

SNRG DEMONSTRATOR DESIGN REVIEW

JUNE 2020



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INTRODUCTION

The duplex is designed as a terraced building within the full courtyard. Therefore as a standalone building for the COP26 exhibit and other destinations, it will need to be adapted. The duplex is also design to be at first floor level whilst at the exhibition it will be set on the ground. Therefore the lower level floor design will be detailed and insulated accordingly.



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DUPLEX (2-BED APARTMENT - 76M² GIA)

SNRG have focused on design quality to achieve a simple aesthetic, as a blank canvas for residents to express their personality.

Best use of space is ensured with 2.5m high ceilings and open plan layout on the lower floor, sharing daylight from large windows (clear window areas in excess of 20% of wall area) and stairwell roof lights. Finishes emphasise simplicity with exposed CLT.

A central service 'pod' comprises; kitchen, shower room, staircase, storage, lighting, heating, ventilation and cooling.

Bedrooms have equal provision, with full height windows onto the day-lit stairwell and deep window bench for relaxed views of the community's shared garden.

Mediating between apartment and access deck is a terrace, bounded by a light well and a timber planter.



SNRG Demonstrator Build Solution

Proposed construction and materials

SNRG LAYERS:
Skin
Structure
Stuff
Services
Space Plan

Roof Construction - Int to Ext:

- 12.5mm Fermacell
- 45x45mm battens at 400mm c/c
- 12mm OSB, taped
- 245 x 45 joists at 400mm
- 245mm Warmcel at 60kg/m3
- 60mm woodfibre
- Breather paper
- 45x45mm counterbattens
- 18mm OSB
- single ply roofing membrane eg Alwitra
- R60

External Walls - Int to Ext

- 100mm CLT
- 300mm solid woodfibre insulation
- Breather paper
- 75x45mm vertical battens
- Timber cladding panels infilled with:
- 150x22mm with 8mm gaps between
- R60

Pergola:

- 220 x 220 structure
- eq Doug Fir or Larch

Suggested

- 220 x 45 structure
- Decking surface

Acoustics:

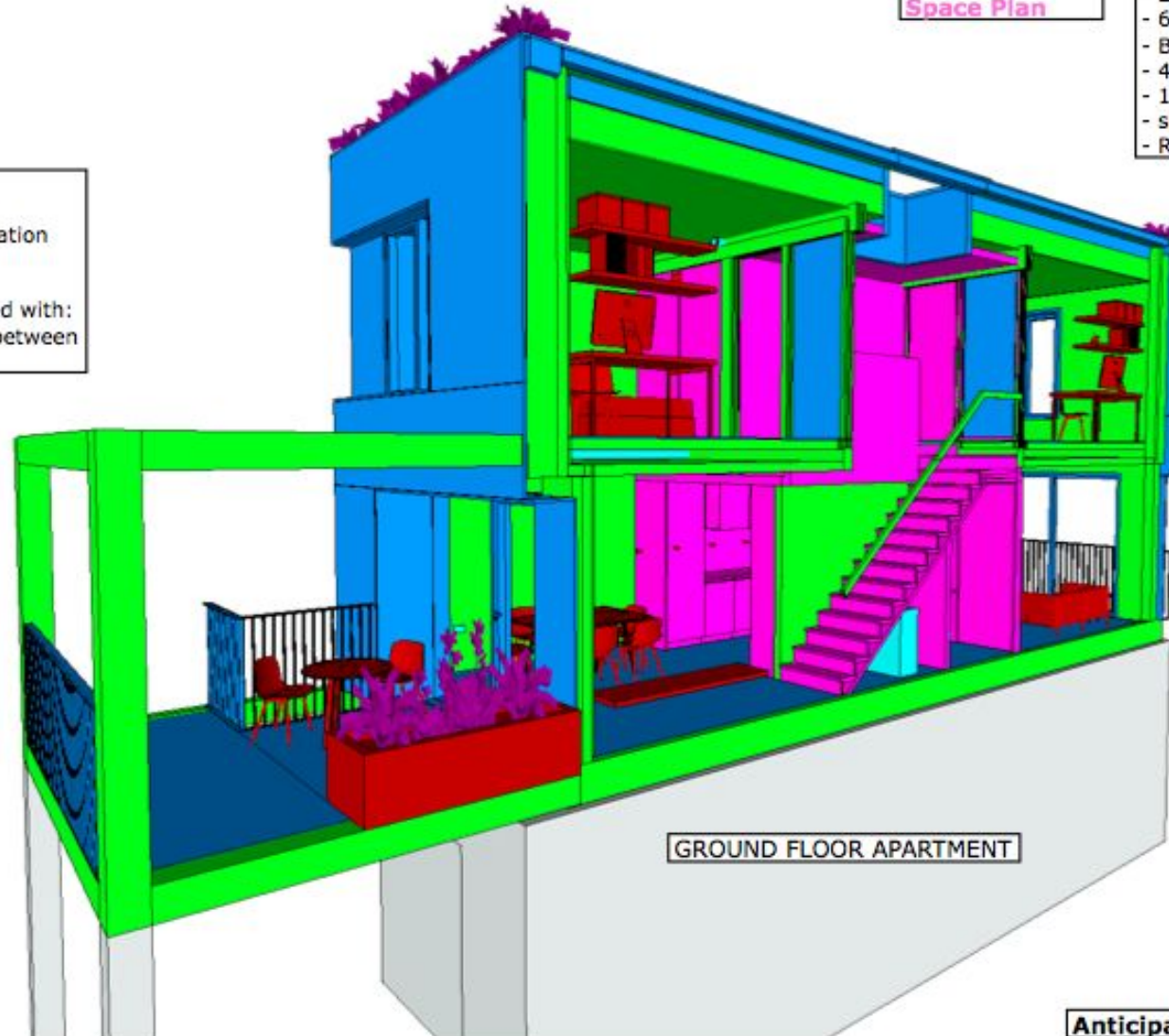
- Int Floor** - xx db
- Int Walls** - xx db
- Party Walls** - xx db
- Party Floor** - xx db

U-Values:

- Floor** - 0.13 W/m2k
- Walls** - 0.11 W/m2k
- Roof** - 0.12 W/m2k

Fire Rating:

- Ext Walls** - R60
- Party Floor** - R60
- Party Wall** - R60
- Int floor** - R30



Windows & Doors

- Accoya Frames
- Triple glazed
- U-Value of 0.8

Suggested FF Floor

- eg. 140mm CLT or NLT
- R30

Suggested GF Ceiling

- eg. 100mm CLT or NLT
- R30

Party Floor

- eg. 140mm CLT or NLT

Party Ceiling Ceiling

- eg. 100mm CLT

Floor Construction - GF Module

- Internal to External:
- 18mm T&G OSB
- 245 x 45 C16 at 400mm c/c
- void filled with Warmcel
- 60mm woodfibre board
- breather paper
- 25mm counterbattens

Anticipated max airtightness - 0.6ACH

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AERIAL VIEWS



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REAR VIEW

Glazed balustrade integrated into sliding door system.



