

The background of the entire slide is a black and white photograph of the MACCCS building, a modern structure with a prominent glass facade and a central tower. The image is overlaid with large, semi-transparent geometric shapes in shades of blue and grey, creating a dynamic, abstract composition. The text is placed within these shapes for high contrast and readability.

MACCCS

The Malaysian Anti Corruption Commission Complex of Selangor

BY
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PUBLIC WORKS DESIGN FORUM

2018

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1.0

Introduction

Project Brief 1.1

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1.0 Introduction

1.1 Project Brief

General Information

Type of Project:

Conventional (In-House)

Location:

Seksyen 16 Shah Alam, Selangor

Site Area:

2.93 hectare

Project Ceiling Cost:

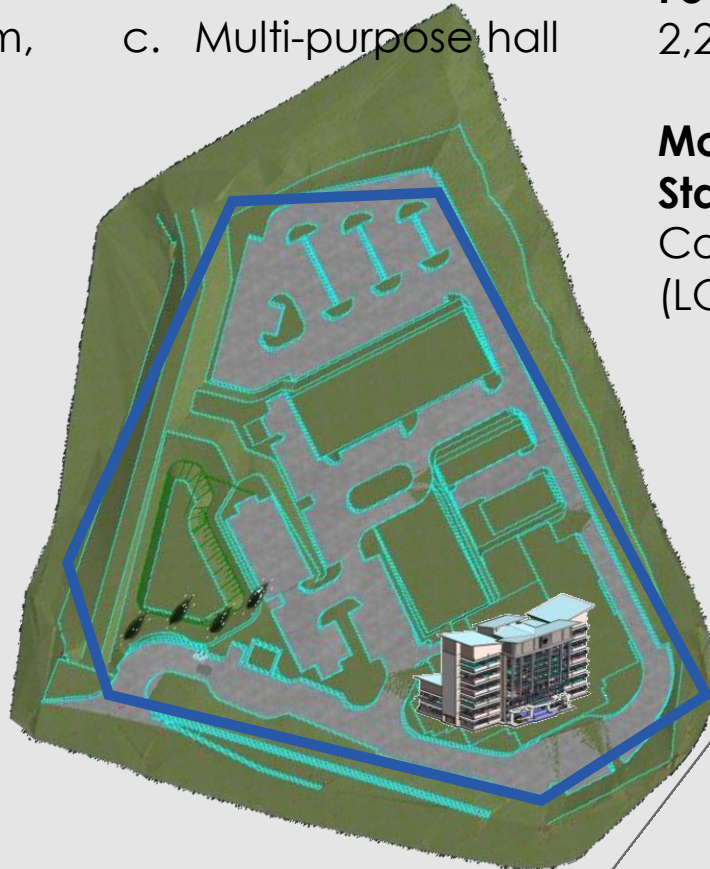
RM 49 million

Site possession:

5th Feb 2014

Design Components

- a. Administration building
- b. Warehouse
- c. Multi-purpose hall



BIM Modeling Info

Modeling Scope:

Administration Building

Administration Building Footprint Area:

2,280 m²

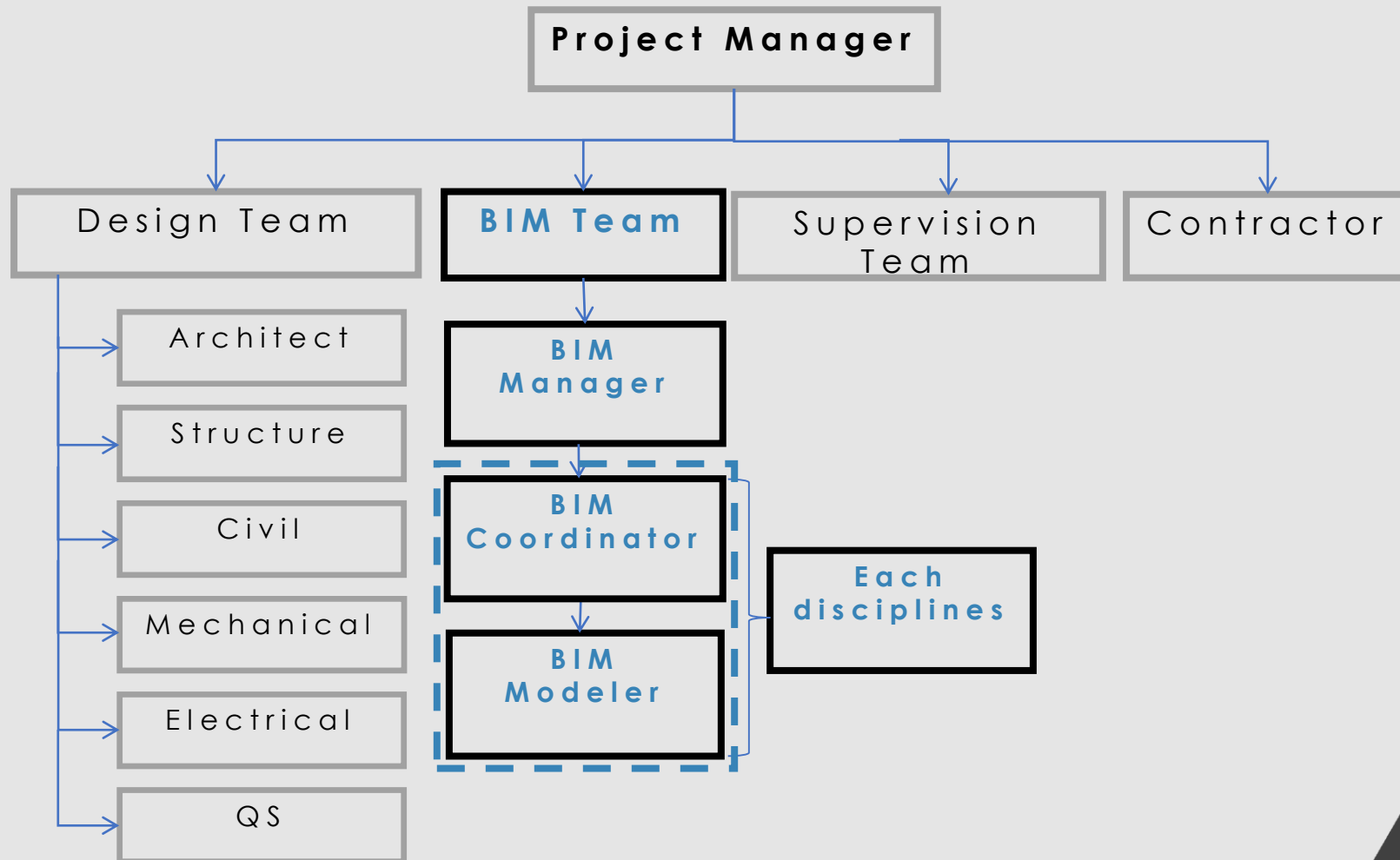
Model Development Status:

Construction Model (LOD 400)



1.0 Introduction

1.2 Project Team





The Malaysian Anti-Corruption Commission Complex of Selangor (MACC is JKR's **in-house project** and is one of the BIM **pilot project**.

The project has been **completed** and handed over to the client **on November 9, 2017**.



The total cost of the project is **RM49.5 million** which consist of a 7-storey office building which houses 180 staff, multi-purpose hall, warehouse and utility buildings, built on a site of **7.23 acres** (29,300m²).



The project team took the approach **using BIM software for the administration building** while other buildings are maintained with the use of AutoCAD.



2.0

Building Information Modelling (BIM)

BIM Objectives 2.1

2.0 BIM

2.1 BIM Objectives



BIM provides the opportunity to **rehearse** the design of the building in a virtual environment and to virtually test the building for its **functionality and services coordination**.



