A plans, the new schedule / table should be enclosed by a red closed-loop (recommended RGB: 204,0,51).
- (f) In general, demolition of approved works in the A&A plans should be shown in blue dotted lines (recommended RGB: 0,63,255). APs on some occasions may opt not to follow this practice where revision involves multiple blue dotted lines in the same locality and thus cause confusion to the readers.
- (g) In case A&A works involve revision in GFA, a full-colour GFA diagram as required under section 5.2.10 should be provided as far as possible. APs are also required to revise the GFA figures in the schedule / table according to section 5.4.1(d) and 5.4.1(e) above.
- (h) The above practices are applied to 2D view only. Application of the practices in the 3D model is not necessary at this stage.

5.5 Other Essential Information on Prescribed Plans or BIM Files for BD

The information shown on electronic drawings output from the building model should be identical to the submitted prescribed plans. Acceptable standards as stipulated in PNAP ADV-33 are still applicable to BIM submission.

5.5.1 Title Block

When the model is output to 2D views, the views shall be identical to the submitted prescribed plans and contain the title block, as shown in Figure 34.

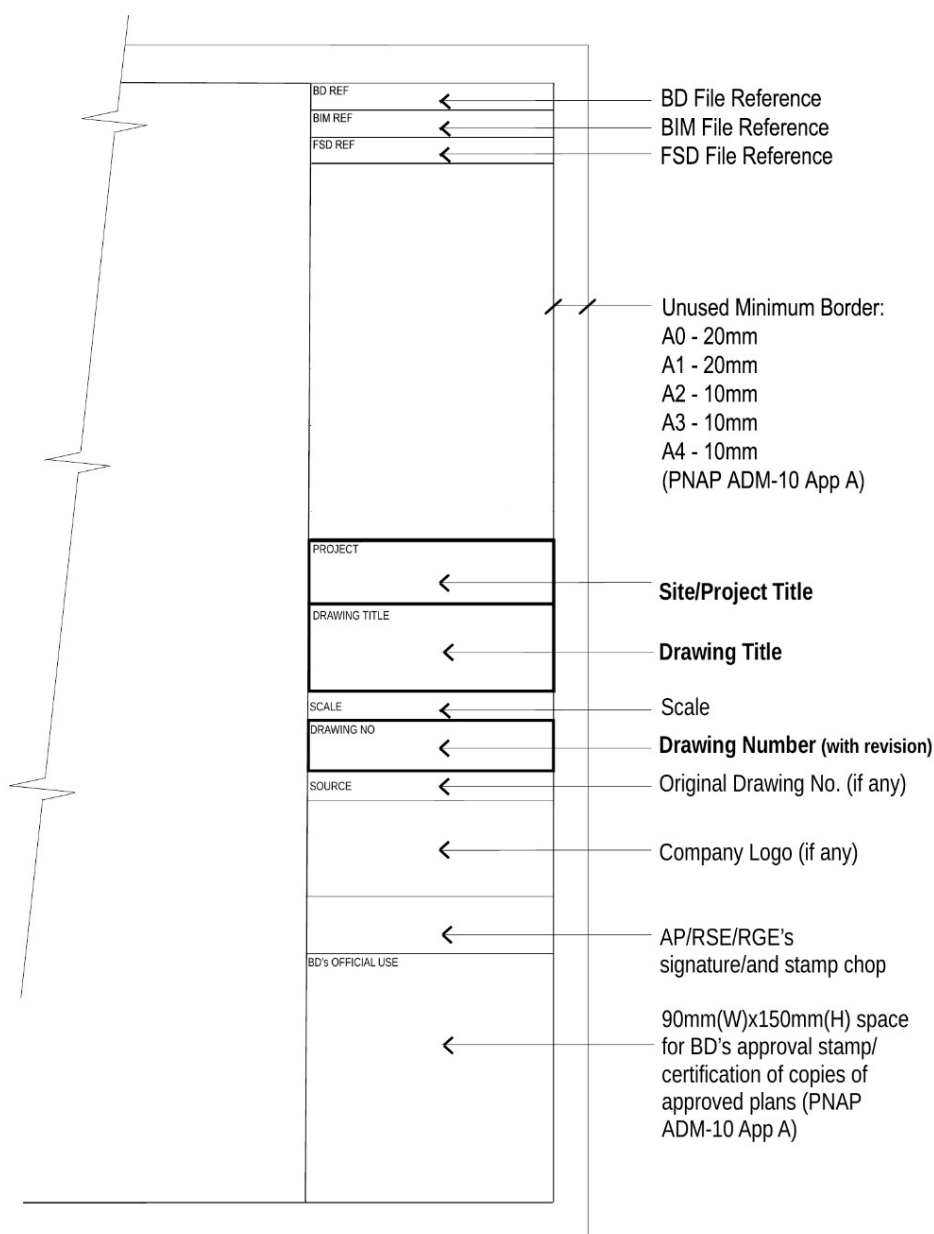


Figure 34 Example of Title Block

5.5.2 Legends, Abbreviations and Fire Services (FS) Notes

Legends, abbreviations and FS notes should be provided. See Appendices 1, 2 and 3 for details.

5.5.3 Development Information

Taking the advantages of BIM, it is highly recommended to provide useful development information in the BIM files upon completion of the project. The format of schedules is shown in Figure 35 below.

