# Sirocco Quays

## Multi - Generational Residential Scheme

By picking a contemporary grey palette of contextual materials, the hybrid steel and CLT building seamlessly places itself onto the site whilst signifying the advancement of Belfast City.

Following extensive massing, the design has been considered to work alongside the future Sirocco Quays development with the variation in building heights, with the tower rising above all surrounding developments to signpost 'Sirocco Quays' from the Lagan.

## SUSTAINABILITY AIM

Proposed construction materials should be fully considered for external walls, windows, roofing, internal walls & flooring. These should be considered in the context of achieving an BREEAM 'Excellent' certification within the 'Material' category.

**01** Reduce reliance on the HVAC system through the use of a 'Smart Facade'.

**02** Integrate a passive production of energy from a renewable solar source, thereby reducing carbon emissions.

**03** Improve airtightness by giving careful consideration to modelling and specification.

**04** Integrate a rain water recycling system to reduce water demand.

### 01. SMART FACADE

Saint Gobian Sage Glass will be utilised & installed along the South facing facade. By dynamically changing tint in response to the sun, the system increases occupant comfort & privacy whilst maintaining a connection to the outdoors without the need for blinds or shades. This system also will negate against excessive solar gain in the summer

### 02. SOLAR PV PANELS

The upper roof level will house BAUDERSOLAR PV system, in which the solar PV module and substructure are combined to form a single unit which does not penetrate the waterproofing or CLT panel. This system will be utilised & installed along south facing roof areas.

Battery units are to be located within the main service core to facilitate the storage of excess power and the connection to the main electrical system.

### 03. AIRTIGHTNESS

Air tightness tape is to be used around all penetrations (windows, and external doors) as this will significantly reduce the amount of heat lost from the building for a low cost. This will have the resultant effect of improving the energy efficiency of the building by reducing the heat load.

### 04. RAINWATER COLLECTION

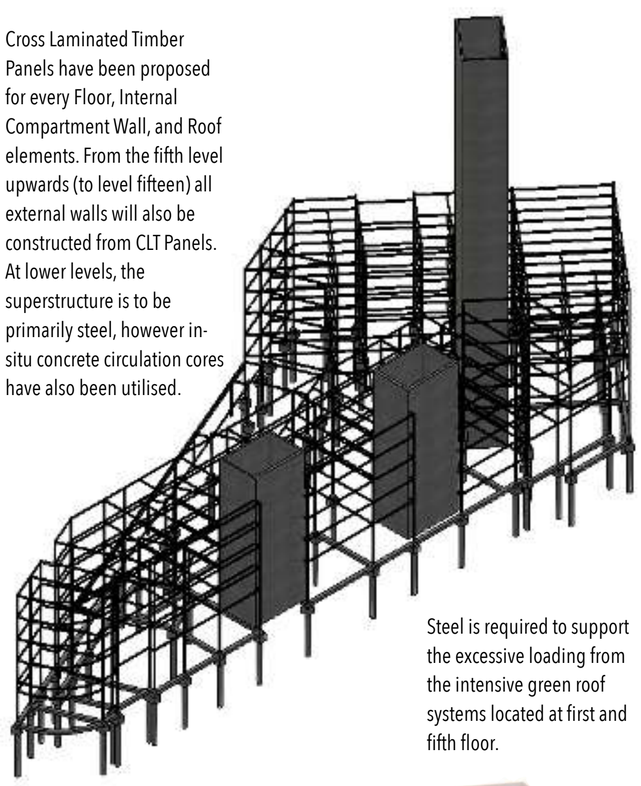
Each services core is located directly adjacent to a storage facility on each floor, thus allowing for the integration of an internal drainage system that will allow the collection of rainwater.

The fifteenth roof level will house appropriately sized attenuation tanks. The storage of rainwater within these tanks allows for this water to be recycled throughout the building, reducing the demand and achieving the sustainable aims.

