

## FLEETWOOD



DESIGN VALIDATION REPORT + SUPPORTING CALCULATIONS







#### SITE HISTORY & CONTEXT

Midland has always been the guts of Perth, always changing but never fearful of the future. Serving as the foundation for the city, providing what was needed to grow and become a modern society. And though the rail workshops closed in 1994, the community of Midland had continued to develop on strong principles of hard work and innovation, with Midland High winning the innovation award 4 years running this year.

It must be said however, that Midland isn't just important to Perth, but to the first peoples who lived there, with artifacts dating to 40 thousand years ago, and Corroborees still happening in 1907. The area would have been a common camp site for the Noongar during the summer seasons, camping by the Helena River and receiving nourishment from its flow.



The site chosen for this project is 15 Yelverton Drive, situated at the heart of the Old Rail Workshops. It directly relates to Hebe Park and the Coal Dam Lake; once used as dumping grounds for the coal that fuelled the Old Trains. Remnants of the old track remain as features of Coal Dam Park. This site was chosen due to its historical richness in both European and Aboriginal cultures. There was a strong desire to introduce a larger demographic variety within site amongst the team to encourage stronger bonds among the community. The prolific site allowed more emphasis to be placed on communal relations and support.





#### **MODULE DESIGN**

The design is inspired by bees and their relationship with the first peoples of Australia, who prized honey for their medicinal value. We adapted the hexagon shape of bee cells, playing on the dichotomy of visual aesthetics and the natural stability of the shape. We defined the parameters of each module to fit on a truck without the need for pilot vehicles to reduce imposing restrictions on the community and save on the economic and environmental costs.

Our goal is to create something that can be scalable, to work both as standalone units and as medium density residential complexes. This goal was created to allow these units to be used by everyone, establishing a new mode of living that would be economically viable to prolong the use and maintenance of these structures.

The honeycomb shape gave us something very interesting to play with, and with more time, we could possibly go on and on refining and changing things because of the shape's versatility. The shape allowed us to expand in 3 dimensions and allowed for some very interesting unit arrangements.



ture. Each half-hexagon module would be made up of seven pieces as depicted above. Lightweight and fire resistant, Alucobond was chosen as the exterior cladding for its clean finish, colour availability and swift installation process. Due to the site bordering the train line, a composite system was agricultural biproduct that boasts strong acoustic insulating properties. Fire-resistant boards have been used within the walls, floors and ceiling creating fire compartments, mitigating the expansion of any accidental fires. Cork has been applied to the walls and floors of the dry areas of each units providing a natural finish to the project.







TYPE A 1 BED 1 BATH		AREA sqm
1	LIVING	11.85
2	KITCHEN	11.85
	DINING	
4	WC	2.78
5	STUDY	11.85
6	BEDROOM	11.85
	TOTAL AREA	59.25



TYPE B		AREA sqm
2 BED 1 BATH		
1	LIVING	11.85
2	KITCHEN	11.85
	DINING	
4	WC	2.78
5	STUDY	11.85
6	BEDROOM	11.85
	TOTAL AREA	71.1





TYPE C 2 BED 2 BATH		AREA sqm	TYPE D 3 BED 2 BATH		AREA sqm
1	LIVING	12.45	1	LIVING	11.85
2	KITCHEN	18.15	2	KITCHEN	11.85
3	DINING	12.45	3	DINING	18.16
4	WC	2.78	4	WC	2.78
5	STUDY	18.15	5	STUDY	11.85
6	BEDROOM	11.85	6	BEDROOM	11.85
	TOTAL AREA	101.75		TOTAL AREA	120.00





## **DESIGN PHILOSOPHY**

Of equal importance of the modules is the arrangement of space and how the project works together. The most important aspect of the Hive is belonging, the kind of belonging that is only provided by stability, stability in privacy, community, and livelihood. Each unit is arranged and stacked according to the needs of the project. With this in mind, the project is divided into three parts, all equal in the workings of the project much like the division of honeybee hierachy which depend on each other to function.

The Café, situated in the eastern side of the project, relates to the adjacent parks and serves as a point of reference for the Community of Midland to relate to the project. The Café serves as a space where residents can be trained with real skills for the outside, regardless of education, and where the community of Midland as a whole can come and support the project. The Café will be run as a cooperative, where profits will be reinvested in the community living there at the Hive, buying books, paying bills and maintenance. The Commons serves as a gathering place for the residents of the Hive, to grow together, sharing and learning from one another. The Commons emphasises the communal aspect of the Hive, where residents can come together to grow and become who they believe they should be. There are spaces for entertainment, nourishment, education and community, hopefully providing a place where broken individuals can be supported and loved as they trek their way into wholeness.

The Colony, named after the family unit of honeybees, is meant to provide private living quarters for all residents of the hive. Each individual unit is meant as a space to recharge and be at peace.



## COMMONS

1 2

3

4

5

6

- **ADMINISTRATION**
- PLAZA
  - ACCESSIBLE WC
  - STUDY KITCHEN
- DINING
- LIVING
- 7 8 LAUNDRY 9
  - ALFRESCO



1

2

3

4

5

6

7

- DINING
- **KITCHEN**
- **KITCHEN DINING** BATHROOM
- STUDY
- BEDROOM











#### **SOLAR PV & BATTERY ARRAY**

Commonplace in the Net Zero Strategies of many buildings are the Photovoltaic Cells placed on the roof. The cells face East and West, contrary to usual practice of having it face North. This allows energy to be generated at varying times throughout the day, hopefully alleviating the issue with energy loads experienced by the grid due to over collection at midday. The Photovoltaic Cells feed into a Battery Array situated in the Service Modules below the northern row of the Colony which

#### **INTERNAL FITTINGS**

To reduce water usage for cleaning, all taps and showers will be fitted with Mist nozzles while all water-based appliances are to be waterwise.

Electrical appliances should have integrated inverters to reduce electrical consumption and overall dead weight. Fibreoptic with LED backup lighting will be used to draw in daylight into the project, only using electricity when absolutely necessary.

#### SERVICES

The utility services will be channelled through the west side of the site directly into the middle of the Hive. Water mains will feed into a small water tank which will then be distributed amongst the different units. Electrical mains will used as a backup system for the Solar PV and will feed into the batteries when solar energy dries up for the time being. This strategy allows the battery array to mitigate any damage to systems should there be a general power outage.



## **RW COLLECTION TANK**

Rainwater is collected from the roofing system and delivered to a storage tank below the central corridor and is to be used for flushing and plant care.

#### **OPENINGS**

To reduce heat loss in the project, all external openings will utilise a minimum of double-glazed windows and solid core doors.



#### FLOOR AREA REQUIREMENTS

Туре	Size	Requirements
А	59m2	47m2
В	71m2	67m2
С	102m2	70m2
D	120m2	93m2

Balconies have thus far not been provided to encourage residents to get to know each other in the more public areas of the project.

## **CEILING HEIGHT REQUIREMENTS**

Ceiling Heights match the reqirements of 2.4m for Non-Habitable Rooms and 2.7m Habitable Rooms as well as a minimum of 1.5m minimum height for Attic Rooms.

Ceiling Height for restaurant/café has been matched at 3.3m

#### **STAIR REQUIREMENTS**

Stair requirements at 600mm for internal circulation and 1000mm for central and fire escape stairs with maximum of 18 risers before each landing.

#### CORRIDOR WIDTH

Corridor width of 1500mm has been matched along with window gap of 1500mm.



SETBACK COMPLIANCE Setbacks comply with the MRA for Yelverton Drive

## PEDESTRIAN ENTRY AND ACCESS

Highly identifiable Pedestrian Entry and Access provided on the South Façade.

#### SOLAR ACCESS

Most major openings sit in the acceptable range for solar access.

#### **OPEN SPACE REQUIREMENTS**

Communal Open Space requirements of 6m2 per dwelling exceeded at 130m2, or 10m2 per dwelling.



## **ENGINEERING ANALYSIS**

The structural planning for the cold-formed steel structure is based on engineering knowledge as shown in figure below. The load bearing walls are designed in cold-formed steel frames and the roof is designed to be scissors truss. Loads considered are roof loads, wind loads, imposed and permanent loads.

## LOAD TRANSFER

TRUSS SYSTEM WALL FRAMES UPPER FLOOR FLOOR JOIST BEARER BEAM UPPER FLOOR WALL FRAMES LOWER FLOOR FLOOR JOIST PAD FOOTING



## **STRUCTURAL DESIGN**

STRUCTURE	MATERIALS
Roof Cladding	Custom Orb 0.48 BMT
Purlin	Cold-formed Steel C10012
Truss	Cold-formed Steel C10012
Wall Frame	Cold-formed Steel C10012
Flooring Joist & Bearer	Cold-formed Steel C20024
Stairs	Cold-formed Steel C10012
Column	125x125x4 SHS
Exterior/ Interior Load Bearing Wall	9mm Fibre Cement Weatherboards + 15mm Fire Resistant Gypsum Board
Interior Wall Partition. Non-load Bearing	15mm Fire Guard Plasterboard on both sides of cold formed steel frame
Flooring	18mm Magnesium Oxide Board
Stairs, Corridors & Lift Core	Concrete

## **INTRA-CONNECTION DESIGN**

STRUCTURAL MEMBERS	CONNECTIONS	REFERENCES
Roof truss to wall frame		FRAMECAD Fastening Solution for Cold
		Formed Steel
Load Bearing Wall Frame Studs	M6 Fastite (Flat head, 17mm,PP,	
connection	BMT 0.95)	http://nebula.wsimg.com/0e855b7fb6c
		a2a10d9cc159431092f2f?AccessKeyId=
Truss system		25F1265C92698680223B&disposition=0
,		&alloworigin=1
Bearer to floor joist		Powers, Blue-Tip Screw Bolt
Fix down for load bearing wall	M12 Screw Bolts	https://www.westcoastfasteners.com.a
frame		u/pdf/Powers_Blue_Tip_Screw_Bolts.p
		df



## SUMMARY OF DESIGN CAPACITY FOR LOAD BEARING WALL

CAPACITY	VALUE	COMMENT		
Design tensile force, Nt*	26.2kN			
Design compression force, Nc*	45kN	Obtained from STAAD PRO CONNECT design analysis		
Design bending moment, M*	1.932kNm			
Design shear force, V*	20.3kN			
Tension, ΦtNt	87.5kN	>Nt*= (::Satisfied)		
Compression, Nynet	91kN	>Nc* (.Satisfied)		
Nominal member capacity for local buckling, Ncl	50.3kN	Ncl ≤ Nynet ∴Compression members do not yield		
Nominal section moment capacity, ΦMs	3.033kNm	>M* (::Satisfied)		
Moment causing initial yield, My	4.24kNm			
Elastic lateral-torsional buckling moment, Mo	17kNm	Mo > 2.78My ∴ Mbe=My		
Nominal member capacity for lateral-torsional buckling, Mbe	4.24kNm	>M* (::Satisfied)		
Nominal member capacity for local buckling, Mbl	3.35kNm	>M* (::Satisfied)		
Nominal shear capacity of the web, $\Phi Vv$	33.03kN	>V* (∴Satisfied)		
Combined bending and shear, $\left(\frac{M^*}{\Phi bMs}\right)^2 + \left(\frac{V^*}{\Phi vVv}\right)^2$	0.78	≤1.0 ∴M* and V* are satisfied		



#### SUMMARY OF DESIGN CAPACITY FOR FLOOR JOIST

CAPACITY	VALUE	COMMENT
Design tensile force, Nt*	73.4kN	
Design compression force, Nc*	73.4kN	Obtained from STAAD PRO CONNECT design analysis
Design bending moment, M*	15.64kNm	
Design shear force, V*	21.71kN	
Tension, ΦtNt	318kN	>Nt*= (::Satisfied)
Compression, Nynet	389.7kN	>Nc* (∴Satisfied)
Nominal member capacity for local buckling, Ncl	384kN	Ncl ≤ Nynet ∴Compression members do not yield
Nominal section moment capacity, $\Phi$ Ms	19.24kNm	>M* (::Satisfied)
Moment causing initial yield, My	25.2kNm	
Elastic lateral-torsional buckling moment, Mo	1271kNm	Mo > 2.78My ∴ Mbe=My
Nominal member capacity for lateral-torsional buckling, Mbe	25.2kNm	>M* (∴Satisfied)
Nominal member capacity for local buckling, Mbl	24.9kNm	>M* (::Satisfied)
Nominal shear capacity of the web, $\Phi Vv$	118.35kN	>V* (::Satisfied)
Combined bending and shear, $\left(\frac{M^*}{\Phi bMs}\right)^2 + \left(\frac{V^*}{\Phi vVv}\right)^2$	0.69	≤1.0 ∴M* and V* are satisfied



