

GILLIES HALL

GOING LARGE WITH
PASSIVE HOUSE



MONASH
University



Jackson
Clements
Burrows
Architects

MULTIPLYX
Built to outperform.

AECOM

GLAS

landscape architecture



2014 to 2016 - Monash Stage 1 Student Residential at Clayton



1000 Beds, 3 Architects, 4 Buildings

2014-2016 Monash Stage 1 Student Residential at Clayton Campus

5 Star Green Star

1000 beds delivered to campus in 21 Months



LOGAN HALL
McBRIDE CHARLES RYAN



CAMPBELL & HOLMAN HALLS
HAYBALL + RMA



TURNER HALL
JCBA

+

MULTIPLEX

2014-2016 Monash Stage 1 - Exemplar Sustainable Design



PRECAST
BUSINESS AS USUAL



SHADING & COMPLIANT GLAZING
BUSINESS AS USUAL



VEGE GARDENS
BUSINESS AS USUAL

=

FIVE STAR DESIGN but
POOR THERMAL COMFORT + HIGH OPX

Monash University Net Zero Initiative



ENERGY EFFICIENCY



CAMPUS ELECTRIFICATION



MICROGRID

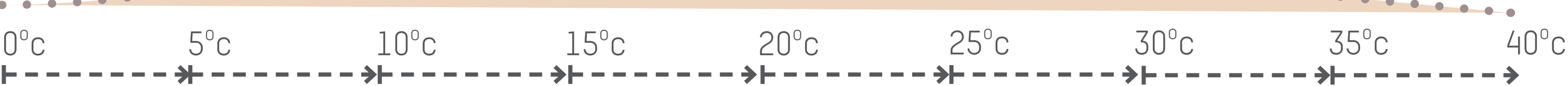


RENEWABLE ENERGY



OFFSETTING

GILLIES HALL - Going Large with Passive House in a warm (and cold) climate



GILLIES HALL - Going Large with Passive House & Engineered timber



NOV 2017



FEB 2017



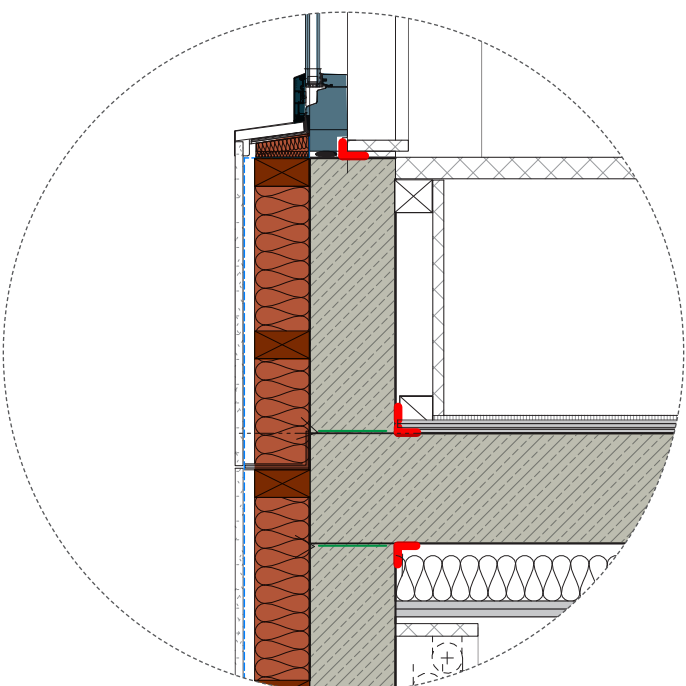
JULY 2018



GILLIES HALL - Going Large with Passive House (in 19 months)



JULY 2017



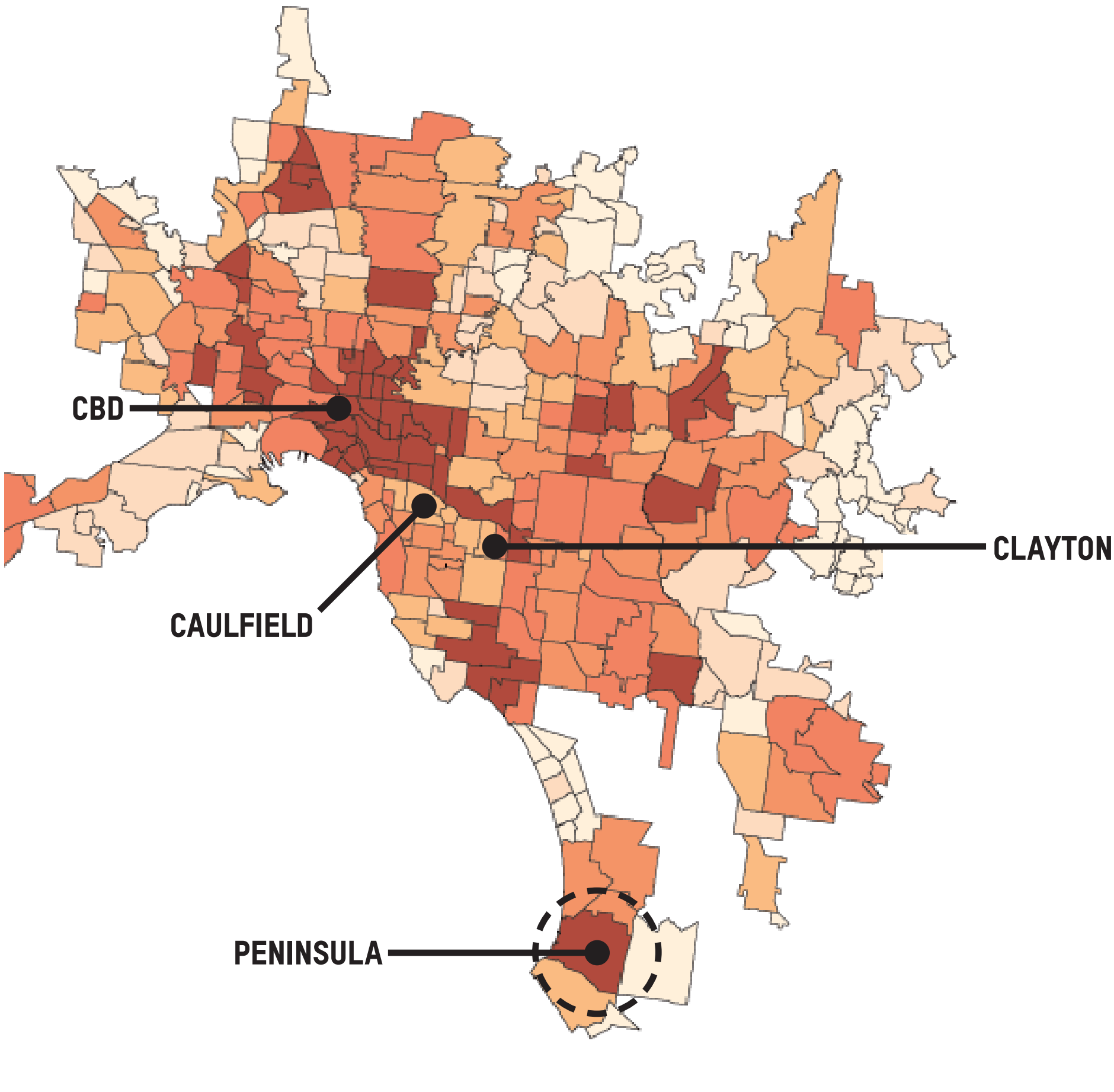
FEB 2017



JAN 2019



MONASH UNIVERSITY - Melbourne Campuses



Consultant Design Brief Issued June 2017



- 150 Single Occupancy Units (SOU's)
- Support Staff Residences (x2)
- Floor Lounges for Building Residents
- Communal Spaces
- 6,500m² GFA

Get - Planning Approval

Target - Passive House Certification

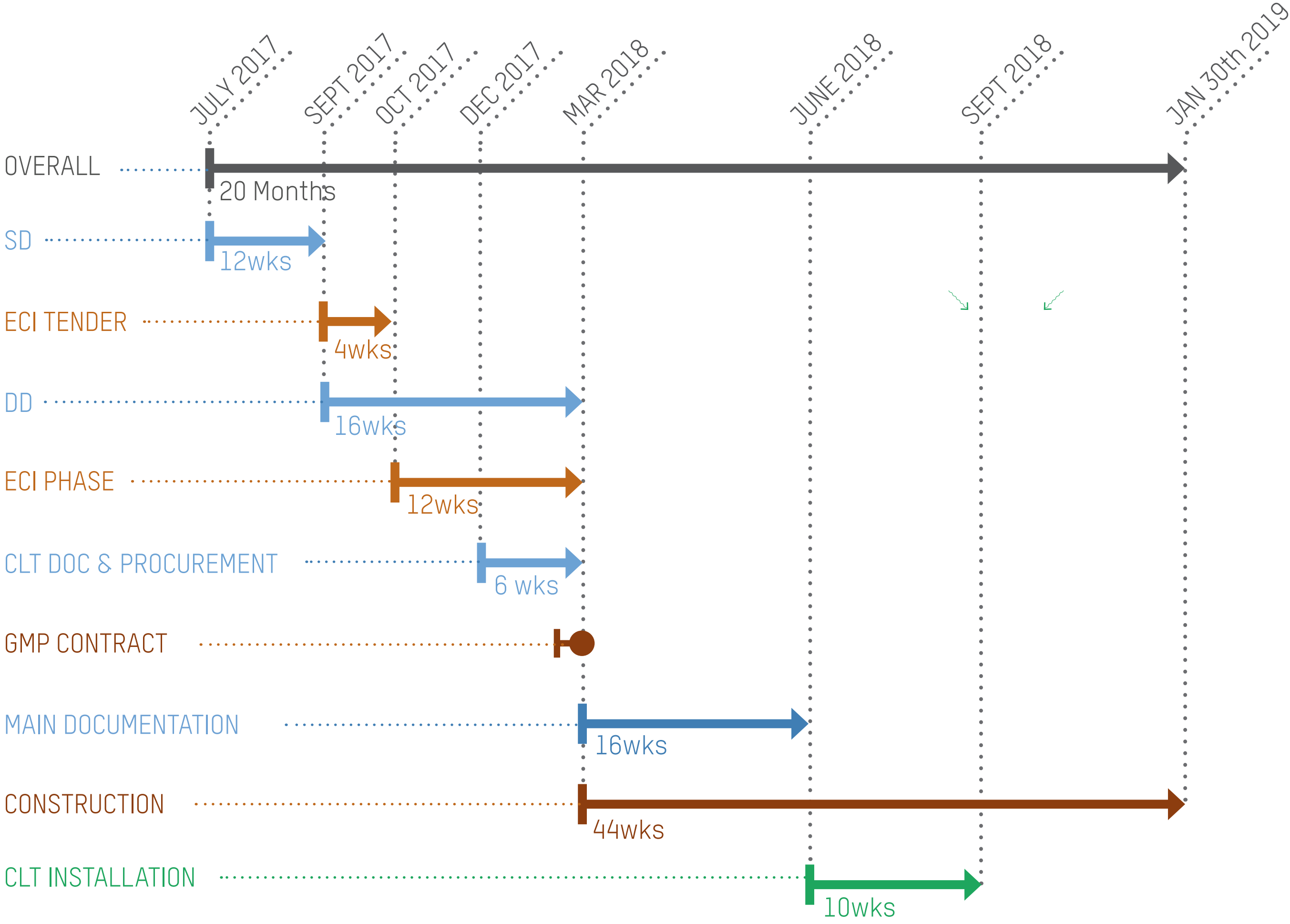
Explore - Cross Laminated Timber

Complete - Ready for Semester One 2019

All in 19 Months!!!!