Legend:

1. File reference
2. Address
3. Lot number and description
4. Consent date
5. No. of the blocks, storeys, carpark and building type
6. No. of the domestic unit and unit size in usable floor area
7. Gross floor areas
8. Sub-total of the gross floor area of the residential housing unit
9. Usable floor areas

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

Area Code	1. File Reference 2. Address 3. Lot no. 4. T.P.U.	Consent date	No. of Blocks	No. of Storeys & Carparks	Building Type	Domestic Units		Gross Floor Area		Usable Floor Area	
						No.	Unit Size	Domestic	Non-domestic	Domestic	Non-domestic
NTE	2/0000/01		1	40	Apartment/Commercial with	160	23.2	0.0	0.0	0.0	0.0
			4	42	resident's	123	30.9				
				all over 5	recreational	205	31.4			0.0	
				podium levels	facilities	443	46.1				
	(Address) Tsuen Wan Town Lot No.xxx			and 2		39	69.0				
				basement levels							
	Lot no. (TWLxxx)			624 cp							
						#REF!	63349.9	0.0	39895.2	37063.0	0.0
						(Total no. of RHU) (RHU) (Other) Commercial (Other) (Other)					

Unit size in terms of UFA

Figure 35 Example of Development Information

5.6 Other Information on Prescribed Plans or BIM Files for Other Departments

BD is the central clearing house to process all building plan submissions from the private sector through the Centralised Processing System. Upon receipt of plans, BD would disseminate them to relevant departments and organisations for processing. Taking advantage of BIM, APs are encouraged to incorporate other information as requested by other departments in the same BIM 3D model. The following paragraphs aim to facilitate APs in the preparation of BIM 3D model.

5.6.1 Planning Department

Statutory planning information such as permitted use and statutory zoning under the OZP / Development Permission Area Plan, relevant approved planning conditions, building intensity information, building height under OZP are recommended to be machine-readable for easy extraction. Planning Department has provided a checklist of Building Plan Vetting Form in Appendix 4 for reference. Figure 36 below lists out some key information which are mandatory requirements for the submission to the Planning Department.

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

(1) General Information

Project Description	
Planning Area	
Lot No.	
Address	
Class of Site	

(2) Statutory Planning Restrictions

Outline Zoning Plan (OZ)/ Development Permission Areas (DPA) Plan No.	
Zoning	

(3) Comparison between the Restriction/Requirements under OZP/Approved Planning Application and the Building Plan Submissions

Building Intensity	Current Submission	Restrictions under OZP	Approved Planning Application
Site Area (sq.m)			
Total GFA (sq.m)			
- Domestic GFA (sq.m)			
- Non-Domestic GFA (sq.m)			
Maximum Plot Ratio			
- Domestic Plot Ratio			
- Non-Domestic Plot Ratio			
- Car (visitor)			
- Car (commercial)			
- Motor Cycle			
- Bicycle			
- Lorry			
- Container Vehicle			
- Others (please specify)			
- Loading/Unloading			
Open Space Provision (sq.m)			
- Private (sq.m)			
- Public (sq.m)			
Others (please specify)			
Maximum Site Coverage			
- Domestic Site Coverage (%)			
- Non-Domestic Site Coverage (%)			
Maximum Building Height			
- Main Roof (m/mPD)			
- Roof-top Structures (m/mPD)			
No. of Storeys			
- Domestic			
- Non-Domestic			
No. of Flats/Units			
No. of Parking & Loading/Unloading Spaces @			
- Car (resident)			

Figure 36 Key Information in the Building Plan Vetting Form

5.6.2 Lands Department

To facilitate the processing of GBP under lease, APs should also observe Lands Department requirements such as submission of development schedule to indicate the extent of compliance with the lease conditions, separate calculation of GFA and SC as defined under the lease and specific requirement on use of computer for mathematical calculation of areas as stated in Practice Note Issue No. 3/2018 or any subsequent revision issued by the Lands Administration Office of the Lands Department.

6. File Structure and File Naming Convention

APs should follow the standardised file structure and file naming convention for BIM submission.

6.1 File Size

Native files are required for submission. It is important to control the file size. The non-essential and irrelevant data for statutory submission should be deleted, and the maximum file size for each native file is restricted to 500MB.

6.2 Linked Files

APs should adopt the following file structures for linked files in the form of external reference of objects/tables/schedules in native files, whichever is appropriate for the project.

- (a) Several BIM files are linked or connected to contain all information. It is suitable for projects that comprise several buildings/towers or that with the large file size (e.g. a massive scale development with thousands of apartments).
- (b) If several BIM files are adopted, Universal Naming Convention (UNC) paths or relative paths should be used for linking all BIM files. Relative locations should be used for defining the linking between BIM files.
- (c) Subfolder layers should be used under the project folder, and the number of layers should be kept to a minimum as possible.

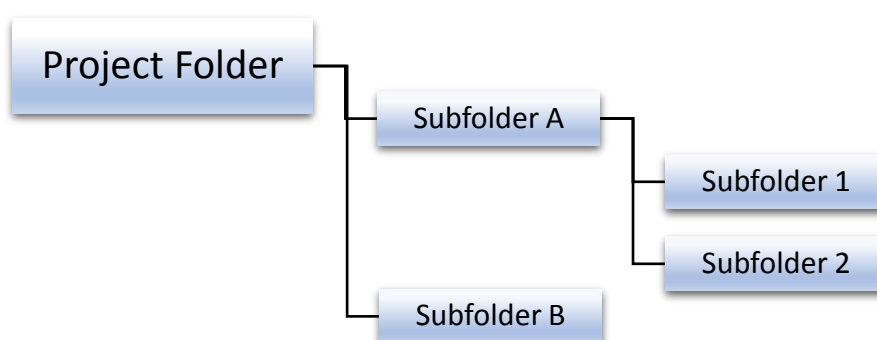


Figure 37 Example of Linked File Structure

6.3 BIM File Reference

The BIM file reference should consist of 4 fields, as illustrated in Tables 2 to 4 below. The BIM file reference should be shown in the title block of each prescribed plan to identify the source file.