## SUMMARY OF DESIGN CAPACITY FOR FLOOR BEARER

CAPACITY	VALUE	COMMENT	
Design tensile force, Nt*	40.9kN		
Design compression force, Nc*	12.4kN	Obtained from STAAD PRO CONNECT design analysis	
Design bending moment, M*	13.1kN		
Design shear force, V*	72.4kN		
Tension, ΦtNt	332kN	>Nt*= (::Satisfied)	
Compression, Nynet	406.8kN	>Nc* (∴Satisfied)	
Nominal member capacity for local buckling, Ncl	337.9kN	Ncl ≤ Nynet ∴Compression members do not yield	
Nominal section moment capacity, ΦMs	19.24kNm	>M* (∴Satisfied)	
Moment causing initial yield, My	25.2kNm		
Elastic lateral-torsional buckling moment, Mo	739.2kNm	Mo > 2.78My ∴ Mbe=My	
Nominal member capacity for lateral- torsional buckling, Mbe	25.2kNm	>M* (::Satisfied)	
Nominal member capacity for local buckling, Mbl	24.9kNm	>M* (∴Satisfied)	
Nominal shear capacity of the web, ΦVv	118.35kN	>V* (∴Satisfied)	
Combined bending and shear, $\left(\frac{M^*}{\phi bMs}\right)^2 + \left(\frac{V^*}{\phi vVv}\right)^2$	0.84	≤1.0 ∴M* and V* are satisfied	



## SUMMARY OF DESIGN CAPACITY COLUMN

CAPACITY	VALUE	COMMENT
Design tensile force, Nt*	39.5kN	
Design bending moment about z- axis, Mz*	4.152kNm	Obtained from STAAD PRO CONNECT design analysis
Design shear force, V*	0.062kN	
Design bending moment, M*	1.67kNm	Calculation
Tension, ΦtNt	592kN	>Nt*= (::Satisfied)
Nominal member moment capacity, ΦMb	25.2kNm	>M* (:Satisfied)
Nominal section moment capacity, ФMs	24.84kNm	>M* (:Satisfied)
Nominal moment section capacity, ΦMz	20.8kNm	>Mz* (::Satisfied)
Nominal shear capacity, ΦVw	94.5kN	$\frac{dp}{tw} \le \frac{82}{\sqrt{\frac{fy}{250}}}$ $\therefore \Phi \forall v = \Phi \forall u = \Phi \forall w$
Nominal shear capacity of the web, ΦVv	94.5kN	0.6ΦVv>V* (∴Satisfied) ∴ Shear and bending interaction ok.

## SUMMARY OF DESIGN CAPACITY FOR STAIRCASE

CAPACITY	VALUE	COMMENT
Design shear force, V*	0.241kN	Calculation
Design bending moment, M*	0.0075kNm	
Tension, ΦtNt	592kN	>Nt*= (::Satisfied)
Nominal member moment capacity, ΦMb	18.7kNm	>M* (::Satisfied)
Moment causing initial yield, My	27kNm	
Elastic lateral-torsional buckling moment, Mo	10267.2kNm	Mo > 2.78My ∴ Mbe=My
Nominal member capacity for lateral-torsional buckling, Mbe	27kNm	>M* (∴Satisfied)
Nominal section moment capacity, $\Phi Ms$	24.3kNm	>M* (∴Satisfied)
Nominal shear capacity of the web, $\Phi Vv$	23.5kN	>V* (::Satisfied)



## COST

Preliminary Estimated Cost

Total preliminary estimated cost = \$2.879 million ± 30 % = \$2.015 million - \$3.743 million



## **Final Estimated Cost**

Total cost for this project is AUD 2,084,707.73 inclusive of 10% G.S.T. Calculations can be provided upon request. The unit rate for all the materials is taken from Rawlinson's Australian Construction Handbook 2022 and SPON'S Architects' and Builders' Price Book 2020. The rates taken from Rawlinson excludes the Goods and Services Tax (G.S.T) and includes the Builders' head office overheads and profit at the following rates:

- > Preliminaries, Transportation Systems and Base Material Prices: 0.0%
- ► Electrical and Mechanical Services: 2.5%
- ➤ All other trades and services: 5.0%

The overall markup of this project is 10%, which contains the general overhead, profit and contingency. The overhead is included in the rate stated in Rawlinson's. A fixed profit of 5% and 5% of contingency for greenfield work are taken into account during the calculation of unit rate.

As labour rates differs based on the type of work, therefore, the latest salary rates for each occupation are taken from (Talent.com, 2022) and listed down in Appendix B.



Based on the plotted combined S-Curve graph, the curve for cumulative income is higher than the cumulative expenditure curve, showing that the overall income for this project is sufficient to cover the expenses. The financial costs for this project will not be an issue because all expenses are guaranteed.



## TABULATION OF CUMULATIVE INCOME AND EXPENDITURE

Week	Payment (AUD)	Cumulative Income (AUD)	Expenditure (AUD)	Cumulative Expenditure (AUD)	Net Balance (AUD)	Remarks
1	0	0	517.00	517.00	(517.00)	Interim Valuation 1
2	416,941.55	416,941.55	517.00	1,034.00	415,907.55	20% payment
3		416,941.55	44,425.39	45,459.39	371,482.16	
4		416,941.55	110,376.67	155,836.06	261,105.49	
5		416,941.55	110,376.67	266,212.73	150,728.82	Interim Valuation 2
6	312,706.16	729,647.71	110,376.67	376,589.40	353,058.31	15% payment
7		729,647.71	139,718.38	516,307.78	213,339.93	
8		729,647.71	108,349.47	624,657.25	104,990.46	
9		729,647.71	79,007.75	703,665.00	25,982.71	Interim Valuation 3
10	208,470.77	938,118.48	79,007.75	782,672.75	155,445.73	10% payment
11		938,118.48	67,234.94	849,907.69	88,210.79	
12		938,118.48	2,772.00	852,679.69	85,438.79	
13		938,118.48	7,982.27	860,661.96	77,456.52	Interim Valuation 4
14	260,588.47	1,198,706.94	5,210.28	865,872.24	332,834.70	12.5% payment
15		1,198,706.94	5,210.28	871,082.52	327,624.42	
16		1,198,706.94	29,410.27	900,492.79	298,214.15	
17		1,198,706.94	24,200.00	924,692.79	274,014.15	Interim Valuation 5
18	416,941.55	1,615,648.49	143,647.66	1,068,340.45	547,308.04	20% payment
19		1,615,648.49	119,447.66	1,187,788.11	427,860.38	
20		1,615,648.49	119,447.66	1,307,235.77	308,412.72	
21		1,615,648.49	119,447.66	1,426,683.43	188,965.06	Interim Valuation 6
22	312,706.16	1,928,354.65	119,447.66	1,546,131.09	382,223.56	15% payment
23		1,928,354.65	119,447.66	1,665,578.75	262,775.90	
24		1,928,354.65	119,447.66	1,785,026.41	143,328.24	
25		1,928,354.65	119,447.66	1,904,474.07	23,880.58	Interim Valuation 7
26	104,235.39	2,032,590.04	119,447.66	2,023,921.73	8,668.31	5% payment
27		2,032,590.04	8,857.20	2,032,778.93	(188.89)	
28		2,032,590.04	8,857.20	2,041,636.13	(9,046.09)	
29		2,032,590.04	8,857.20	2,050,493.33	(17,903.29)	Interim Valuation 8
30	52,117.69	2,084,707.73	8,857.20	2,059,350.53	25,357.20	2.5% payment
31		2,084,707.73	17,107.20	2,076,457.73	8,250.00	
32		2,084,707.73	8,250.00	2,084,707.73	-	
33		2,084,707.73	-	2,084,707.73		



## **PROJECT SCHEDULE** GANNT Chart

The project will commence on 3rd of October 2022 and is expected to be completed on 22nd May 2023. The estimated duration of the project is 159 days, excluding weekends and public holidays.