**and BTW,
we did it.**

20 Months - How we did it

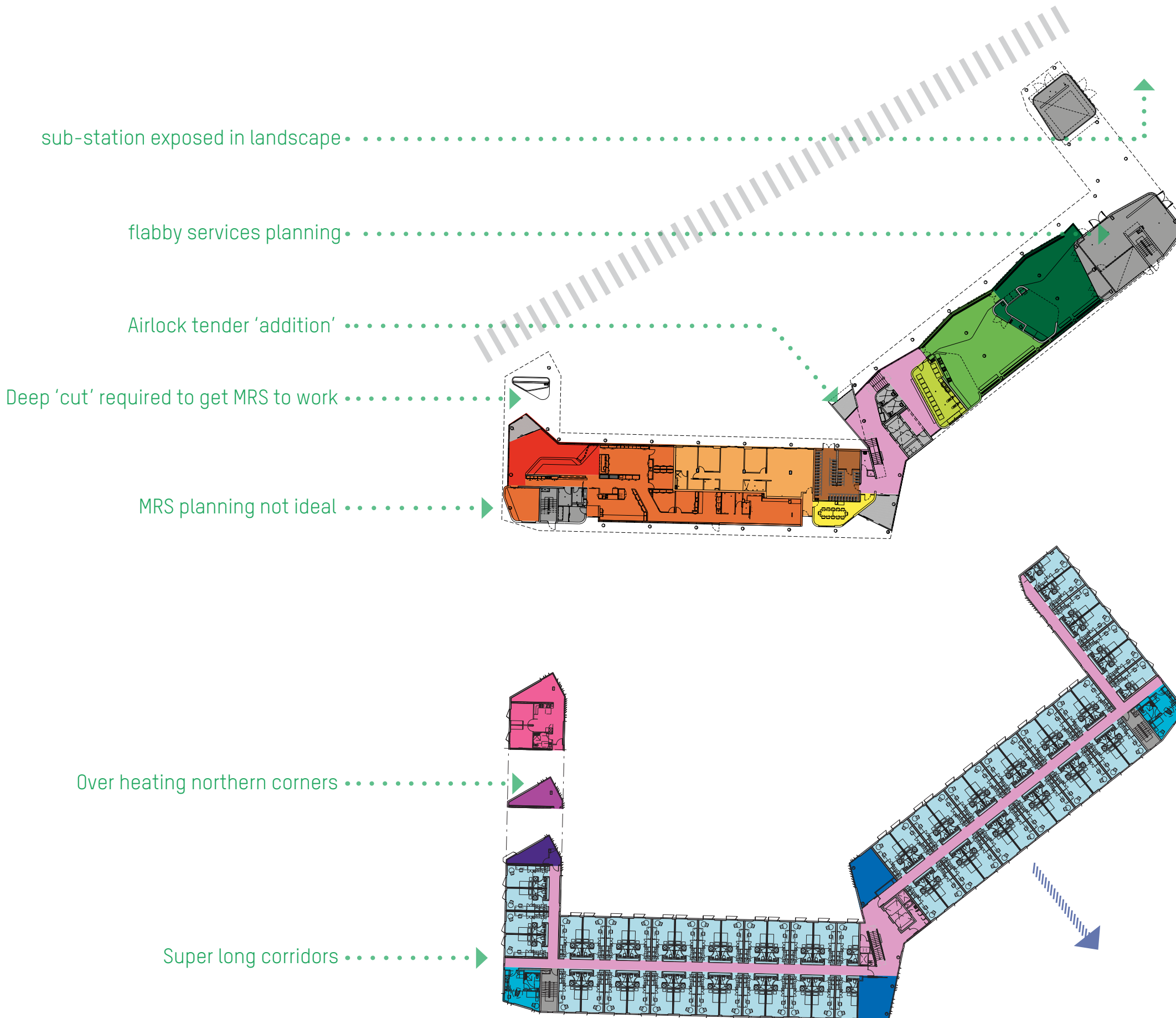


Passive House - How much did it cost?



ITEM	% OF GMP	
Insulation Below Ground Slab	0.3%	0.8%
Taping for Airtightness	0.3%	
Airtightness Testing	0.2%	
Hydraulics	0.2%	2.0%
Electrical	0.2%	
Mechanical	1.2%	
Solar PV	0.4%	
Doors & Windows	0.9%	9.8%
Cladding (Levels 2 –6)	2.8%	
Ground Floor Façade	0.3%	
Shading	4.3%	
Scaffolding	1.5%	
Total extra Over	12.6%	

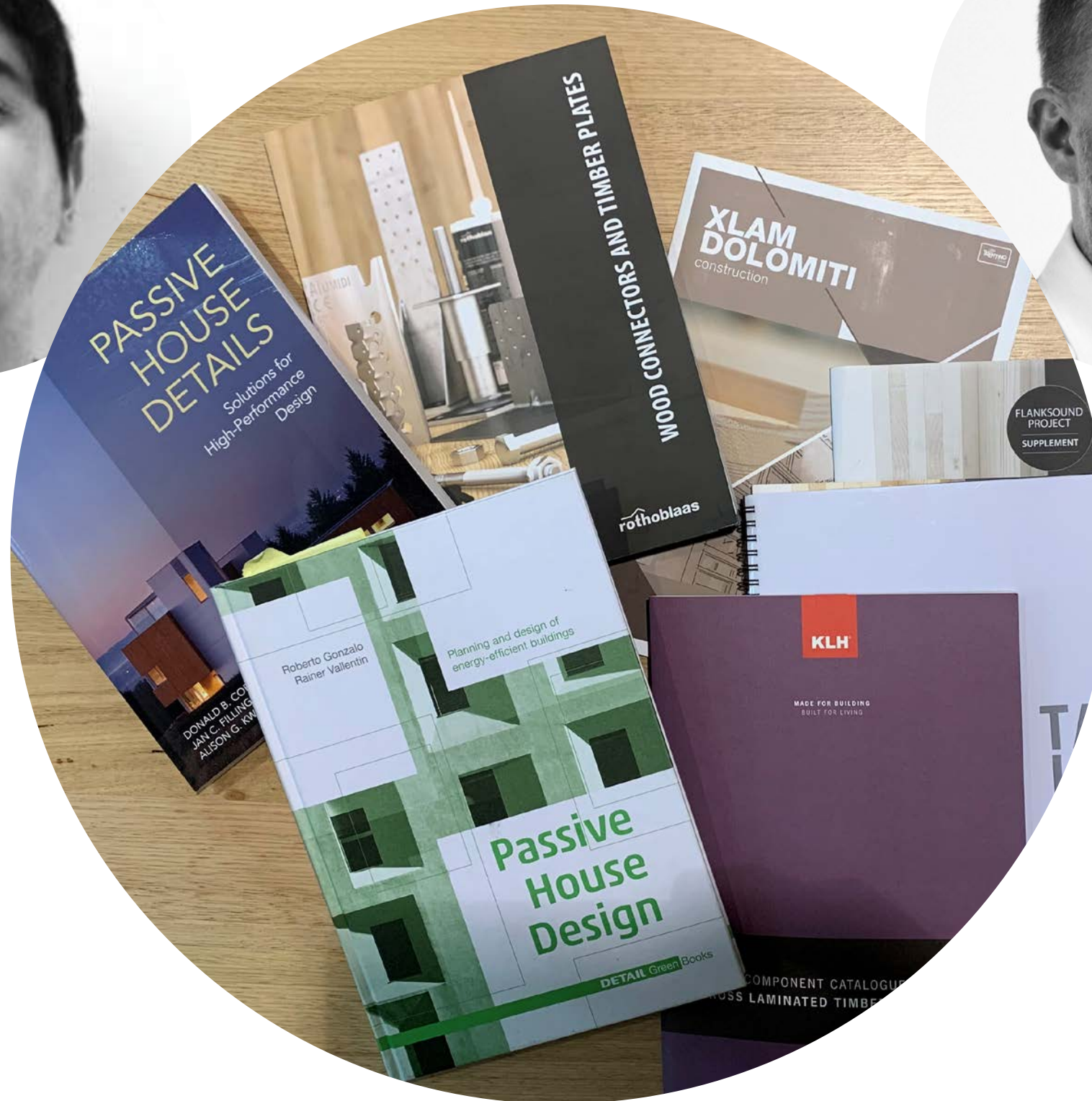
Re-Assess the standard model - Monash Turner



Passive House & CLT - Where to begin???