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

Field	Description	Maximum Digits
BD File Reference ¹	File Reference number (including prefix and suffix) assigned by BD.	N/A
Software Version ²	Refers to the software version which produces the native file	4
Disc Submission No. ³	Refers to the number of disc submission	2
Remarks	User defined character (optional)	10

- Notes:
1. The field should be blank for the first submission
 2. "A21" refers to ArchiCAD 21, "R19" refers to Revit 2019. Total 4 digits cater for future use.
 3. It refers to the actual number of disc submission and thus it is not necessarily equal to the number of plan submission.

Table 2 Description of Fields for BIM File Reference

BD File Reference														Software Version		Disc Submission No.		Remarks (User defined)									
				-																							
Prefix														Suffix													

Table 3 Blank Form for BIM File Reference

Background of Submission	Example of BIM File Reference
1. First GBP drawn by Revit 2019	R19-01
2. Subsequent amendment plan for Tower 2 of a development under BD file reference 2/9023/18, drawn by ArchiCAD 21 (the 5 th submission of disc)	2-9023-18-A21-05-Tower2

Table 4 Example for BIM File Reference

6.4 Drawing Naming

The drawing naming should consist of 3 fields, as shown in Table 5 below:

Drawing Number					Revision Number			Drawing Title	
				-			-		

Table 5 Blank Form for Drawing Naming

(a) Drawing Number

The first field is the drawing number, which consists of 2 components, namely type of drawing and drawing number. The type of drawing is represented by a single digit, as illustrated in Table 6 below while the drawing number is represented by a 3-digit code, as illustrated in Table 7 below.

Code	Type of Drawing
A	General Building Plan
C	Calculation/Schedule

Table 6 Code for Type of Drawing

Code	Drawing Number
001	1 st Drawing
002	2 nd Drawing
999	999 th Drawing

Table 7 Code for Drawing Number

(b) Revision Number

The second field is the revision number, which is represented by a 2-digit code, as illustrated in alphabetical order. APs may omit some alphabets if they think fit (e.g. I, O) but the maximum number of characters shall not be more than 2 such as 'A', 'B', 'C', 'Z', 'AA', 'AZ' and 'BA'.

(c) Drawing Title

The third field is the drawing title for free-text input. APs may refer to PNAP ADV-33 as shown in Table 8 below.

Drawing Title
SITE LOCATION PLAN AND NOTES
BASEMENT FLOOR PLAN
GROUND FLOOR PLAN
SECTION A-A AND B-B
ELEVATION PLAN
SITE COVERAGE AND PLOT RATIO
LIST OF GFA CONCESSIONS CALCULATION
SITE LOCATION PLAN AND NOTES
GFA DIAGRAM AND CALCULATION
UFA DIAGRAM AND CALCULATION
COMPARTMENT DIAGRAM
EVA DIAGRAM AND CALCULATION
CALCULATION SCHEDULES FOR MOE/ FRC/ SANITARY FITTINGS
DRAINAGE PLAN
SITE LOCATION PLAN AND NOTES

Table 8 Reference of Drawing Title in PNAP ADV-33

(d) Examples

Examples of drawing names are illustrated in Table 9, Figures 38 and 39 below.

Examples	Drawing Names
1. 2nd revision of ground floor plan in the building plan, 4th drawing in the drawing list	A004-B-GROUND FLOOR PLAN
2. 5 th revision of Calculation/Schedule, 10 th drawing in the drawing list - GFA calculation under the lease	C010-E-DLO.GFA