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Observation         Oracle Market	Sole         Sole merginality         Conv.         Model (1)/2012         Provide		-	9000	Yelverton Drive Modular Construction	159 days	Mon 3/10/22	Mon 22/5/23	
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Support         Support         Support         Support         Support           9         Support         Support         Support         Support         Support         Support           9         Support         Support         Support         Support         Support         Support         Support           9         Support         Support         Support         Support         Support         Support         Suppo	Image: Section of an indication and anomalia monolation				Detailed Site Investigation	2 days	Wed 5/10/22	Thu 6/10/22	2
Decision         Processes         Processes         Processes         Processes           Bootstand research and the finance         Processes	2         98-000000000000000000000000000000000000		1		Supplementary investigation and construction control	1 days	Fri 7/10/22	Eri 7/10/22	2
Intercent         Arrow         Notation         <	1         All Second Particle Particle Second Particle Particle Second Particle Second Particle Second Particle Particle Secon	-	-	*	Supprementary investigation and construction control	1 day	Man 10/10/22	Tue 18/10/22	3
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Backbook	2         statution of endowneem seem         24 model         0 models construction         24 models         24 m	•		*	Construction of footing on site	20 days	Wed 19/10/22	Tue 15/11/22	
Bate spectrom         Party         Web/10/27         Phy/10/27         Phy/10/27 <t< td=""><td>1         Stempletin         24m         Worklass         10           2         Stempletin         64m         Worklass         10           3         Stempletin         14m         Worklass         14m           4         Stempletin         14m         Worklass         14m           5         Stempletin         14m         Worklass         14m           6         Stempletin         14m         Worklass         14m           7         Stempletin         14m         Worklass         14m           8         Stempletin         14m         Worklass         14m           9         Stempletin         14m         Worklass         14m           9         Stempletin         14m         Worklass         14m           1         Stempletin         14m         Morklass         14m           1</td><td>0</td><td></td><td>-</td><td>Installation of reinforcement steel</td><td>10 days</td><td>Wed 19/10/22</td><td>Tue 1/11/22</td><td>5</td></t<>	1         Stempletin         24m         Worklass         10           2         Stempletin         64m         Worklass         10           3         Stempletin         14m         Worklass         14m           4         Stempletin         14m         Worklass         14m           5         Stempletin         14m         Worklass         14m           6         Stempletin         14m         Worklass         14m           7         Stempletin         14m         Worklass         14m           8         Stempletin         14m         Worklass         14m           9         Stempletin         14m         Worklass         14m           9         Stempletin         14m         Worklass         14m           1         Stempletin         14m         Morklass         14m           1	0		-	Installation of reinforcement steel	10 days	Wed 19/10/22	Tue 1/11/22	5
Concrete	2         Concentrag         4409         His/10/22         His/10/22<	1		-	Cite inspection	2 days	Wed 2/11/22	Thu 2/11/22	10
Line control         Line contro         Line control         Line control </td <td>-         -         Secondag         -&lt;</td> <td>-</td> <td></td> <td></td> <td>Site inspection</td> <td>zuays</td> <td>wed 2/11/22</td> <td>110 3/11/22</td> <td>10</td>	-         -         Secondag         -<	-			Site inspection	zuays	wed 2/11/22	110 3/11/22	10
Bitment humon tank and	Image: Interver	2	- 1	-+	Concreting	6 days	Fri 4/11/22	Fn 11/11/22	11
P         Generation of rules and particular discussion of the status of the statu	2         Contractive of incident data         7 day         We MU127         New MU127           2         Sequencies         8 day         We MU127         New MU1272           2         Sequencies         8 day         We MU127         New MU1272           2         Sequencies         8 day         We MU1272         New MU1272           3         Sequencies         6 day         We MU1272         New MU1272           4         Sequencies         6 day         We MU1272         New MU1272           5         Sequencies         6 day         We MU1272         New MU1272           5         Sequencies         6 day         We MU1272         New MU1272           5         Sequencies         6 day         We MU1272         New MU1272           6         Sequencies         8 day         New MU1272         New MU1272           7         Medicie Index Inter         8 day         New MU1272         New MU1272           8         Medicie Index Inter         8 day         New MU1272         New MU1272           8         Medicie Index Inter         8 day         New MU1272         New MU1272           8         Medicie Index Inter         8 day         New MU1272 <td< td=""><td>3</td><td></td><td>-4</td><td>Remove formwork and curing</td><td>2 days</td><td>Mon 14/11/22</td><td>Tue 15/11/22</td><td>12</td></td<>	3		-4	Remove formwork and curing	2 days	Mon 14/11/22	Tue 15/11/22	12
Installion defendements stell         Jerge         Wei MU1/22         P           Image: Second Seco	Image in mining intervention         3 days         Week MU/L23         FM MU/23         9           Image intervention         3 days         Week MU/L23         FM MU/23         6           Image intervention         3 days         Meek MU/23         FM MU/23         7           Image intervention         3 days         Meek MU/23         FM MU/23         7           Image intervention         3 days         Meek MU/23         FM MU/23         7           Image intervention         3 days         Meek MU/23         FM MU/23         7           Image intervention         3 days         Meek MU/23         FM MU/23         7           Image intervention         3 days         Meek MU/23         FM MU/23         7           Image intervention         3 days         Meek MU/23         FM MU/23         7           Image intervention         3 days         Meek MU/23         FM MU/23         7         7           Image intervention         3 days         Meek MU/23         FM MU/23         7         7           Image intervention         3 days         Meek MU/23         FM MU/23         7         7           Image intervention         3 days         Meek MU/23         FM MU/23         7         <	4	;	*	Construction of triangular shape	7 days	Wed 16/11/22	Thu 24/11/22	
Image: Second	Image: Section (Section (	5		4	Installation of reinforcement steel	3 days	Wed 16/11/22	Fri 18/11/22	9
Borosting         3-any         More 7U/1/22         Hold T/1/22         Hold T/1/22           Programmed relation in the futury         Hole More More Mark and Carlosting         Hole More More Mark and Carlosting         Hole More More Mark and Carlosting           Programmed relation in the futury         Hole More More Mark and Carlosting         Hole More Mark and Carlosting         Hole More Mark and Carlosting           Programmed relation in the futury         Hole More Mark and Carlosting         Hole More Mark and Carlosting         Hole More Mark and Carlosting           Programmed relation in the futury         Hole More Mark and Carlosting         Hole More Mark and Carlosting         Hole Mark Mark and Carlosting         Hole Mark Mark and Carlosting           Hole Mark Mark and Carlosting         Hole Mark Mark and Mark Mark and Mark Mark Mark Mark Mark Mark Mark Mark	Concreting         3-mp         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22           Personal or function         8-day         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22           Personal or function         8-day         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22           Personal or function         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22           Personal or function         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22           More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22           More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22           More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/1/22         More 1/1/22           More More 1/1/22         More 1/1/1/22         More 1/1/22	111		4	Site inspection	1 day	Fri 18/11/22	Fri 18/11/22	
Baser of more and some of constant of performance performance of performance performance of performance	Image:			4	Concreting	3 days	Mon 21/11/22	Wed 23/11/22	16
Permette estimation         1 etc.         Mes Buildon         1 212022         1           Conctions         4 day         Mes Buildon         1 101022         1           Conctions         4 day         Mes Buildon         1 101022         2           Definition         1 101020         Mail 1002         1 111022         2           Mes Buildon         3 days         Mes 10102         1 111022         2           Mes Buildon         3 days         Mes 10102         Mail 1002         3 111102         1 111022         1 111022           Mes Buildon         3 days         Mes 10102         Mail 1002         3 111102         3 111102         3 111102           Mes Buildon         3 days         Mes 201022         Mail 1002         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 1111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 111102         3 1111102	Provide of products and the sector         Product of models in the factor         Product of	_	- 6		Remove formwork and curing	1 day	Thu 74/11/22	Thu 24/11/22	17
Production of models in the factory         Productin the factory         Production of models in	Image: Production in production in the fattery in the fatt	-	1		Propagation of profeb material	10 days	Man 10/10/22	F-1 31 /10 /22	17
Construment strein         6 days         Mex 10/02/2         1           Construment strein         6 days         Mex 10/02/2         1           Construment strein         Mark 10/02         Mark 10/02         1           Mark 10 forms in         Strein         Mex 4/02/2         1           Mark 10 form in in inform information         Strein         Mex 4/02/2         1           Mark 10 form information         Strein         Mex 4/02/2         1         3         3           Mark 10 form information         Strein         Mex 10/02/2         Mix/12/2         3         3         3           Delfwery         Construment information         Strein         Mex 10/02/2         Mix/12/2         3         3           Multifier construment information         Strein         Fix/02/2         Mix/02/2         Mix/02/2         Nix/02/2         Nix/02/2         Nix/02/2         Nix/02/2         Nix/02/2         Nix/02/2	Disci formes dire         6 days         Mees 10/10/20         1           Construction of modules in botary         40 days         Mees 10/10/20         1           Description         20 days         Mees 10/10/20         11/10/20         1           Mees all originations         20 days         Mees 10/10/20         11/10/20         19           Mees all originations         20 days         Mees 10/10/20         11/10/20         19           Mees all originations and thrap         20 days         Mees 10/10/20         19         20 days         20 days           Mees all originations and thrap         20 days         Mees 10/10/20         10/10/20         20 days         20 days         20 days           Mees all originations and thrap         20 days         Mees 10/10/20         Mees 10/10/20         20 days         20 days         20 days           Mees all originations and thrap         20 days         Mees 10/10/20         Mees 10/10/20         20 days	-	2		Preparation of prefab materials	to days	wion 10/10/22	FI 21/10/22	
Model         Convections         4 day         Model/2012         171/02/2         70           Considered         Basel and Prace         20 app         Basel And Prace         20 app         Basel And Prace         20 app           Image: And Prace         Basel And Prace         20 app         Basel And Prace         20 app         Basel And Prace         20 app           Image: And Prace         Basel And Prace         20 app         Basel And Prace         20 app         Basel And Prace         20 app           Image: And Prace         Basel And Prace         20 app         Basel And Prace         20 app         20 app <td>Model Note State         Connection         4 day         Model Null Null Null Null Null Null Null Nu</td> <td></td> <td></td> <td>4</td> <td>Cold-formed steel</td> <td>6 days</td> <td>Mon 10/10/22</td> <td>Mon 17/10/22</td> <td>1</td>	Model Note State         Connection         4 day         Model Null Null Null Null Null Null Null Nu			4	Cold-formed steel	6 days	Mon 10/10/22	Mon 17/10/22	1
P         Construction of modules in the factory         40 days         Mon XM/1072         111 M/1072         19           Image: Section of models in the factory         20 days         Mon XM/1072         111 M/1072         19           Image: Section of models in the factory         20 days         Mon XM/1072         111 M/1072         19           Image: Section of models in the factory         20 days         Mon XM/1072         111 M/1072         19           Image: Section of Mone Mone Mol/202         111 M/202	P         Construction of models in the factory         40-40         Model 201022         1912/102         1912/102         1912/102         1912/102         1912/102         1912/102         1912/102         1912/102         1912/102         1912/102		1	-4	Connections	4 days	Tue 18/10/22	Fri 21/10/22	20