This allows the project team and client to gain a **vision** and **understand** the proposed design in virtual reality, so they can confidently work towards improving the building design prior to **actual construction and installation**.



Clash detection is performed throughout the coordination process to **explore potential conflicts** in the design. Its objective is to **eliminate major conflict** prior to site works and installation.

(Source: MRCB's BIM Execution Plan, 2016)



3.0

The Project-MACC Complex Selangor

Site Setting 3.1

Site Location 3.1.1

Site Analysis 3.1.2

Site Plan 3.1.3

Design Development 3.2

Design Proposals 3.2.1

Final Design 3.2.2

Location:
Seksyen 16
Shah Alam,
Selangor

Site Area:
2.93 hectare

Seksyen 16

3.0 The Project-MACCCS

3.1 Site Setting

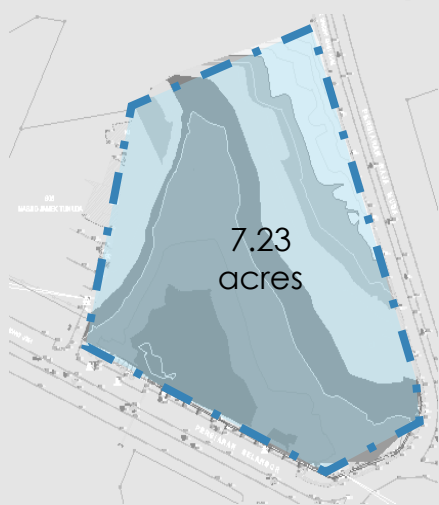
3.1.1 Site Location

3.0 The Project-MACCCS

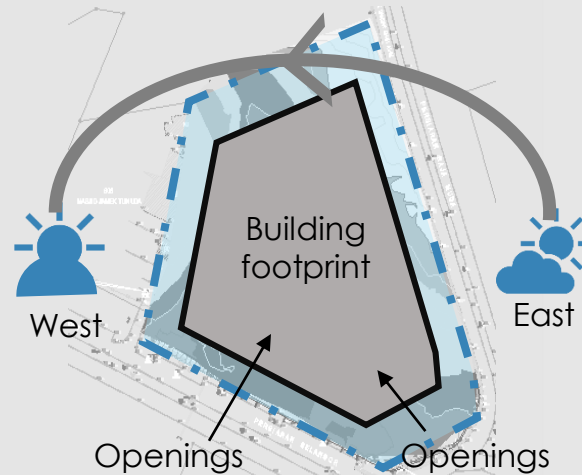
3.1 Site Setting

3.1.2 Site Analysis

1. Site Boundary



2. Sun Path



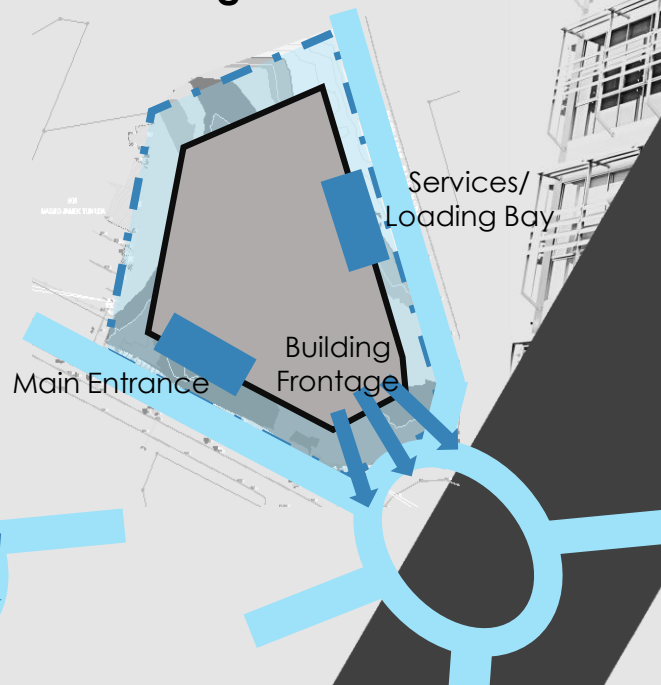
3. Road Network



4. Accessibility



5. Building Orientation



3.0 The Project-MACCCS

3.1 Site Setting

3.1.3 Site Plan



3.0 The Project-MACCCS

3.2 Design Development

Kes Teoh Beng Hock (01.07.2009)



Kes Ahmad Sarbini (06.04.2011)



3.0 The Project-MACCCS

3.2 Design Development

3.2.1 Design Proposals

Original Brief
Administration Block
Multipurpose Hall
Warehouse
4 Types of Quarters
Others

Design Reference
SPRM Kelantan



Designers
Ar. Zairul Azidin
Pn. Nazliah / Pn. Hani Yuliaty
En. Yazid/Pn. Elina

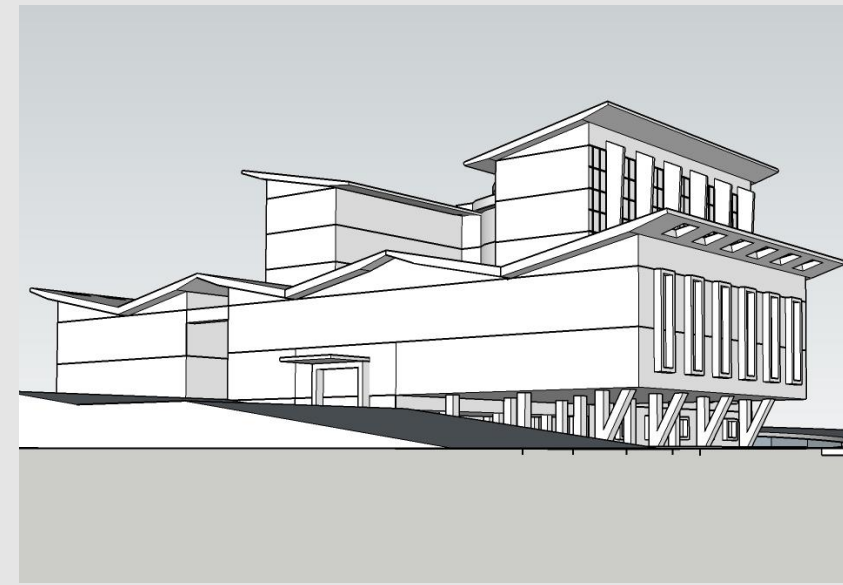


3.0 The Project-MACCCS

3.2 Design Development

3.2.1 Design Proposals

Design Proposal 1 (23.3.2012)



3.0 The Project-MACCCS

3.2 Design Development

3.2.1 Design Proposals

Design Proposal 2 (15.6.2012)



Design Proposal 3 (15.6.2012)



Adaptation from SPRM Kota Bharu, Kelantan



3.0 The Project-MACCCS

3.2 Design Development

3.2.1 Design Proposals

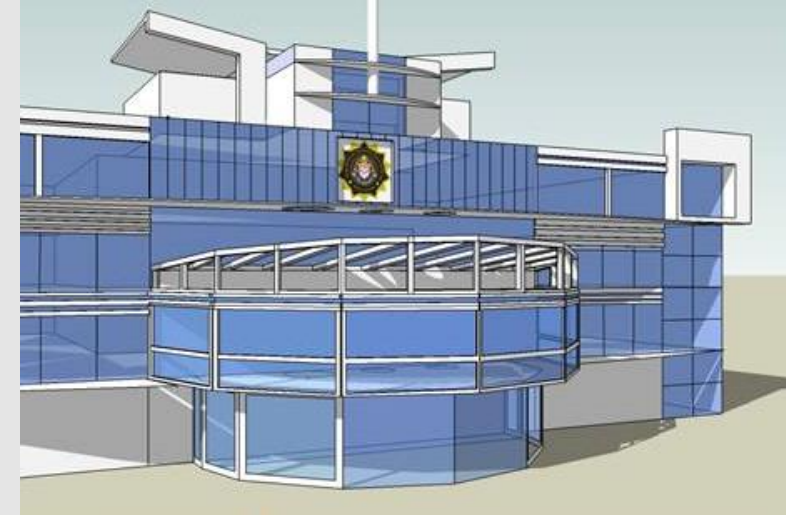
Design Proposal 4 (15.6.2012)