The water can be used:
- WC Fixtures
- Drip Irrigation system for Green Roof

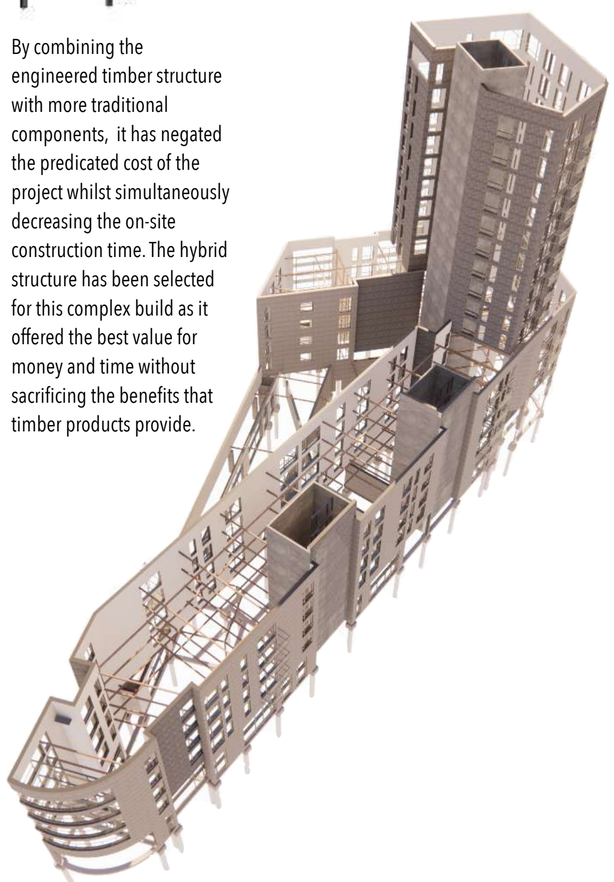
### SUPERSTRUCTURE CONSTRUCTION

Cross Laminated Timber Panels have been proposed for every Floor, Internal Compartment Wall, and Roof elements. From the fifth level upwards (to level fifteen) all external walls will also be constructed from CLT Panels. At lower levels, the superstructure is to be primarily steel, however in-situ concrete circulation cores have also been utilised.



Steel is required to support the excessive loading from the intensive green roof systems located at first and fifth floor.

By combining the engineered timber structure with more traditional components, it has negated the predicated cost of the project whilst simultaneously decreasing the on-site construction time. The hybrid structure has been selected for this complex build as it offered the best value for money and time without sacrificing the benefits that timber products provide.



### Proposed Heating & Hot Water System:

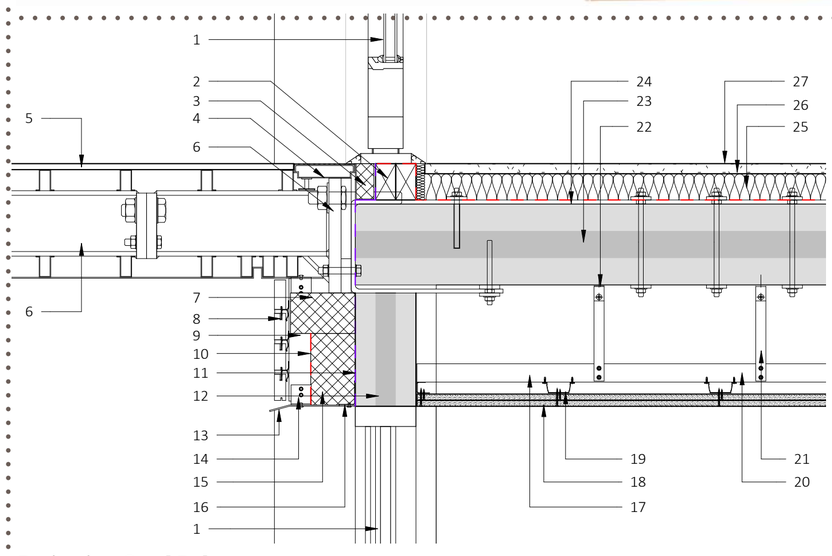
Numerous service cores rise throughout the entire building. Additional cores service the lower levels (Ground - Fourth) as these house more apartments. The tower apartment service core does connect to the lower service core for easy installation.