Breadt of frame         20 days         Mod /4/022         P1 HM/122         19           Breadt of frame         30 days         Mod /4/022         P1 HM/122         19           Breadt formal will rame         30 days         Mod /4/022         P1 HM/122         19           Breadt formal will rame         30 days         Mod /4/022         P1 HM/122         19           Breadt formal will rame         30 days         Mod /4/022         P1 HM/122         19           Breadt formal will rame         30 days         Mod /4/022         P1 HM/122         19           Breadt formal will rame         3 days         Mod /4/022         P1 HM/122         19           Breadt formal will rame         3 days         Mod /4/022         P1 HM/122         19           Breadt formal will rame         3 days         Mod /4/022         P1 HM/122         19           Breadt formal will rame         3 days         Mod /4/022         P1 HM/122         19           Breadt formal will rame         3 days         Mod /4/023         Mod /4/023         P1 HM/122         19           Breadt formal will rame         6 days         Mod /4/023         P1 HM/122         18         14           Breadt formal will rame         6 days         Mod /4/023 </td <td>Month order to see the set of th</td> <td></td> <td>;</td> <td>*</td> <td>Construction of modules in the factory</td> <td>40 days</td> <td>Mon 24/10/22</td> <td>Fri 16/12/22</td> <td></td>	Month order to see the set of th		;	*	Construction of modules in the factory	40 days	Mon 24/10/22	Fri 16/12/22	
Institution         Description         Description           A meth lenses with frame         D Styp         Mode 24/022         P           A meth lenses with l	Institution of the sector in the se	1			Install roof truss	20 days	Mon 24/10/22	Fri 18/11/22	19
Bits Status Status Status         Open Particular         Open Particular         Open Particular           Bits Status         55 draw         Mon 21/1/22         55 draw         Mon 21/1/22         56 draw           Bits Status         55 draw         Mon 21/1/22         57 draw         Mon 21/1/22         57 draw           Bits Status         55 draw         Mon 21/1/22         57 draw         Mon 21/1/22         57 draw           Bits Status         55 draw         Mon 21/1/22         57 draw         57 draw         57 draw           Bits Status         55 draw         Mon 21/1/22         57 draw         58 draw         58 draw           Bits Status         66 draw         Mon 51/1/22         57 draw         58 draw         58 draw           Bits Status         66 draw         Mon 51/1/22         57 draw         58 draw         59 draw           Bits Status         56 draw         Mon 51/1/22         57 draw         58 draw         59 draw         59 draw         50 draw           Bits Status         56 draw         Mon 51/1/22         71 draw         50 draw         7	Image: Interview of Arrows and the arrows of Arrows o	-			Install External Wall frame	20 days	Mon 24/10/22	Ed 19/11/22	10
metal informit warring         Bio Prof.         Mon 24/10/24         Pio 21/22         Pio 21/22 <thpio 21="" 22<<="" td=""><td>Instal information was rune         Bio Prof.         Mon. 44/10/24         P3           Instal information was rune         3 down         Mon. 44/10/24         P3           Instal information         3 down         Mon. 12/10/20         P3           Instal information         6 down         Mon. 12/10/20         P3           Instal information         1 down         Mon. 12/10/20         P3           Instal information         1 down</td><td></td><td></td><td>*</td><td>instan external wan frame</td><td>20 days</td><td>wion 24/10/22</td><td>FTI 18/11/22</td><td>19</td></thpio>	Instal information was rune         Bio Prof.         Mon. 44/10/24         P3           Instal information was rune         3 down         Mon. 44/10/24         P3           Instal information         3 down         Mon. 12/10/20         P3           Instal information         6 down         Mon. 12/10/20         P3           Instal information         1 down         Mon. 12/10/20         P3           Instal information         1 down			*	instan external wan frame	20 days	wion 24/10/22	FTI 18/11/22	19
Institution and server         55-cyr         Mon 24/0/22         82/21/	Institution with the server         35-ory         Mon 24/10/20         P3           Image: Server in the server         35-ory         Mon 24/10/20         8/2.13/22         8/2.13/22           Image: Server in the serverin the	_	1	-	Install Internal Wall Frame	10 days	Mon 24/10/22	Fn 4/11/22	19
Assemble instaling operation         LS day by percent instaling operation         Z day Z day by percent instaling operation         Mome 2/1/122 Z day Fib 12/1/22         Yes 2/1/22 Z day Fib 12/1/22         Yes 2/1/22	Assende interaction         15 dam         Mon 21/1/12/2         Vel X2/12/2         Z           interaction         3 days         Mon 21/1/12/2         Vel X2/12/2         Z           interaction         3 days         Mon 21/1/12/2         Vel X2/12/2         Z           interaction         3 days         Mon 21/1/12/2         Vel X1/12/2         Z           interaction         3 days         Mon 21/1/12/2         Vel X1/12/2         Z           interaction         6 days         Mon 21/1/12/2         Vel X1/12/2         Z           interaction of models in back rew         6 days         Mon 21/1/12/2         Wel X1/12/2         Wel X1/12/2           interaction of models in back rew         6 days         Mon 21/12/2         Wel X1/12/2         Wel X1/12/2           interaction of models in back rew         6 days         Mon 21/12/2         Wel X1/12/2         Wel X1/12/2         Wel X1/12/2           interaction system         4 days         Mon 21/12/2         Wel X1/12/2         Wel X1/12/2         Wel X1/12/2         Wel X1/12/2           interaction system         4 days         Mon 21/12/2         Wel X1/12/2         Wel X1/12/2         Wel X1/12/2         Wel X1/12/2           interaction days mellocoddays conting ant solar panel         4 days			4	Install Floor joist and bearer	15 days	Mon 24/10/22	Fri 11/11/22	19
Image: Install Integramedia         3 dyn         Men 12/12/22         27           Image: Install Integramedia         3 dyn         Men 12/12/22         27           Image: Install Integramedia         3 dyn         Men 12/12/22         27           Image: Install Integramedia         4 dyn         Men 12/12/22         27           Image: Install Integramedia         4 dyn         Men 12/12/22         27           Image: Install Integramedia         6 dyn         Med 12/12/22         27           Image: Install Integramedia         6 dyn         Med 12/12/22         14.30           Image: Install Integramedia         6 dyn         Med 12/12/22         14.30           Image: Install Integramedia         6 dyn         Med 12/12/22         14.30           Image: Install Integramedia         16 dyn         Med 12/12/23         13.34.15           Image: Install Integramedia         16 dyn         Med 12/12/23         12.4           Image: Install Integramedia         16 dyn         Med 12/1	Impaction         3 days         Mm12/12/22         Viel 3/12/22         27           Impaction         2 days         Mm12/12/22         27           Impaction         2 days         Mm21/12/22         27           Impaction         2 days         Mm21/12/22         27           Impaction         2 days         Mm21/12/22         28           Impaction         2 days         Mm21/12/22         28           Impaction         2 days         Mm12/12/23         28           Impaction         2 days         Mm12/12/23         28           Impaction         2 days         Mm12/12/23         27           Impaction         2 days         Mm12/12/23         27           Impaction         2 days         Mm12/12/23         27			-4	Assemble into section	15 days	Mon 21/11/22	Fri 9/12/22	26,23,24,25
by exection         2 days         The 15/12/22         61 / 15/12/22         28           belowy by Schools soft rug         6 day         Mon 15/12/22         10 / 15/12/22         10 / 15/12/22           belowy by Schools soft rug         6 day         Mon 15/12/22         10 / 15/12/22         10 / 15/12/22           belowy by Schools soft rug         6 day         Mon 15/12/22         10 / 15/12/23         33           belowy by Schools soft rug         6 day         Mon 15/12/23         10 / 15/12/23         33           below by Schools soft rug         6 day         Mon 15/12/23         33         30           below by Schools soft rug         6 day         The 15/12/23         33         30           below by Schools soft rug         6 day         The 15/12/23         32         33           below by Schools soft rug         6 day         The 15/12/23         12         34           below by Schools soft rug         5 day         The 15/12/23         12         12           below by Schools soft rug         5 day         The 32/12/23         12         12           below by Schools soft rug         5 day         The 32/12/23         12         12           below by Schools soft rug         5 day         The 32/12/23 <td< td=""><td>Impection         2 days         Thu 15/12/22         Pi13/12/22         2           Impection         6 days         Mon 11/12/21         The 27/12/22         3           Impection         2 days         Mon 11/12/21         The 27/12/23         3           Impection         2 days         The 17/12/23         3         3           Impection         2 days         The 17/12/23         1         2           Impection</td><td>1</td><td></td><td></td><td>Install lifting connection</td><td>3 days</td><td>Mon 12/12/22</td><td>Wed 14/12/22</td><td>27</td></td<>	Impection         2 days         Thu 15/12/22         Pi13/12/22         2           Impection         6 days         Mon 11/12/21         The 27/12/22         3           Impection         2 days         Mon 11/12/21         The 27/12/23         3           Impection         2 days         The 17/12/23         3         3           Impection         2 days         The 17/12/23         1         2           Impection	1			Install lifting connection	3 days	Mon 12/12/22	Wed 14/12/22	27
Policy         Edity         Mon 31/2/22         Nor 21/2/22         Nor 21/2/22           Mon 31/2/22         Mon 31/2/22 <td>Production         Objective         &lt;</td> <td></td> <td></td> <td>-</td> <td>Inspection</td> <td>2 days</td> <td>Thu 15/12/22</td> <td>Fri 16/12/22</td> <td>28</td>	Production         Objective         <			-	Inspection	2 days	Thu 15/12/22	Fri 16/12/22	28
Delvery J zectors such trip         6.4mp         Mon 19/2/27         No. 27/2/27         22           Imatiliation on solation solation in solation of modules in front row         6.4mp         Mon 19/2/27         No. 19/2/27         14.30           Imatiliation of modules in front row         6.4mp         Mon 19/2/27         No. 19/2/27         14.30           Imatiliation of modules in front row         6.4mp         Mon 19/2/27         No. 19/2/27         13.2           Imatiliation of modules in front row         6.4mp         Mon 19/2/27         No. 19/2/27         13.2           Imatiliation of modules in front row         6.4mp         Mon 19/2/27         Non 19/2/27         13.2           Imatiliation of modules in front row         6.4mp         Mon 19/2/27         Non 19/2/27         12.2           Image: Construction of Submer row         2.4mp         Mon 19/2/27         Non 19/2/28         12           Image: Construction of Submer row         15.4mp         Fri 12/2/23         The 12/2/28         17         12/2/28         17           Image: Construction of Submer row         10.4mp         The 12/2/28         17         12/2/28         17           Image: Construction of Submer row         10.4mp         The 12/2/28         17         12/2/28         17         12/2/28         <	Deleviny 12 sectors ach htp         6.4mp         Mon 19/1/20         The 21/1/22         22           Installation of modules in fract now         6.4mp         Mon 19/1/23         14.30           Installation of modules in fract now         6.4mp         Mon 19/1/23         14.30           Installation of modules in fract now         6.4mp         Mon 19/1/23         14.30           Installation of modules in fract now         6.4mp         Mon 19/1/23         14.30           Installation of modules in fract now         6.4mp         Mon 19/1/23         14.30           Installation of modules in fract now         6.4mp         Mon 19/1/23         13.34.15           Installation of nodules in fract now         6.4mp         Mon 19/1/23         13.34.15           Installation of coding competition of nodules proved         2.4mp         The 19/1/23         17           Installation of coding competition of nodules proved         2.5mp         The 19/1/23         17           Installation of coding competition of nodules proved         2.5mp         The 19/1/23         17           Installation of coding competition of coding competition of coding proved			*	Delivery	6 days	Mon 19/12/22	Tue 27/12/22	
Institute of modules is the isotropy of early were 38/1202         Vere 38/1202         <	Institution of code is that we we all 20/20         Wei 30/20	-		-	Delivery by 2 sections each trip	6 days	Mon 19/12/22	Tue 27/12/22	22
<ul> <li>Intralicio no declario in fuero rome 6 days wei 8/2/22 ms //12 433</li> <li>Intralicio no declario in Sac rome 6 days wei 8/2/22 ms //12 433</li> <li>Univestifing connection 12 days met 8/2/22 ms //23 33</li> <li>Univestifing connection 12 days met 8/2/22 ms //23 33</li> <li>Intralicio no declario in Sac rome 6 days met 8/2/22 ms //23 33</li> <li>Materia Islamion 10 days met 8/2/22 ms //23 33</li> <li>Materia Islamion 10 days met 8/2/23 18</li> <li>Materia Islamion 10 days met 8/2/23 18</li> <li>A for Condition System 4 days met 8/2/23 18</li> <li>Intralicion of Cabding, copering and oder panel 25 days met 8/2/23 17</li> <li>Materia Islamion 10 days met 8/2/23 17</li> <li>Materia Islamion 13 days met 8/2/23 17</li> <li>Materia Islamion 15 days met 8/2/23 17</li> <li>Materia Islamion 15 days met 18/2/23 17</li> <li>Interico Exigin 15 days met 18/2/23 17</li> <li>Interico Exigin 15 days met 18/2/23 17</li> <li>Interico Islami 15 days met 18/2/23 17</li> <li>Interico Exigin 15 days met 18/2/23 17</li> <li>Interico Islami 18/24 18/27</li> <li>Interico Islami</li></ul>	<ul> <li>Installation of module is fact row</li> <li>Early Min 9/223</li> <li>Installation of module is fact row</li> <li>Early Min 9/223</li> <li>Unitest Billation of module is fact row</li> <li>Early Min 9/223</li> <li< td=""><td>-</td><td></td><td></td><td>Installation of modulos on site</td><td>14 days</td><td>Wed 29/12/22</td><td>Wed 19/1/22</td><td></td></li<></ul>	-			Installation of modulos on site	14 days	Wed 29/12/22	Wed 19/1/22	
<ul> <li>Instancion informa informa (1)/2010 (2010)</li> <li>Instancion (2010)</li> <l< td=""><td><ul> <li>Initialized induzitis in text. 1000</li> <li>Bielon</li> <li>Biel</li></ul></td><td></td><td></td><td>_</td><td>Installation of modules on site</td><td>14 days</td><td>Wed 20/12/22</td><td>Thu 5 /1 /22</td><td>14.20</td></l<></ul>	<ul> <li>Initialized induzitis in text. 1000</li> <li>Bielon</li> <li>Biel</li></ul>			_	Installation of modules on site	14 days	Wed 20/12/22	Thu 5 /1 /22	14.20