Adaptation from Toyota
Headquarters



Design Proposal 5 (15.6.2012)

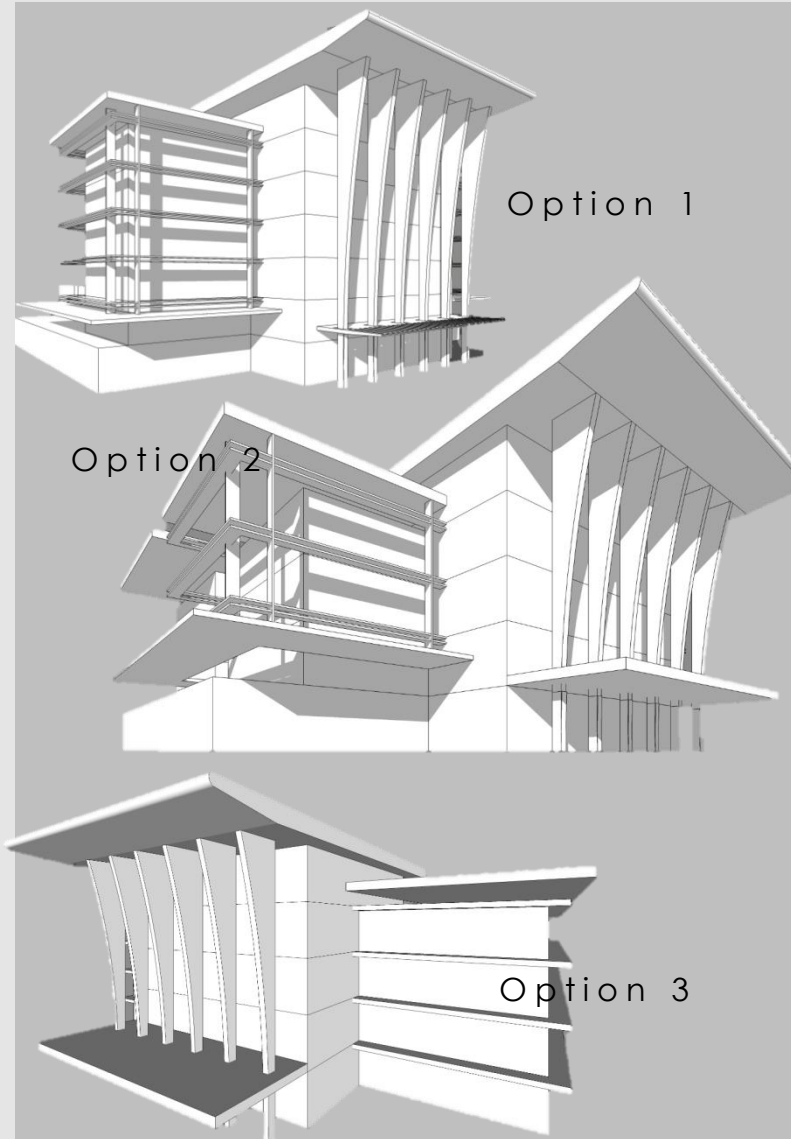


3.0 The Project-MACCCS

3.2 Design Development

3.2.1 Design Proposals

Design Proposal 6 (15.6.2012)



Brief Changes

- Administration Block
- Multipurpose Hall
- Warehouse
- ~~4 Types of Quarters~~
- Others

Design Proposal 7 (14.8.2012)



3.0 The Project-MACCCS

3.2 Design Development

3.2.1 Design Proposals

Pre-Design Workshop
(7-8.9.2012)

Design Proposal 8 (6.9.2012)



Design Proposal 9 (6.9.2012)



3.0 The Project-MACCCS

3.2 Design Development

3.2.1 Design Proposals
Design Workshop
(7-8.9.2012)

Design Proposal 10 (7.9.2012)



Design Proposal 11 (7.9.2012)



3.0 The Project-MACCCS

3.2 Design Development

3.2.1 Design Proposals
Post-Design Workshop
(7-8.9.2012)

Design Proposal 12 (PRE-FINAL) (20.9.2012)



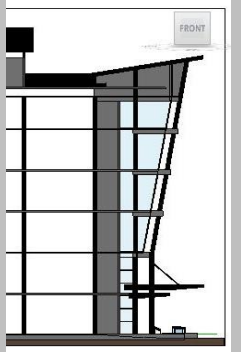
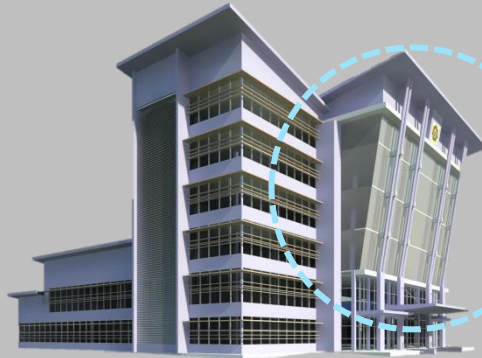
3.0 The Project-MACCCS

3.2 Design Development

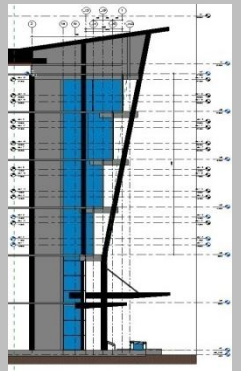
3.2.1 Design Proposals

Design Proposal 12 (PRE-FINAL) (20.9.2012)

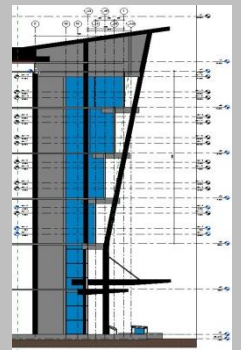
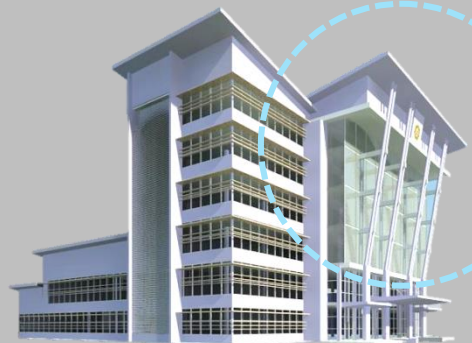
Option 1



Option 2



Option 3



Final Design (25.9.2012)



3.0 The Project-MACCCS 3.2 Design Development

3.2.2 Final Design



Final Design Rendering (25.9.2012)