Dropped ceilings (at 2400mm above FFL) are present throughout the development - this will allow for each apartment to connect easily to the service core.

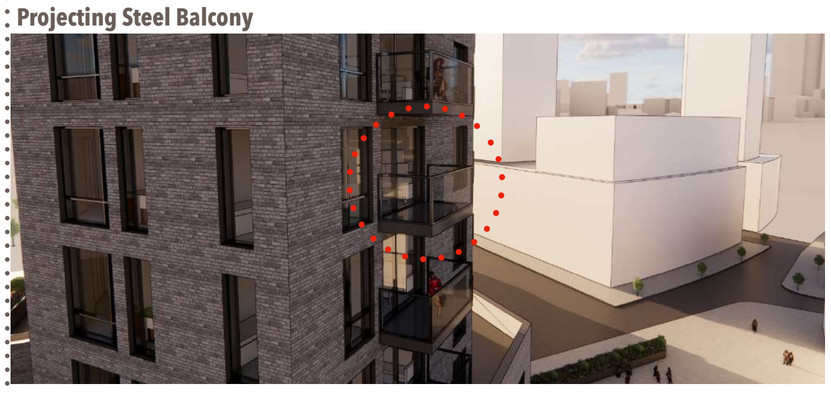
As for the heating system, the Daikin Altherma 3 Geo has been selected to provide economical heating and hot water to each individual apartment.

The system consists of numerous air source heat pumps on the roof, a network of in- apartment water-to-water heat pumps with integrated DHW cylinders, connected to a common central water loop to form a linked communal system.

The system utilises lower water temperatures, resulting in a reduction of more than 90% in heat losses compared to alternatives.




### Projecting Steel Balcony



**1|** APS AP200 THERM+ door system to be installed following manufactures instructions.

**2|** 2no. 50 x 100mm Timber Framing to span under door opening to provide adequate support. Timber to be suitably fixed to CLT Floor Panel. Where the top fix bracketry is to be attached to the CLT Floor Panel, timber to be site cut to fit.

**3|** 50x100mm KINGSPAN Kooltherm K5 rigid insulation board, positioned and fixed to the external face of timber framing. Pro Clima DA airtight weather resistant vapour check membrane to be lapped under insualtion.

**4|** ACO Profi line X to be installed at door threshold following manufactures installation instructions. Threshold drain to direct water to the solid aluminium soffit drip tray located at the front edge.

**5|** SAPPHIRE Glide-on Cassette balcony to be manufactured offsite and connected to integrated top fix bracketry. The Cassette combines the framless glass balustrade, galvansied steel framing, MYDEK Delta30 30mm aluminium decking boards and aluminium soffit (which have been manufactured to incorporate drip drainage channels).

**6|** SAPPHIRE Top Fix Bracketry and Protruding Galvanised Steel Arms.

**7|** Rainscreen Fast Fix Ventilated Cavity Barrier (FFCB) for horizontal application at each floor level. Cavity barrier to be mechanically fixedto the CLT substrate at maximum 500mm centres with non-combustible fixings. Contractor to ensure there are no gaps between the substrate and the barrier when attached as per manufacturers specifications.

**8|** MECHSLIP Brick Slip cladding system to support IBSTOCK Clay Brick Slips. Brick slips are to be mounted to the MECHSLIP cladding support system laid in a stretcher bond pattern. Brick colour to be confirmed by Client after reviewing samples of:
Darker Selection - Bradgate Medium Grey with Dark Grey Mortar
Lighter Selection - Moseley with Light Grey Mortar

**9|** MECHSLIP cladding rail and mullion system fixed back to CLT wall panel via specialist bracketry (as per manufacturers instructions). Minimum 38mm vented cavity must be maintained.