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INNER FACADE

- Balustrade
- Alignment of opening window and door
- Pergola structure



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EXHIBITION OVERVIEW LEFT

As a stand-alone building, the duplex will have insulation and cladding on 4 elevations rather than 2 short elevations. The floor will also need to be insulated. The long elevations can be used at the COP26 event for marketing opportunities, with projection on at least 1 side.

- Pergola
- Entrance
- Front and Rear Cladding
- Side Cladding



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ENTRANCE

- Planter (low level lighting)
- Entrance glazing and door
- External lighting
- Front cladding
- Air inlet



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ENTRANCE INSIDE

- Entrance glazing and door
- Ceiling
- Floor
- Recessed floor up-lighting
- Ceiling formed from homegrown 'Nail Laminated Timber' Panels - a rebated detail formed with every other 'lamella' rebated.
- Internal wall surfaces of the external structural walls to be visual grade spruce homegrown Cross Laminated Timber panels
- Flooring to be homegrown Ash



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LIVING ROOM

- Service block
 - Kitchen
 - Under-stair WC
 - Full-height mirrors
 - Dropped ceiling
- Lighting



SNRG DEMONSTRATOR

JUNE 2020

LIVING ROOM

- Service block
 - Kitchen
 - Under-stair WC
 - Full-height mirrors
 - Dropped ceiling
- Lighting



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ENTRANCE TO STAIRCASE

- Service block
 - Kitchen
 - Storage wall
 - Full-height mirrors
 - Dropped ceiling
 - Lighting
- Staircase
 - Handrail
- Electro-chromatic glass windows



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SITTING TO DINNER



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STAIRCASE

- Handrail (integrated LED lighting)
- Winder treads at top
- Balustrade
- Electro-chromatic glass windows
- Skylight
- Lighting



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STAIRCASE

- Handrail (integrated LED lighting)
- Winder treads at top
- Balustrade
- Electro-chromatic glass windows
- Skylight
- Lighting



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LANDING

- Staircase
 - Handrail (integrated LED lighting)
 - Winder treads
 - Balustrade
 - Electro-chromatic glass windows
- Skylight
- Lighting
- Doors (flush liner shadow-gap, high contrast colour)



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BEDROOM

- Service Block
 - 4 panel array (white, mirror, black, electro-chromatic glass)
 - Electro-chromatic glass windows
- Power sockets



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BEDROOM

- Window
 - Projecting bench cil
 - Opening light
 - Recessed fixed light
- Recessed floor up-lighting
- Power sockets



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SHOWER ROOM

- Skylight
- Shower and screen
- Tiling
- Ceiling
- Lighting



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SHOWER ROOM

- Shower and screen
- Tiling
- Ceiling
- Lighting
- Service low wall
- Sanitary ware
- mirror



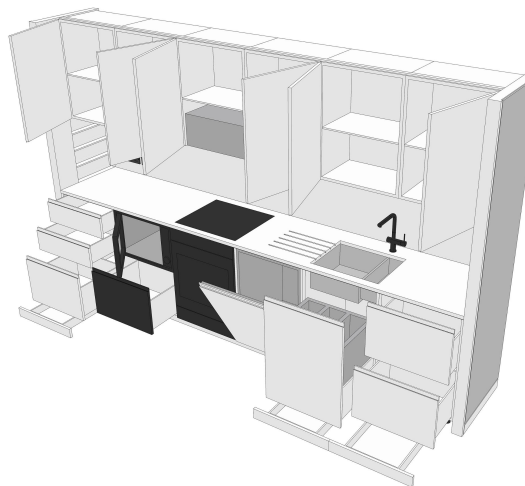
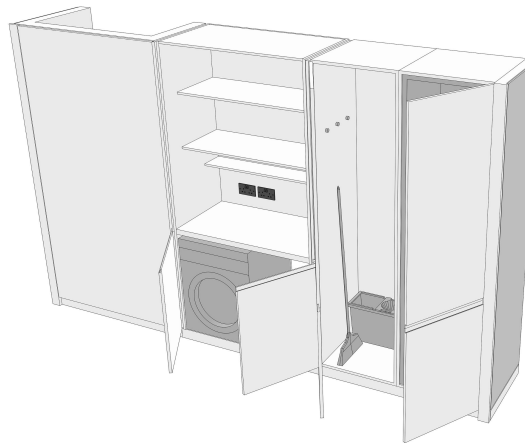
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KITCHEN

- Structure & Flank walls
- Accommodation
- Appliances
- Instant hot water tap
- Doors (top recess handles)
- Interiors
- Lighting
- Extraction
- Skirting storage
- Full height fridge freezer
- Cleaning cupboard with coat storage
- Butler's pantry with washing machine and access to under stair