3.0 The Project-MACCCS 3.2 Design Development

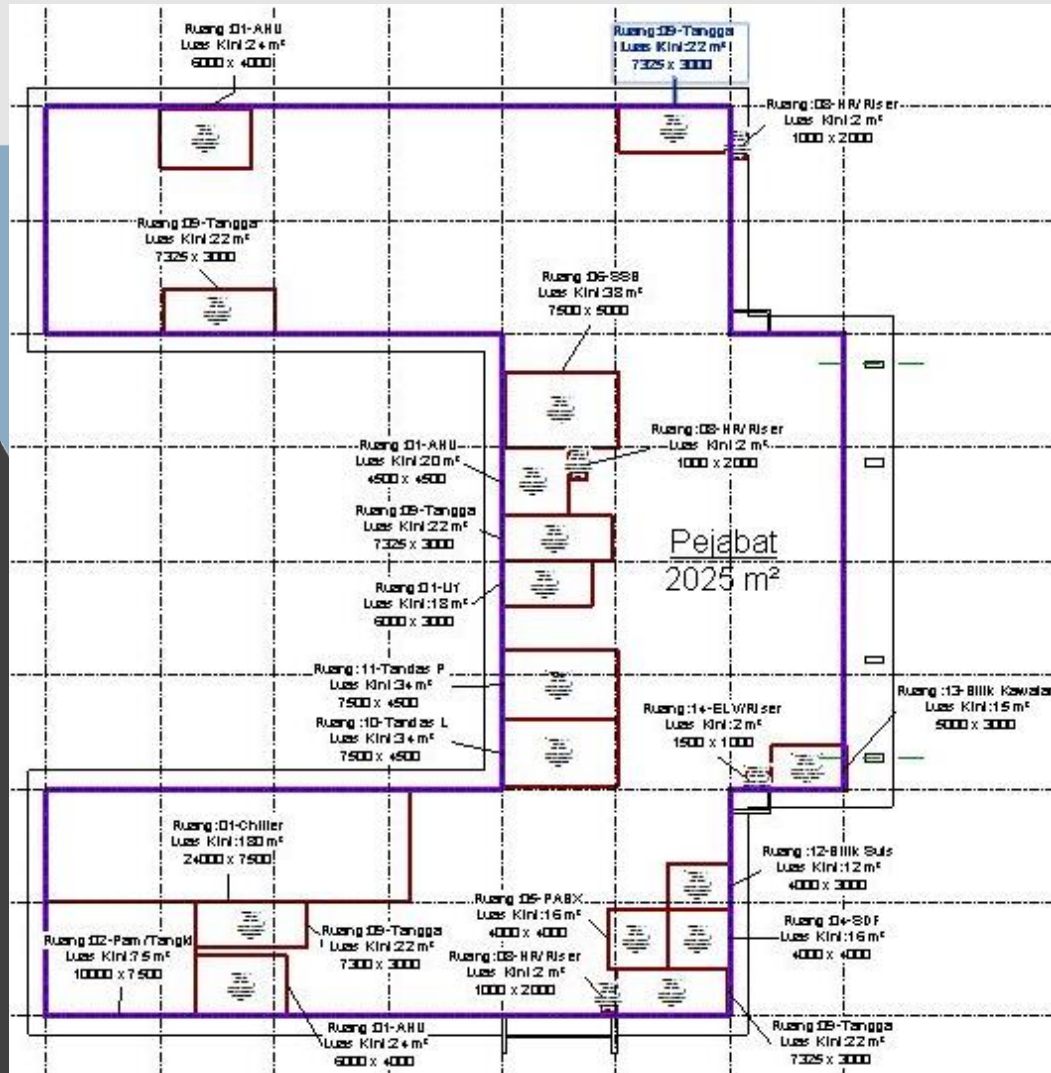
3.2.2 Final Design



BIM's INNOVATION (25.9.2012)

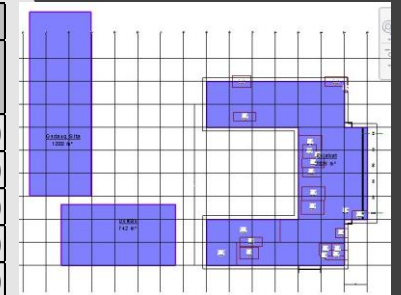
3.0 The Project-MACCCS 3.2 Design Development

3.2.2 Final Design



MASSING & FLOOR AREA Level 1 (Ground Level)

Aras	Bilik / Ruang Perkhidmatan	Luas Diperlukan	Ukuran 1 (mm)	Ukuran 2 (mm)
Satu (Bawah)	RR_01- Chiller (24000 x 7500)	180.00 m²	24000	7500
Satu (Bawah)	RR_02- Pam/Tangki (10000 x 7500)	75.00 m²	10000	7500
Satu (Bawah)	RR_02-AHU (4500 x 4500)	24.00 m²	6000	4000
Satu (Bawah)	RR_02-AHU (4500 x 4500)	20.25 m²	4500	4500
Satu (Bawah)	RR_02-AHU (4500 x 4500)	24.00 m²	6000	4000
Satu (Bawah)	RR_03- Lif (6000 x 3000)	18.00 m²	6000	3000
Satu (Bawah)	RR_04-SDF (4000 x 4000)	16.00 m²	4000	4000
Satu (Bawah)	RR_05-PABX (4000 x 4000)	16.00 m²	4000	4000
Satu (Bawah)	RR_06-SSB (7500 x 5000)	37.50 m²	7500	5000
Satu (Bawah)	RR_08-Hose Reel/Riser (1000 x 2000)	2.00 m²	1000	2000
Satu (Bawah)	RR_08-Hose Reel/Riser (1000 x 2000)	2.00 m²	1000	2000
Satu (Bawah)	RR_08-Hose Reel/Riser (1000 x 2000)	2.00 m²	1000	2000
Satu (Bawah)	RR_09-Tangga (7325 x 3000)	21.98 m²	7325	3000
Satu (Bawah)	RR_09-Tangga (7325 x 3000)	21.98 m²	7325	3000
Satu (Bawah)	RR_09-Tangga (7325 x 3000)	21.98 m²	7325	3000
Satu (Bawah)	RR_09-Tangga (7325 x 3000)	21.98 m²	7325	3000
Satu (Bawah)	RR_09-Tangga (7325 x 3000)	21.90 m²	7300	3000
Satu (Bawah)	RR_10-Tandas L (7500 x 4500)	33.75 m²	7500	4500
Satu (Bawah)	RR_11-Tandas P (7500 x 4500)	33.75 m²	7500	4500
Satu (Bawah)	RR_12-Bilik Suis (4000 x 3000)	12.00 m²	4000	3000
Satu (Bawah)	RR_13-Bilik Kawalan (5000 x 3000)	15.00 m²	5000	3000
Satu (Bawah)	RR_14-ELV/Riser (1500 x 1000)	1.50 m²	1500	1000
Bawah: 22	Jumlah	622.55 m²		



BIM's INNOVATION

(25.9.2012)

3.0 The Project-MACCCS

3.2 Design Development

3.2.2 Final Design FLOOR AREA SCHEDULE

Room Schedule Menurut Tingkat						
Level	Department	Name	JKR Luas Brif	Area	Jkr13 Peratus Perbezaan	Jkr13 Perbezaan Ruang
01 - Aras Satu						
01 - Aras Satu	03-Cawangan Siasatan	03-s12-Bilik Kawat Cam Saksi	60.00 m ²	23.95 m ²	-60.08%	-36.05 m ²
01 - Aras Satu	03-Cawangan Siasatan	03-s10-Bilik Saringan Eksibit	40.00 m ²	24.73 m ²	-38.17%	-15.27 m ²
01 - Aras Satu	03-Cawangan Siasatan	03-s04-Bilik Rakam Pernyataan (VIR) (2/3)	20.00 m ²	18.90 m ²	-5.49%	-1.10 m ²
01 - Aras Satu	03-Cawangan Siasatan	03-s04-Bilik Rakam Pernyataan (VIR) (1/3)	20.00 m ²	16.80 m ²	-16.01%	-3.20 m ²
01 - Aras Satu	03-Cawangan Siasatan	03-s04-Bilik Rakam Pernyataan (VIR) (3/3)	20.00 m ²	23.43 m ²	17.13%	3.43 m ²
01 - Aras Satu	03-Cawangan Siasatan	03-s05-Bilik Rundingan dan Aduan	20.00 m ²	22.01 m ²	10.05%	2.01 m ²
01 - Aras Satu	03-Cawangan Siasatan	03-s06-Bilik Menunggu Saksi 1/2	9.00 m ²	9.90 m ²	10.00%	0.90 m ²
01 - Aras Satu	03-Cawangan Siasatan	03-s07-Bilik Rakam Pernyata Saksi 1	16.00 m ²	12.80 m ²	-19.99%	-3.20 m ²
01 - Aras Satu	03-Cawangan Siasatan	03-s11-Bilik Menunggu Kawad Cam (Saksi)	18.00 m ²	9.01 m ²	-49.96%	-8.99 m ²
01 - Aras Satu	03-Cawangan Siasatan	03-s11-Bilik Menunggu kawad Cam (Pelakun)	18.00 m ²	14.05 m ²	-21.97%	-3.95 m ²