**10|** Protect TF200 breather membrane applied to external face of Kingspan insulation.

**11|** Pro Clima DA airtight weather resistant vapour check membrane applied to external side of CLT wall panel.

- Moisture vapour diffusion resistance factor (μ): 5000
- Temperature Resistance : -40 °C to 100 °C
- Thermal conductivity 0.17 W/mK
- Fire Rating Fire Class E

**12|** 150 x 2950mm CLT wall panel supplied by KHL. Panel to be secured to 200mm x 2950mm CLT floor panels (KHL) by specialist angle bracket (as per manufacturers & structural engineers specifications).

**13|** 2.5mm Aluminium Window Flashing PPC to RAL 7015. Fascia to be fixed with MECHSLIP cleat.

**14|** MECHSLIP Cleat to secure Aluminium Window Flashing to MECHSLIP Cladding Rail & Mullion System. Cleat is to be site cut.

**15|** 110mm KINGSPAN Kooltherm K5 rigid insulation board, positioned and fixed to the external face of CLT wall panel.

**16|** MECHSLIP Aluminium angle bracket to be fixed to CLT Wall Panel with Vapour Control Layer lapped underneath. Aluminium angle to be fixed to Aluminium Window Flashing as per manufactures recommendations.

**17|** 80mm Isover APR1200 Glasswool Acoustic Insulation within suspended ceiling void. A minimum 50mm service void to be maintained between the underside of CLT floor panel and Gyproc plasterboard.

- Thermal conductivity 0.043 W/mK
- Fire rating A1

**18|** 2no. layers 15mm Gyproc plasterboard fixed to Gypframe MF5 with suitable British Gypsum screws at 230mm centres in field of board and 150mm centres at board ends

**19|** Gypframe MF5 Ceiling Sections to be spaced at a maximum of 450mm centres. Each MF5 Section to be fixed to each MF7 Primary Support Channel with two suitable British Gypsum wafer head screws

**20|** Gypframe MF7 Primary Support Channels to be spaced at a maximum of 450mm centres.

**21|** Gypframe MF8 Strap Hanger fixed to MF7 Primary Support Channels with two suitable British Gypsum wafer head screws. MF8 Strap Hanger to be spaced at a maximum of 450mm centres.

**22|** Gypframe MF12 Soffit Cleat to be fixed to MF8 Strap Hanger with MF11 Nut and Bolt. MF12 Soffit Cleat to be suitably fixed to underside of CLT floor panel.

**23|** 200mm CLT floor panel supplied by KHL. Panel to be secured to CLT wall panels (KHL) by specialist angle bracket (as per manufacturers & structural engineers specifications)

**24|** FLOORPROTEC Breathertec Breathable Floor Protection Membrane to be laid on CLT floor panel.

**25|** 50mm ROCKWOOL Acoustic Rockfloor Insulation positioned and fixed to the CLT floor panel.

- Thermal conductivity 0.038 W/mK
- Fire Rating A1

**26|** 600 x 1200 x 28mm CELLECTA Screedboard (28) laid on ROCKWOOL Insulation with CELLECTA pro-adhesive layer. The Screedboard (28) system combines the CELLECTA 20mm Screedboard (20) with the CELLECTA 8mm Fibrefon (8)acoustic fleece.