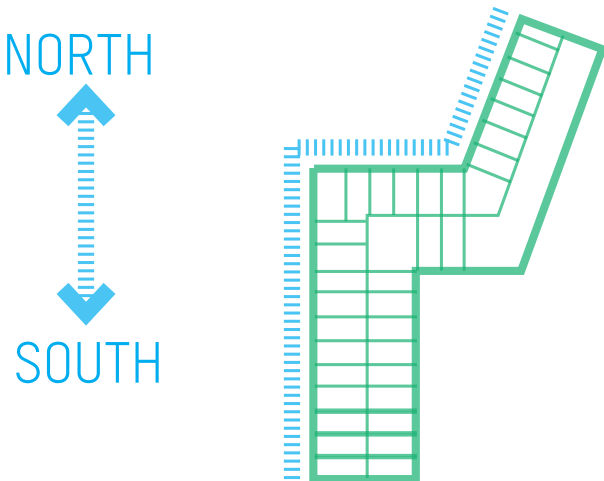


Pablo Sepulveda
AECOM

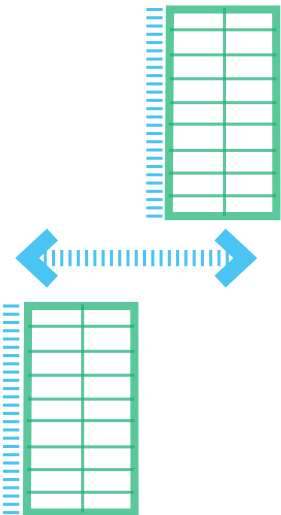


David Ritter
Atelier Ten

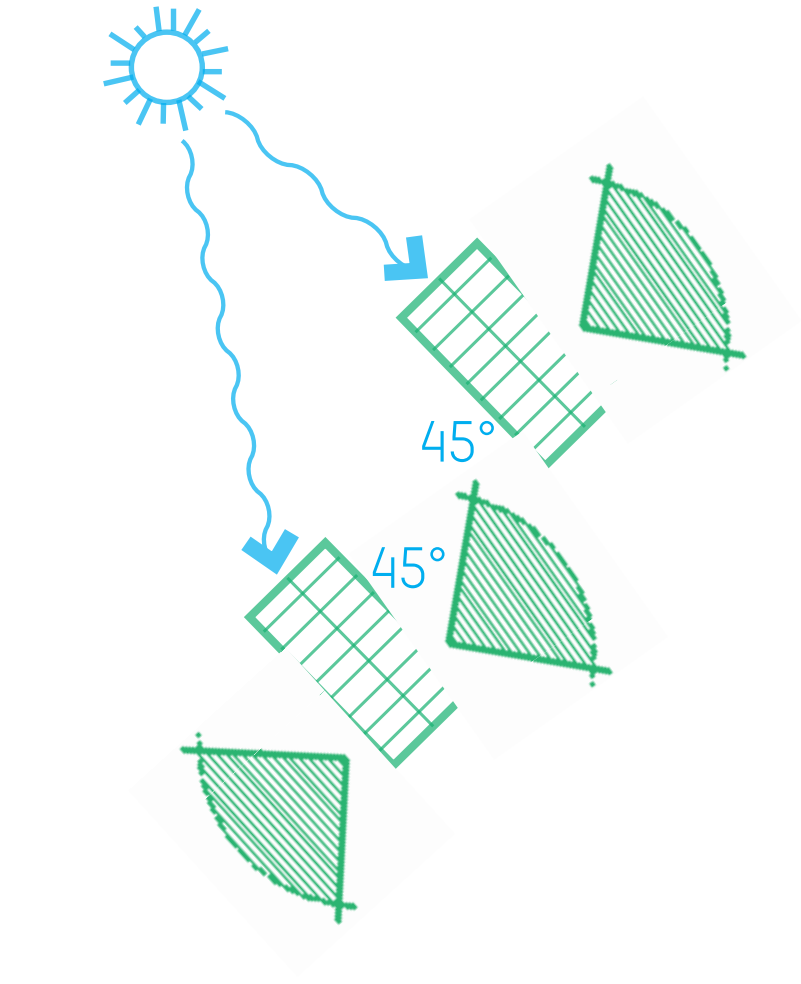
First Moves



SINGULAR FORM

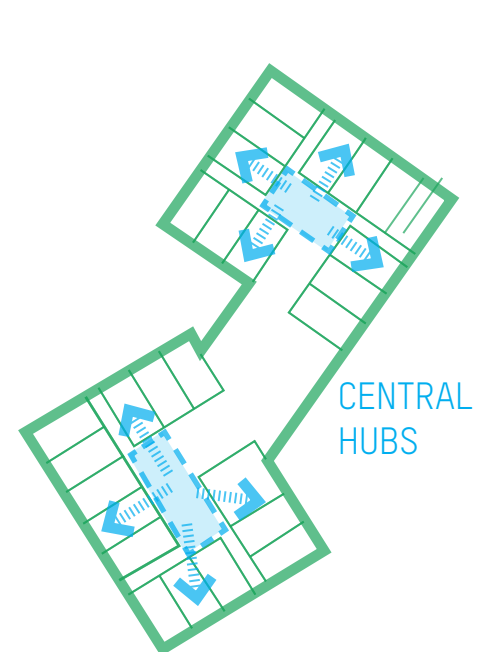


SPLIT FORM

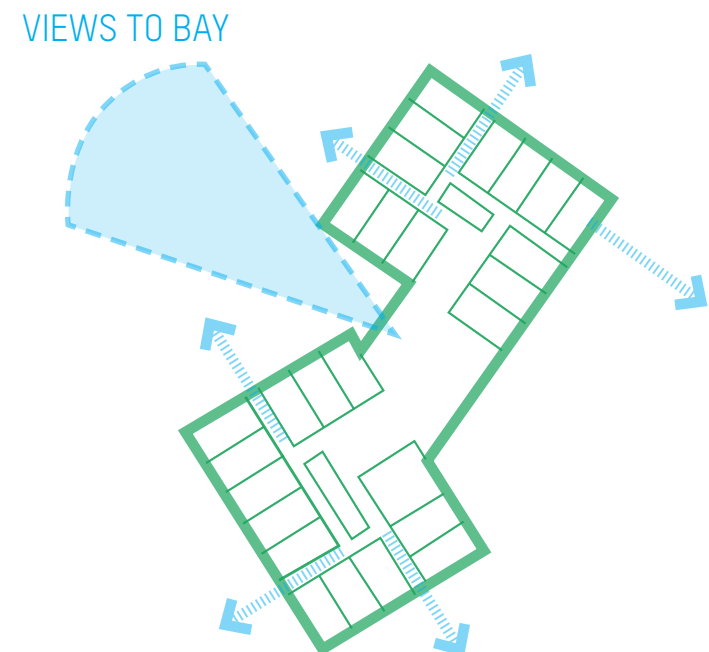


ROTATE FORMS

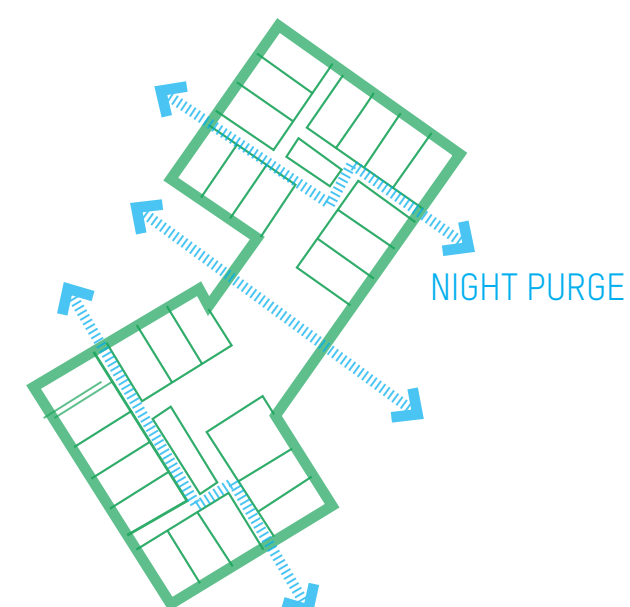
Developing the thinking



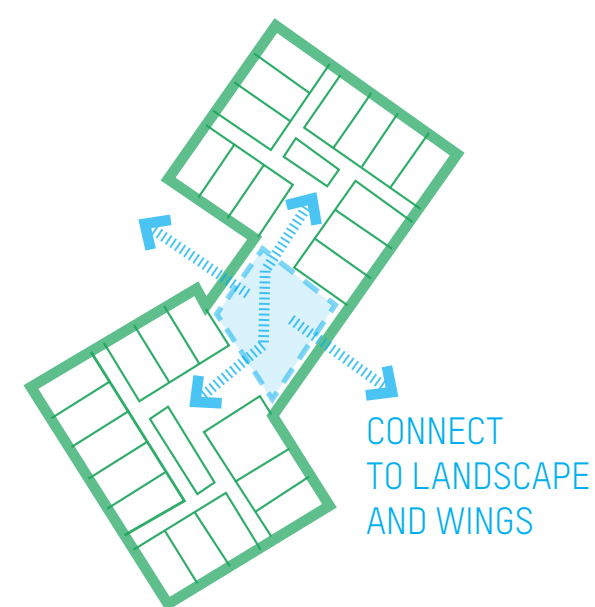
CREATE
HUB



CELEBRATE
VIEWS

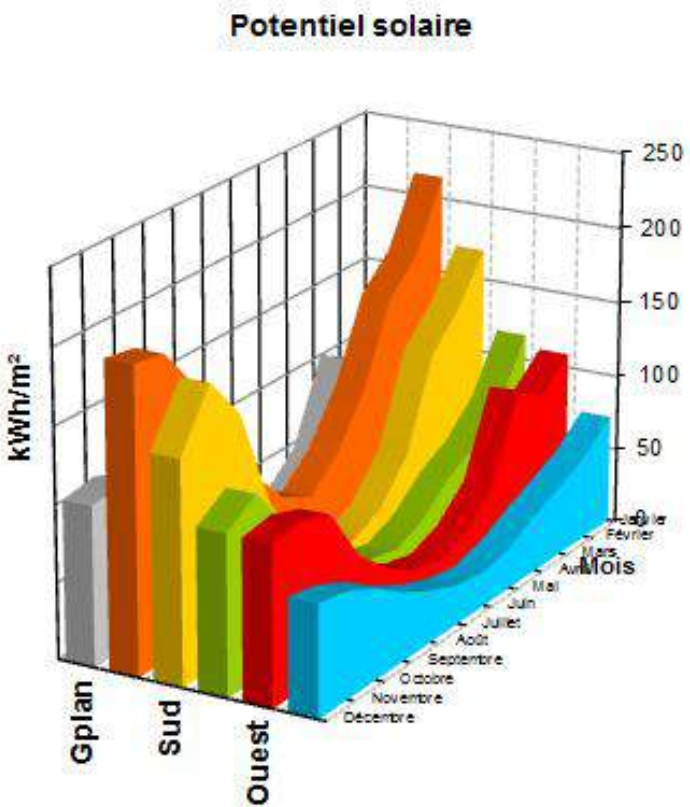
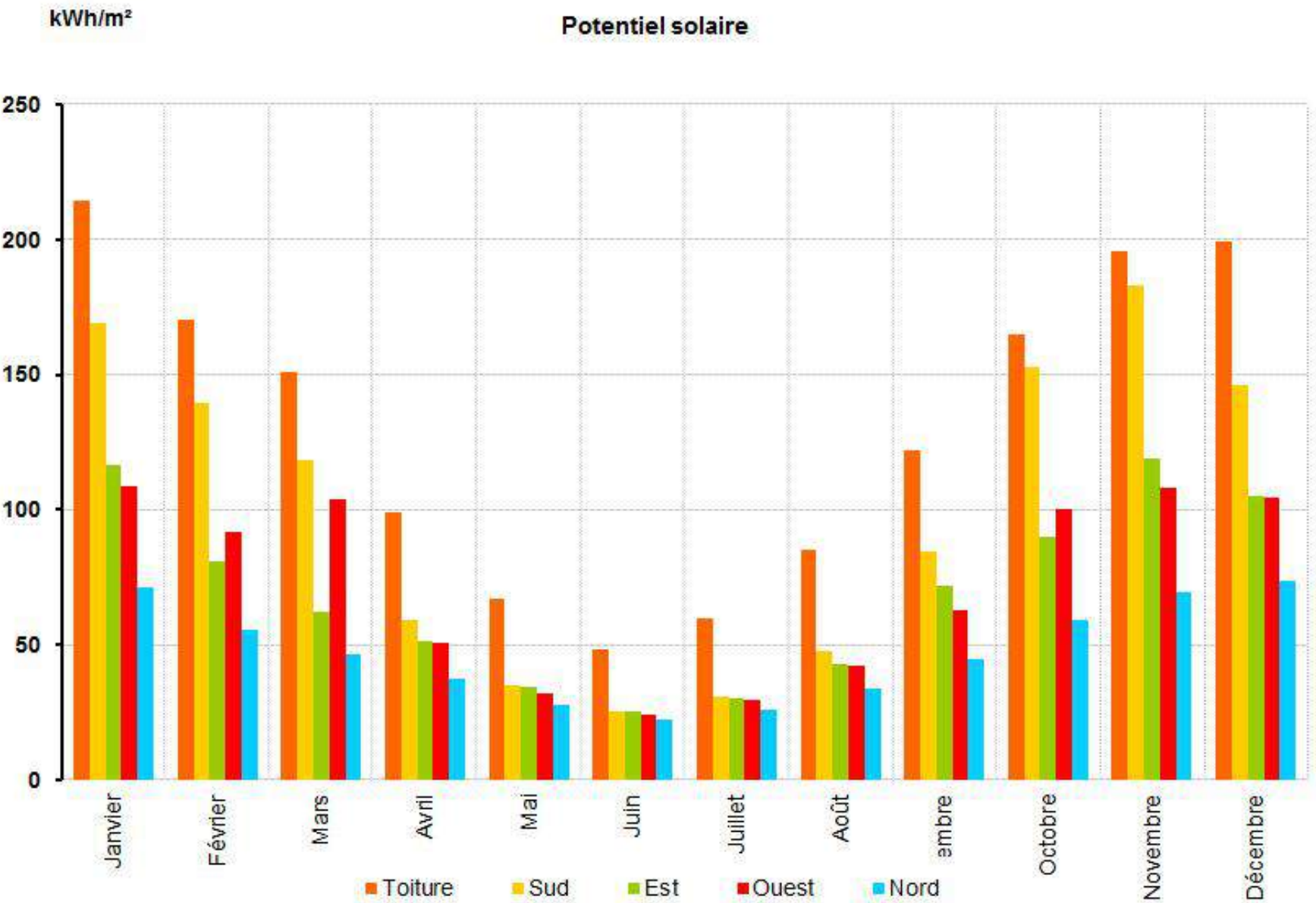