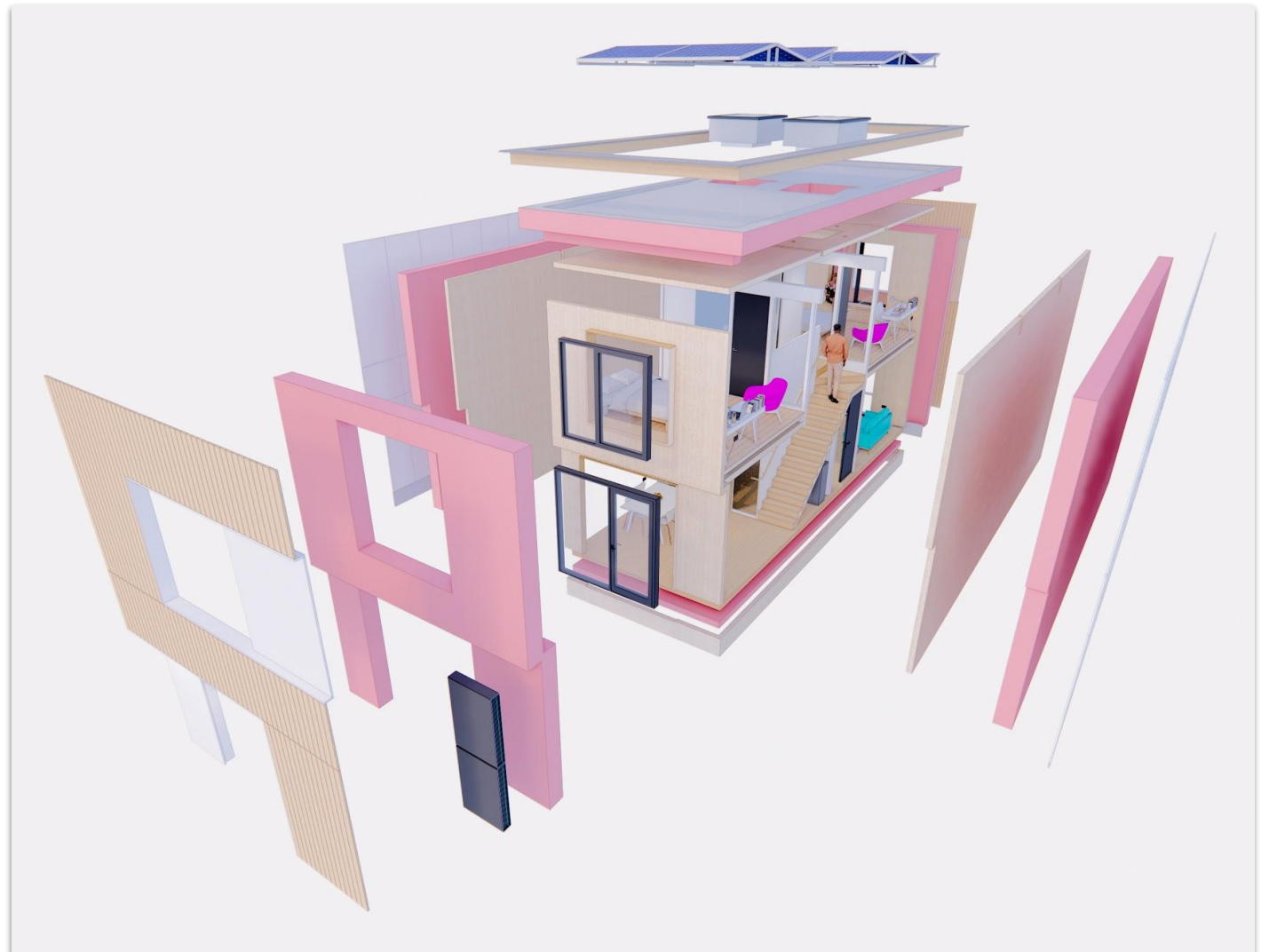


SNRG DEMONSTRATOR

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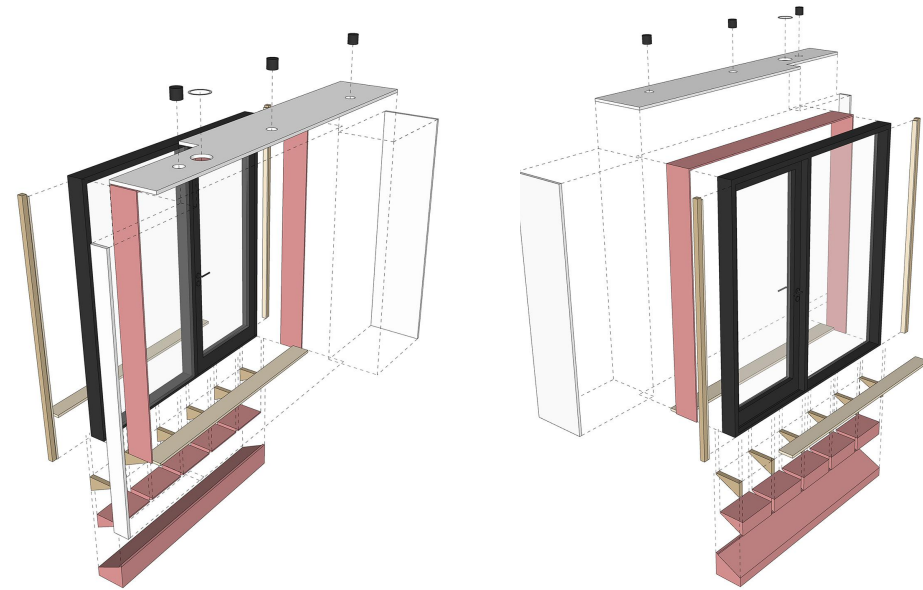
WINDOWS AND DOORS