BIM's INNOVATION

(25.9.2012)

	Aras 1 (Aras Bawah)	Aras 2	Aras 3	Aras 4	Aras 5	Aras 6	Jumlah
Keluasan Efektif (mps)	1,402.45	1,379.45	854.57	894.57	894.57	894.57	6,320.18
Keluasan Pej. Pengarah						164.38	164.38
Pej Timb. Pengarah			116.25				116.25
Caw. Siasatan	515.75	620.50	776.25				1,912.50
Caw. Perisikan				735.00			735.00
Unit Keselamatan	350.00	307.50					657.50
Caw. PENMAS					581.25		581.25
Caw. PERUN					313.75		313.75
Caw. Pendakwaan				316.25			316.25
Caw. Pen. Rahsia			168.75				168.75
Caw. JKTU					118.75		118.75
Caw. Pengurusan						460.00	460.00
Gunasama	521.00						521.00
BGOS 30pax & 10pax		76.00	76.00				152.00
B.Mesy Utama						237.5	237.50
Jumlah	1,386.75	1,004.00	1,137.25	1,051.25	1,013.75	861.88	
Baki	15.70	375.45	-282.68	-156.68	-119.18	32.69	

3.0 The Project-MACCCS

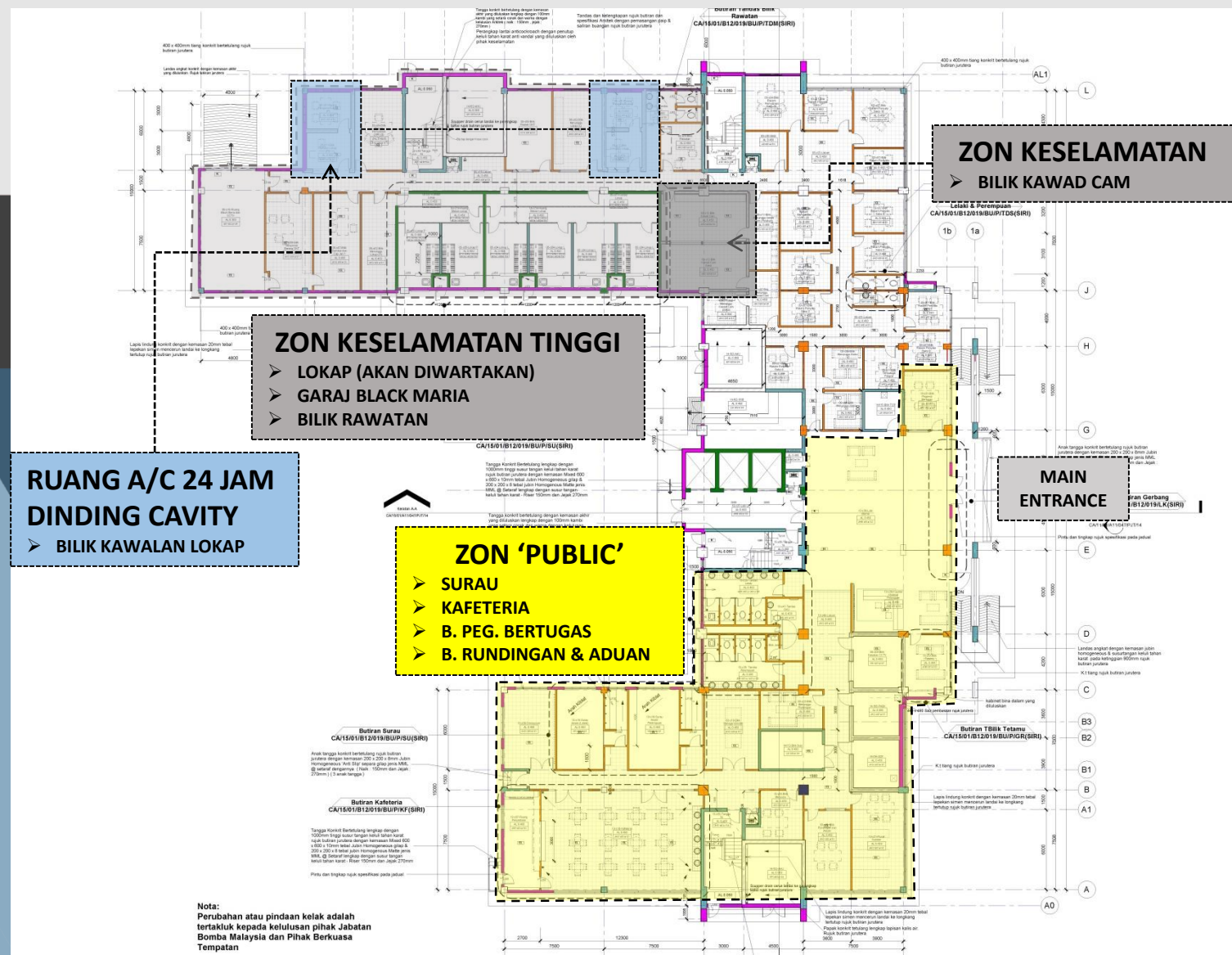
3.2 Design Development

3.2.2 Final Design FLOOR AREA STAKING

BIM's INNOVATION (25.9.2012)