MAXIMIZE
CROSS
FLOW
VENTILATION



ACTIVE
SOCIAL
CENTRAL
KNUCKLE

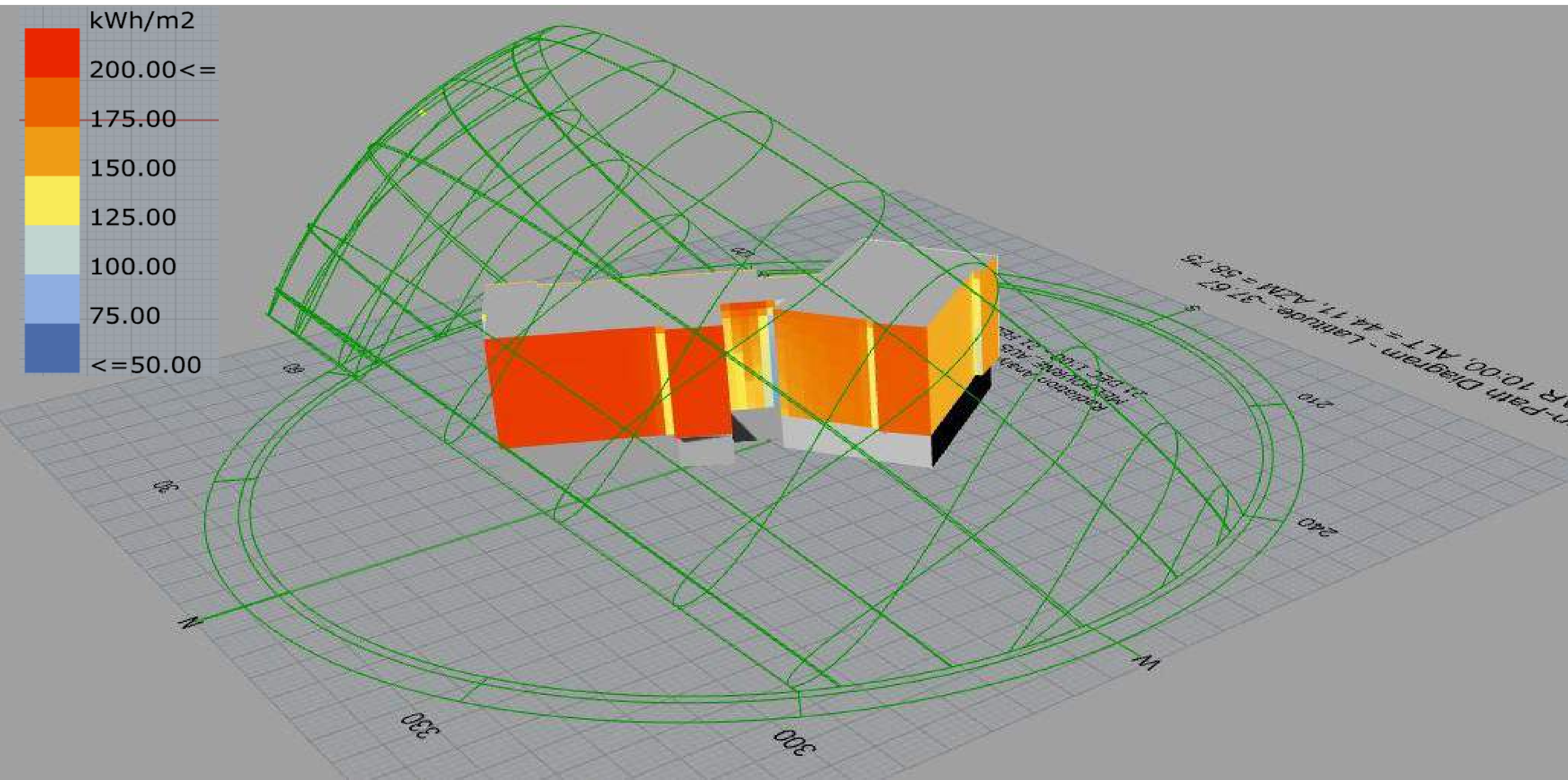
Initial Analysis - Radiation



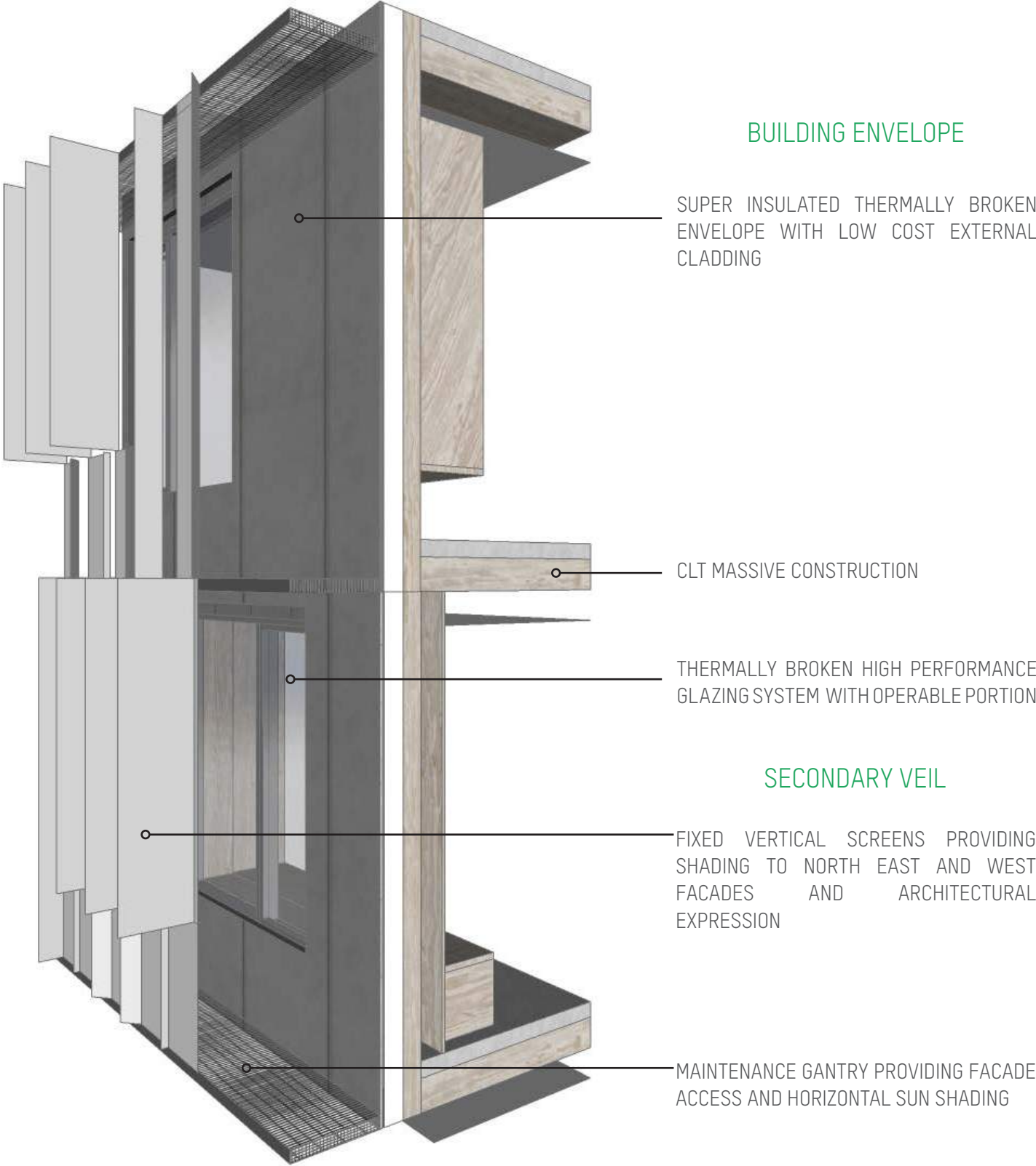
ESD Passive house Key Points

MONASH PENINSULA

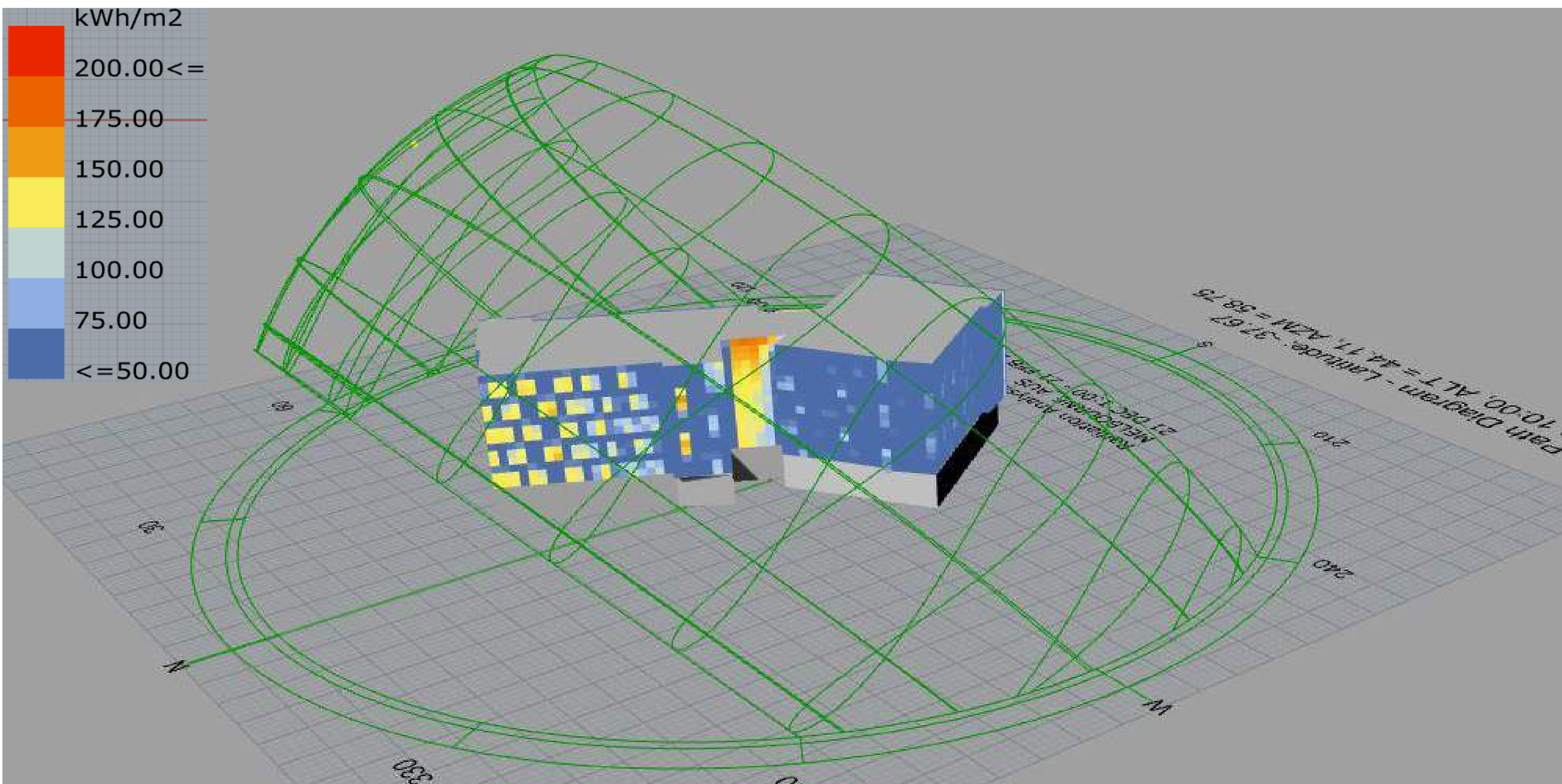
Radiation Summer - No shading



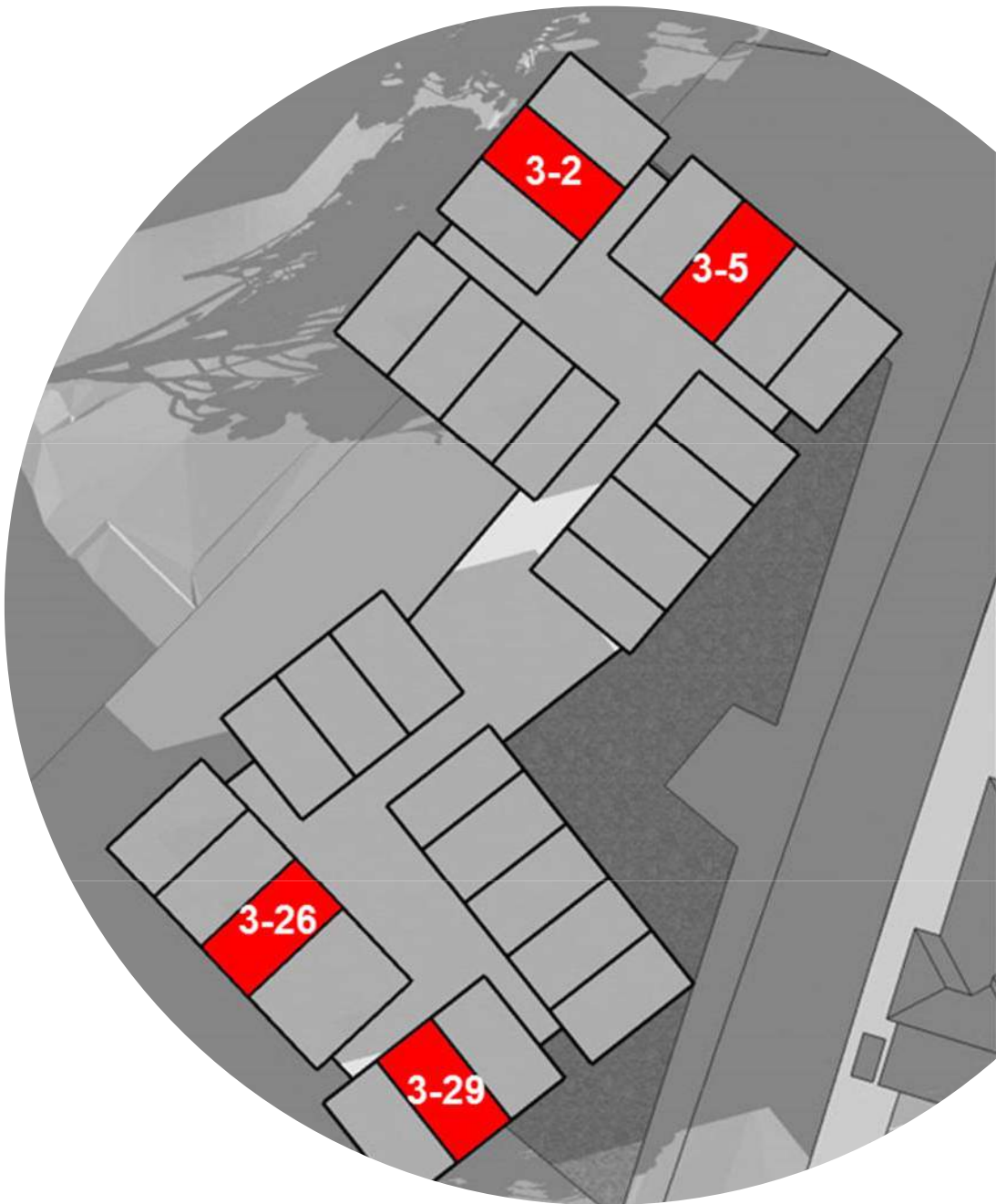
Facade Development - Secondary Veil



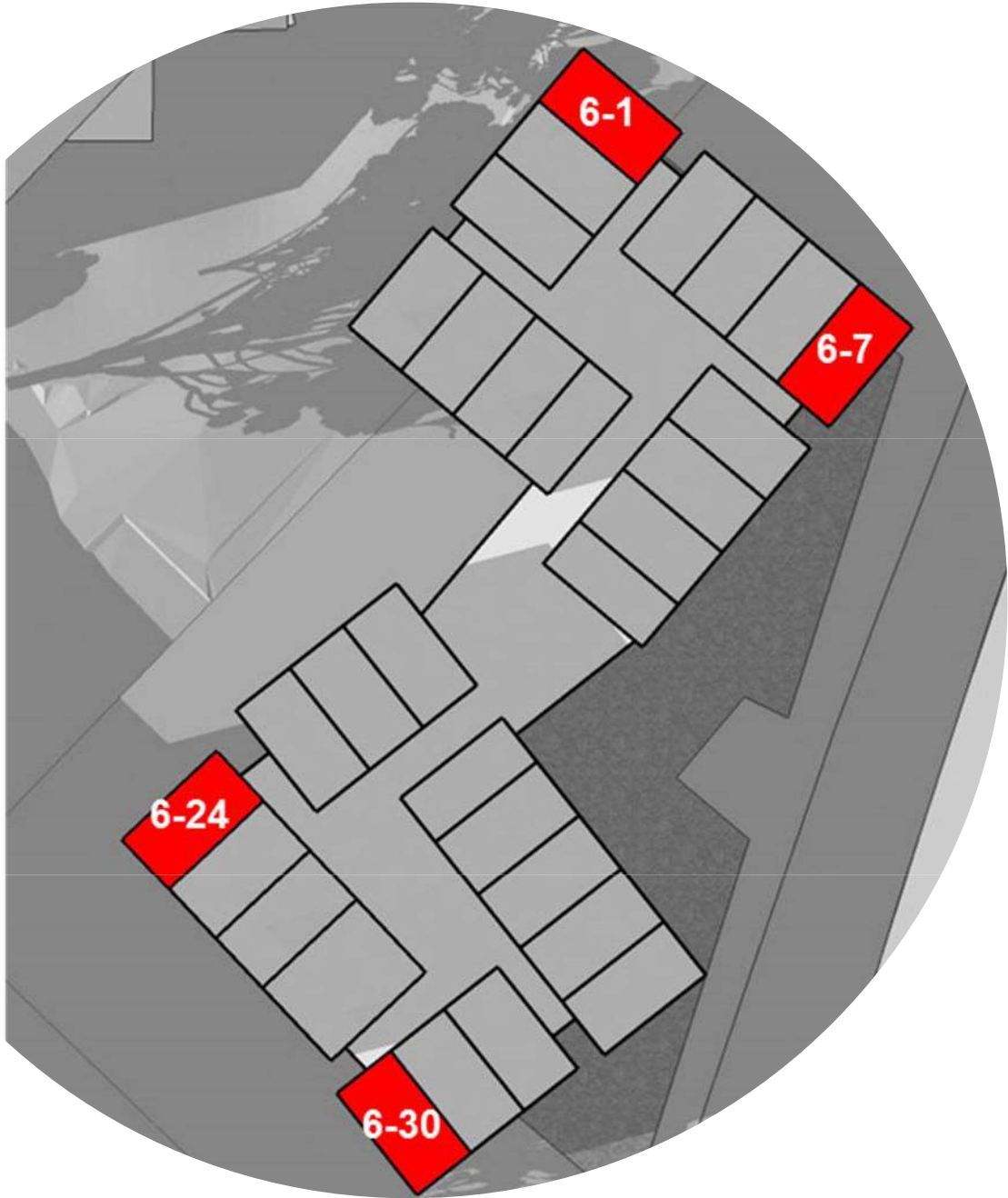
Radiation Summer - Shading



Initial Analysis - Room Studies

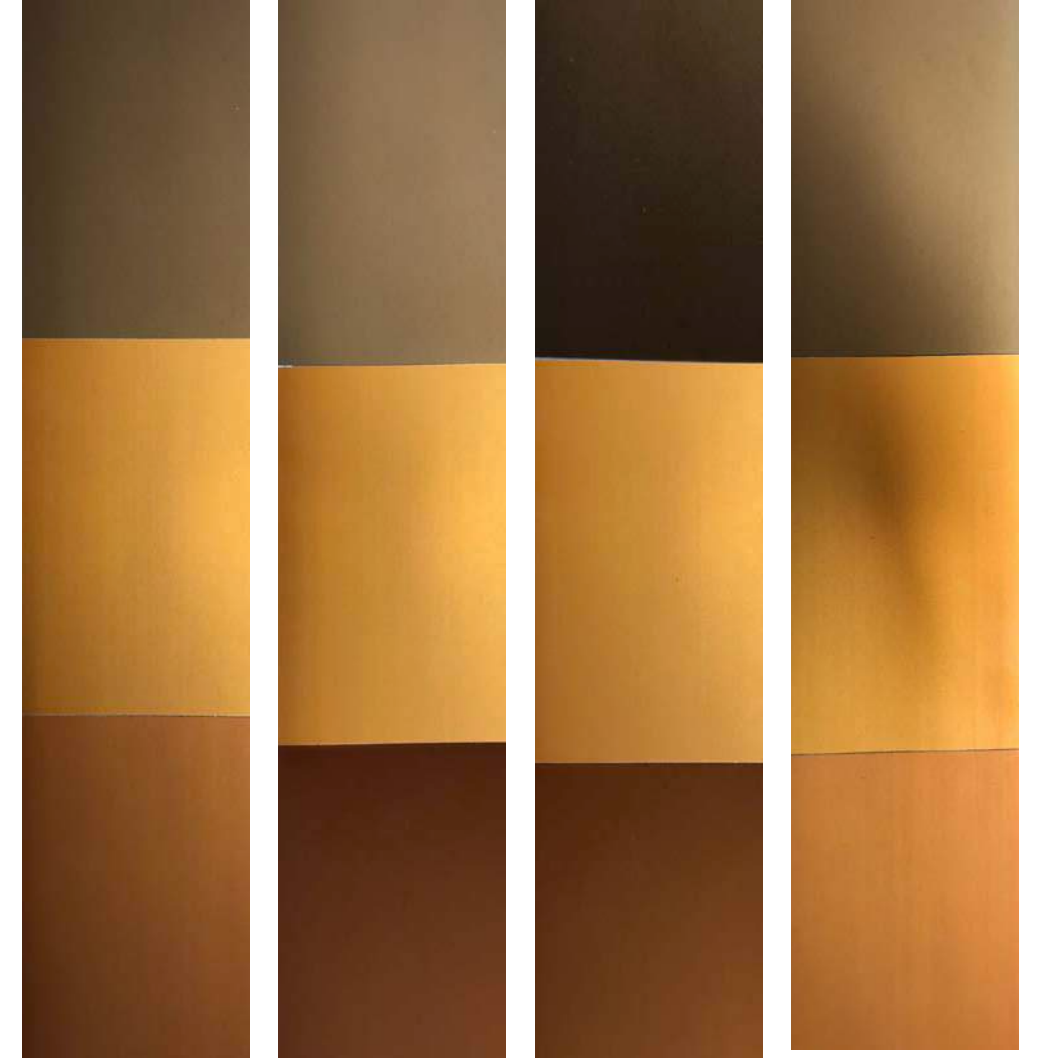


3rd
Floor



6th