- Front Door
- Rear Door
- Front Window
- Rear Window



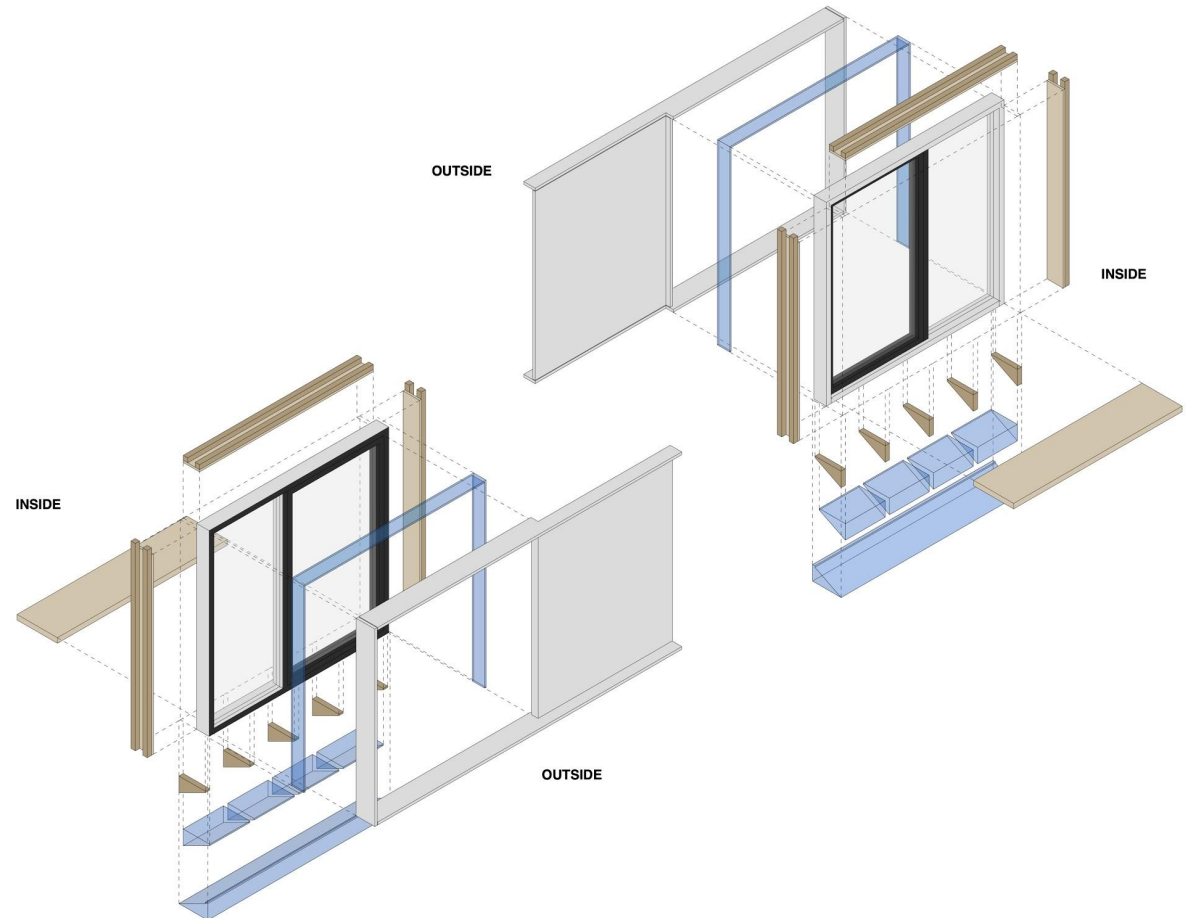
SNRG DEMONSTRATOR

JUNE 2020



WINDOWS AND DOORS

- Front Door
- Rear Door
- Front Window
- Rear Window



5.2 GENERAL DESIGN

APPROACH TO LIGHTING

The light as less about decorative fittings and more a clear expression of function, atmospheric / architectural.

External lighting

- 3 recessed spotlights are set into the entrance soffit / canopy. One of these specifically lights the entrance and another lights the white spandrel panel.
- The pergola structure outside the unit could have subtle integrated lighting, or support for lighting.
- Recessed linear LED lighting at the base of small timber planter, for unobtrusive evening light.

Internal Lighting

- Linear LED lighting is integrated into the internal corners of the kitchen service ceiling and rear of upper cabinets for task light [**Lumen Line or LED Flex**]
- Linear LED light-box fittings [**LED Flex Pro Profile Surface 1109**] are applied in blocks within the recess of the NLT ceiling lamellas, to suggest the block light of a skylight.
- Recessed downlights are used in the service block ceilings.
- Recessed downlight only in dropped service ceiling zone. The outer habitable rooms are full height to structure.
- Low glare recessed in-ground up-lights frame the spaces in corners of habitable rooms [**LightGraphix LD56**]
- Staircase - Linear LED lighting recessed into underside of timber handrail.

Shower room and under stair WC

- Recessed edge lighting [**Lumen Line or LED Flex**]
- Recessed downlights - IP54 rated [**Lucent ProSpex Edge60 Accent**]

PRO PROFILE SURFACE 1109

SPECIFICATION SHEET



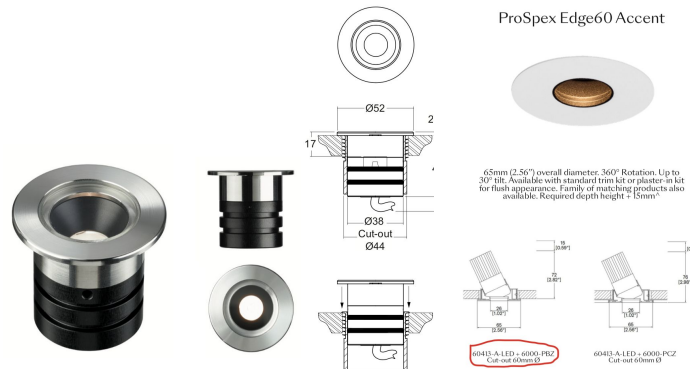
PRODUCT SPECIFICATION

| | |
|------------------|--------------------------|
| Product name | Pro Profile Surface 1109 |
| Profile material | Al 6063-T5 |
| Dimensions | 19.7*20mm |
| Length | 2M |
| Max flex width | 16mm |

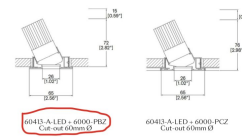


PERFORMANCE OPTIONS

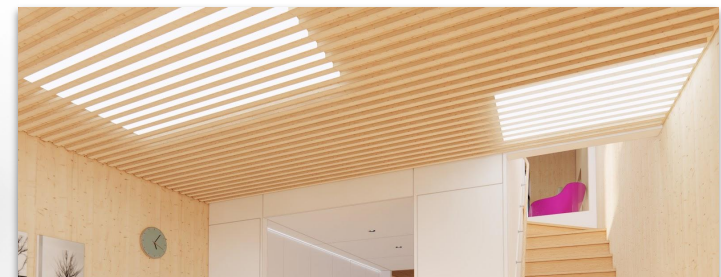
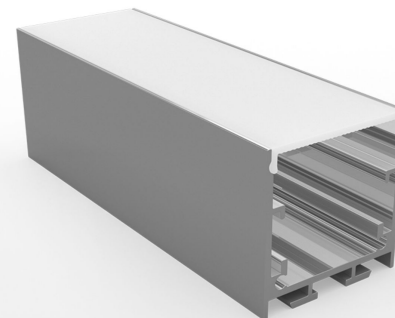
| | |
|-----------------|----------|
| PMMA OPAL MATTE | 022-1102 |
| PMMA SEMI-CLEAR | 022-1103 |
| PMMA CLEAR | 022-1104 |
| END CAPS | 021-1111 |



65mm (2.56") overall diameter, 360° Rotation. Up to 307° tilt. Available with standard trim kit or plaster-in kit for flush appearance. Family of matching products also available. Required depth height = 15mm!