- Thermal conductivity 0.05 W/mK
- Fire Rating A1

**27|** Approximately 5mm floor finish to Client specification.

Hannah Irwin
B00737495

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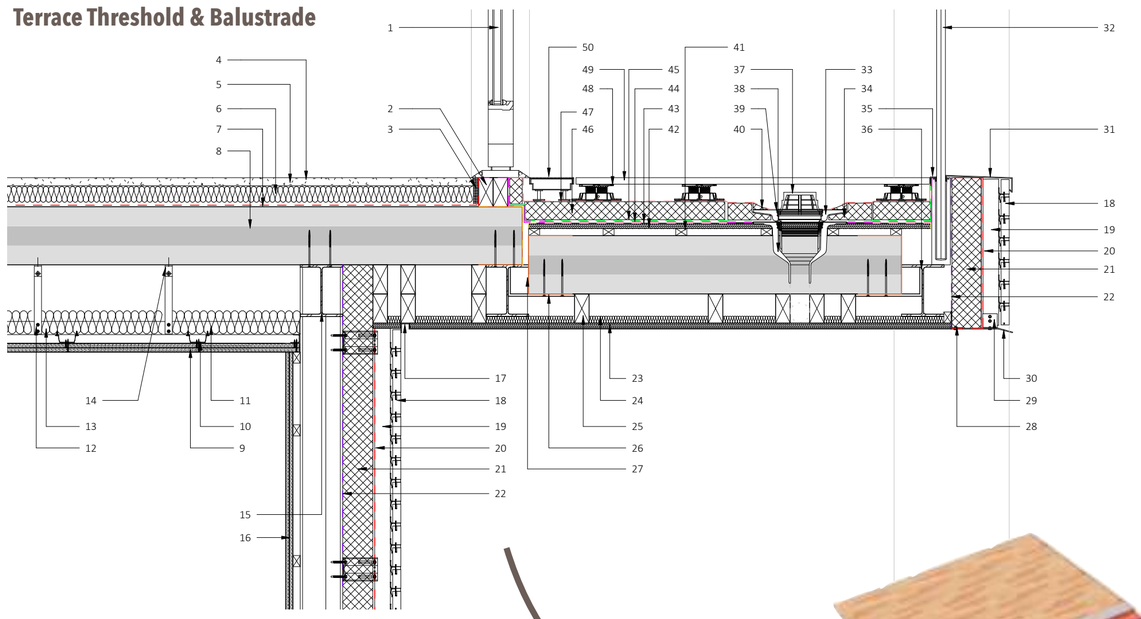
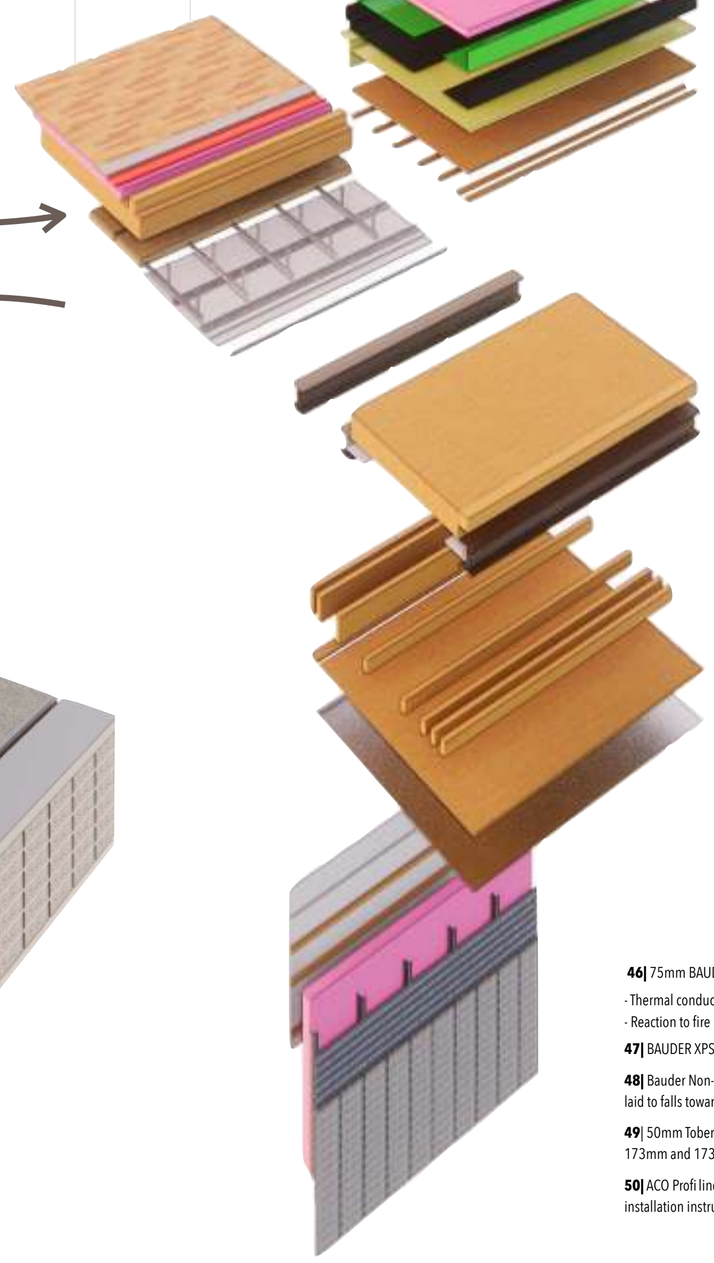
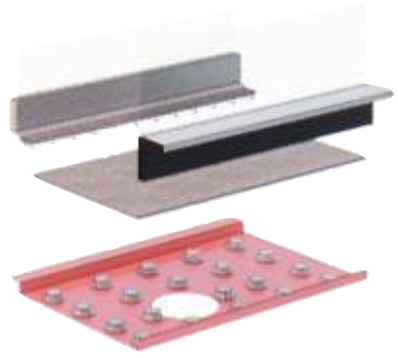
B00737495