3.0 The Project-MACCCS 3.2 Design Development

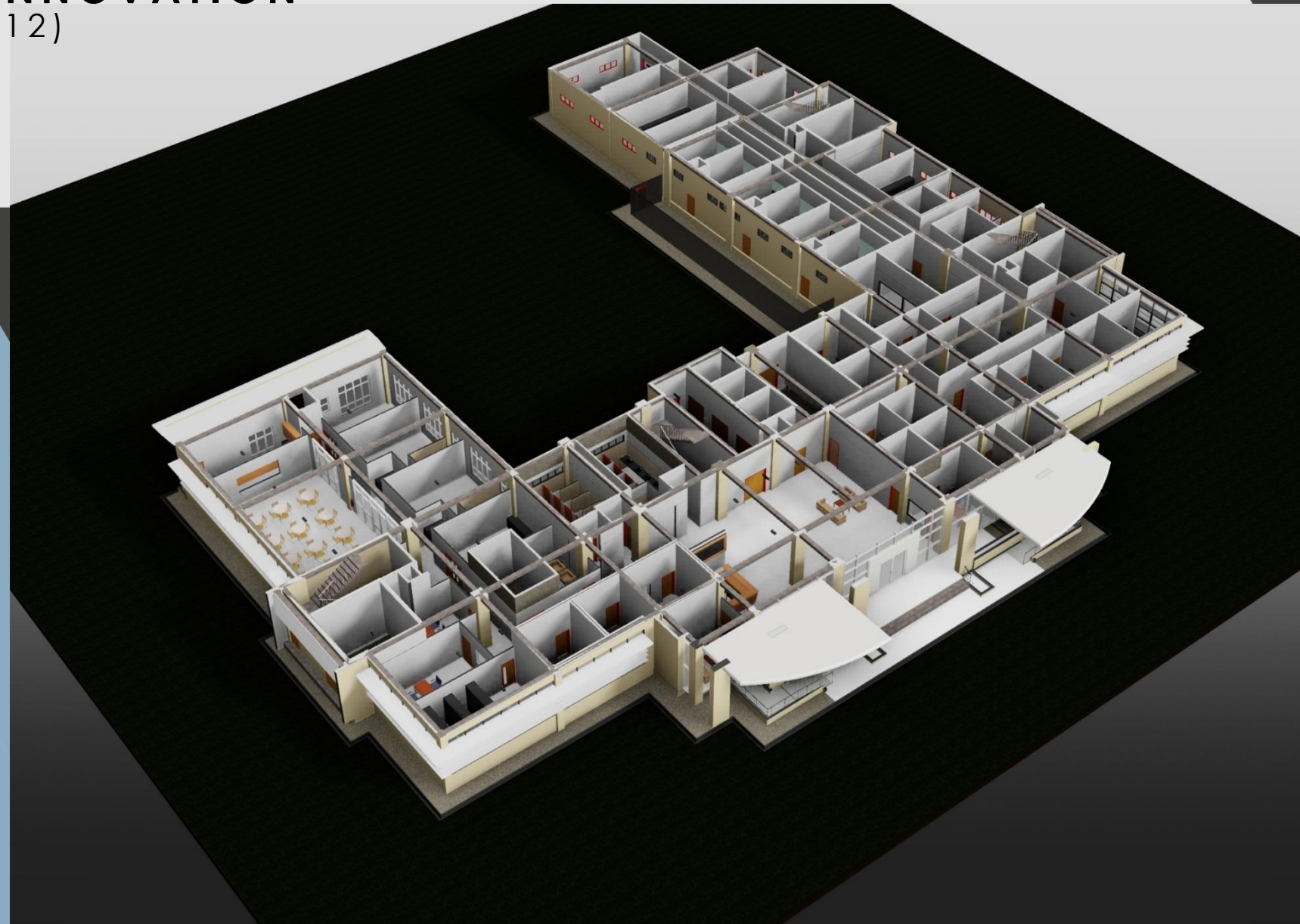
3.2.2 Final Design ZONING & SPECS IDENTIFICATION



BIM's INNOVATION (25.9.2012)