PRO PROFILE SURFACE 1809R





SNRG DRAFT SECTION DETAILS

SEC AA

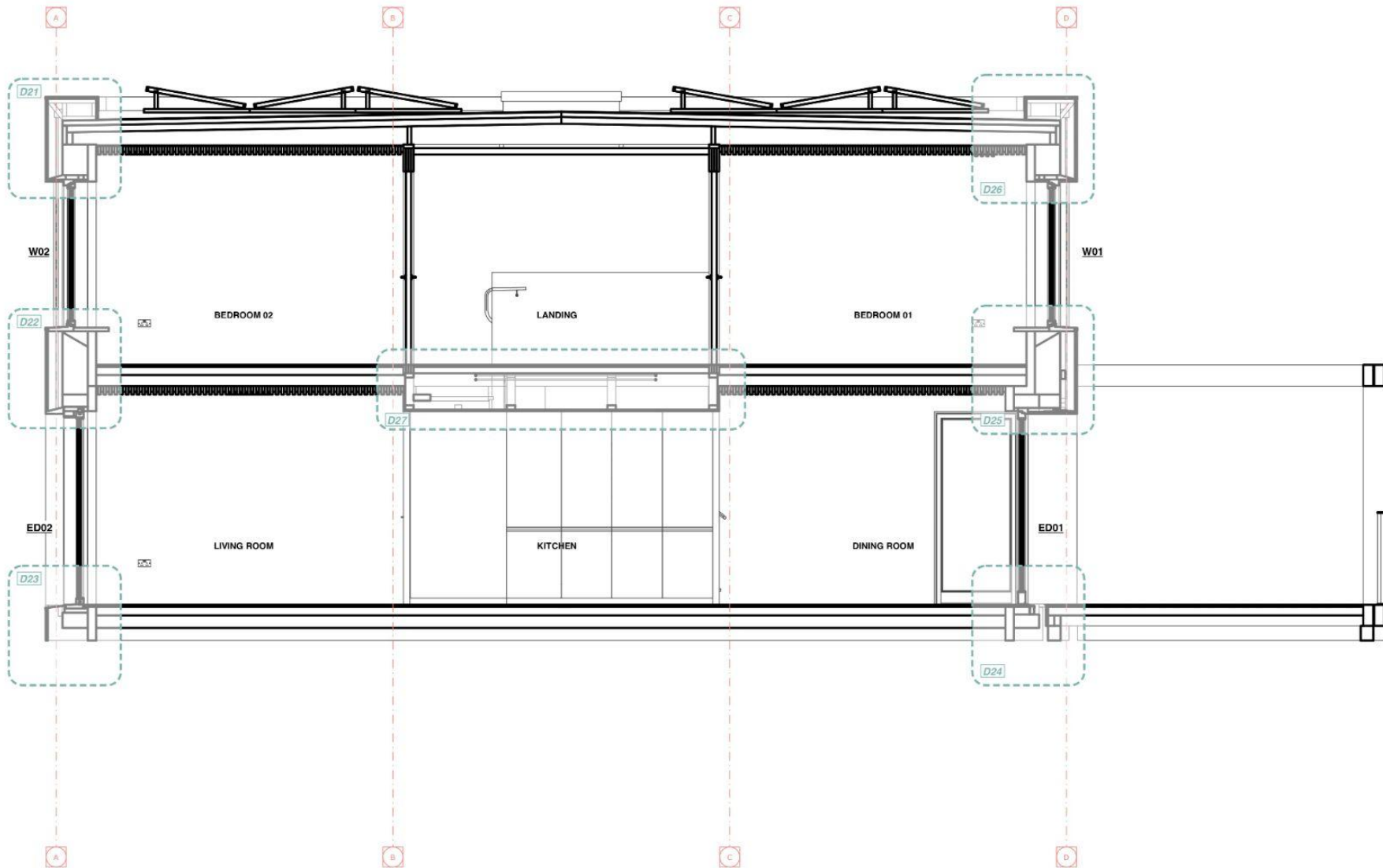


NOTES

REVISIONS

NOTES:
Do not scale from drawings.
Check to see dimensions corresponding to the A3 collect.
To be used in conjunction with relevant job-specific drawings and information.
All existing info, sizes and building information has been checked from various sources.
All dimensions to be checked on site.

| | | | |
|----------------|----------------------------|-------------------|-------------|
| Title | SECTION AA | Drawing No. / Rev | L[02]01 / A |
| Client | — | | |
| Date | NOV 2020 | | |
| Issue | STAGE 04 | | |
| Drawn By | JM | Checked By | RS |
| Scale / Format | 1:25 / A1 - or - 1:50 / A3 | | |
| Project Name | SNRG DEMO | | |



SEC AA

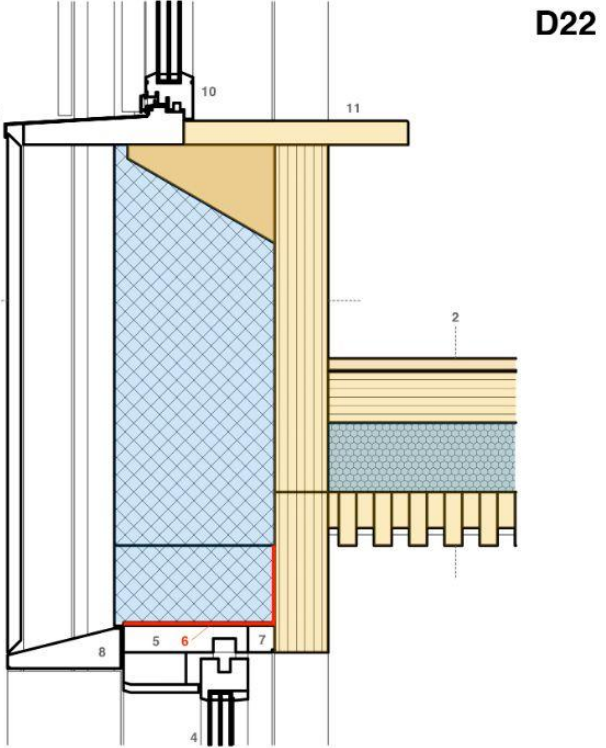
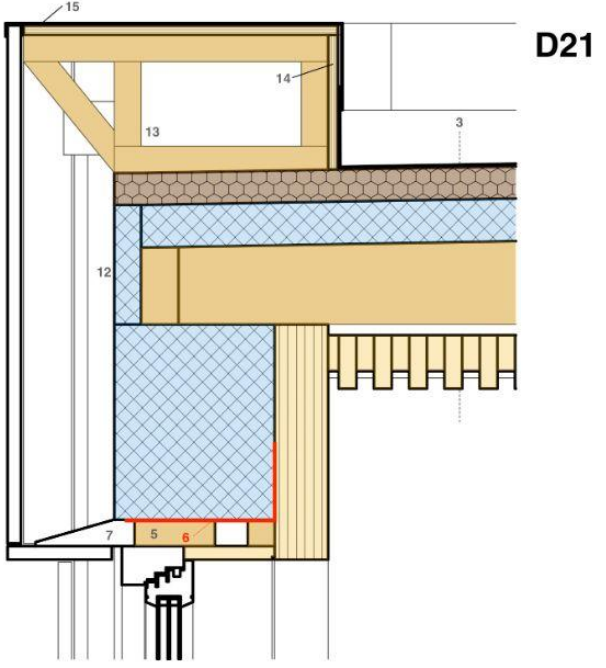