Table 9 Examples of Drawing Names

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

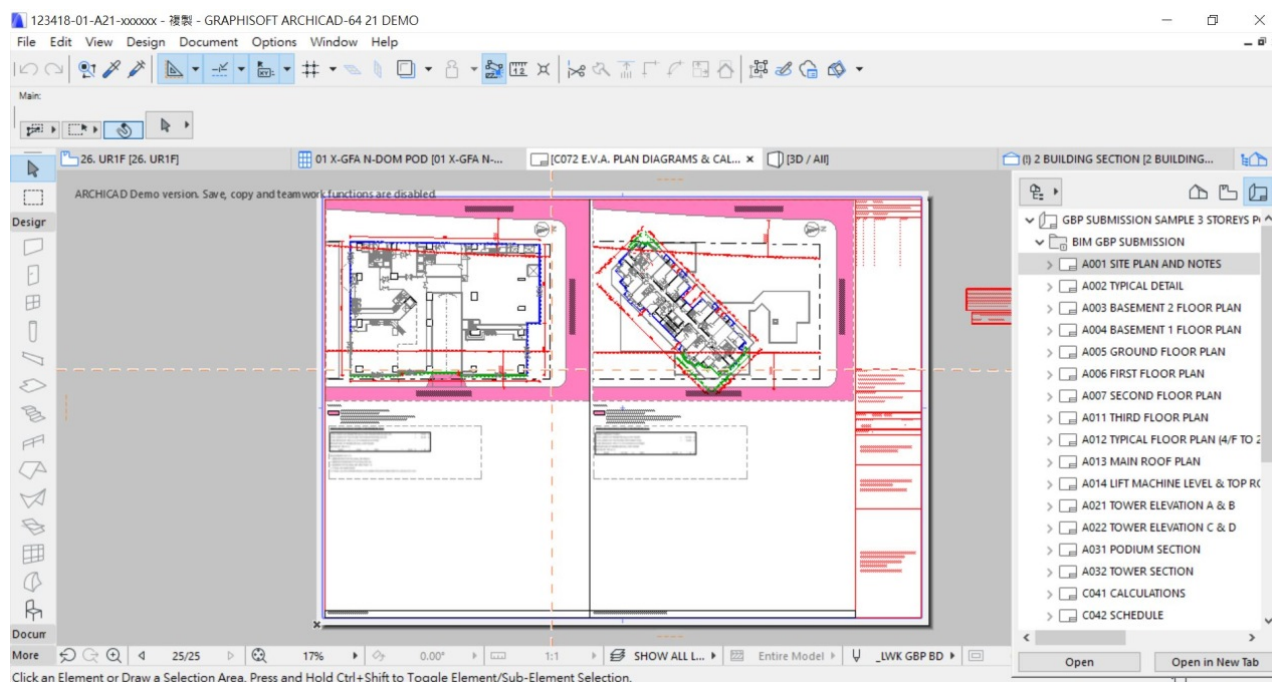


Figure 38 Example of Drawing Names in ArchiCAD

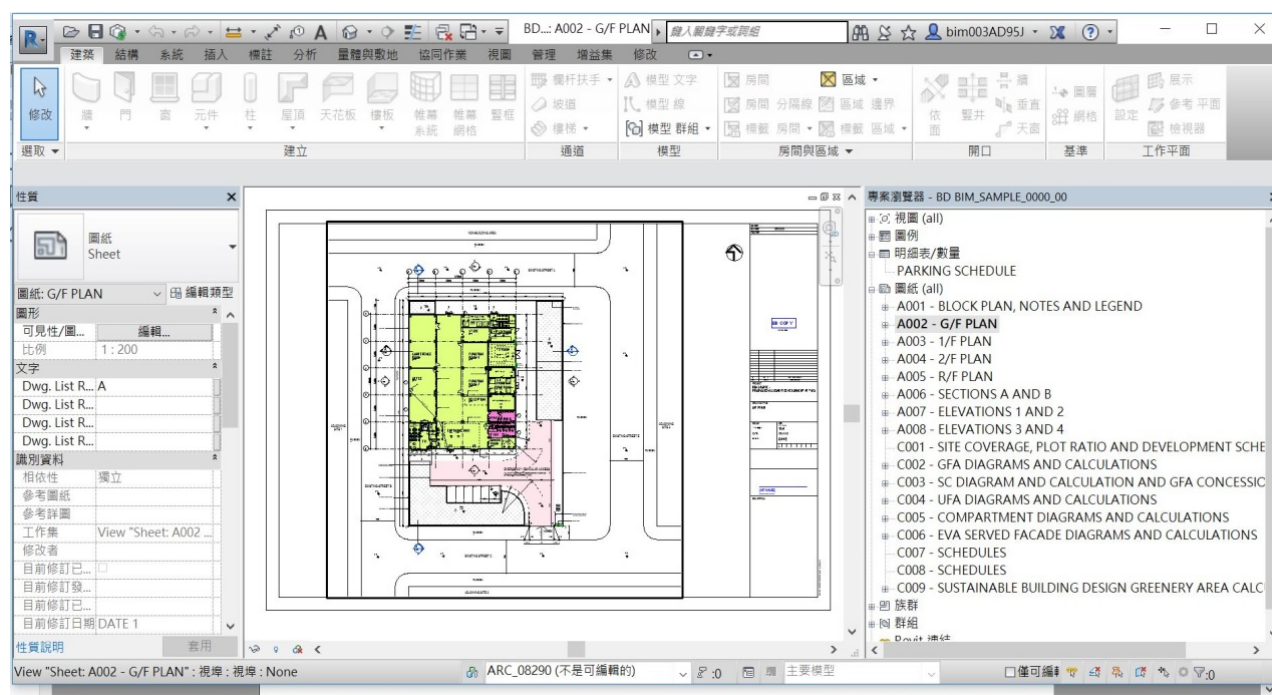


Figure 39 Example of Drawing Names in Revit

7. Review

The Guidelines will be reviewed, taking into the experience gained. Suggestions to facilitate and improve the BIM submission are always welcome.

Appendix 1: Legends

	MEAN STREET LEVEL
	PROPOSED STRUCTURAL FLOOR LEVEL
	PROPOSED FINISHED FLOOR LEVEL
	MECHANICAL VENTILATION & ARTIFICIAL LIGHTING
	MECHANICAL VENTILATION
	ARTIFICIAL LIGHTING
	ACCESSIBLE FACILITIES FOR PERSONS WITH A DISABILITY
	FIREMAN'S LIFT
	LEVEL DIFFERENCE
	DROP KERB
	OPENABLE WINDOW
	IRRIGATION POINT
	EV CHARGING STATION
	EXIT SIGN AT HIGH LEVEL
	NON-STRUCTURAL PRE-FABRICATED EXTERNAL WALL
	HOSE REEL
	FIRE SERVICE ACCESS POINT
	ACCESSIBLE UNISEX TOILET
	ACCESSIBLE URINAL

Doors

- (D1) -/60/60 F.R.R. SELF-CLOSING DOOR
- (D2) -/60/60 F.R.R. SELF-CLOSING DOOR WITH SMOKE SEAL
- (D3) -/60/60 F.R.R. SELF-CLOSING DOOR WITH F.R.R. TRANSPARENT GLASS
UPPER PANEL
- (D4) -/60/60 F.R.R. SELF-CLOSING DOOR WITH F.R.R. TRANSPARENT GLASS
UPPER PANEL AND SMOKE SEAL
- (D5) -/120/120 F.R.R. SELF-CLOSING DOOR WITH F.R.R. TRANSPARENT GLASS
UPPER PANEL
- (D6) -/120/120 F.R.R. SELF-CLOSING DOOR WITH F.R.R. TRANSPARENT GLASS
UPPER PANEL AND SMOKE SEAL
- (D7) -/120/120 F.R.R. SELF-CLOSING DOOR
- (D8) -/120/120 F.R.R. SELF-CLOSING DOOR WITH SMOKE SEAL
- (D9) -/120/120 F.R.R. SELF-CLOSING LIFT SHAFT EMERGENCY ACCESS DOOR
WITH SMOKE SEAL
- (D10) -/-/- F.R.R. SELF-CLOSING DOOR WITH SMOKE SEAL
- (D11) -/-/- F.R.R. SELF-CLOSING DOOR WITH TRANSPARENT GLASS UPPER PANEL
AND SMOKE SEAL
- (D12) -/-/- F.R.R. GLASS PANEL DOOR
- (D13) -/60/60 F.R.R. GLASS PANEL DOOR
- (D14) -/60/60 F.R.R. SELF-CLOSING DOOR WITH PANIC BOLT-ON INSIDE
- (D15) -/-/- F.R.R. DOOR WITH PANIC BOLT-ON INSIDE
- (D16) -/60/60 F.R.R. METAL DOOR