Floor

Facade Development - Secondary Veil



Facade Development - Secondary Veil



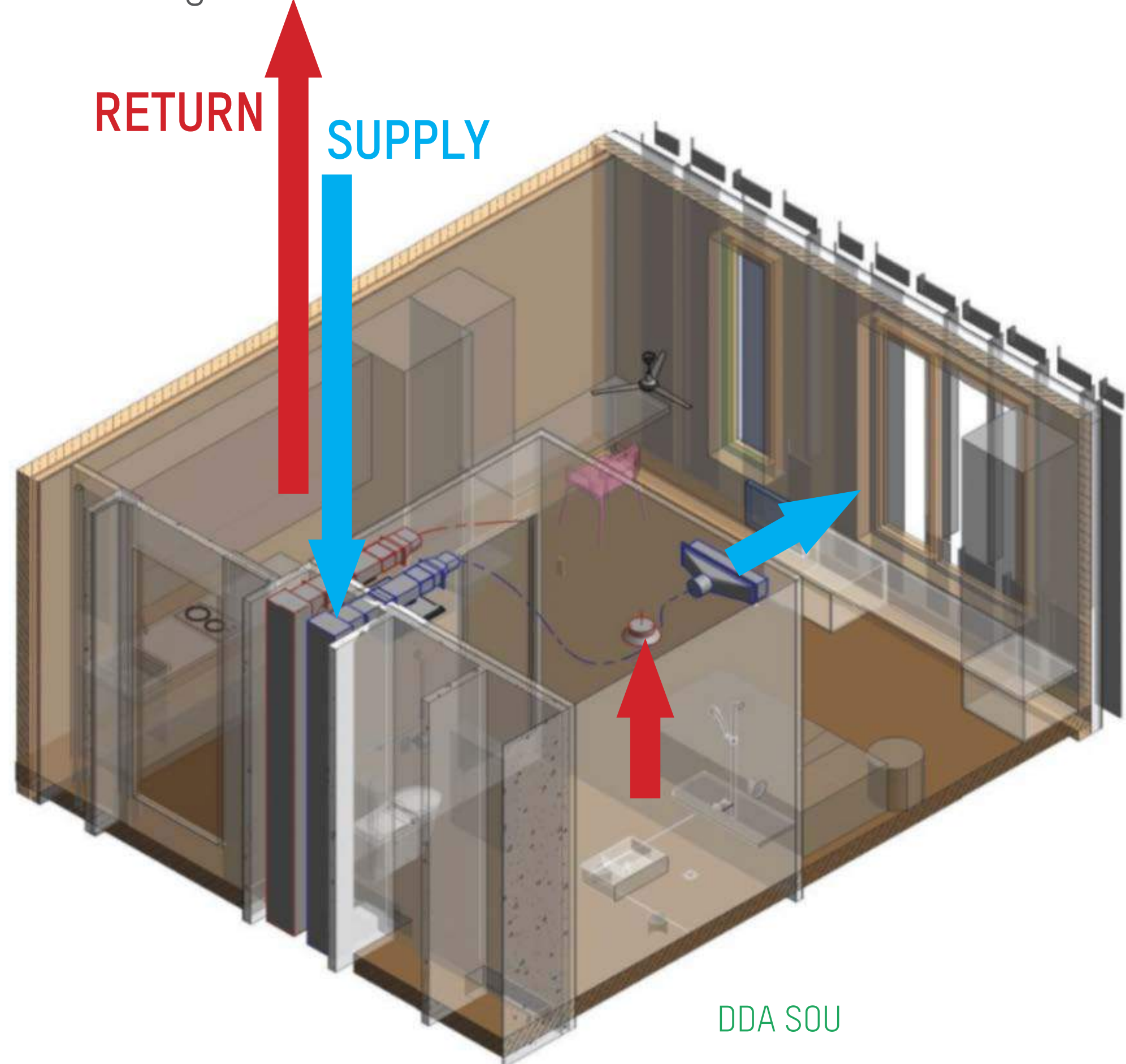
Interior Development - Cross Laminated Timber



RESIDENTIAL LEVELS



In Detail - Mechanical Design



Looking for Answers - To Europe with Multiplex



AUSTRIA



KLH



NORWAY



GRAZ

BINDERHOLZ

Trondhiem, Norway - Moholt 50/50 Student Accommodation & Library



MDH Arkiteker

Fridges - Where we almost came unstuck



AUSTRIA

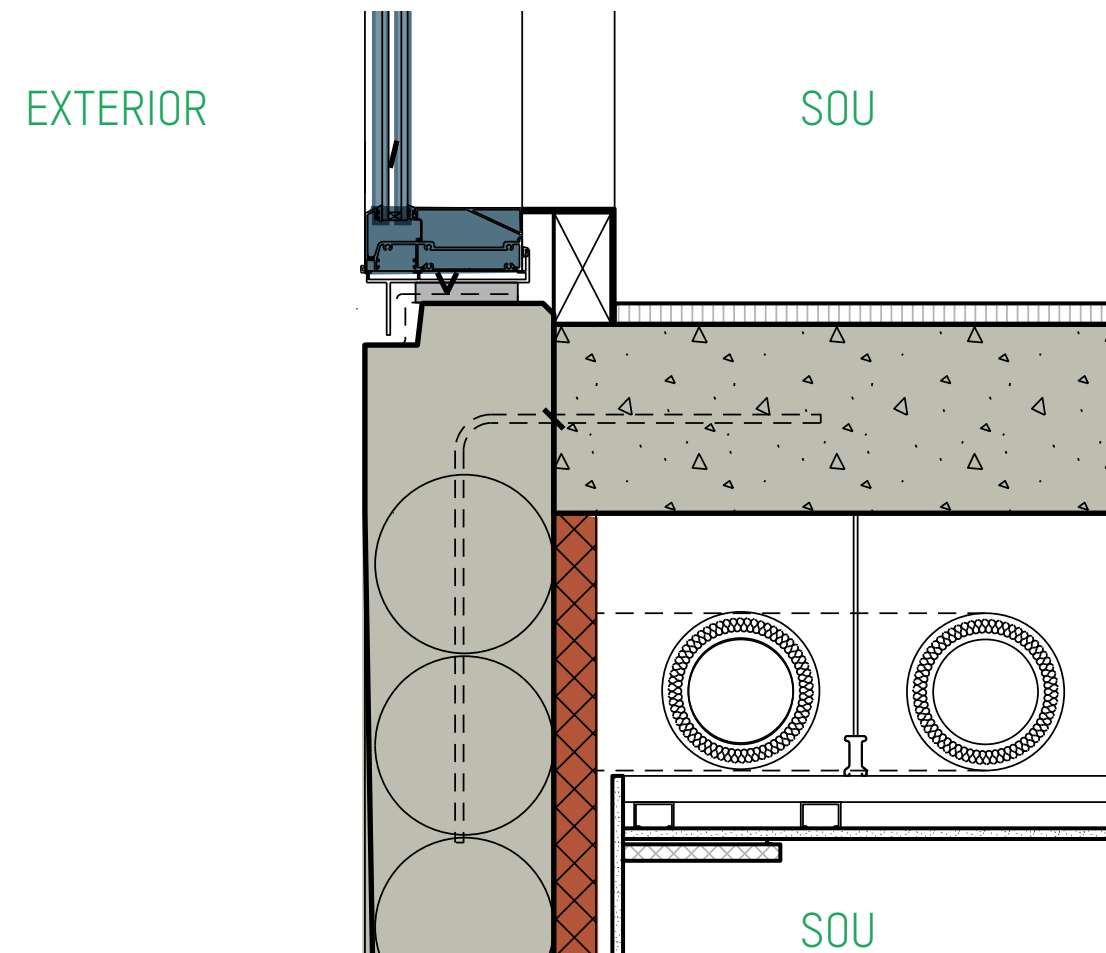
Liebherr TP1434
93kWh / year
GREAT FRIDGE