Initializing induction and modules in back row       6 Jaya       Mon 19/1/3       33         Initializing induction flowed in back row       2 Jaya       Mon 19/1/3       33         Initializing induction flowed in back row       2 Jaya       Mon 19/1/3       33         Initializing induction flowed       2 daya       The 17/1/3       Weid 20/1/2/3       33         Initializing induction flowed       6 daya       Mon 19/1/3       33       34         Initializing indication flowed       6 daya       Mon 19/1/3       33       34         Initializing indication flowed       6 daya       Mon 19/1/3       33       34         Initializing indication flowed       6 daya       Mon 19/1/3       10       10/1/3       10         Initializing indication flowed       10 daya       Fin 2/2/3       37       10       10/2/3       17         Initializing indication flowed       10 daya       Fin 2/2/3       17       170/2/3       170/2/3       17         Initializing indication flowed       10 daya       Fin 2/2/3       17       170/2/3       170/2/3       170/2/3       170/2/3         Initializing indication flowed       10 daya       Fin 2/2/3       170       10/2/3/3       44         Initializing indication flo	<ul> <li>Installation drinoder in factore</li> <li>Bang Mon 17/23 Mon 17/23 33</li> <li>Mon 17/23 Mon 17/23 43</li> <li>Installation drinoder in factore</li> <li>Star mapecian</li> <li>Star mapecian</li> <li>Star mapecian</li> <li>Star Main Star Main Main Star Main Star Main Star Main Star Main Star Main Main Main Star Main Main Main Star Main Main Main Main Main Main Main Sta</li></ul>	5	-	-	Installation of modules in front row	6 days	Wed 28/12/22	Thu 5/1/23	14,30
Interstalling connections         12 days         Wei 24/1/22         Mon 16/1/23           Mail Installation         10 days         The 19/1/3         The 27/1/3         22           Mail Installation         10 days         The 19/1/3         The 27/1/3         22           Mail Installation         6 days         The 19/1/3         The 27/1/3         22           Mail Installation         Staps         The 19/1/3         The 27/1/3         22           Mail Installation System         4 days         Mon 90/1/3         The 19/2/3         38           Mail Installation of Lobding         10 days         Fri 17/2/3         10 the 10/2/3         37           Filteria System         10 days         Fri 12/2/3         37           Filteria Design         10 days         Fri 12/2/3         10 days         44           Filteria Design         10 days         Fri 12/2/3         10 days         44           Filteria Design         10 days         Fri 12/2/3         10 days         44	5         B         Universite Histing connections         12 days         Wei 38/223           7         A         Despection         2 days         Wei 38/223           7         A         M&E instalation         12 days         Ter 12/123         B3.84.85           7         A         A         Control of soften soften         4 days         Ter 12/123         B3.24.85           8         A         Control of soften soften         5 days         Fri 22/123         B3         B3.84.85           9         A         Control of soften soften         S days         Fri 32/123         Ter 27/123         B3           9         A         Control of soften soften         D days         Fri 32/123         Ter 27/123         S days           10         D days         Fri 32/123         Ter 37/123         Ter 37/123         Ter 37/123         Ter 37/123           10         Softer So	4		-4	Installation of modules in back row	6 days	Mon 9/1/23	Mon 16/1/23	33
Inspection         2 doisy         Thu 17/1/3         Wei Al/1/23         33.8 ls           Impection         06 day         Thu 19/1/3         Thu 27/1/3         32           Impection         6 day         Thu 19/1/3         Thu 27/1/3         32           Impection         6 day         Thu 19/1/3         Thu 27/1/3         32           Impection         5 days         Thu 19/1/3         Waid 27/1/23         38           Impection         Sdays         Thu 19/1/3         Waid 27/1/23         Thu 19/1/3           Impection         Sdays         Thu 19/1/3         Waid 27/1/23         Thu 19/1/3           Impection         Sdays         Thu 19/1/3         Thu 27/1/3         37           Impection         Sdays         Thu 19/1/3         Thu 27/1/3         37           Impection         Sdays         Thu 27/1/3         Thu 27/1/3         37           Impection         Sdays         Thu 27/1/3         Thu 27/1/3         44           Impection         Sdays         Thu 27/1/3         Thu 27/1/3         44           Impection         Sdays         Thu 27/1/3         Thu 27/1/3         44           Impection system         Sdays         Thu 27/1/3         Thu 27/1/3	6         1         Inspection         2 days         Tot 17/1/23         Wind 19/1/23         33.8.15           7         A         McRe instantion         6 days         Tot 19/1/23         Tot 27/1/23         32           8         5         Central System         6 days         Tot 19/1/23         Tot 27/1/23         32           9         8         Central System         6 days         Tot 19/1/23         Wind 25/1/23         32           2         6         Roof clading         D days         Tri 19/1/23         Wind 25/1/23         32           2         6         Roof clading         D days         Tri 19/1/23         Tot 21/1/23         37           4         -         Cond clading         D days         Tri 19/1/23         Tot 21/1/23         37           4         -         Main Cond clading         D days         Fri 19/1/23         Thu 21/1/23         37           4         -         Main Cond clading         D days         Fri 19/1/23         Thu 21/1/23         37           5         A         Mono Sol         D days         Fri 19/1/23         Thu 21/1/23         11         42           4         D cont         Cond clading         D days         <	5 💷			Uninstall lifting connections	12 days	Wed 28/12/22	Mon 16/1/23	
Make installation         10 days         Ph 19/1/3         Thus 2/1/3         Thus	7         Mate installation         10 aby         Pm 19/1/23         Tm 2/1/23         F           8         -         Adr Condition System         4 day         Mm 39/1/23         Tm 2/1/23         S2           8         -         Adr Condition System         4 day         Mm 39/1/23         Tm 2/1/23         S2           1         -         Adr Condition System         5 day         Pr 19/1/23         Tm 2/1/23         S2           1         -         Bool dashing         15 days         Pr 19/1/23         Tm 2/1/23         S7           1         -         Bool dashing         15 days         Pr 19/1/23         Tm 2/1/23         S7           2         -         Bool dashing         15 days         Pr 19/1/23         Tm 2/1/23         S7           3         -         Doos         10 days         Pr 19/1/23         Tm 2/1/23         S7           4         Solar Ponel         6 days         Pr 19/1/23         Tm 2/1/23         Tm 2/1/23         S7           5         -         Boom         15 days         Pr 10/1/23         Tm 2/1/23         S7           6         -         Contractorial Chetrol Superstructure         30 days         Pr 10/1/23         Tm 2/1/23	6		-4	Inspection	2 days	Tue 17/1/23	Wed 18/1/23	33,34,35
<ul> <li>Electrical System</li> <li>Gebys</li> <li>Wate Redicultion System</li> <li>Solar Preni</li> <li>Gebys</li> <li>Filor Adding</li> <li>Filo</li></ul>	Image: Section System         6 day: Mon: 19/1/3         1/72/1/3         1/2         1/2           Image: Section System         6 day: Mon: 19/1/3         Mon: 19/1/3         Mon: 19/1/3         1/2         1/2           Image: Section System         5 day: Mon: 19/1/3         Mon: 19/1/3         Mon: 19/1/3         1/2         1	7		*	M&E Installation	10 days	Thu 19/1/23	Thu 2/2/23	
<ul> <li>AF Condition System 4 days</li> <li>AF Condition System 5 days</li> <li>Thu 2/023</li> <li>Thu 2/0233</li> <li>Thu 2/023</li> <li>Thu 2/023</li>     &lt;</ul>	a       Ar Constitution System       4 days       More Noticulation System       5 days       Fri 18/2/23       The 27/23       3 a         1       Fristallicition Statem       5 days       Fri 18/2/23       The 97/23       3 a         2       Fristallicition Statem       5 days       Fri 18/2/23       The 27/23       3 a         3       Fristallicition Statem       5 days       Fri 18/2/23       The 27/23       3 a         3       Fristallicition Statem       15 days       Fri 18/2/23       The 27/23       7 a         5       Fristallicition Statem       6 days       Fri 18/2/23       The 97/23       44         2       Fristallicition Statem       6 days       Fri 18/2/23       The 97/23       44         2       Fristallicition Statem       6 days       Fri 18/2/23       The 97/23       44         2       Fristallicition Statem       6 days       Fri 18/2/23       The 97/23       44         2       Fristallicition Statem       6 days       Fri 18/2/23       The 97/23       41         2       Fristallicition Statem       5 days       Fri 18/2/23       The 97/23       14       42         2       Fristallicition Statem       5 days       Fri 18/2/23 <td< td=""><td>8</td><td></td><td>-</td><td>Electrical System</td><td>6 days</td><td>Thu 19/1/23</td><td>Fri 27/1/23</td><td>32</td></td<>	8		-	Electrical System	6 days	Thu 19/1/23	Fri 27/1/23	32
Water Hetizudation System         Soury         Full SU/23         Week 25/1/23         22           P         Installation of clading, copening: and solar panel         25 cars         Fill 3/2/23         Thu 19/1/23         Thu 19/1/23         37           P         Installation of clading         15 cars         Fill 3/2/23         Thu 19/1/23         Thu 19/1/23         37           P         Floor clading         15 cars         Fill 3/2/23         Thu 19/1/23         Thu 29/1/23         Thu 19/1/23           P         Doors         10 cars         Fill 3/2/23         Thu 29/1/23         44           P         Solar Ponel         6 days         Fill 19/2/23         Thu 29/1/23         44           P         Solar Ponel         6 days         Fill 19/2/23         Thu 29/1/23         44           P         Construction of Exterior Design         5 days         Fill 10/2/23         Thu 29/1/23         44           P         Construction of Exterior Superstructure         40 days         Fill 3/2/23         Thu 29/2/23         37           P         Construction of Exterior Superstructure         40 days         Fill 3/2/23         Thu 29/2/23         37           P         Construction of Exterior Superstructure         40 days         Fill 3/2/2	Image: Solution of States         Staps         Fm: 19/1/23         Work Stri21         3 / 2           Image: Solution of States         Staps         Fm: 19/1/23         The 19/1/23	9		-	Air Condition System	4 days	Mon 30/1/23	Thu 2/2/23	38
Match Match Coulding System         Source         Source         Source         Source           Image: Source S	Image: Second System         Source         Image: System         Source         Source <td>0 000</td> <td></td> <td>-</td> <td>Water Peticulation System</td> <td>Edays</td> <td>Thu: 10/1/22</td> <td>Wod 25 /1 /22</td> <td>22</td>	0 000		-	Water Peticulation System	Edays	Thu: 10/1/22	Wod 25 /1 /22	22
<ul> <li>Installation Cooling, Comparison Subar Parine 12 Stays Pr13/23 Till 12/23 37</li> <li>Boo't dading 13 Stays Pr13/23 Till 12/23 37</li> <li>Boo't dading 13 Stays Pr13/23 Till 12/23 37</li> <li>Doos 10 days Pr12/23 Till 12/23 37</li> <li>Starbor Dading 2 Stays Pr13/23 Till 12/23 37</li> <li>Starbor Dading 2 Stays Pr13/23 Till 12/23 Till 12/23 44</li> <li>Starbor Dading 2 Stays Pr10/23 Till 12/23 Till 12/23 44</li> <li>Starbor Dading 2 Stays Pr10/23 Till 12/23 Till 12/23 Till 12/23 44</li> <li>Starbor Dading 2 Stays Pr10/23 Till 12/23 Till 12/23 44</li> <li>Starbor Dading 2 Stays Pr10/2/23 Till 12/23 Till 12/23 44</li> <li>Starbor Dading 2 Stays Pr10/2/23 Till 12/23 Till 12/23 44</li> <li>Starbor Dading 2 Stays Pr10/2/23 Till 12/23 Till 12/23 37</li> <li>Starbor Dading 2 Stays Pr10/2/23 Till 12/2/23 37</li> <li>Starbor Stapsmidel Stab 2 Stays Pr10/2/23 Till 12/2/23 37</li> <li>Starbor Dading 2 Stays Pr10/2/23 Till 12/2/23 37</li> <li>Starbor Dading 2 Stays Pr10/2/23 Till 12/2/23 37</li> <li>Starbor Dading 2 Stays Till 12/2/23 Till 12/2/23 37</li> <li>Starbor Dading 2 Stays Till 12/23 Till 12/2/23 37</li> <li>Starbor Dading 2 Stays Till 12/23 Till 12/2/23 37</li> <li>Starbor Dading 2 Stays Till 12/23 Till 12/2/23 37</li> <li>Starbor Dading 2 Stays Till 12/23 Till 12/2/23 56</li> <li>Remove Equipment and Machineries 2 days Wid 13/23 Till 12/23 56</li> <li>Remove Equipment and Machineries 2 days Wid 13/27 Till 12/23 56</li> <li>Remove Equipment and Aschineries 2 days Wid 13/23 Till 12/2/23 56</li> <li>Perform Entig and cormisioning M&amp;EService 3 days Till 12/23 Till 12/2/23 Till 12/2/23 Till 12/2/23 Till 12/2/23 Till 12/2/23 56</li> <li>Perform Entig and cormisioning M&amp;EService 3 days Wid 13/23 Till 12/2/23 56</li> <li>P</li></ul>	<ul> <li>miclastori of Casang, Generging, and Solir parts</li> <li>a miclastori of Casang, Generging, and Solir parts</li> <li>b Sol classing</li> <li>c Solir diading</li> <li>d Solir diading</li></ul>					J days	5-12/2/22	The 0/0/23	32
B       Noor diadang       10 days       Int Jul/23       Thu Jul/23       Jul	Image: Solution of Solu	-		~	instanation of cladding, openings and solar panel	25 days	Fri 3/2/23	1110 9/3/23	
I Floor didding       15 days       Fri 3/2/3       The 23/2/23       37         Image: Construction of Section 10 days       Fri 24/23       The 9/2/3       44         Image: Construction of Section 10 days       Fri 24/23       The 9/2/3       44         Image: Construction of Section 10 days       Fri 24/23       Fri 24/23       44         Image: Construction of Section 10 days       Fri 24/23       Fri 24/23       42         Image: Construction of Section 10 days       Fri 10/273       The 9/273       44         Image: Construction of Section 10 days       Fri 10/273       The 9/273       41         Image: Construction of Section 10 days       Fri 10/273       The 9/273       41         Image: Construction of Section 10 days       Fri 3/2/23       The 20/273       37         Image: Construction of Section 10 days       Fri 3/2/23       The 20/273       37         Image: Construction of Section 10 days       Fri 3/2/23       The 23/2/23       37         Image: Construction of Section 10 days       Fri 3/2/23       The 23/2/23       37         Image: Construction of Section 10 days       Fri 3/2/23       The 23/2/23       37         Image: Construction of Section 10 days       Fri 3/2/23       The 23/2/23       57,58         Imadicacion in Se	1       Filor cladding       15 days       Fil 2/2/3       The 2/2/23       The 2/2/23       37         2       Doos       10 days       Fil 2/2/23       The 3/2/23       The			-	Root cladding	10 days	Fri 3/2/23	Thu 16/2/23	37