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

D17	-/120/120 F.R.R. METAL DOOR
D18	-/- F.R.R. DOOR
D19	-/- F.R.R. DOOR FOR MAINTENANCE ONLY
D20	-/120/- F.R.R. LIFT LANDING DOOR
D21	-/60/- F.R.R. STEEL LOUVERS DOOR
D22	-/120/120 F.R.R. ACCESS PANEL WITH SMOKE SEAL
D23	-/30/30 F.R.R. SELF-CLOSING DOOR
D24	-/30/30 F.R.R. SELF-CLOSING DOOR WITH SMOKE SEAL
D25	-/30/30 F.R.R. SELF-CLOSING DOOR WITH F.R.R. TRANSPARENT GLASS UPPER PANEL AND SMOKE SEAL
D26	-/60/- F.R.R. SELF-CLOSING DOOR WITH F.R.R. TRANSPARENT GLASS UPPER PANEL
D27	-/120/- F.R.R. SELF-CLOSING DOOR WITH F.R.R. TRANSPARENT GLASS UPPER PANEL
D28	-/240/240 F.R.R. SELF-CLOSING DOOR
D29	-/240/240 F.R.R. SELF-CLOSING DOOR WITH SMOKE SEAL
D30	/240/240 F.R.R. SELF-CLOSING DOOR WITH F.R.R. TRANSPARENT GLASS UPPER PANEL
D31	-/240/240 F.R.R. SELF-CLOSING DOOR WITH F.R.R. TRANSPARENT GLASS UPPER PANEL AND SMOKE SEAL
D32	DOOR WITH FIXED LOUVRE PANEL WITH A MINIMUM SIZE OF 1/20 OF THE FLOOR AREA OF THE ROOM

The door legends from D1 to D22 are extracted from PNAP ADV-33 with minor revision. D23 to D32 are newly added.

Fire Shutters

R1	-/120/- F.R.R. HORIZONTAL FIRE SHUTTER
R2	-/120/- F.R.R. STEEL FIRE SHUTTER
R3	-/60/60 F.R.R. STEEL FIRE SHUTTER
R4	-/240/- F.R.R. STEEL FIRE SHUTTER
R5	-/240/240 F.R.R. STEEL FIRE SHUTTER

The fire shutter legends from R1 to R5 are extracted from PNAP ADV-33 with minor revision.

Access Panels

AP1	-/60/60 F.R.R. SELF-CLOSING ACCESS PANEL
AP2	-/120/120 F.R.R. SELF-CLOSING ACCESS PANEL
AP3	-/240/240 F.R.R. SELF-CLOSING ACCESS PANEL
AP4	ACCESS PANEL

The access panel legends from AP1 to AP4 are newly added.



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

Appendix 2: Abbreviations

Abbreviation	Full Name
@HL	At high level
@LL	At low level
▽AFFL	Above finished floor level
▽BL	Bottom level
▽CL	Cover level
▽EXL	Existing level
▽FFL	Finished floor level
▽IL	Inverted level
▽MSL	Mean street level
▽SFL	Structural floor level
▽TL	Top level
▽TOS	Top of soil
AAV	Automatic air vent
ACC	Air-cooled chiller
ACF	Air curtain fan
ACPR	Air conditioning plant room
AP	Access panel
ACPF	Air conditioner platform
ACU	Air-cooled condensing unit
AD	Air duct
AF	Architectural feature
AHU	Air handling unit room
AL	Artificial lighting
ALC	Aluminum cladding
ALG	Aluminum grille
ASP	Anti-syphonage pipe
AT	Accessible unisex toilet
AU	Accessible urinal
AW	Architectural wall (non-structural)
AW/SP	Acoustic window with the sliding panel
BAL	Balcony
BATH	Bathroom
BHR	Building Height Restriction
BITG	Back inlet trapped gully
BL	Boundary line
BLA	Building line above
BLB	Building line below
BLDG	Building
BLK	Block
BMS	Building management system



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

BOH	Back of house
BR	Bedroom
BS	British standard
BSEN	British standard European Norm
BW	Bay window
CB	Cantilevered beam
CL	Cat ladder
CS	Cantilevered slab
CSB	Cantilevered slab balcony
CSC	Cantilevered slab canopy
C/C	Centre to centre
C/L	Centre line
CAP	Capacity
CC	Covered channel
CD	Cable duct
CDP	Condensation pipe
CE	Ceiling
CI	Cast iron
CLA	Covered landscape area
CLD	Cladding
CMC	Check meter cabinet
COA	Common area
COF	Common flat roof
CORR	Corridor
CP	Control panel
CS	Cantilevered slab
CSB	Cantilevered slab balcony
CSC	Covered surface channel
CT	Cable tray
CTC	Caretaker's counter
CTQ	Caretaker's quarter
CW	Curtain wall
CWPR	Cleansing water pump room
D	Duct
DAS	Davit arm system
DG	Dangerous goods store
DI	Drencher inlet
DOM	Domestic
DP	Down pipe
DR	Door
DRE	Drencher pipe
DSP	Drainage sump pump
DT	Disconnecting trap