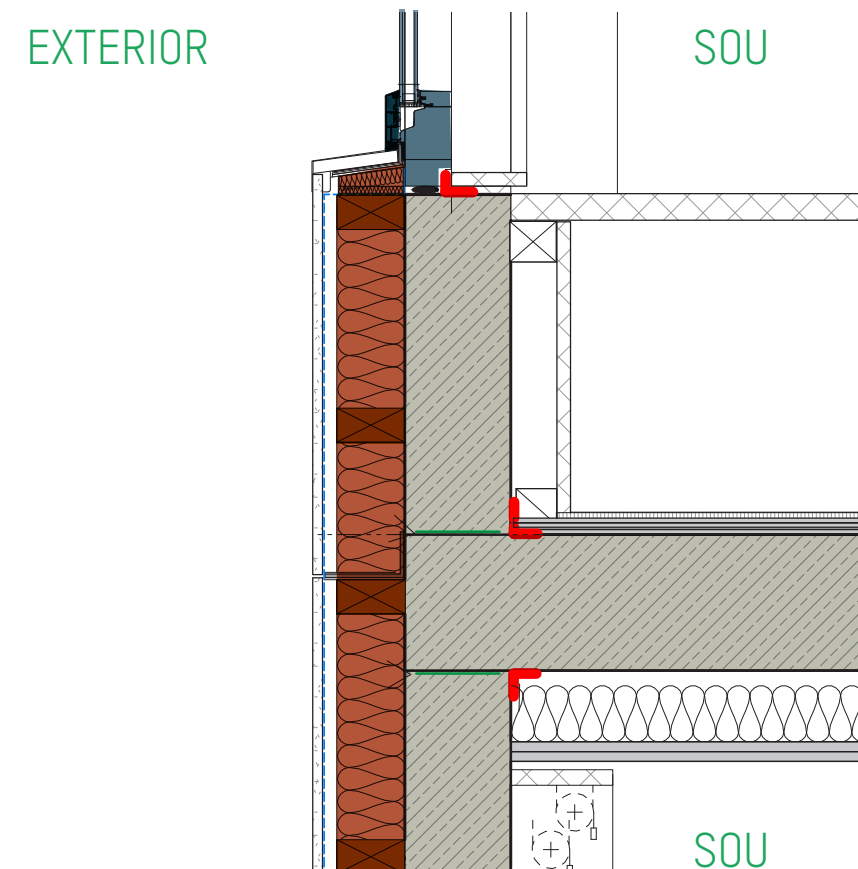
AUSTRALIA

Hisense 157L
190kWh / year
RUBBISH PLASTIC NONSENSE

In Detail - Business as Usual vs Passive House



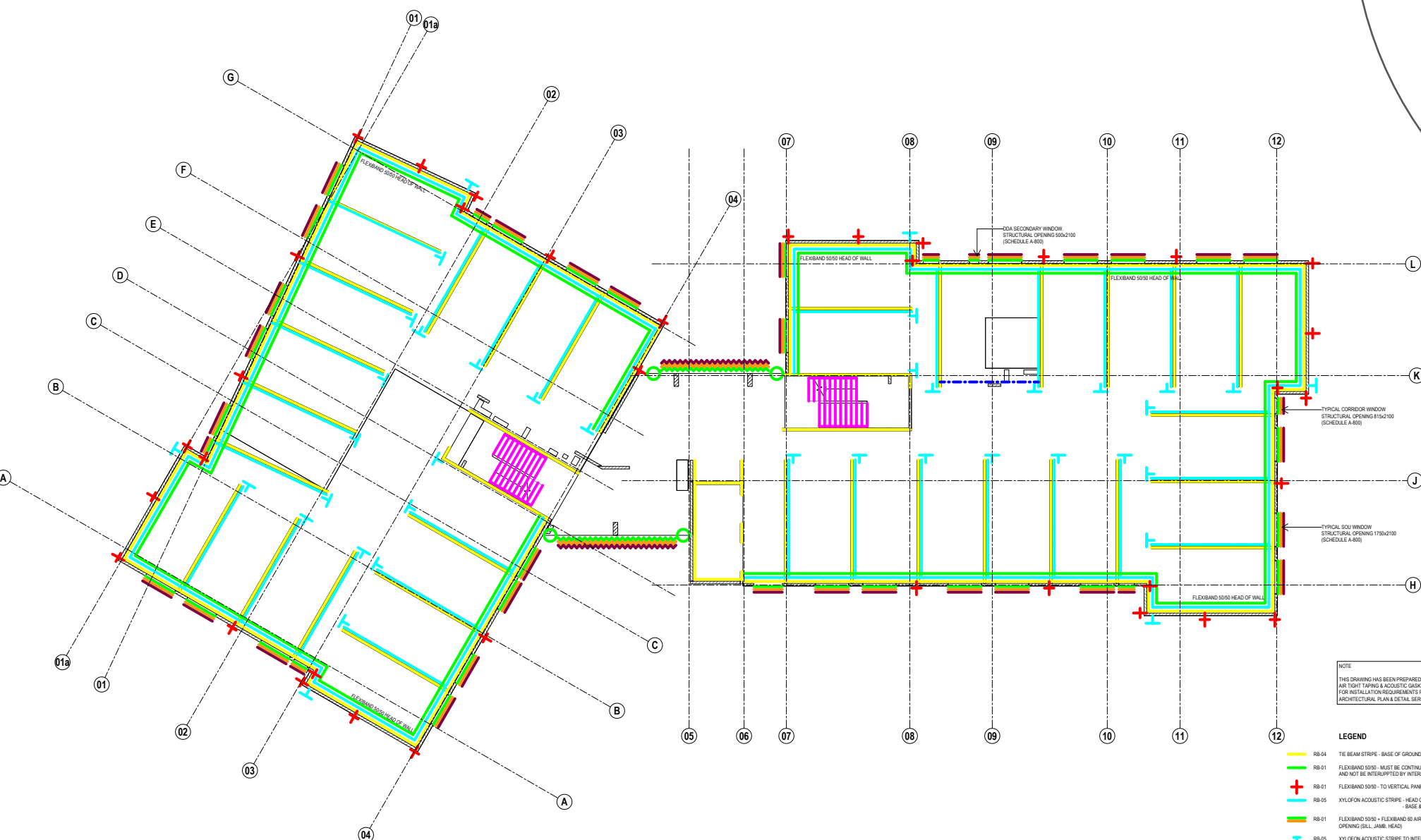
BUSINESS AS USUAL
TURNER - TYPICAL FACADE SECTION DETAIL



PASSIVE HOUSE
PENINSULA - TYPICAL FACADE SECTION DETAIL

- STRUCTURE
- THERMAL INSULATION
- WINDOW / GLAZING

In Detail - Documenting for CLT and Passive House



LEGEND

RB-04

TIE BEAM STRIPE - BASE OF GROUND FLOOR

RB-01

FLEXIBAND 50/50 - MUST BE CONTINUOUS TO PERIMETER ENVELOPE AND NOT BE INTERRUPTED BY INTERNAL WALLS

RB-01

FLEXIBAND 50/50 - TO VERTICAL PANEL JOINTS (FULL HEIGHT)

RB-05

XYLOFON ACOUSTIC STRIPE - HEAD OF WALL LEVEL 02 - BASE & HEAD WALL LEVEL 04

RB-01

FLEXIBAND 50/50 + FLEXIBAND 60 AIR BARRIER TAPE - TO WINDOW OPENING (SILL, JAMB, HEAD)