3.0 The Project-MACCCS **3.2 Design Development**

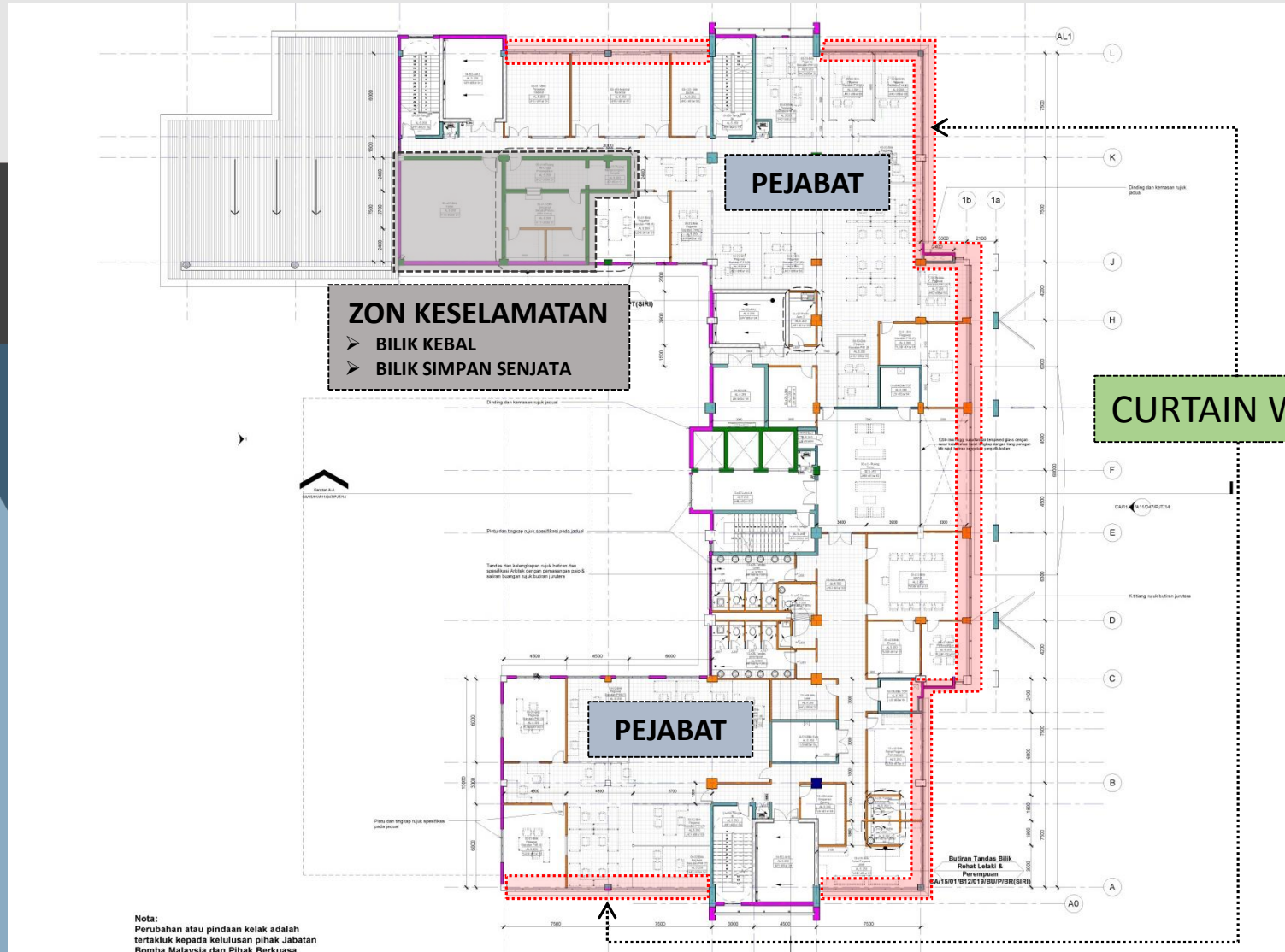
3.2.2 Final Design 3D FLOOR PLAN LAYOUT



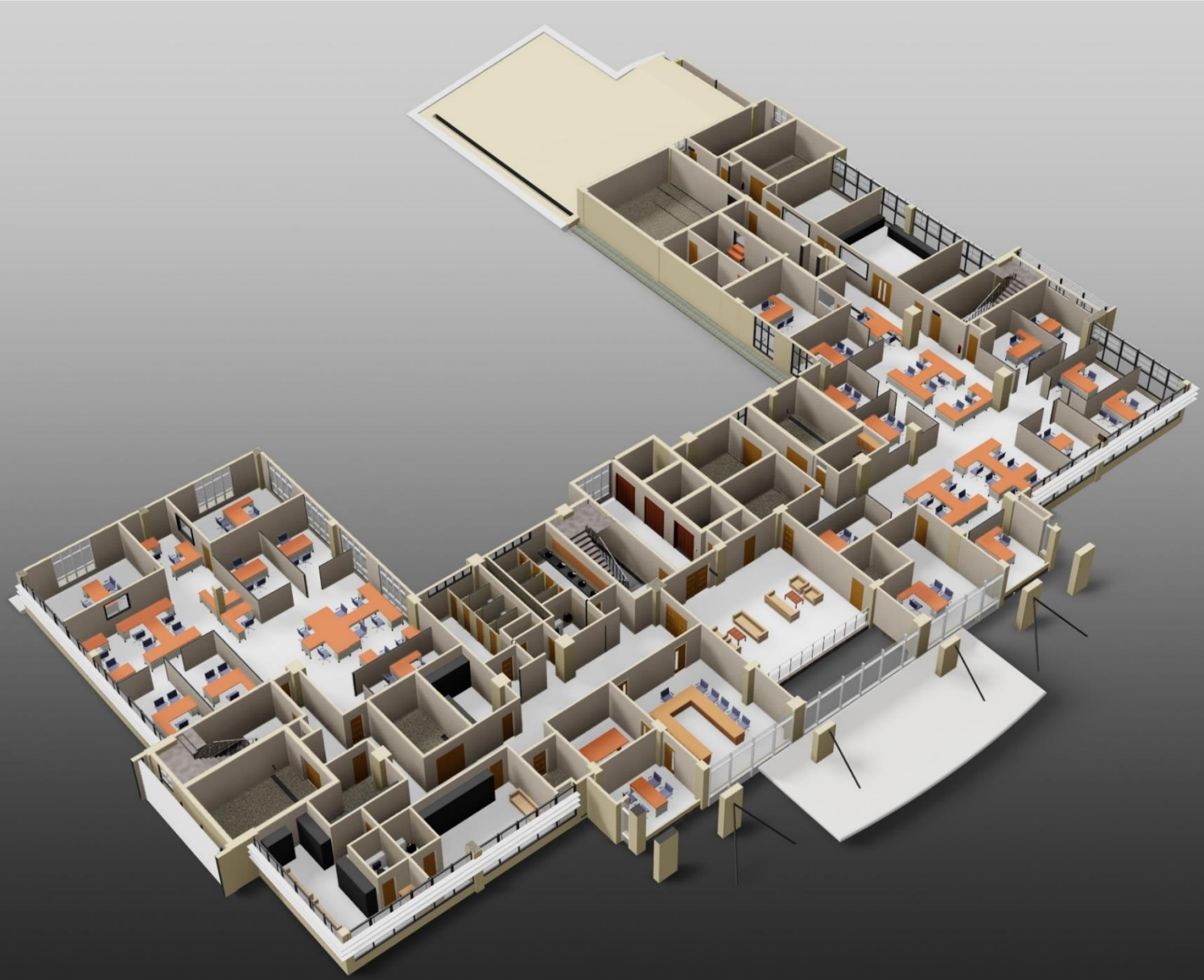
BIM's INNOVATION (25.9.2012)

3.0 The Project-MACCCS 3.2 Design Development

3.2.2 Final Design ZONING & SPECS IDENTIFICATION



BIM's INNOVATION (25.9.2012)



3.0 The Project-MACCCS 3.2 Design Development

3.2.2 Final Design 3D FLOOR PLAN LAYOUT



4.0

Issues + Suggestions

BIM Implementation Issues 4.1

Lessons Learned & Way Forward 4.2

4.0 Issues + Suggestions

4.1 **BIM** Implementation Issues

There are several issues that arises during the implementation of this project:



i. Human resource competence in implementing BIM.

BIM's work culture **has not been fully absorbed and embraced** due to a lack of commitment and understanding coupled with limited BIM facilities and infrastructure.

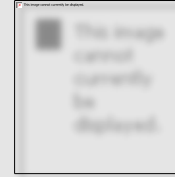


ii. The willingness of a project team in the use of BIM.

BIM's use is a factor that is expected to contribute to delays in project delivery. The **lack of experience and knowledge in BIM** indirectly creates a **negative perception** of the effectiveness of BIM in project implementation.

4.0 Issues + Suggestions

4.1 **BIM** Implementation Issues



iii. The client readiness and understanding on BIM's added value.

The client is not well informed on BIM. Since this project is a pioneer project, there is **no reference to a success story**.



iv. Logistic issues for work coordination.

Logistic problem requires design changes and information to be sent via e-mails and official letters which **delayed the preparation** of detailed drawings.



v. BIM is implemented only at the tender stage

The project team has the assumption that if BIM is included as part of **contractual requirements** then this will involve additional cost in appointing BIM modeler and BIM manager by the contractor during construction.



4.0 Issues + Suggestions

4.2 Lessons Learned & Way Forward

This project serves as a platform to **review BIM's issues** at every stage of project implementation. The journey of this project is a learning lesson, hence the **best and effective guide** to ensure building projects in JKR continues to innovate and be competitive.



i. Improve BIM facilities and infrastructure in design units

Increase the **amount of software and BIM facilities** in design units. Every Architect and their Technical Assistants should be **equipped with a BIM computer**.



ii. Increase project team commitment to BIM usage

By understanding the BIM's objectives and implementation process, the project team can **plan the entire project journey** as well as **understand the factors** that may implicate the time and cost.

4.0 Issues + Suggestions

4.2 Lessons Learned & Way Forward



iii. Improve the clients' confidence on BIM

BIM gives a **clear overview** of the entire design development image along with the input of technical requirements and costs that comply with the project ceiling. It also demonstrates that that quality, time and cost are being coordinated, controlled and monitored well during construction phase.

BIM indirectly embraces a **dynamic working environment** and shapes high quality JKR images.



iv. Creating BIM units in each design unit as coordinator and checker.

Skilled personnel in BIM can indirectly **creates 'train the trainers' work culture** to ensure the continuity and sustainability of BIM's expertise in JKR.