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

DTD	Deadend travel distance
DWG	Drawing
E&M	Electrical & mechanical
EA	Exhaust air
EAD	Exhaust air duct
EAL	Exhaust air louvre
EDR	Electric duct room
EG	Eaves gutter
EMGR	Emergency generator room
ELR	Electric room
ELS	Excavation and lateral support
ELV	Extra low voltage
EMR	Electric meter room
EN	European Norm
ENT	Entrance
EQ	Equal
ESC	Escalator
EVA	Emergency vehicular access
EVC	Electric vehicle charger
EVCR	Electric vehicle charger room
FAI	Fresh air inlet
FB	Fire blanket
FBG	Fibreglass
FCC	Fire control centre
FCG	Fixed clear glass
FCU	Fan coil unit
FD	Fire damper
FDR	Floor drain
FE	Fire extinguisher
FLAV	Female lavatory
FG	Fixed glass
FH	Fire hydrant
FHP	Fire hydrant pipe
FL	Floor
FLA	Flue aperture
FLL	Fireman's lift lobby
FMCR	Female changing room
FPR	Filtration plant room
FR	Flat roof
FRS	Firefighting & rescue stairway
FS	Fire services installation
FSCR	Fire service control room
FSI	Fire service inlet



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

FSRP	Fire service repeater panel
FWG	Fixed wired glass
FWGL	Fixed wired glass louvre
FWGW	Fixed wired glass window
FWP	Flushing water pipe
FWTPR	Flushing water tank and pump room
GB	Glass balustrade
GC	Glass cladding
GFA	Gross floor area
GMC	Gas meter cabinet/chamber
GT	Gully trap
GW	Glass wall
GYM	Gymnasium
H/L	High level
HR	Hose reel
HV	Cable containment for high voltage
HW	Hardwood
ICOF	Inaccessible common flat roof (for maintenance only)
IFR	Inaccessible flat roof (for maintenance only)
IP	Irrigation point
IRR	Irrigation
IT	Information technology
KIT	Kitchen
LAV	Lavatory
LAE	Lift and escalator
LCB	Lightweight concrete backfill
LCL	Lockable cat ladder
LFS	Lift shaft
LG	Lower ground
LIV/DIN	Living & Dining
LL	Lift lobby
L/L	Low level
LMR	Lift machine room
LMCP	Local motor control panel
L/UL	Loading / unloading
LV	Cable containment for low voltage
MB	Metal balustrade
M BATH	Master bathroom
MBR	Master bedroom
MC	Metal cladding
MCF	Mass concrete fill
MCR	Male changing room
MDR	Mail delivery room



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

MFXR	Multi-function room
MH	Manhole
ML	Metal louvre
MLAV	Male lavatory
ML/FD	Metal louvre with fire damper
MS	Mild steel
MSL	Mean street Level
MSFL	Mean site formation level
MSR	Main switch room
MVAL	Mechanical ventilation & artificial lighting
MW	Maintenance window
NDOM	Non-domestic
NDR	Network distribution room
NOC	Network operation centre
OCO	Owner's committee Office
O KIT	Open kitchen
OTG	Open trap gully
P	Planter
PAU	Primary air handling unit
PD	Pipe duct
PD(E)	Pipe duct (mandatory or essential)
PD(NE)	Pipe duct (non-mandatory or non-essential)
PFWTPR	Potable and flushing water tank & pump room
PG	Private garden
PL	Plumbing system
POWR	Power room
PR	Plot ratio
PRM	Pump room
PP	Pump pit
PRPW	Parapet wall
PRV	Pressure reducing valve
PW	Potable water
PWL	Pipe well
PWP	Potable water pipe
PWTPR	Potable water tank & pump room
RM	Room
RC	Reinforced concrete
RCC	Reinforced cement concrete
RCP	Refuse collection point
RHP	Rectangular horizontal plane
RRCR	Rainwater recycle & cleaning water plant room
RRF	Residents' recreational facilities
RS	Roller shutter



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

RSMRC	Refuse storage & material recovery chamber
RSMRR	Refuse storage & material recovery room
RT	Roof tiles with waterproof membrane felt on cement sand screeding laid to fall
RWO	Rainwater outlet
RWP	Rainwater pipe
SC	Site coverage
SCH	surface channel
SA	Supply air
SAD	Supply air duct
SB	Sand bucket
SBA	Setback area
SCLD	Stone cladding
SDR	Sliding door
SFH	Street fire hydrant
SH	Shower
SI	Sprinkler inlet
SKP	Sunken planter
SML	Smoke lobby
SMV	Smoke vent
SO	Structural opening
SPR	Sprinkler
SS	Stainless steel
SSD	Staircase separation distance
ST	Stair
STG	Sealed trapped gully
STO	Store
STV	Stop valve
SVD	Smoke vent duct
SVI	Smoke vent inlet
SVO	Smoke vent outlet
SWMP	Swimming pool
T/	Top of
T/A	To above
T/B	To below
TBE	Telecommunication and broadcasting equipment
TD	Travel distance
TDR	Trap door
TL	Top level
TLD	Telephone duct
TOS	Top of soil
TP	Transfer plate
TPA	Transfer plate above
TPB	Transfer plate below



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

TR	Top roof
TRP	Tree planter
TRS	Temporary refuge space
TX	Transformer
UDG	Underground
UFA	Usable floor area
UFS	Usable floor space
UG	Upper ground
UPS	Uninterrupted power supply
UPVC	Un-plasticized polyvinyl chloride
UR	Upper Roof
URN	Urinal
UP	Utility platform
UTR	Utility room
VD	Vent duct
VS	Vertical smoke barrier in 450H with FRR -/30/-
VG	Vertical grating
VGN	Vertical greenery
VP	Vent pipe
VRV	Variable refrigerant volume
WC	Water closet
WCC	Water-cooled chiller
WF	Water feature
WFB	Window flower box
WG	Wind guard
WGL	Wired glass louvre
WGW	Wired glass window
WH	Water heater
WI	Wrought iron
WIC	Walk-in closet
WL	Water level
WMC	Water meter cabinet
WMR	Water meter room
WP	Waste pipe
WPR	Waterproof
WPRML	Waterproof metal louvre
WPT	Water point
WT	Water tank
WTPR	Water tank & pump room

Appendix 3: FS Notes

FSI shall be provided in accordance with current Codes of Practice for Minimum Fire Service Installations and Equipment (FSI code), relevant FSD Circular Letters and international codes as specified. Examples of FS notes are demonstrated below for reference only, and the project proponent shall formulate their notes to suit the project design.