## Terrace Threshold & Balustrade

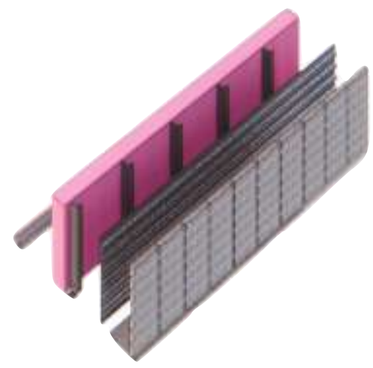










**1|** APS AP200 THERM+ door system to be installed following manufactures instructions.
**2|** 2no. 50 x 100mm Timber Framing to span under door opening to provide adequate support. Timber to be suitably fixed to CLT Floor Panel.

**3|** 20mm ROCKWOOL Acoustic Rockfloor Perimeter Insulation.

**4|** Approximately 5mm floor finish to Client specification.

**5|** 600 x 1200 x 28mm CELLECTA Screedboard (28) laid on ROCKWOOL Insulation with CELLECTA pro-adhesive layer. The Screedboard (28) system combines the CELLECTA 20mm Screedboard (20) with the CELLECTA 8mm Fibrefon (8)acoustic fleece.

- Thermal conductivity 0.05 W/mK
- Fire Rating A1

**6|** 50mm ROCKWOOL Acoustic Rockfloor Insulation positioned and fixed to the CLT floor panel.

- Thermal conductivity 0.038 W/mK
- Fire Rating A1

**7|** FLOORPROTEC Breathertec Breathable Floor Protection Membrane to be laid on CLT floor panel.

**8|** 200mm CLT floor panel supplied by KHL. Panel to be secured to CLT wall panels (KHL) by specialist angle bracket (as per manufacturers & structural engineers specifications)

**9|** 2no. layers 15mm Gyproc plasterboard fixed to Gypframe MF5 with suitable British Gypsum screws at 230mm centres in field of board and 150mm centres at board ends

**10|** Gypframe MF5 Ceiling Sections to be spaced at a maximum of 450mm centres. Each MF5 Section to be fixed to each MF7 Primary Support Channel with two suitable British Gypsum wafer head screws

**11|** Gypframe MF7 Primary Support Channels to be spaced at a maximum of 450mm centres.

**12|** Gypframe MF8 Strap Hanger fixed to MF7 Primary Support Channels with two suitable British Gypsum wafer head screws. MF8 Strap Hanger to be spaced at a maximum of 450mm centres.