NOTES

REVISIONS

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| | | | |
|----------------|---------------------------|-------------------|-------------|
| Title | SEC-AA DET | Drawing No. / Rev | D(02)01 / A |
| Client | --- | | |
| Date | NOV 2020 | | |
| Issue | STAGE 04 | | |
| Drawn By | JJM | Checked By | RS |
| Scale / Format | 1:5 / A1 - or - 1:10 / A3 | | |
| Project Name | SNRG DEMO | | |



- 1 Ext Wall 01 Outside to Inside - 18mm THK Trioxypol alk screen cladding panel. Finish: Spray with external grade paint - colour white > Select fix onto 20mm timber cross-batten support in ventilated cavity. Fixed back to CLT with Russwood FassalerClip > Tyvek Home-wrap or similar vapour permeable membrane. Taped Joints to manufacturer's install details > 300mm THK wood fibre insulation > CLT 100mm THK volume structure.
- 2 Int Floor Built Up: 1F Floor to GF Ceiling - 12mm THK Russwood Larch sanded boards. Finish on side: OSBMD Plyerl Tiers Weiss 3043 > Last onto Vitrakone Fibre 22 underlay pinned to CLT structural floor 100mm THK > MODULE SEPARATION > 120mm void for services infill with Parocflex acoustic insulation > 100mm THK NLT ceiling (refer to NLT Ceiling Detail).
- 3 Roof Built Up Outside to Inside - TPO Membrane adhered to solid cork board insulation. Taped and sealed to manufacturer's guidelines and lapped up 150mm min capping to form sealed edge > 40mm THK solid cork board insulation > 80mm THK Wood fibre insulation > Soprema Hydro Membrane lapped over joints > 150mm x 240mm high joints solid timber joints set to false (refer to Roof Joint Cladding List) > 200mm air gap > 150mm THK NLT ceiling (refer to NLT Ceiling Detail).
- 4 ED02 Sliding opening triple glazed door and fixed pane. Refer to Door Schedule and assoc. FINECRAFT Details.
- 5 Timber sub-frame fixed up to steel angle bracket to SE Spec.
- 6 Steel angle bracket to SE Spec.
- 7 Timber fascia to form inside of window reveal - shadow gap 5mm to CLT edge.
- 8 Timber chamfer piece fixed back to window sub-frame.
- 9 Aluminium faced sill to extend and form drip. PPO to RAL 9010 Pure White.
- 10 W01 W02 Inward opening triple glazed casement window and fixed pane. Refer to Window Schedule and assoc. FINECRAFT Details.
- 11 Timber window seat fixed down to CLT structural wall.
- 12 25mm THK wood fibre insulation surround.
- 13 Timber formed upstand fixed through cork board to joists. Refer to Roof Plan for setting out.
- 14 18mm THK structural plywood forming upstand.
- 15 Aluminium capping lapped to form drip and forming inside face of roof. PPO to RAL 9011 Graphite Black.

NOTES

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Title Drawing No. / Rev
SEC-AA DET D(02)02 / A