Audio/Visual Advisory System

Audio/visual advisory system shall be provided to xx/F where the area occupied by any single occupancy/for institutional purposes* on any one floor exceeds 2,000 square metres AND where the occupants, due to their transient presence either as shoppers, audience or guests/guests or visitors*, are exposed to risks to require additional advice through such systems.

Fire Hydrant/Hose Reel System

1. Fire hydrant/hose reel system shall be provided for the entire building in accordance with FSI Code and Circular Letter no. 2/2013.
2. One xxm³ FS tank with FS pump set shall be provided on xx/F.
3. There shall be sufficient hydrants and hose reels on each floor to ensure that every part of the building can be reached by a length of not more than 30m of Fire Services hose and hose reel tubing.
4. The intermediate booster pumps shall be provided on xx/F. / The fixed fire pumps shall be utilized as intermediate booster pumps*.
5. All FS inlets shall be inter-connected.

Sprinkler System

1. Sprinkler system shall be provided in accordance with the LPC Rules incorporating BS EN 12845: 2003, Circular Letters no. 3/2006 and 3/2012 to protect the entire building / xx/F-xx/F * except E & M plant rooms.
2. The hazard group of the sprinkler system:-
 - OH 3 for basement floors to xx/F;
 - OH 1 for xx/F to xx/F.
3. One xxm³ sprinkler water tank and sprinkler pump set shall be provided on xx /F.
4. Sprinkler system signal shall be transmitted to the Fire Services Communications Centre via a direct telephone link.
5. The intermediate booster pumps shall be provided on xx /F. / The fixed sprinkler pumps shall be utilized as the sprinkler intermediate booster pumps.*
6. Fast response type sprinkler heads shall be provided for the basement floors.
7. Fast response type sprinkler heads shall be provided and extended to 2 floors above/below non-domestic floors (xx/F-xx/F) for staircase connecting the domestic and non-domestic portion of the development.



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

Fire Alarm System

Fire alarm system shall be provided to the entire building. One actuating point and one audio warning device shall be provided at each hose reel point. Visual fire alarm system shall be provided in accordance with current Design Manual: Barrier Free Access 2008 and Circular Letter no. 2/2012. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.

Fire Detection System

1. Fire detection system shall be provided in accordance with BS 5839 Part I: 2002 + A2: 2008, Circular Letters no. 1/2009, 3/2010 and 2/2012 as follows: -
 - smoke detectors shall be provided in area not covered by automatic fixed installation.
 - heat detectors shall be provided for all E/M plant rooms of the entire building/ xx/F to xx/F on non-domestic floors.*
 - the entire basement area shall be covered by fire detection system except car parking area.
2. Main fire alarm panel shall be provided inside the Fire Control Centre. All fire alarm signals including manual and AFA signals shall be connected to Fire Services Communications Centre through direct telephone link.

Emergency Generator

An independently powered generator of sufficient electrical capacity shall be provided on xx/F to meet the fire service installations and fireman's lifts is required to provide.

Secondary power supply

The secondary electricity supply shall be arranged to be tee-off before the incoming main switch for the essential FSI service.

Exit Sign

Sufficient directional sign and exit sign shall be provided to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building/public areas to staircases are clearly indicated* in accordance with FSI Code and Circular Letter no. 5/2008.

Emergency Lighting

Sufficient emergency lightings shall be provided throughout the entire building and all exit routes leading to ground level/to all staircases, passages and public areas including lift lobbies on all floors and refuge areas* in accordance with FSI Code, BS 5266 Part I: 2011 and BS EN 1838: 2013.



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

Portable Hand-operated Approved Appliance

Portable fire extinguishers shall be provided as indicated on plan.

Ventilation/Air Conditional Control System

A ventilation / air conditioning control system shall be provided to stop mechanically induced air movement within a designated fire compartment.

Fire Shutter

Fire shutters shall be provided as indicated on plans and operated by smoke detectors and the manual control devices on both sides of wall opening for automatic and manual operation respectively in accordance with FSI Code.

Street Fire Hydrant System

Street fire hydrant system with pump set and xxm^3 water tank on xx/F shall be provided as indicated on plans in accordance with FSI Code.

Pressurization of Staircase

Pressurization of staircase shall be provided to staircase no. xx from G/F to R/F and staircase no. xx from Bxx/F to G/F in accordance with FSI Code and Circular Letter no. 2/2006.

Pressurization of staircase shall not be provided to the development since: -

1. Natural venting of staircase is provided.
2. The aggregate area of openable windows of the rooms/units of the building exceeds 6.25% of the floor area of those rooms/units, calculated on a floor by floor basis.
3. The cubical extent of the building does not exceed 28,000 cubic metres.
4. The designed fire load of the basement does not exceed 1,135 MJ/square metre.

Pressurization of staircase shall not be provided to the basement since: -

1. The basements are less than three levels.
2. Open air access routes for firemen are provided.
3. The cubical extent of the basement does not exceed 7,000 cubic metres.
4. The designed fire load of the basement does not exceed 1,135 MJ/square metre.

Static / Dynamic Smoke Extraction System

Static / dynamic smoke extraction system* shall be provided to the development / compartments over 7,000 cubic metres / basement levels* in accordance with FSI Code.

Static / dynamic smoke extraction system* shall not be provided to the development since: -

1. Atrium of the building does not exceed 28,000 cubic metres, or basement level or floor of building forming part of that compartment which does not exceed 7,000 cubic metres.



GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

2. For fire compartment exceeding 7,000 cubic metres where: -
 - (a) The aggregate area of openable windows of the compartment exceeds 6.25% of the floor area of that compartment.
 - (b) The designed fire load of the building does not exceed 1,135 MJ/square metre.
3. The internal means of escape serving all guest rooms is provided with openable windows communicating to the open and the aggregate area of such windows exceeds 6.25% of the floor area of that route (applicable to hotel only).

Drencher System

1. Drencher system shall be installed on all refuge floors to cover all external wall openings / provided to cover xx/F* in accordance with FSI Code.
2. The system shall be automatically operated by a quick opening valve or deluge valve which is operated by a system of approved heat detectors or sprinklers installed in the same areas as the drencher system, together with manual control.
3. One xxm^3 drencher water tank and drencher pump set shall be provided on xx/F. Drencher tank calculations shall be provided below:-
 xxm^2 (external wall opening areas) X 10 litres/min/ m^2 X 30 min (duration) X 130% = xxm^3

FS Requirement for Open Kitchen

1. Smoke detector(s) fitted with sounder base shall be provided inside the flat with open kitchen. The alarm signal of the smoke detector(s) shall be connected to the local fire services control panel of the building and shall not be linked to Fire Services Communications Centre.
2. Smoke detector(s) shall be provided at the common area outside the flat with open kitchen. The alarm signal of the smoke detector(s) shall be connected to the local fire services control panel and Fire Services Communications Centre.
3. Sprinkler head(s) shall be provided to cover the notional open kitchen area. The alarm signal of the system shall be connected to the local fire services control panel and the Fire Services Communication Centre.

** delete as appropriate*

xx specify the number as appropriate

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

Appendix 4: Planning Department Building Plan Vetting Form

Planning Department Building Plan Vetting Form

(Note : In completing the form, all the required information should be directly extracted from the submitted building plans and the related plans/planning documents without making any calculation.)

(1) General Information

Site Record No. : _____ / _____ Building Plan (B.P.) Record No. : _____
Our File Reference : _____
Sender's File Ref. : _____ dated _____
Drawing Nos. : _____ dated _____
New Submission / Major Revision / Re-submission / Amendment Submission *
(For major revision, re-submission & amendment, last BP. Rec. No. : _____)
Project Description : _____
Planning Area : _____ Lot no. : _____
Address : _____
Class of Site : _____

(2) Statutory Planning Restrictions

(a) OZP/DPA Plan No. : _____ (approved/draft) *
(b) Zoning : _____
(c) Proposed use always permitted on OZP/DPA Plan ? Yes/No *
(d) Subject to any approved planning application(s) ? Yes/No *
(If yes, all planning application No(s). _____)
(e) Subject of an objection site ? Yes/No *
(f) Subject to master layout plan(s) approved by TPB ? Yes/No *
(If yes, date(s) of all approval(s) by TPB _____)

(3) Other Planning Restrictions

	ODP (adopted/draft) *	LP (adopted/draft) *
(a) Plan No. :	_____	_____
(b) Zoning :	_____	_____
(c) Density Zone :	_____	_____
(d) Designation on Metroplan Landscape Strategy/Metroplan * :	_____	
(e) SCA No. :	_____	
(f) SCA Restrictions :	_____	
(g) Any Master Layout Plan/Concept Plan/Landscape Plan required under lease ? Yes/No *	_____	
(h) Road Widening : Yes/No *	_____	
(i) Set Back : Yes/No *	_____	
(j) Non-Building Area : Yes/No *	_____	
(k) Others :	_____	

* Delete as appropriate

(4) Comparison between the Restriction/Requirements under Lease/OZP/Approved Planning Application and the Building Plans Submission

Building Intensity	Current Submission (A)		
Site Area (sq. m)			
Total GFA (sq. m)			
- Domestic GFA (sq. m)			
- Non-Domestic GFA (sq. m)			
Maximum Plot Ratio			
- Domestic Plot Ratio			
- Non-Domestic Plot Ratio			
Maximum Site Coverage			
- Domestic Site Coverage (%)			
- Non-Domestic Site Coverage (%)			
Maximum Building Height			
- Main Roof (m/mPD)			
- Roof-top Structures (m/mPD)			
No. of Storeys			
- Domestic			
- Non-Domestic			
No. of Flats/ Units			
No. of Parking & Loading/Unloading Spaces@			
- Car (Resident)			

@ Please indicate requirements of provision under HKPSG in the remarks column if no restrictions/requirements have been stipulated under lease/OZP/approved planning applications

GUIDELINES FOR USING BUILDING INFORMATION MODELLING IN GENERAL BUILDING PLANS SUBMISSION

Building Intensity	Current Submission (A)			
- Car (Visitor)				
- Car (Commercial)				
- Motor Cycle				
- Bicycle				
- Lorry				
- Container Vehicle				
- Others (please specify)				
- Loading/Unloading				
Open Space Provision (sq.m)				
- Private (sq.m)				
- Public (sq.m)				
Others (please specify)				

@ Please indicate requirements of provision under HKPSG in the remarks column if no restrictions/requirements have been stipulated under lease/OZP/approved planning applications

(5) General Use by Floor

Floor	Use

(6) Overall Remarks

Prepared by (SO/SOT) :	(Name and Initial) Date:
Checked by (SSO) :	(Name and Initial) Date:
Vetted by (TP) :	(Name and Initial) Date:

(7) Is the Site Affected by Major Planning Proposals?

	Yes/No *		Yes/No *
(A) TDS Proposals		(E) Road Proposals	
(B) PDS Proposals		(F) MTR/LRT Reserves and/or Route Protection Area	
(C) RPIS Proposals		(G) PHI Consultation Zones	
(D) Metroplan Proposals		(H) Other Public Works Projects	

Remarks

Prepared by (TP):

(Name and Initial)

Date:

* Delete as appropriate