Wall dadsing       15 days       Fri 3/2/3       Thu 2/2/3       Fri 2/2/3	1       Mail dadding       15 days       Fri 32//23       Thu 23//23       <	3			Floor cladding	15 days	Fri 3/2/23	Thu 23/2/23	37
Docs       Dod ayy       Fri 24/27.3       Thu 9/27.3       44         Mindows       10 dayy       Fri 24/27.3       Thu 9/27.3       44         Restauration       Gaty       Fri 24/27.3       Thu 9/27.3       44         Restauration       Gaty       Fri 24/27.3       42         Restauration       Staty Fri 10/27.3       Thu 9/27.23       42         Restauration       Staty Fri 10/27.3       Thu 9/27.23       41         Restauration       Staty Fri 10/27.3       Thu 9/07.23       37         Restauration       Staty Fri 10/27.3       Thu 22/27.3       37         Restauration       Staty Fri 13/27.3       Thu 22/27.3       37         Restauration       Staty Fri 13/27.3       Mon 17/47.3       45.22         Restauration       Staty Fri 13/27.3       Mon 17/47.3       57.58         Restauration       Staty Fri 13/27.3       Thu 11/5/2.3       56	Doors         10 days         Fri 24/2/3         The 9/3/23         44           Mindows         10 days         Fri 24/2/23         Thu 9/3/23         44           Res         Solar Panel         6 days         Fri 13/2/3         44           Res         Boom         15 days         Fri 13/2/3         42           Res         Res         Dec         Or 1.200         Or 1.200         Or 1.200           Res         Res         Dec         Dec         Or 1.200         May         Aug         Sc           Res         Res         Dec         Or 1.200         Dec         Or 1.200         Or 1.200         Or 1.200         Or 1.200         Dec			-	Wall cladding	15 days	Fri 3/2/23	Thu 23/2/23	37
Windows         10 days         Fri 24/2/3         Thu 9/3/23         44         Or 4.223         Or 2.223         No.         Or 2.223         No.	Windows         10 days         Fri 24/2/3         Thu 9/3/3         44           Solar Panel         6 days         Fri 124/2/3         Fri 24/2/3         44           Solar Panel         6 days         Fri 124/2/3         Fri 24/2/3         42           Room         15 days         Fri 124/2/3         Fri 24/2/3         42           Room         15 days         Fri 124/2/3         Thu 30/2/3         41           File         Construction of Exterol Superstructure         40 days         Fri 32/2/3         Thu 30/2/3         41           Exterior supended Jab         15 days         Fri 32/2/3         Thu 30/2/3         41           Seconstruction of Exterol Works         20 days         Fri 32/2/3         Thu 30/2/3         41           Exterior supended Jab         15 days         Fri 32/2/3         Thu 30/2/3         45           Seconstruction of Exterol Works         20 days         Fri 31/2/3         Mon 12/2/3         37           Exterior supended Jab         10 days         Fri 31/2/3         Mon 12/2/3         37           Mater Reliculation system         5 days         Fri 31/2/3         Mon 12/2/3         55           Exterior supended Jab         0 days         Fri 31/2/3         Mon 12/2/3         5	111		4	Doors	10 days	Fri 24/2/23	Thu 9/3/23	44
wmmows       30 00 yp       Pri 4/4/23       110 3/23       Fi 24/2/23	wmows       10 8µps       H1 24/2/3       Thu 24/2/3       Fri 24/2/3       42         *       Interior Deign       15 days       Fri 10/2/3       Thu 20/3/23       41         *       Room       15 days       Fri 10/2/3       Thu 20/3/23       41         *       Non       Dist       Max       Pic       Max       Non	í.		-	Medeur	10 days	5-1 34/3/32	Thu: 0/2/22	
Solar Panel       6 days       Fi 117/2/3       Fi 127/23       Fi 22/23       42         A Room       15 days       Fi 103/23       Thu 30/3/23       41         Tollet       15 days       Fi 103/23       Thu 30/3/23       41         Kitchen       15 days       Fi 103/23       Thu 30/3/23       41         Kitchen       15 days       Fi 103/23       Thu 30/3/23       41         Kitchen       15 days       Fi 13/2/3       Thu 30/3/23       41         Construction of Exterior Superstructure       40 days       Fi 3/2/23       Thu 23/2/33       37         Uft core wall       15 days       Fi 3/2/23       Thu 23/2/23       37         Construction of Exterial Works       20 days       Fi 3/3/23       Thu 23/2/23       37         Construction of Exterial Works       20 days       Fi 3/3/23       Mon 17/4/23       Thu 23/2/23       37         Severage system       10 days       Fir 3/3/23       Mon 17/4/23       Exterior Support days       Fir 3/3/23       Mon 17/4/23         Landscaping       10 days       Tu 11/2/23       Thu 11/5/23       56         Remove temporary structures       3 days       Wed 3/5/23       Thu 11/5/23       56         Remove temporary st	Solar Panel       6 days       Fri 17//23       F1 24/23       F1 24/23         *       Interior Deign       15 days       Fri 10/3/23       Thu 30/3/23       41         *       Tollet       15 days       Fri 10/3/23       Thu 30/3/23       41         *       Tollet       15 days       Fri 10/3/23       Thu 30/3/23       41         *       Tollet       15 days       Fri 10/3/23       Thu 30/3/23       41         *       Construction of Exterior Superstructure       40 days       Fri 3/2/23       Thu 23/3/23       37         *       Construction of Exterior Superstructure       40 days       Fri 3/3/23       Thu 23/23       37         *       Construction of Exterior Superstructure       40 days       Fri 3/3/23       Thu 23/23       37         *       Construction of Exterior Superstructure       10 days       Fri 3/3/23       Thu 23/23       37         *       Construction of Exterior Superstructure       10 days       Fri 3/3/23       Thu 11/23       48,52         *       Severage system       10 days       Tru 13/23       Thu 11/23       50         *       Stet Clean Up       7 days       Wed 3/7/23       Thu 11/23       56         *       Re	-	-1	*	windows	10 days	Fri 24/2/23	Thu 9/3/23	44
interior Design       15 days       Fri 103/23       Thu 30/23       Interior Design         Room       15 days       Fri 103/23       Thu 30/23       41         Tollet       15 days       Fri 103/23       Thu 30/23       41         Construction of Exterior Superstructure       40 days       Fri 3/2/23       Thu 30/23       41         Construction of Exterior Superstructure       40 days       Fri 3/2/23       Thu 30/23       37         Uff core wall       15 days       Fri 3/2/23       Thu 30/323       37         Severage system       10 days       Fri 3/3/23       Thu 30/3/23       53         Severage system       10 days       Fri 3/3/23       Mon 17/4/23       68,52         Dranage       10 days       Fri 3/3/23       Mon 17/4/23       68,52         Mater Reclocation system       5 days       Tue 18/23       Tue 18/23       57,58         Housekeeping       10 days       Tue 18/23       Tue 18/23       56         Remove temporary structures       3 days       Wed 10/5/23       Fri 11/2/23       64         Housekeeping       2 days       Fri 12/5/23       Fri 12/5/23       Fri 12/5/23       Fri 12/5/23         Perform testing and commisionning of M&E Service       2 days	interior Design       15 days       Fri 10/3/23       Tu 30/3/23       1         Room       15 days       Fri 10/3/23       Tu 30/3/23       41         Tollet       15 days       Fri 10/3/23       Tu 30/3/23       41         Construction of Exterior Superstructure       40 days       Fri 30/3/23       41         Construction of Exterior Superstructure       40 days       Fri 30/3/23       7         Construction of Exterior Superstructure       40 days       Fri 31/3/23       Tu 30/3/23       37         Construction of External Works       20 days       Fri 31/3/23       Tu 23/2/3       37         Construction of External Works       20 days       Fri 31/3/23       Mon 17/4/23       48,52         Sowrage system       10 days       Fri 31/3/23       Mon 17/4/23       48,52         Dranage       10 days       Fri 10/3/23       Tu 11/5/23       56         Mater Recloaltion system       5 days       Wed 3/5/23       Thu 11/5/23       56         Remove Equipment and Machineries       2 days       Fri 12/5/23       56       57         Remove Equipment and Machineries       2 days       Fri 12/5/23       51       57         Remove Equipment and Machineries       2 days       Fri 12/5/23			*	Solar Panel	6 days	Fri 17/2/23	Fri 24/2/23	42
Borm       15 days       Fri 103/23       Tru 30/23       41         Toilet       15 days       Fri 103/23       Tru 30/23       41         Kitchen       15 days       Fri 103/23       Tru 30/23       41         Exterior superstructure       40 days       Fri 3/23       Tru 30/23       41         Exterior superstructure       40 days       Fri 3/23       Tru 20/23       37         Lift core wall       15 days       Fri 3/23       Tru 20/23       37         Construction of External Works       20 days       Fri 3/2/3       Tru 20/23       37         Construction of External Works       20 days       Fri 3/2/3       Tru 20/23       37         Drainage       10 days       Fri 3/2/3       Mon 17/4/23       48,52         Drainage       10 days       Fri 3/2/3       Tru 11/23       56         Remove Equipment and Machineries       2 days       Wed 3/5/23       Tru 11/5/23       56         Remove Equipment and Machineries       2 days       Wed 10/5/23       Tru 8/5/23       61         Watst Reticulation system       2 days       Wed 10/5/23       Tru 8/5/23       61         Perform final walk through inspection       3 days       True 18/5/23       61	Room       15 days       Fri 103/23       Thu 303/23       41         Toilet       15 days       Fri 103/23       Thu 303/23       41         Kitchen       15 days       Fri 103/23       Thu 303/23       41         Exterior superstructure       40 days       Fri 3/2/3       Thu 303/23       41         Exterior supended slab       20 days       Fri 3/2/3       Thu 203/23       37         Construction of External Works       20 days       Fri 3/2/3       Thu 203/23       37         Construction of External Works       20 days       Fri 3/2/3       Thu 203/23       33         Construction of External Works       20 days       Fri 3/2/3       Thu 203/23       33         Construction of External Works       20 days       Fri 3/2/3       Thu 203/23       34         Severage system       10 days       Fri 31/2/3       Mon 17/4/23       45,52         Motescheping       10 days       The 11/2/3       Mon 17/4/23       -         Landscaping       10 days       The 13/2/3       Thu 11/5/23       -         Housskeeping       7 days       Wed 3/5/23       Thu 11/5/23       -         Water Reticulation system       2 days       Mon 15/5/23       61			*	Interior Design	15 days	Fri 10/3/23	Thu 30/3/23	
Tollet       15 days       Fri 10/3/23       Thu 30/3/23       41         Kitchen       15 days       Fri 10/3/23       Thu 30/3/23       41         Construction of Exterior Supeneted slab       20 days       Fri 3/2/23       Thu 30/3/23       7         Lift core wall       15 days       Fri 3/2/23       Thu 30/3/23       37         Construction of External Works       20 days       Fri 3/3/23       Thu 30/3/23       53         Sewerage system       10 days       Fri 3/3/23       Thu 30/3/23       53         Sewerage system       10 days       Fri 3/3/23       Mon 17/4/23       48,52         Drainage       10 days       Fri 3/3/23       Mon 17/4/23       48,52         Mater Reliculation system       5 days       Tue 13/5/23       57,58         Housekeeping       7 days       Wed 3/5/23       Thu 11/5/23       56         Remove temporary structures       3 days       Wed 10/5/23       Fri 12/5/23       56         Remove temporary structures       3 days       Wed 10/5/23       Thu 11/5/23       64         Master Management       2 days       Fri 12/5/23       Thu 11/5/23       64         Perform fishing and commisionning of M&E Service       2 days       Fri 12/5/23       F	Tollet       15 days       Fri 10/3/23       Tru 30/3/23       41         Kitchen       15 days       Fri 10/3/23       Tru 30/3/23       41         Construction of Exterior superstructure       40 days       Fri 3/3/23       Tru 30/3/23       71         Lift core wall       15 days       Fri 3/2/23       Tru 23/23       37         Lift core wall       15 days       Fri 3/2/23       Tru 23/23       37         Construction of External Works       20 days       Fri 3/2/23       Tru 23/23       37         Sewerage system       10 days       Fri 3/2/33       Mon 17/4/23       48,52         Dranage       10 days       Fri 3/3/23       Mon 17/4/23       48,52         Mater Reliculation system       5 days       Fri 3/3/23       Tru 11/5/23       56         Remove Euporary structures       3 days       Wed 3/5/23       Tru 11/5/23       56         Remove temporary structures       3 days       Wed 3/5/23       Tru 11/5/23       56         Remove temporary structures       3 days       Wed 3/5/23       Tru 11/5/23       56         Remove temporary structures       3 days       Wed 3/5/23       Tru 11/5/23       56         Remove temporary structures       3 days       Fri 12/5/23<			-	Room	15 days	Fri 10/3/23	Thu 30/3/23	41