Client

Date
NOV 2020

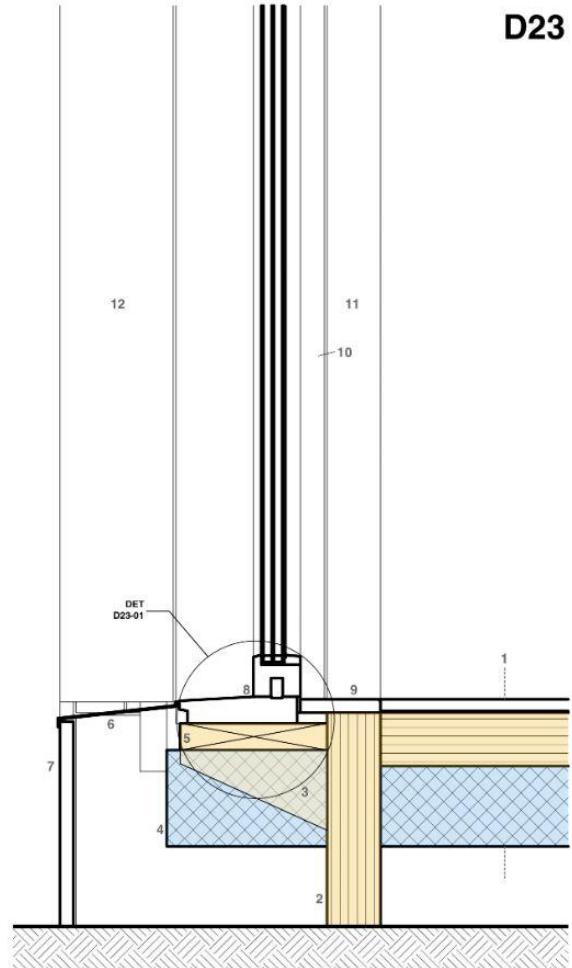
Issue
STAGE 04

Drawn By
JHM Checked By
RS

Scale / Format
1:5 / A1 - or - 1:10 / A3

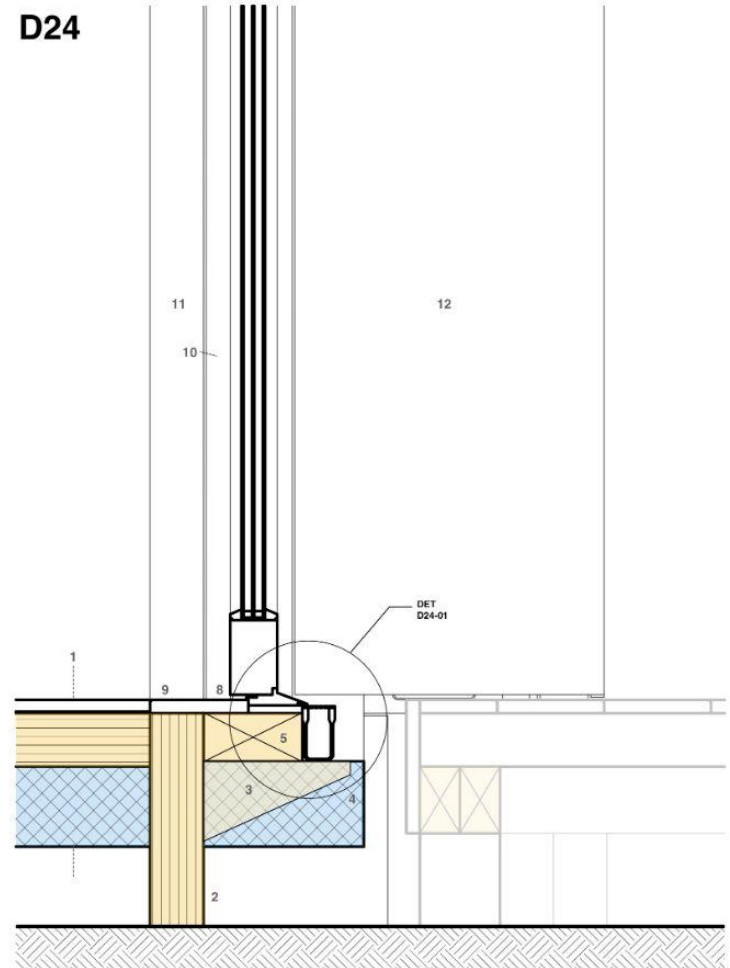
Project Name Project ID
SNRG DEMO

D23



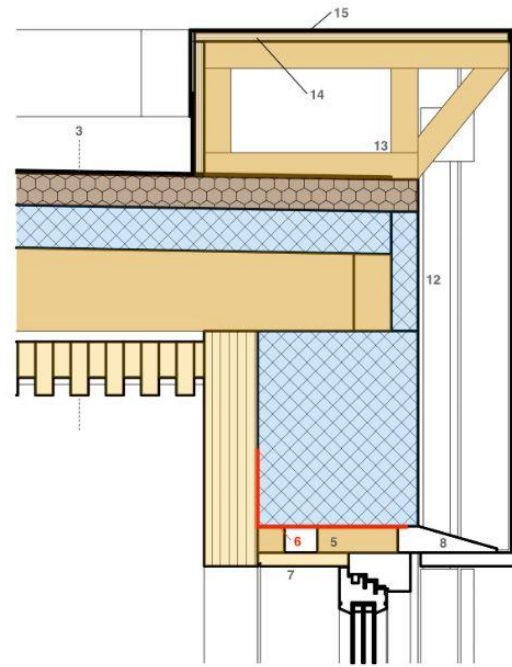
- 1 Inf Floor Build Up GF to Earth - 18mm THK Fluewood Larch sanded boards. Finish on site: OSMO Polyx® Tints White 3040 > Laid onto Vapourone Floor ZL underlay pinned to CLT structural floor 100mm THK > 150mm Isoler insulation by Suprema > ADP membrane to lower surface of insulation > 150mm min vented scum > Earth (Levelled).
- 2 100mm THK CLT timber structural frame forming foundation. Footing foundation detail TBC.
- 3 Timber angle brackets to SE spec fast back to CLT structure.
- 4 Tyvek Homewrap or similar vapour permeable membrane. Taped joints to manufacturer's install details. Adhered to outside of 300mm THK wood fibre insulation.
- 5 Timber fixed down to angle brackets.
- 6 Aluminium sill extension to Treocraft Details to extend and form drip. PPC to RAL 9010 Pure White.
- 7 18mm THK Trecoya panel forming weatherboard to base. Finish: Painted to RAL 9007 Grey Aluminium membrane to lower surface of insulation > 150mm min vented scum > Earth (Levelled).
- 8 EDCODE1 Triple Glazed External Door. Refer to Door Schedule and assoc. TREECRAFT Details.
- 9 20mm THK solid timber floor strip forming internal threshold. Finish on-site: OSMO Polyx® Tints White 3040.
- 10 Timber fascia to form inside of window reveal - shadow gap 5mm to CLT edge.
- 11 CLT structural wall behind.
- 12 18mm THK Trecoya rain screen cladding panel. Finish: Spray with external grade paint - colour white shown behind forming reveal.

D24

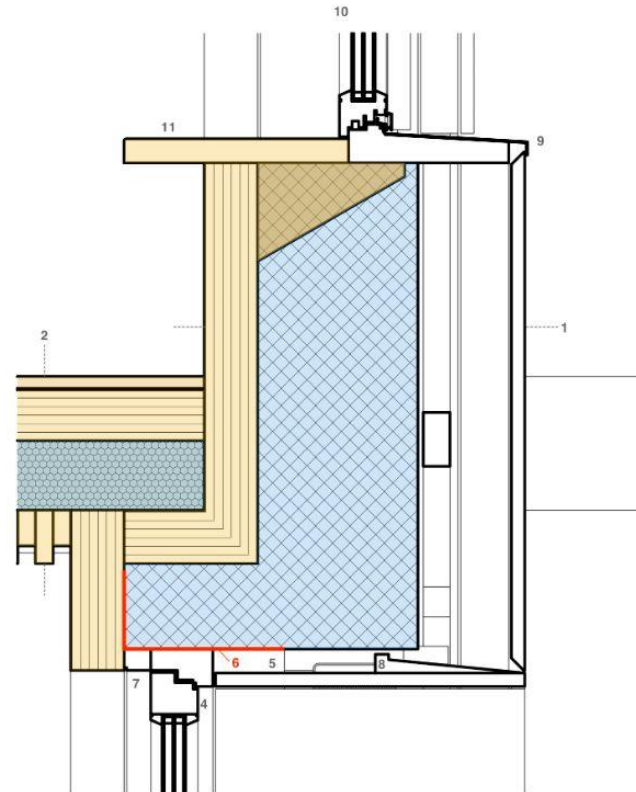


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D26



D25



- 1 Ext Wall 01 Outside to Inside - 18mm TRK Trisoys rain screen cladding panel. Finish: Spray with exterior grade paint - colour: white - Secret fix onto 40mm timber cross-section support in workited cavity. Fixed back to CLT with Russwood FassadenClip > Trysk Homewrap or similar vapour permeable membrane. Tapot joints to manufacturer's install details > 300mm THK wood fibre insulation > CLT 100mm THK volume structure.
- 2 Int Floor Build Up: 1F Floor to GF Ceiling - 12mm TRK Russwood Larch sanded boards. Finish on site: OSB/O Plyoff Ties White 3040 > Laid onto Velophane Fibre 22 underlayment pinned to CLT structural floor 100mm THK > MIDDLE SEPARATION > 150mm void for services infilled with Paraflex acoustic insulation > 100mm TRK NLT ceiling (refer to NLT Ceiling Detail).
- 3 Roof Build Up Outside to Inside - TPO Membrane adhered to solid cork board insulation. Taped and sealed to manufacturer's guidelines and lapped up 150mm min capping to form sealed edge > 40mm TRK solid cork board insulation > 80mm TRK Wood fibre insulation > Supraply Hydro Membrane lapped over joists > 150mm - 240mm high joists solid timber joists out to baffle (refer to Roof Joint Cladding List) > 20mm air gap > 100mm TRK NLT ceiling (refer to NLT Ceiling Detail).
- 4 ED01 Hinged opening triple glazed door and fixed pane. Refer to Door Schedule and assoc. TREECRAFT Details.
- 5 Timber sub-frame fixed up to steel angle bracket to SE Spec.
- 6 Steel angle bracket to SE Spec.
- 7 Timber fascia to form inside of window reveal - shadow gap 5mm to CLT edge.
- 8 Timber Chamber piece fixed to Fascia Panel.
- 9 Aluminium faced sill to extend and form drip. RPO to RAL 9010 Pure White.
- 10 WS1 M32 inward opening triple glazed casement window and fixed pane. Refer to Window Schedule and assoc. TREECRAFT Details.
- 11 Timber window seat fixed down to CLT structural wall.
- 12 25mm THK wood fibre insulation surround.
- 13 Timber formed upstand fixed through cork board to joists. Refer to Roof Plan for setting out.
- 14 18mm THK structural plywood forming upstand.
- 15 Aluminium cladding lapped to form drip and forming inside face of roof. RPO to RAL 9011 Graphite Black.