RB-05

XYLOFON ACOUSTIC STRIPE TO INTERNAL BEAM/CLT WALL JUNCTION

RB-01
RB-02
RB-07

FLEXIBAND 50/50 + FLEXIBAND 60 AIR BARRIER TAPE - D63532 - TO SILL AND JAMB OF CURTAIN WALL

RB-01

FLEXIBAND 50/50 TO LIGHTWEIGHT FACADE CONSTRUCTION

RB-06

ALADINE STRIPE - TO TREAD TRIANGLE/STRING SUPPLIER), AND
ALADINE STRIPE - BETWEEN STAIR AND ADJACENT WALLS

RB-05

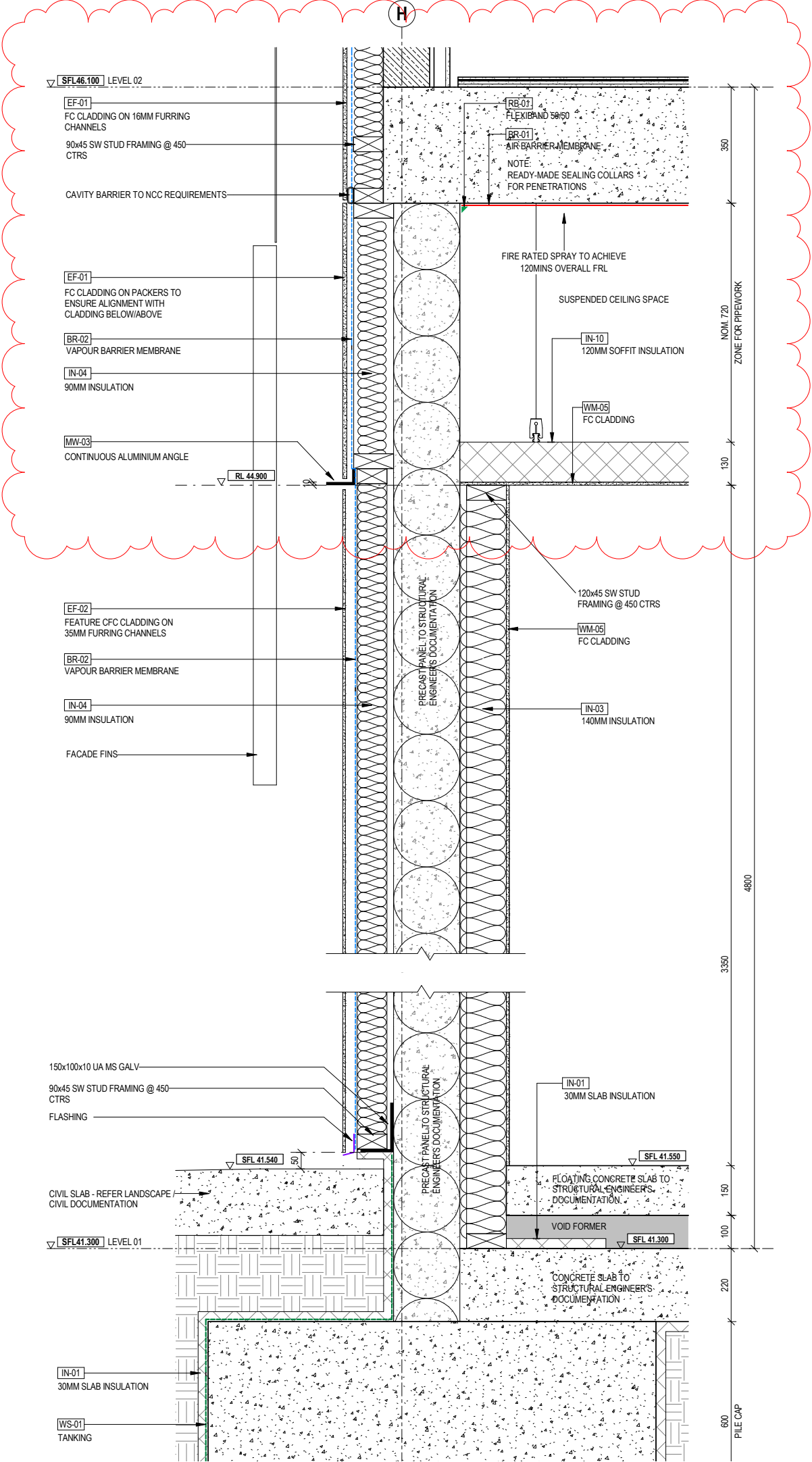
XYLOFON ACOUSTIC STRIPE - TO ALL ODA SOU FLOOR PANEL & BEAM

GROUND LEVEL

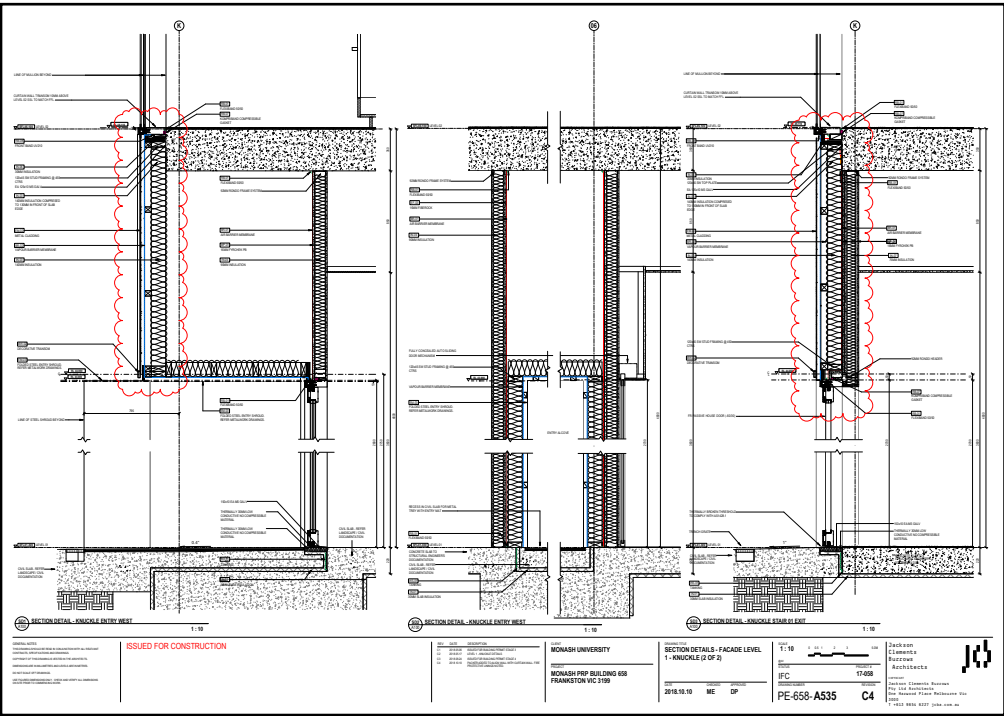
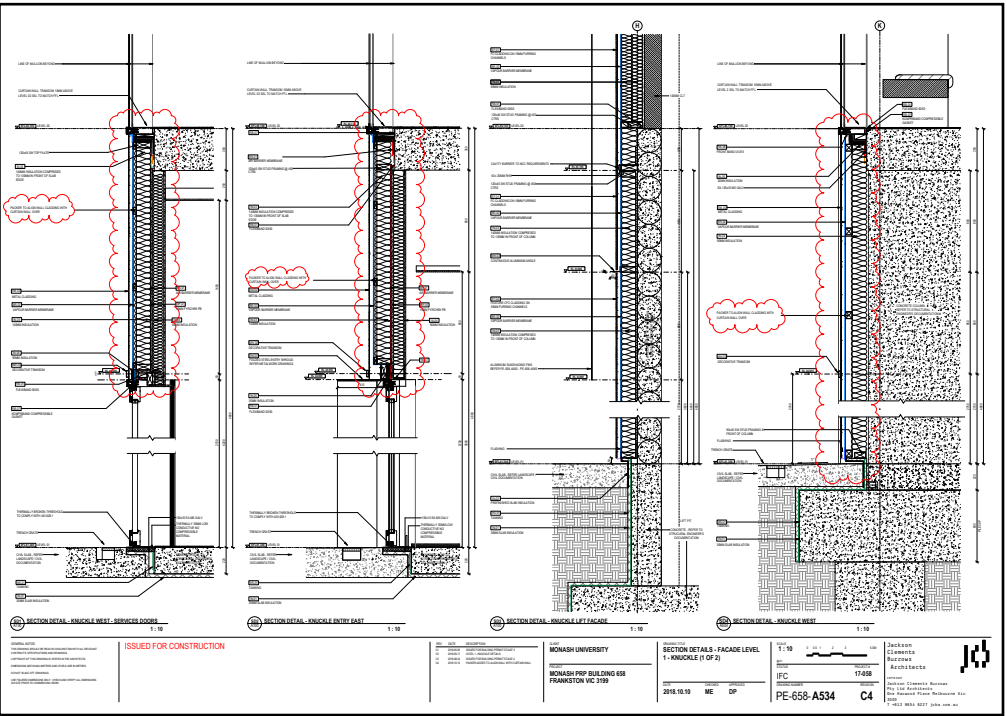
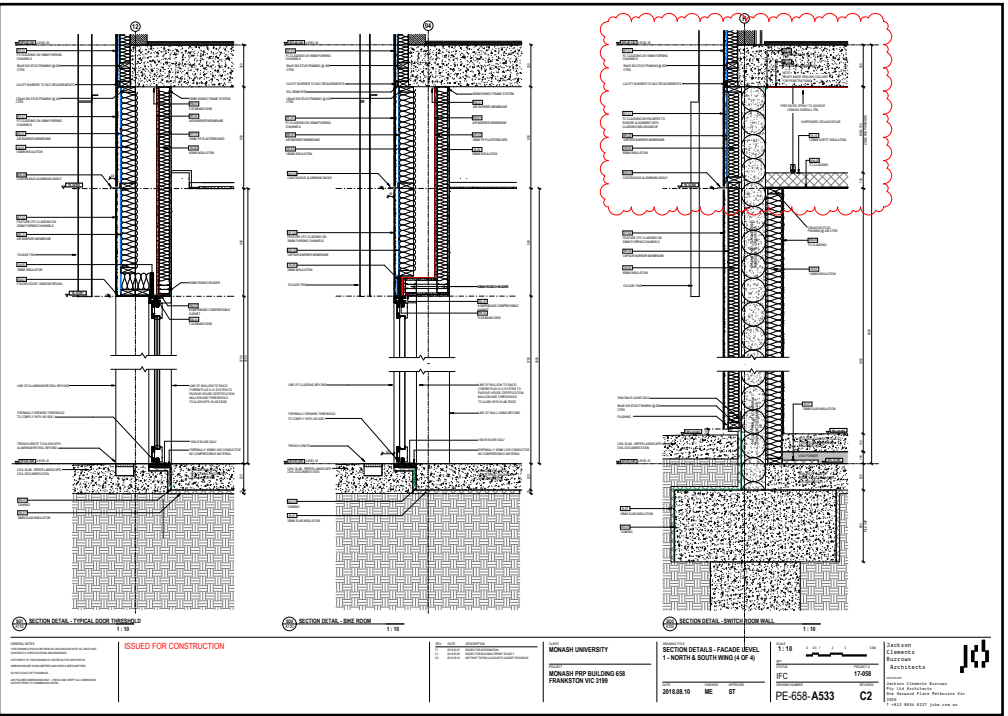
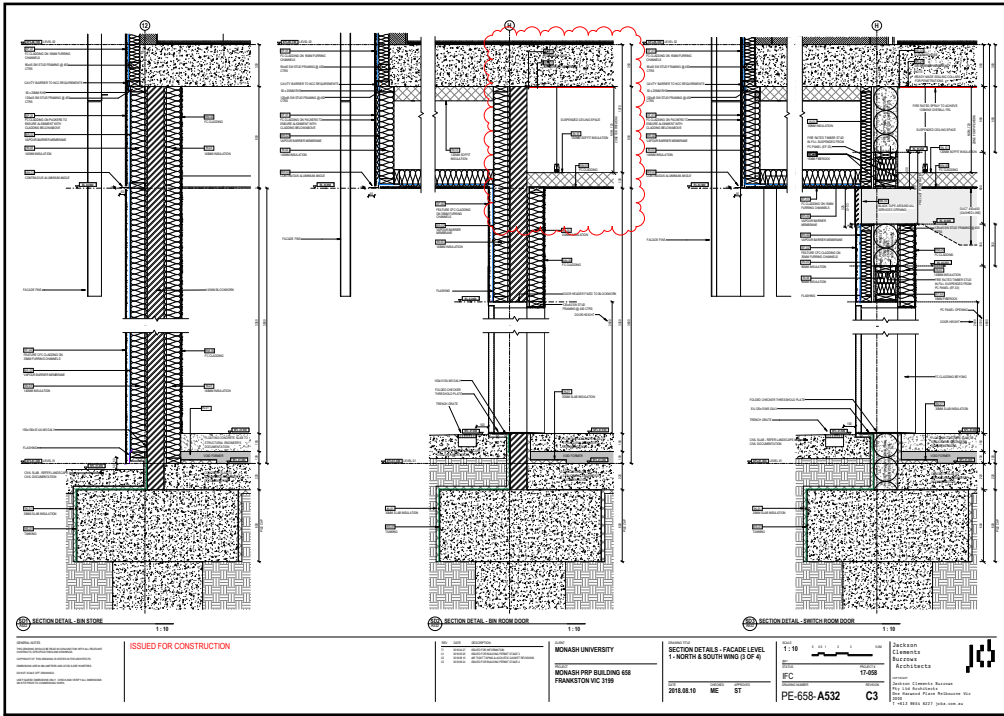
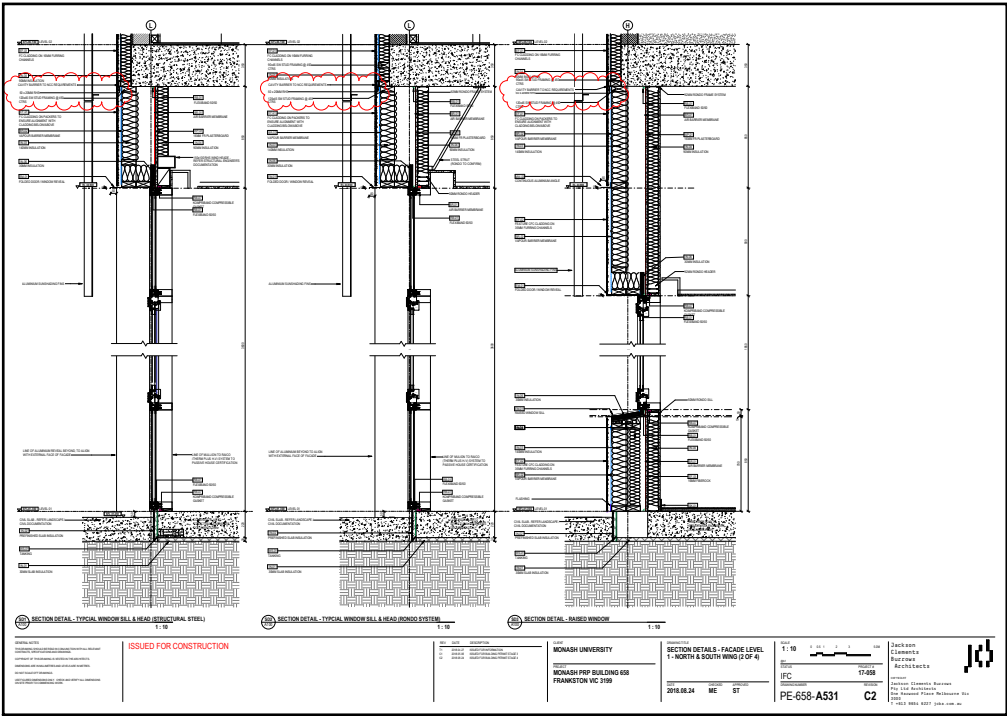
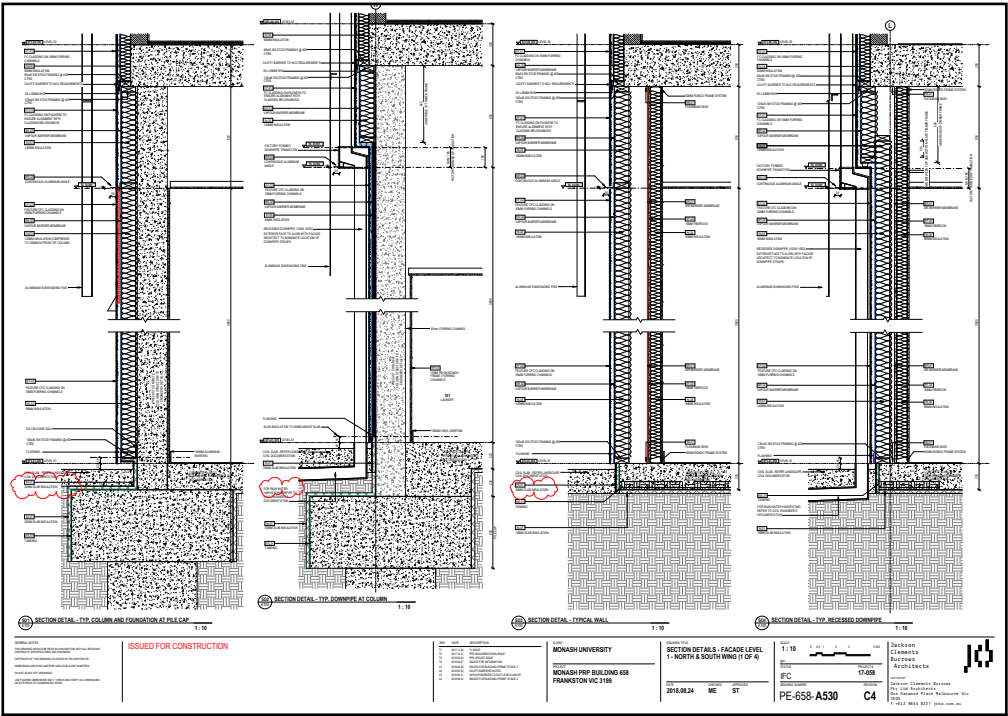


BIN ROOM AND SWITCHROOM
OUTSIDE THE
PASSIVE HOUSE LINE

GROUND LEVEL - Headaches



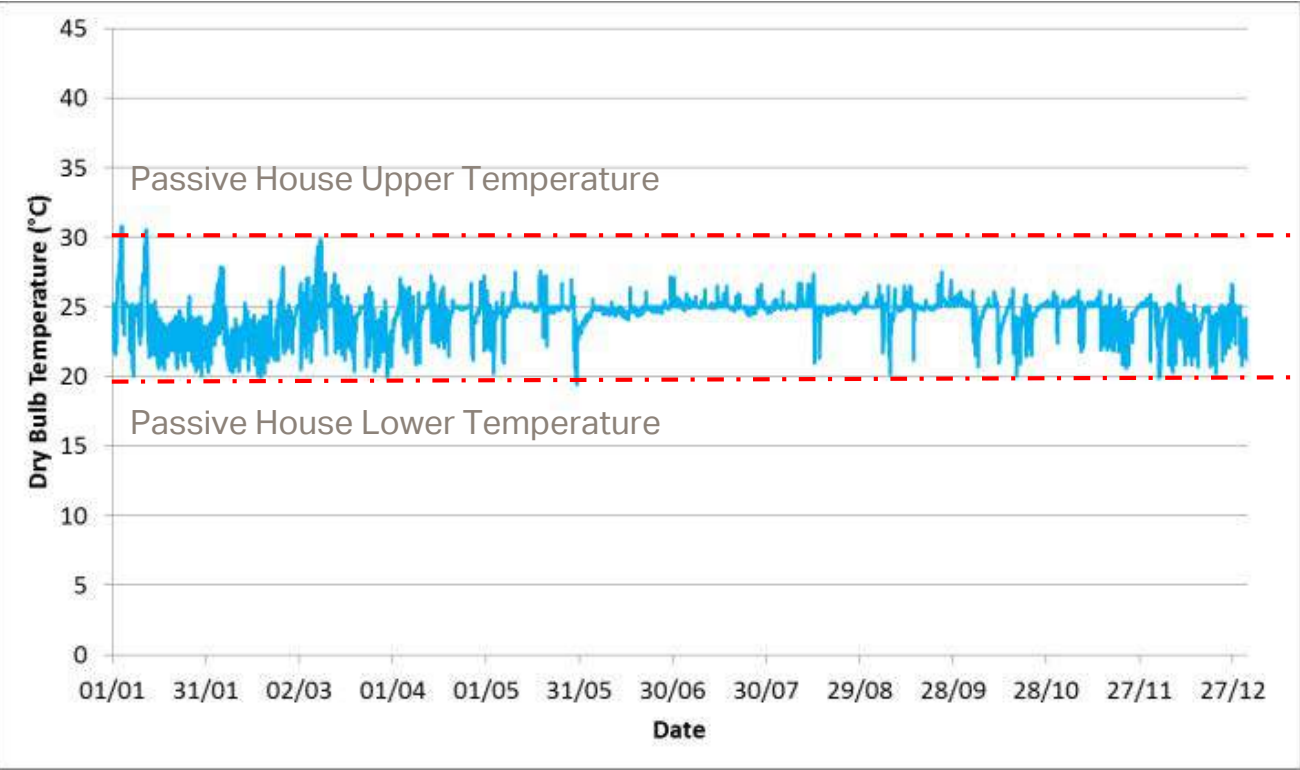
GROUND LEVEL - Headaches, one of many!