Kitchen       15 days       Fri 10/3/23       Thu 30/3/23       41         Construction of Exterior Superstructure       40 days       Fri 3/2/23       Thu 23/3/23       37         Exterior Superstructure       40 days       Fri 3/2/23       Thu 23/2/23       37         Uft core wall       15 days       Fri 3/2/23       Thu 23/2/23       37         Construction of Exteriol Works       20 days       Fri 3/3/23       Thu 23/2/23       33         Construction of External Works       20 days       Fri 3/3/23       Thu 23/2/23       33         Construction of External Works       20 days       Fri 3/3/23       Thu 23/2/23       33         Sewerage system       10 days       Fri 3/3/23       Mon 17/4/23       48.52         Water Retculation system       5 days       Thu 11/5/23       56         Remove temporary structures       3 days       Wed 3/5/23       Thu 11/5/23       56         Remove temporary structures       3 days       Wed 3/5/23       Thu 13/5/23       61         Perform testing and commisionning of M&E Services       2 days       Fri 12/5/23       Mon 15/5/23       61         Perform testing and commisionning of M&E Services       2 days       Fri 19/5/23       61       Fri 19/5/23       61	Kitchen       15 days       Fri 10/3/23       Thu 30/3/23       41         Construction of Exterior Superstructure       40 days       Fri 3/2/23       Thu 23/2/33       37         Exterior Superstructure       40 days       Fri 3/2/23       Thu 23/2/33       37         Uff core wall       15 days       Fri 3/2/23       Thu 23/2/33       37         Construction of Exterior Superstructure       20 days       Fri 3/3/23       Thu 23/2/33       37         Construction of External Works       20 days       Fri 3/3/23       Thu 23/2/33       37         Construction of External Works       20 days       Fri 3/3/23       Thu 23/2/33       37         Sewerage system       10 days       Fri 3/3/23       Mon 17/4/23       K85.2         Drainage       10 days       Tu 13/2/23       Mon 17/4/23       K85.2         Swerage system       5 days       Tu 13/2/23       Mon 17/4/23       K85.2         Matexheeping       10 days       Tu 13/2/23       Mon 17/4/23       K85.2         Housekeeping       7 days       Wed 3/5/23       Thu 11/5/23       K1115/23         Housekeeping       7 days       Wed 3/5/23       Thu 11/5/23       K64         Fri 12/5/23       Thu 15/5/23       K115/23	1		-	Toilet	15 days	Fri 10/3/23	Thu 30/3/23	41
Answer         Construction of Exterior Superstructure         Add ays         Fri 3/2/23         Thu 30/3/23         Fri           Exterior supended slab         20 days         Fri 3/2/23         Thu 30/3/23         37           Exterior supended slab         20 days         Fri 3/2/23         Thu 23/2/23         37           Construction of External Works         20 days         Fri 3/2/23         Thu 23/2/23         37           Sowerage system         20 days         Fri 3/3/23         Thu 30/3/23         53           Sowerage system         10 days         Fri 3/3/23         Mon 17/4/23         48,52           Danage         10 days         Fri 3/3/23         Mon 17/4/23         48,52           Danage         10 days         True 3/5/23         Thu 11/2/23         56           Housekeeping         10 days         True 3/5/23         Thu 11/5/23         56           Remove Emporary structures         3 days         Wed 3/5/23         Thu 11/5/23         56           Remove Emporary structures         3 days         Wed 3/5/23         Thu 11/5/23         56           Remove Emporary structures         3 days         Wed 3/5/23         Thu 13/5/23         64           Perform testing and commisionning of M&E Services         2 days	Add and a start of Exterior Superstructure       Add any Exterior Superstructure       Add any Exterior Superstructure         Exterior supended slab       20 days       Fri 3/2/23       Thu 30/3/23       37         Exterior supended slab       20 days       Fri 3/2/23       Thu 23/2/23       37         Concrete stains       20 days       Fri 3/2/23       Thu 23/2/23       33         Concrete stains       20 days       Fri 3/3/23       Thu 23/2/23       32         Construction of External Works       20 days       Fri 3/3/23       Thu 23/2/23       32         Severage system       10 days       Fri 3/3/23       Mon 17/4/23       48,52         Drainage       10 days       Tre 13/5/23       Mon 17/4/23	1			Kitchen	15 days	Fri 10/3/23	Thu 30/2/22	41
Construction of External superstructure         up of aps 20 days         rin 3/2/3 rin 2/3/23         Tin 2/3/23 rin 2/3/23	Construction of External superstructure         uo days         rm 3/2/23         Tm 2/3/23         <	-	-1	1	Construction of Exterior Construction	40 days	E-1 2/2/22	Thu 30/3/23	
Externor suspended stab       20 days       Fri 3/2/23       Thu 23/2/23       37         Iff core wall       15 days       Fri 3/2/23       Thu 23/2/23       37         Concrete stains       20 days       Fri 3/2/23       Thu 23/2/23       37         Sector core stains       20 days       Fri 3/2/23       Thu 23/2/23       53         Sector core stains       20 days       Fri 3/2/23       Thu 23/2/23       53         Sector core stains       20 days       Fri 3/2/23       Mon 17/4/23       48,52         Drainage       10 days       Fri 3/3/23       Mon 17/4/23       48,52         Water Retculation system       5 days       Tue 18/2/23       Thu 11/5/23       57,58         Housekeeping       7 days       Wed 3/5/23       Thu 11/5/23       56         Remove temporary structures       3 days       Wed 3/5/23       Fri 11/5/23       64         Final Acceptance       2 days       Fri 12/5/23       Thu 11/5/23       61         Perform testing and commisionning of M&E Service       2 days       Fri 12/5/23       61         Perform testing and commisionning of M&E Services       2 days       Fri 12/5/23       61         Perform testing and commisionning of M&E Services       2 days       Fri 12/5/	Exteror suspended stab       20 days       Fri 3/2/23       Thu 23/23       37         Iff core wall       15 days       Fri 3/2/23       Thu 23/2/23       37         Concrete stairs       20 days       Fri 3/2/23       Thu 23/2/23       37         Concrete stairs       20 days       Fri 3/2/23       Thu 23/2/23       37         Concrete stairs       20 days       Fri 3/2/23       Thu 23/2/23       32         Sewarage system       10 days       Fri 31/3/23       Mon 17/4/23       48,52         Drainage       10 days       Fri 31/3/23       Mon 17/4/23       48,52         Mater flectuation system       5 days       Thu 11/5/23       For 11/5/24         Landscaping       10 days       Thu 11/5/23       56         Remove tauporary structures       3 days       Wed 3/5/23       Thu 11/5/23         Remove tauporary structures       3 days       Wed 3/5/23       Thu 11/5/23         Remove tauporary structures       3 days       Fri 12/5/23       For 11/5/23         Perform testing and commisioning of M&E Services       2 days       Fri 12/5/23       For 11/5/23         Perform final walk-through inspection       3 days       Fri 13/5/23       For 11/5/23       For 11/5/23         Perform	-	1	<u> </u>	construction or exterior superstructure	40 days	FT 3/2/23	Thu 30/3/23	
Lift core wall       15 days       Fri 3/2/23       Thu 30/273       3 7         Concrete staris       20 days       Fri 31/3/23       Thu 30/273       53         Sewerage system       10 days       Fri 31/3/23       Tue 2/5/23	Lift core wall       15 days       Fri 3/2/23       Tru 30/27/3       53         Concrete stairs       20 days       Fri 31/3/23       Tru 30/27/3       53         Concrete stairs       20 days       Fri 31/3/23       Tru 20/27/3       53         Sewerage system       10 days       Fri 31/3/23       Tru 20/27/3       54         Drainage       10 days       Fri 31/3/23       Tru 20/27/3       55         Water Reticulation system       5 days       Tru 20/27/3       57.58         Landscaping       10 days       Fri 31/3/23       Tru 21/2/3       56         Remove temporary structures       3 days       Wed 3/5/23       Tru 11/2/3       56         Remove temporary structures       3 days       Wed 3/5/23       Tru 11/5/23       56         Remove temporary structures       3 days       Wed 3/5/23       Tru 11/5/23       64         Water Management       2 days       Fri 12/5/23       fru 11/5/23       61         Perform Testing and commisionning of M&E Service       2 days       Fri 12/5/23       fru 11/5/23       61         Perform Testing and commisionning of M&E Service       2 days       Fri 19/5/23       fru 11/5/23       61         Perform Testing and commisionning of M&E Service       2			-	Exterior suspended slab	20 days	Fri 3/2/23	Thu 2/3/23	37
Concrete stairs       20 days       Fri 3/2/23       Tu 2/5/23       S3         Severage system       10 days       Fri 3/2/23       Mon 17/4/23       48,52         Dranage       10 days       Fri 3/2/23       Mon 17/4/23       48,52         Water Reliculation system       5 days       Fri 3/2/23       Mon 17/4/23         Landscaping       10 days       Tu 18/2/23       Mon 17/4/23         Housekeeping       10 days       Tu 18/2/23       Tu 11/5/23         Remove Euporary Structures       3 days       Wed 3/5/23       Tu 11/5/23         Remove Euporary Structures       3 days       Wed 10/5/23       Tu 11/5/23         Perform testing and commissionning of M&E Service       2 days       Fri 12/5/23       Mon 11/5/23         Perform final walk-through inspection       3 days       Tu 11/5/23       Fri         Perform testing and commissionning of M&E Service       2 days       Fri 12/5/23       Mon 15/5/23         Completion and Handover       2 days       Fri 13/5/23       Fri 13/5/23       Fri         Completion and Handover       2 days       Fri 12/5/23       Mon 15/5/23       Fri         Completion and Handover       2 days       Fri 13/5/23       Fri       Fri         Completion and Handover <td>Concrete stairs       20 days       Fri 13/2/3       Tru 23/2/3       53         Construction of External Works       20 days       Fri 13/2/3       Tru 23/2/3       53         Sewerage system       10 days       Fri 13/2/3       Mon 17/4/23       48,52         Dranage       10 days       Fri 13/2/23       Mon 17/4/23       48,52         Water Reliculation system       5 days       True 13/2/23       Mon 17/4/23         Landscaping       10 days       Fri 13/2/23       Mon 17/4/23         Landscaping       10 days       True 13/4/23       True 13/7/23         Mass Reliculation system       5 days       Wed 3/5/23       True 13/7/23         Remove tamporary structures       3 days       Wed 3/5/23       True 13/5/23         Remove tamporary structures       3 days       Wed 3/5/23       True 13/5/23         Remove tamporary structures       3 days       Wed 3/5/23       True 13/5/23         Remove tamporary structures       5 days       Fri 12/5/23       True 13/5/23         Perform testing and commissionning of M&amp;E Services       2 days       Fri 12/5/23       61         Perform final walt-through Inspection       3 days       True 18/5/23       61         Perform final walt-through Inspection       3 days<td></td><td></td><td>-4</td><td>Lift core wall</td><td>15 days</td><td>Fri 3/2/23</td><td>Thu 23/2/23</td><td>37</td></td>	Concrete stairs       20 days       Fri 13/2/3       Tru 23/2/3       53         Construction of External Works       20 days       Fri 13/2/3       Tru 23/2/3       53         Sewerage system       10 days       Fri 13/2/3       Mon 17/4/23       48,52         Dranage       10 days       Fri 13/2/23       Mon 17/4/23       48,52         Water Reliculation system       5 days       True 13/2/23       Mon 17/4/23         Landscaping       10 days       Fri 13/2/23       Mon 17/4/23         Landscaping       10 days       True 13/4/23       True 13/7/23         Mass Reliculation system       5 days       Wed 3/5/23       True 13/7/23         Remove tamporary structures       3 days       Wed 3/5/23       True 13/5/23         Remove tamporary structures       3 days       Wed 3/5/23       True 13/5/23         Remove tamporary structures       3 days       Wed 3/5/23       True 13/5/23         Remove tamporary structures       5 days       Fri 12/5/23       True 13/5/23         Perform testing and commissionning of M&E Services       2 days       Fri 12/5/23       61         Perform final walt-through Inspection       3 days       True 18/5/23       61         Perform final walt-through Inspection       3 days <td></td> <td></td> <td>-4</td> <td>Lift core wall</td> <td>15 days</td> <td>Fri 3/2/23</td> <td>Thu 23/2/23</td> <td>37</td>			-4	Lift core wall	15 days	Fri 3/2/23	Thu 23/2/23	37
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Sewerage system       10 days       Fi 31/3/23       Mon 17/4/23       48,52         Dranage       10 days       Fi 31/3/23       Mon 17/4/23       48,52         Water Reticulation system       5 days       Fi 11/3/23       Mon 17/4/23         Landscaping       10 days       Fi 11/3/23       Mon 17/4/23         Housekeeping       10 days       Tue 18/4/23       Tue 15/7/23       57,58         Housekeeping       7 days       Wed 3/5/23       Thu 11/5/23       56         Remove temporary structures       3 days       Wed 10/5/23       Tue 11/5/23       56         Water Management       2 days       Wed 10/5/23       Tue 11/5/23       64         Final Acceptance       5 days       Fri 12/5/23       Tue 11/5/23       61         Perform testing and commisioning of M&E Service       2 days       Fri 12/5/23       Mon 15/5/23       61         Perform testing and commisioning of M&E Service       2 days       Fri 12/5/23       Mon 15/5/24       61         Perform testing and commisioning of M&E Service       2 days       Fri 12/5/23       Mon 15/5/24       61         Completion and Handover       2 days       Fri 19/5/23       Fri 19/5/23       67       Tue 15/5/24         Completion and Handover	Sewarage system       10 days       Fri 31/3/23       Mon 17/4/23       48,52         Dranage       10 days       Fri 31/3/23       Mon 17/4/23       48,52         Water Reliculation system       5 days       Tue 13/4/23       Mon 17/4/23         Landscaping       10 days       Fui 13/3/23       Mon 17/4/23         Landscaping       10 days       Tue 13/4/23       Tue 13/4/23         Maxer Reliculation system       5 days       Wed 3/5/23       Fris/5/23         Mouskeeping       7 days       Wed 3/5/23       True 11/5/23         Remove temporary structures       3 days       Wed 3/5/23       Fris/5/23         Remove temporary structures       2 days       Mon 15/7/23       Tue 45/7/23         Master Management       2 days       Fri 12/5/7.23       For 11/5/7.23         Perform final walk-through Inspection       3 days       Tue 18/5/23       For 12/5/7.23         Perform final walk-through Inspection       3 days       Tue 18/5/23       For 13/5/7.23         Completion and Handover       2 days       Fri 13/5/7.23       For 13/5/7.23       For 13/5/7.23         Completion and Handover to client       1 day       Fri 13/5/7.23       For 13/5/7.23       For 13/5/7.23         Handover to client       1 day <td></td> <td></td> <td>*</td> <td>Construction of External Works</td> <td>20 days</td> <td>Fri 31/3/23</td> <td>Tue 2/5/23</td> <td></td>			*	Construction of External Works	20 days	Fri 31/3/23	Tue 2/5/23	
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## **BCA COMPLIANCE**