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REVISIONS

| NO. | DATE | DESCRIPTION |
|-----|------|-------------|
| | | |
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| | | | |
|----------------|--|---------------------------|--|
| Title | | Drawing No. / Rev | |
| SEC-AA DET | | D(02)03 / A | |
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| SNRG DEMO | | | |



SNRG DEMONSTRATOR: UK's FIRST HOMEGROWN MASS TIMBER STRUCTURE

Homegrown Mass Timber Demonstrator



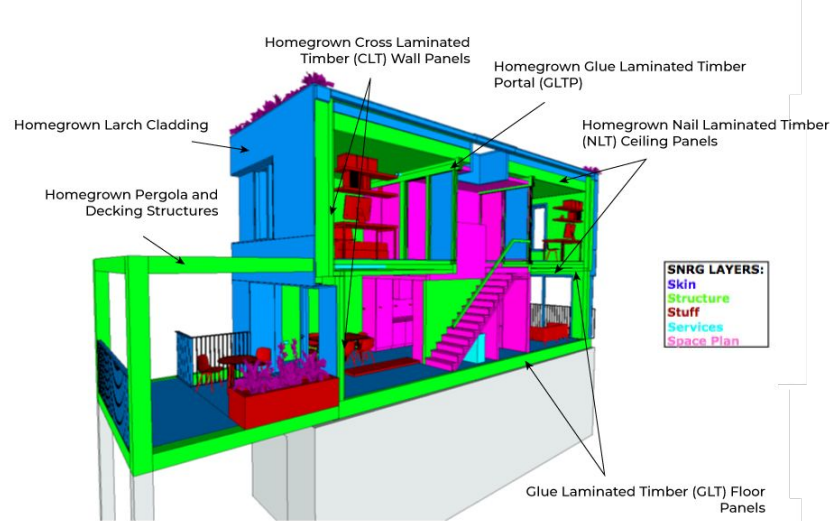
12m x 3m x 100mm CLT Wall Panels



NLT Ceiling Panels
(using beech nails)

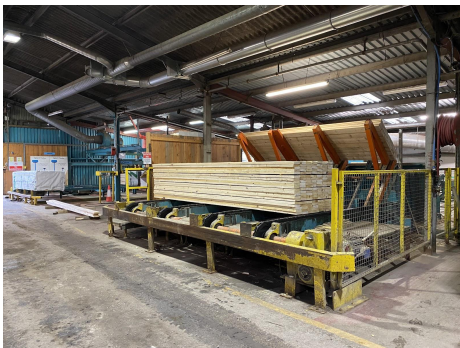


Completed GF Module as a venue for final Innovate UK project sign off meeting



125mm GLT Floor Panels

LAMELLA PREP



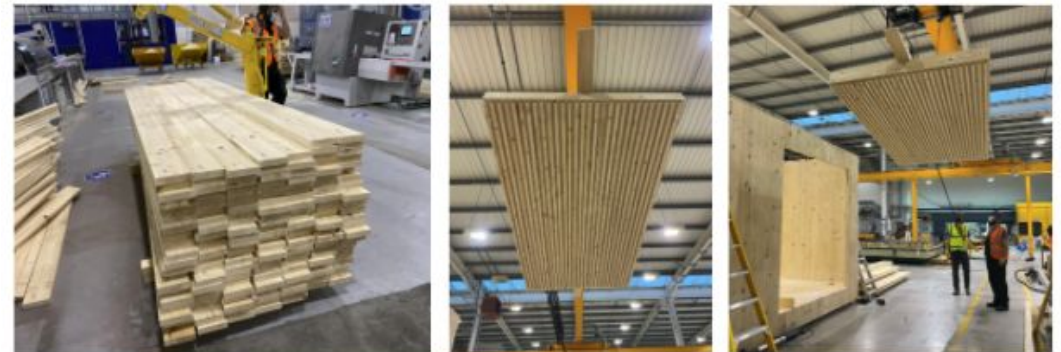
CLT MANUFACTURE



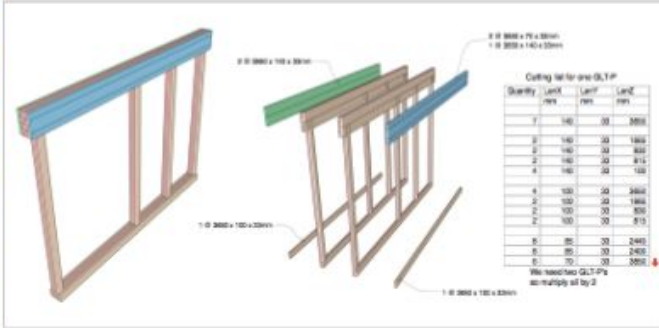
GLT MANUFACTURE



NLT MANUFACTURE



GLTP MANUFACTURE



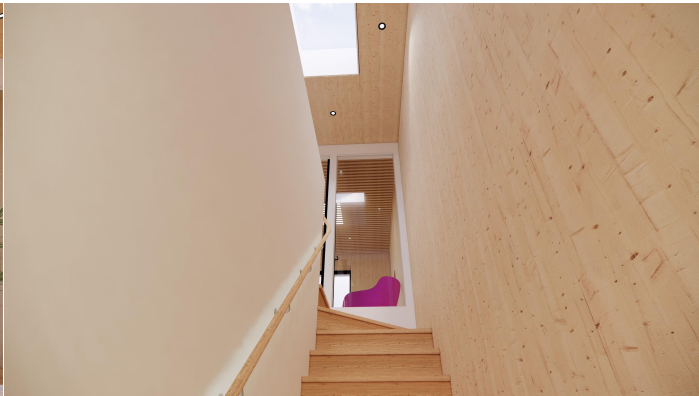
MODULE ASSEMBLY







SNRG DEMONSTRATOR IMAGES





































THANK YOU