4.0 Issues + Suggestions

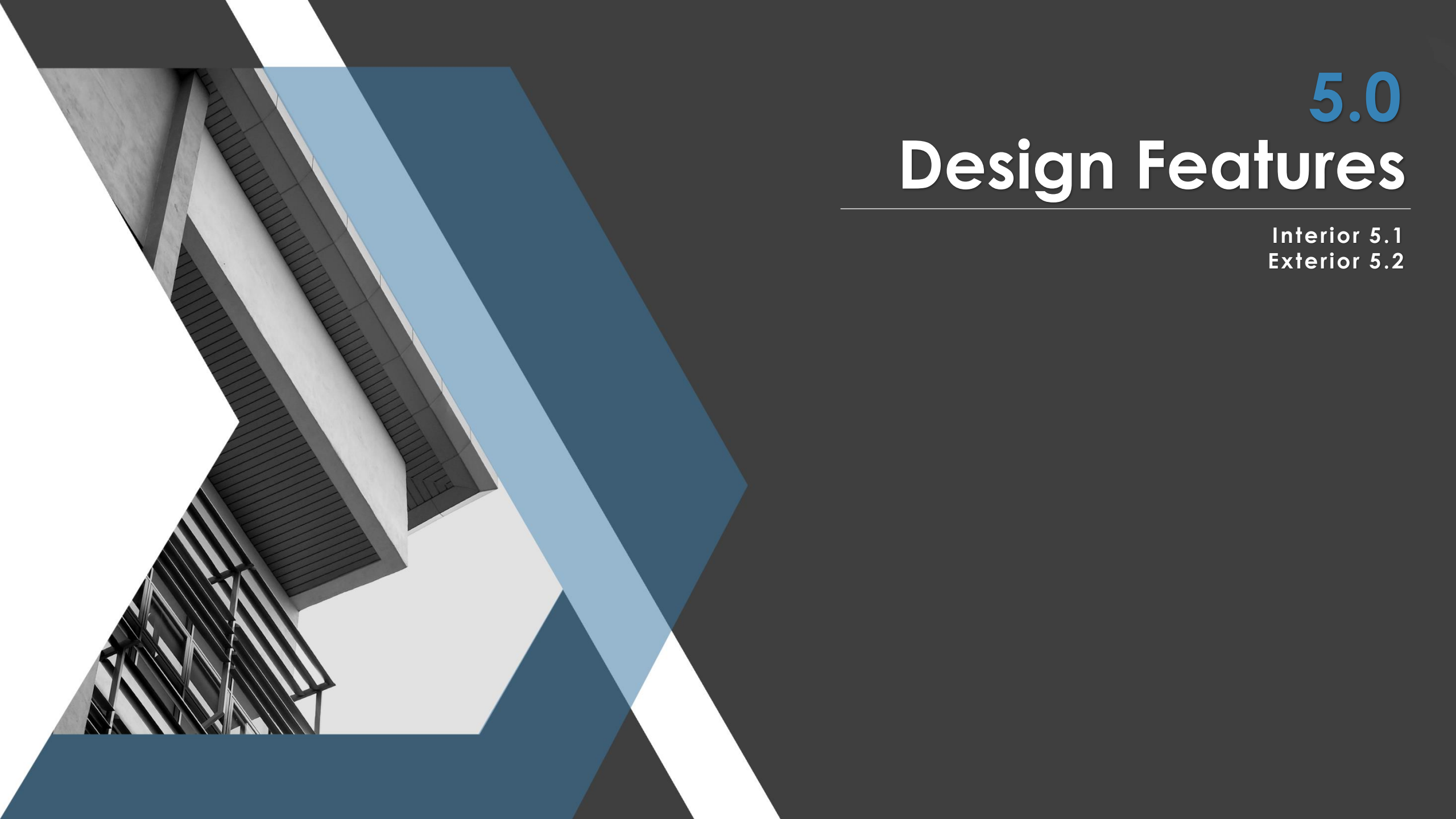
4.2 Lessons Learned & Way Forward



v. Creating BIM Execution Plan

BIM Execution Plan is a BIM project delivery process that outlines the overall vision, implementation process and collaboration procedures for the team to follow through out the project.

BIM Execution Plan should also **outline and define the roles and responsibilities at different stages** of the project so that it can be monitored, updated and revised as necessary throughout the implementation phase of the project.



5.0

Design Features

Interior 5.1
Exterior 5.2

5.0 Design Features

5.1 Interior



5.0 Design Features

5.1 Interior

Main Meeting Room



Multipurpose Hall



5.0 Design Features

5.1 Interior



VIR
Video Interviewing Room

5.0 Design Features

5.1 Interior

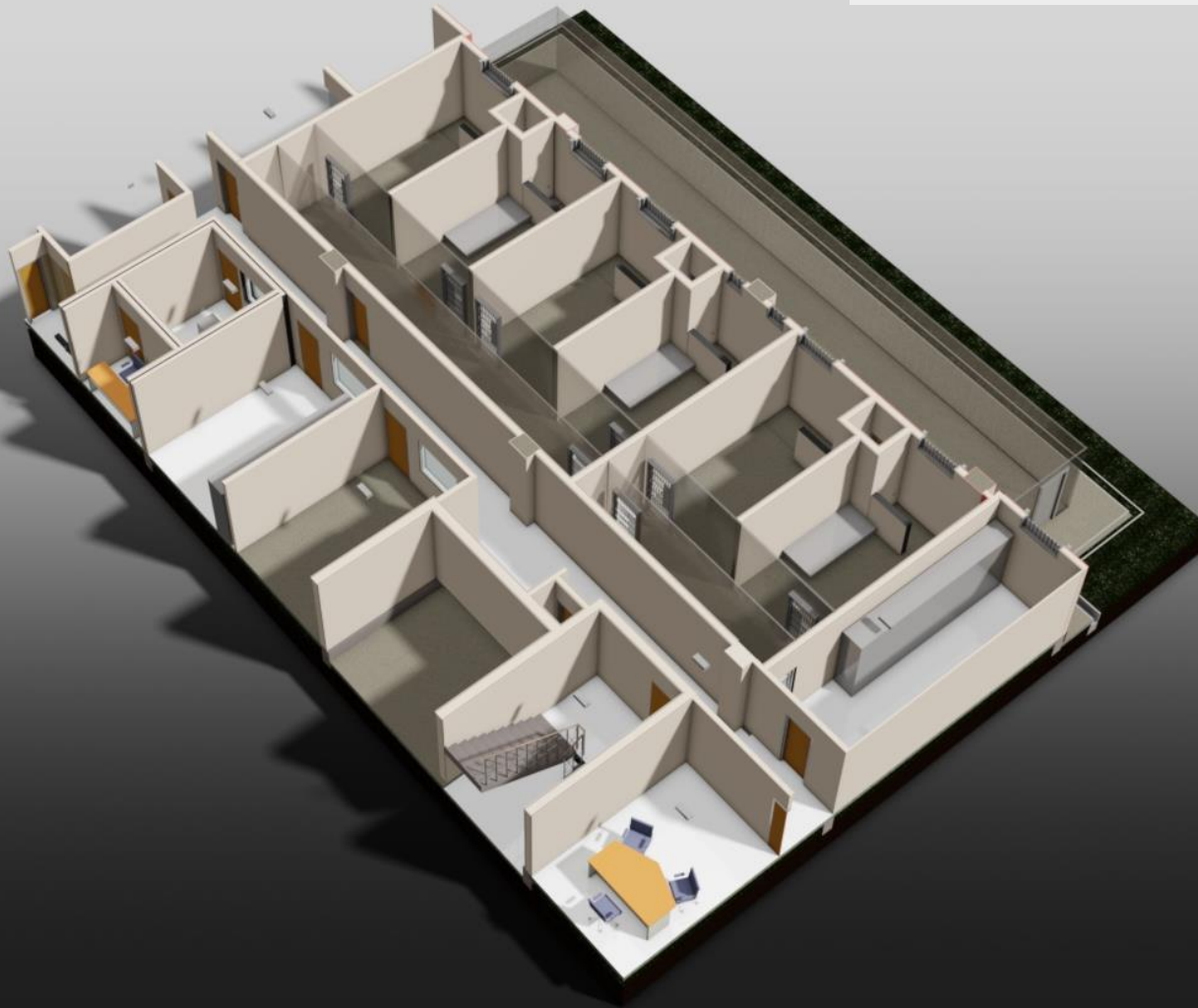
Lock-Up Room



5.0 Design Features

5.1 Interior

Lock-Up Room



5.0 Design Features

5.2 Exterior



Garaj Black Maria



5.0 Design Features

5.2 Exterior

BIM Rendering: Main Entrance



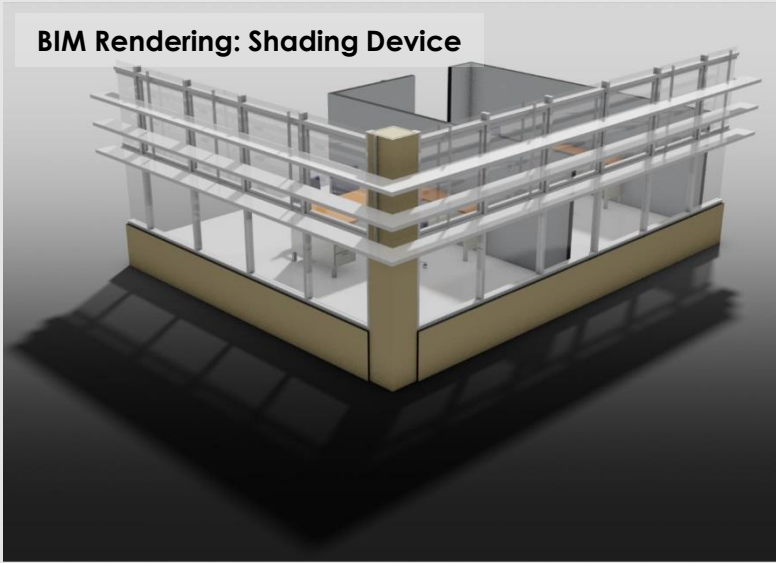
Main Entrance



5.0 Design Features

5.2 Exterior

BIM Rendering: Shading Device



Shading Device



Building Façade- Fins



5.0 Design Features

5.2 Exterior

Drop-Off for Multipurpose Hall



Multipurpose Hall



Warehouse (Gudang Sita)





COLLABORATE

INNOVATE

REJUVENATE



Thank
You