SECTION A: GOVERNING EQUIREMENTS PART A6: Building Classification

A6.1 Class 1 Buildings

A Class 1 building includes one or more of the following sub-classifications:

(1) Class 1a is one or more buildings, which together form a single dwelling including the following:

a. A detached house.

b. One of a group of two or more attached dwellings, each being a building, separated by a fire-resisting wall,

including a row house, terrace house, town house or villa unit.
(2) Class 1b is one or more buildings which together constitute—

a. a boarding house, guest house, hostel or the like that—

i. a boarding house, guest house, hostel or the like that—

ii. have a total area of all floors not more than 300 m2 (measured over the enclosing walls of the building or buildings); or

b. four or more single dwellings located on one allotment and used for short-term holiday accommodation.

## A6.2 Class 2 Buildings

(1) A Class 2 building is a building containing two or more sole-occupancy units.

(2) Each sole-occupancy unit in a Class 2 building must be a separate dwelling.

## A6.6 Class 6 Buildings

A Class 6 building is a shop or other building used for the sale of goods by retail or the supply of services direct to the public, including—

(1) an eating room, café, restaurant, milk or soft-drink bar; or

(2) a dining room, bar area that is not an assembly building, shop or kiosk part of a hotel or motel; or

(3) a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or

(4) market or sale room, showroom, or service station.

Definition of 'sole occupancy unit':

Sole-occupancy unit means a room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes—

a. a dwelling; or

b. a room or suite of rooms in a Class 3 building which includes sleeping facilities; or

c. a room or suite of associated rooms in a Class 5, 6, 7, 8 or 9 building; or

d. a room or suite of associated rooms in a Class 9c building, which includes sleeping facilities and any area for the exclusive use of a resident.

## SECTION B: STRUCTURE

Perhaps the most important foundation to any architectural project is structure. A building needs to be designed to remain stable and not damaged, sustaining its integrity through contextual actions such as climate conditions of wind and storm, human occupancy and use as well as ground conditions of soil types and porosity. This section ensures that buildings and structures do not cause harm or damage to people or property.

As the project is deemed to sit at a prime location in the Midland Area, our vision for the project is the capacity to be either removed or expanded and influences the structural design of the project.

The footing system used within the project is pad footing of considerable size to accommodate the water table and expansion abilities of the project.

The structure has been designed to withstand all permanent actions (dead loads), imposed actions (occupancy and use), and wind action for A1 regions like Midland, Perth. Refer to engineer's report for full calculations. The structure takes advantage of cold formed steel, keeping the strength and lightweight features of steel while having a considerably smaller carbon footprint.

15mm fire resistant plasterboards line the walls and ceilings of the project, while the floor is lined with 18mm magnesium oxide boards, ensuring these areas have a 90-minute fire rating, keeping any fire from raging and consuming the project and nearby properties.

SECTION C: FIRE RESISTANCE : this is an important section of the BCA. Please go through each section and comment on it and add sections that are relevant CP2 Spread of fire

We have done the best in our power to mitigate the spread of fire within and between units by lining all walls, ceilings, and floors with fire resistant materials. Emergency equipment shall be provided in key locations for easy access and be replenished appropriately.

## CP4 Safe Conditions for evacuations

All units in the project have a quick and direct link to the ingress and egress of the building to assist in the swift evacuation of inhabitants.

## CP9 Fire Brigade Access

Access is provided to and around the building on all sides except the east in the event that a new structure is built on the empty lots to the east.

C1.1 Type of Construction Required

Based on the table provided in C1.1, we have stipulated that the type of construction required is A. Rise in Storeys: 4 Class of Building: 1, 2, 6 Type of Construction: A

## C1.2 Calculation in the Rise of Storeys:

The NCC defines in C1.2a the rise in storeys as the greatest number of storeys at any part of the external walls of the building and any storeys within the roof space. An additional clause is found in C1.2d(i) where a mezzanine is regarded as a storey in that part of the building in which it is situated if its floor area is more than 200m2 or more than 1/3 the floor area of the room, whichever is lesser.



In this project, we calculated the rise in storeys based on the lived areas of the building, which includes the mezzanine (since it leads to dwellings and is larger than 200m2), as well as the typical dwellings above the commons and café area.

## C1.3 Buildings of Multiple classification

In buildings with multiple classifications, the highest construction type is required as stipulated in C1.3a. Since this building is a combination of 1, 2 and 6, the correct construction type is A, eventhough at one storey, a class 6 building would only require a C, but in conjunction with all other storeys, it must be A.

## C1.4 Mixed Types of Construction

A building may be of mixed types of construction where it is separated in accordance with C2.7 Separation by firewalls and the type of construction is determined in accordance with C1.1 or C1.3. However, we have deemed it necessary for this project to use construction type A even if it may carry a larger construction cost to reduce any confusion and ensure the safety of inhabitants.

## C1.5 Two Storey Class 2,3 or 9c buildings

C1.5 stipulates that a building having a rise in storeys of two may be type C construction if C1.5a and C1.5b are complied with. This does not affect this project due to the number of rises in storeys.

## C1.6 Class 4 parts of building

There are no dwellings within the class 6 portion of the building, as such, this does not affect this project in any way.

C1.7 Open Spectator Stands and Indoor Sports Stadium Not applicable for this project due to building use.

## C1.8 Lightweight Construction

Lightweight construction means construction which incorporates or comprises—

a. sheet or board material, plaster, render, sprayed application, or other material similarly susceptible to damage by impact, pressure or abrasion; or

b. concrete and concrete products containing pumice, perlite, vermiculite, or other soft material similarly susceptible to damage by impact, pressure or abrasion; or

c. masonry having a width of less than 70 mm.

A vast majority of this project consists of elements that fit within the definition of lightweight construction due to it modular and movable nature. The plaster boards and magnesium oxide boards used within this project have an FRL and comply with Specification C1.8.

## C1.9 Non-Combustible Building Elements

The façade covering, framing and insulation that are incorporated into external and common walls are non-combustible. Refer to the wall details for further information.

C2.6 Vertical Separation of Openings in external walls Windows between storeys are separated by a spandrel at 1100mm in height, in accordance with the 900mm as stipulated and is part of a panel wall that has a FRL of not less than 60/60/60, with any gaps packed with non-combustible material.

#### C2.7 Separation by fire walls

All fire walls have been designed to be constructed in accordance with specification C1.1 and is deemed to satisfy provisions of sections C, D and E.

## C2.10 Separation of lift shafts

The lift shaft is separated from the rest of the building by enclosure of the shaft with walls that have the relevant FRL prescribed by Specification C1.1 as the project is deemed to be of Type A construction and connects three storeys of the building.

# C3.11 Bounding Construction: Class 2 and 3 buildings and Class 4 parts

All entrance doorways into dwellings are fire protected doors, ensuring that access to the public corridors and the required exit remain safe for use.

## SECTION D: ACCESS AND EGRESS :

D1 : Provision for escape

D1.2 Number of Exits required

The project is not under requirements for more than one exit due to:

• All dwellings either open up to the public lobby or are directly connected to an exit that opens up to an open space

The building does not have an effective height of 25m

D1.3 When Fire Isolated stairways and ramps are required The required exit does not need to be fire isolated as it does not serve more than 3 consecutive storeys of Class 2 buildings according to D1.3a(i).

## D1.4 Exit travel distances

Unfortunately, the project does not fully comply with D1.4a(i)(a) in which the entrance doorway from any sole occupancy unit must be not more than 6m from an exit, where currently two units exceed this number and sits at 9m. Future iterations of the design need to accommodate this by either adding a new exit or by moving the units over to a different location.

D1.6 Dimensions of exits and paths of travel to exits All paths have an unobstructed height no less than 2m and have a minimum width of 1m.

D1.9 Travel by non-fire-isolated stairways or ramps The distance between the furthest doorway of a room and the point of egress to a road does not exceed 60m in accordance with D1.9b(ii).

## D1.10 Discharge from exits

The required exit that leads to an open space has a width of 1m.

## D2 : Construction of Exits

no less than 6mm thick.

D2.3 Non-fire-isolated stairways and ramps Main supporting element of the stairs is constructed out of reinforced concrete while the steps uses C25019 cold form steel that needs to be checked against the standard of steel in



## D2.13 Goings and Risers

Within the project, the stairway with the highest numbers of risers is 14, below the maximum of 18 between landings. The going depth is 250mm and riser height of 150mm, which matches the minimum of 550mm with the equation of 2R+G. The surface of the stairway is to be specified by the engineers to have a slip resistance in accordance with table D2.14 when tested in accordance with AS 4586.

There is no gap between the threads, passing the test for 125mm sphere.

D2.16 Barriers to prevent falls Barriers have been provided at all fall hazards

#### D2.17 Handrails

Handrails have been provided along at least one side of each flight at a fixed height of 900mm in accordance with the minimum 865mm.

## D2.20 Swinging Doors

No doors encroach on the required width of any landings, stairways, ramps or passageways and does not impede the path or direction of egress.

## D3 : Access for people with a disability

D3.1 General building access requirements

Two units have been designed to accommodate access for people with disability, providing living quarters and facilities for hygiene at the entry level in accordance with table D3.1 and is served by accessible compliant lift.

## D3.3 Parts of buildings to be accessible

Access is provided to all common and public areas of the project and an accessible compliant lift allows access to other areas.

## D3.6 Signage

Braille and tactile signage to identify each sanitary facility, exit and level.

## SECTION F: HEALTH AND AMENITY

Room heights can ultimately define the way a room is used. Typically, the higher the ceiling height goes, the lighter a room feels. Various codes define ceiling heights for various types of rooms. In the BCA, F3.1a defines the ceiling height of habitable room as 2.4m, however, in the R-codes, it is defined in section 4.3 of volume 2 as 2.7m.

As architects, it is important to focus on ceiling heights as it could very well affect the well-being of a building's occupants. Ultimately, as architects, everything we design should have a purpose, to manipulate or encourage better and healthier living for the betterment of others. In this project, there are bedrooms that are not entirely up to the NCC but it is to the R codes.

For example, the bedrooms have a raked ceiling that starts at 1656mm and ends at 2638mm. It does not reach the BCA's standard in F3.1a(iv)A of not less than 2200mm for at least two thirds of the floor area. There is a dichotomy there, lower

ceiling heights mean that there is less air, easier to warm up, but its easier to start having air toxicity. Therefore, the design provides quite a large portion of windows to allow for proper ventilation, which leads us to our next point, ventilation.

Ventilation holds the key to good health. In our research, pleasant scents encourage healthier habits, better focus, and relaxation. The introduction of south facing living rooms were meant to encourage occupants to open their windows and let natural scents enter the apartments from the nearby Hebe and Coal Dam Parks. Good ventilation also allows occupants to expel contaminated air, reducing the harmful effects these contaminants may carry as outlined in FP4.5. However, it can be difficult to dispose of contaminated air if occupants require warmth in the colder months.

F4.1a states that all habitable rooms must be provided with natural light. Daylight is important as a source of light and warmth. Daylight also helps regulate sleep cycle which have come under assault in recent years with better artificial lighting solutions and the increase reliance on electronic tools. As architects, it is imperative that daylight be provided, encouraging hobbies and entertainment not reliant on artificial lighting like reading or painting.

## SECTION J: ENERGY EFFICIENCY

In a time where society is becoming more aware of the effects of pollution on climate change, we must do what we can to rely on renewable energy and more natural ways to function. We need to be more efficient on how we heat and cool our buildings, reducing any impact we could have on the environment. The NCC stipulates in J1.5 and J1.6 that all walls, floors, and glazing must adhere to a minimum standard or thermal resistance and must be verified by a specialist. Personally, it seems like the minimum requirements are quite low for Zone 5, where Perth is situated.

With the climate crisis looming over our shoulders, as architects we need to help the world build better. The concept of Passivhaus has been around for some time and advocates for buildings to become more climate conscious by using better materials and reducing the need for heating and cooling to begin with.