Internal Thermal Comfort - Passive House vs Business as Usual

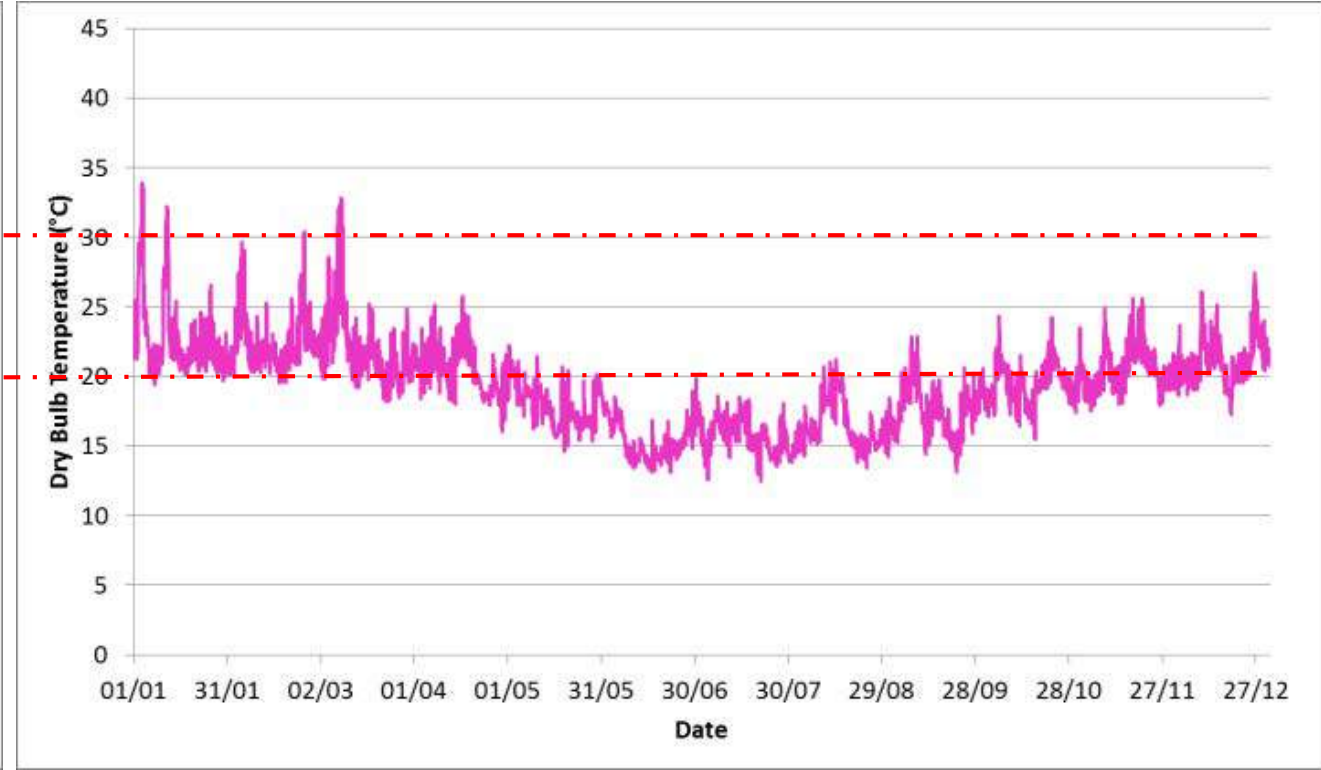
Passive House

Max DB temperature = 30.8°C
Min DB temperature = 19.4°C
Max Mean Radiant temperature = 30.5°C

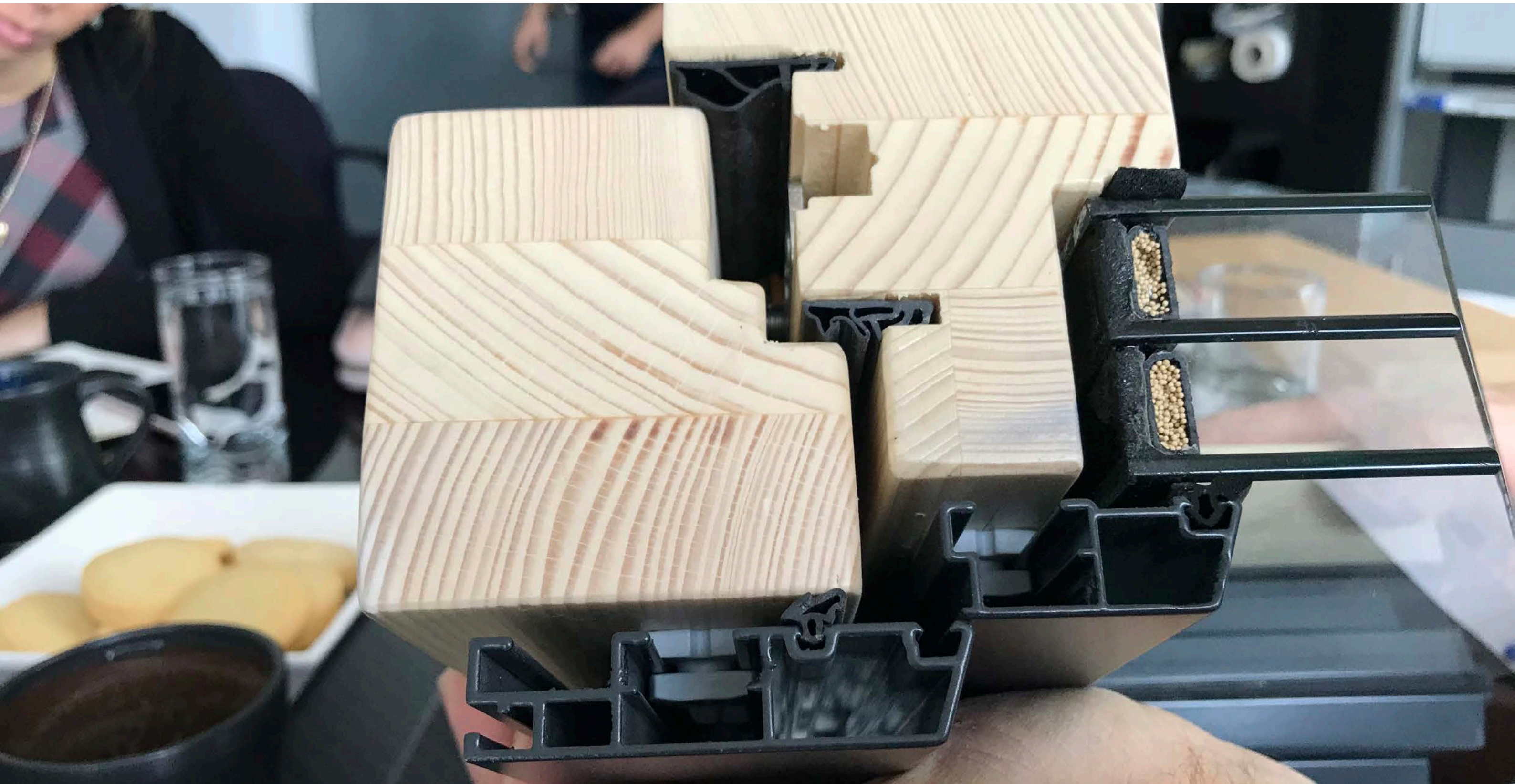


BAU

Max DB temperature = 33.9°C
Min DB temperature = 12.5°C
Max Mean Radiant temperature = 33.5°C



Construction - Working with a immature market



Under Construction - Doing things differently



Under Construction - June 19th 2018 First CLT Panel



Under Construction - CLT



Under Construction - Scaffolding facades



Under Construction - CLT



CLT - Taping the joints



CLT - Taping the joints (everywhere apparently)



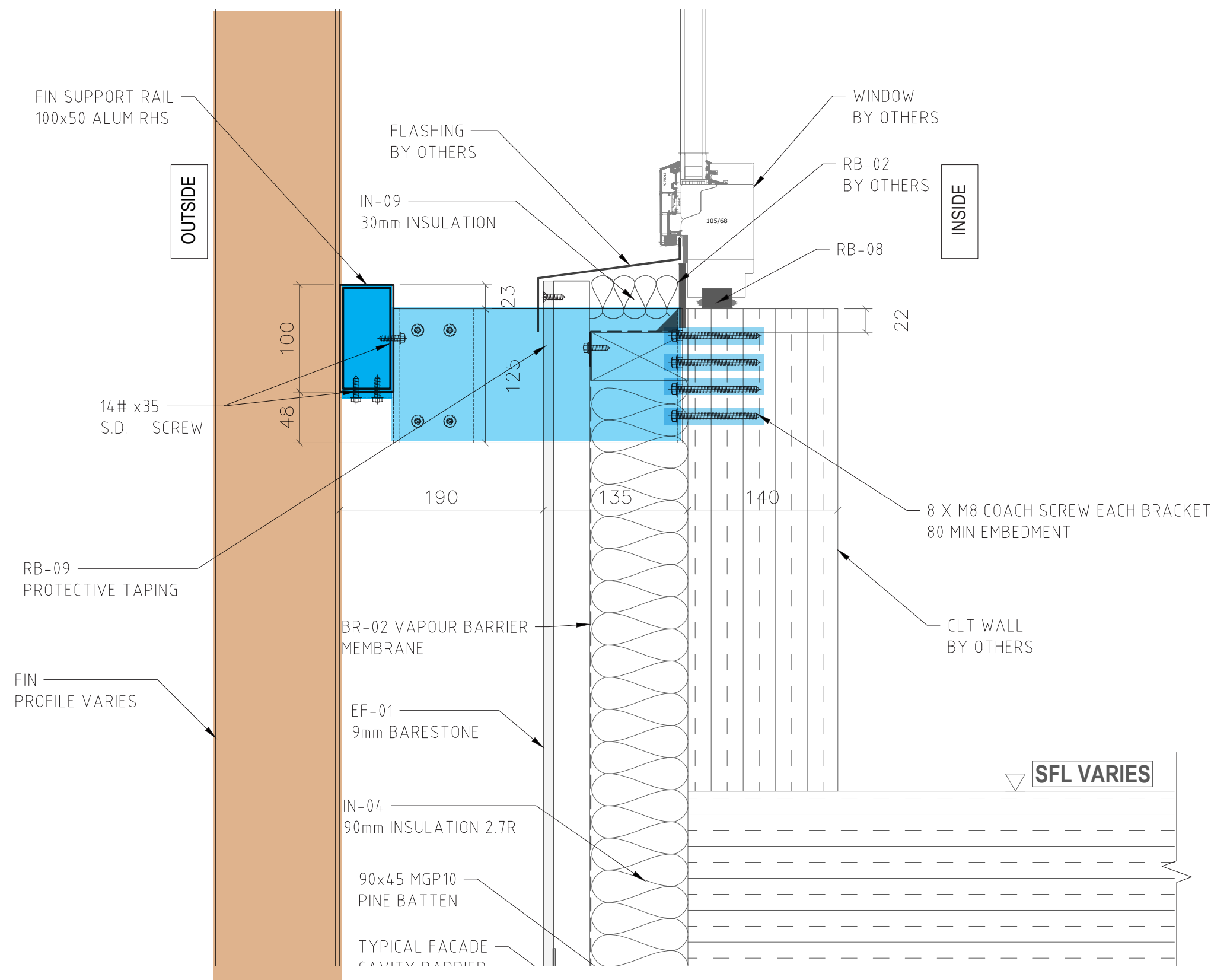
CLT - Window Openings



CLT - Facade Buildup



CLT - Thermal Bridge & Condensation Concerns



3. EXPANSION & CONTRACTION:
±3 mm @ EVERY 1000 IN LENGTH & HEIGHT

ABBREVIATIONS:

1. C.O.S. - CHECK ON SITE
2. T.B.C. - TO BE CONFIRMED
3. AL - ALUMINIUM PANEL

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE FOLLOWING ARCHITECTURAL SCHEDULES AND SPECIFICATIONS:

CLADDING TYPE - A
MATERIALS TYPE - A
EXTERIOR FINISHES SCHED. - A

FOR INTERNAL USE ONLY

☐ CHECKED AS PER ARCHITECTURAL DWGS
☐ CHECKED AS PER STRUCTURAL DWGS
☐ REVISED AS PER DESIGN MEETING HELD
☐ REVISED AS PER ARCHITECTURAL DWGS

CHECKED BY ☐
APPROVED BY ☐

THIRD ANGLE PROJECTION
AS1100.101

DO NOT SCALE THIS DRAWING

Rev No	Description	Date
00	ISSUED FOR CONSTRUCTION	10/10/2018
B	REVISED AND REISSUED FOR APPROVAL	21/09/2018
A	ISSUED FOR APPROVAL	31/08/2018

Project Name
MONASH PRP BUILDING 658

FACADEX
www.facadex.com
E: sales@facadex.com
P: 03 9078 5188
F: 03 8743 4786
A: PO Box 3091
Moorabbin East 3189

Final Cladding



Final Cladding



Final Cladding



The Blower Test



LESSONS LEARNT

Collaboration is key



LESSONS LEARNT

More time for design and procurement



LESSONS LEARNT

Own the Cost Premium



LESSONS LEARNT

Engage with Industry



LESSONS LEARNT

Test Concepts and Model early



LESSONS LEARNT

Understand the market is still immature



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