**13|** 80mm Isover APR1200 Glasswool Acoustic Insulation within suspended ceiling void. A minimum 50mm service void to be maintained between the underside of CLT floor panel and Gyproc plasterboard.

- Thermal conductivity 0.043 W/mK
- Fire rating A1

**14|** Gypframe MF12 Soffit Cleat to be fixed to MF8 Strap Hanger with MF11 Nut and Bolt. MF12 Soffit Cleat to be suitably fixed to underside of CLT floor panel.

**15|** Galvanised Steel Beam to be supported by Steel Column. (as per Structural Engineers specification and details). Secondary steel vertical rail structure to span between beams.



**16|** 2no. 12.5x 2400 x 1200mm British Gypsum Glasroc F-Multiboard secured with 35mm British Gypsum Collated Drywall Screws to C16 timber framing system. 25 x 38mm framing to be secured to CLT wall panel with suitable fixing screws at 600mm centres. Concealed electrical wiring to be positioned & fixed within framing system. Multiboard to be finished with 2mm Thistle Multi-Finish.

- Fire Rating A1
- Thermal conductivity 0.3W/mK
- Water vapour permeability 10m

**17|** 2.5mm aluminium fascia PPC to RAL 7015 on 18mm WBP plywood (EN636-3) on timber framing. Fascia to be secret fixed with fully welded corners and joints.
At wall abutments, fascia shall be formed to form a drip edge.

**18|** MECHSLIP Brick Slip cladding system to support IBSTOCK Clay Brick Slips. Brick slips are to be mounted to the MECHSLIP cladding support system laid in a stretcher bond pattern. Brick colour to be confirmed by Client after reviewing samples of:
Darker Selection - Bradgate Medium Grey with Dark Grey Mortar
Lighter Selection - Moseley with Light Grey Mortar

**19|** Mechslip cladding rail and mullion system fixed back to CLT wall panel via specialist bracketry (as per manufacturers instructions). Minimum 38mm vented cavity must be maintained.

**20|** Protect TF200 breather membrane applied to external face of Kingspan insulation.

**21|** 110mm Kingspan Kooltherm K5 rigid insulation board, positioned and fixed to the external face of CLT wall panel.

**22|** Pro Clima DA airtight weather resistant vapour check membrane applied to external side of CLT wall panel.

- Moisture vapour diffusion resistance factor (μ): 5000
- Temperature Resistance : -40 °C to 100 °C
- Thermal conductivity 0.17 W/mK
- Water column >2500 mm
- Fire Rating Fire Class E

**23|** 18mm Exterior Grade Plywood above PPC Aluminium Soffit. Plywood to be suitably fixed to timber framing.

**24|** 20mm Isover APR1200 Glasswool Acoustic Insulation within suspended ceiling void. A minimum 50mm service void to be maintained between the underside of CLT floor panel and soffit.

- Thermal conductivity 0.043 W/mK
- Fire rating A1

**25|** 50 x 100mm timber framing to be suitably fixed to underside of steel beam.

**26|** STRONGTIE Galvanised Steel Angle Bracket (ABR255) centres specified by KHL & Structural Engineer. Bracket to be secured to CLT wall panel and CLT floor panel with CSA screws.

**27|** All CLT panel ends to be preservative treated with Teknoseal 4000 water borne end grain sealer. Suppliers instructions regarding application and drying time to be strictly followed.

**28|** MECHSLIP Aluminium angle bracket to be fixed to CLT Wall Panel with Vapour Control Layer lapped underneath. Aluminium angle to be fixed to Aluminium Window Flashing as per manufactures recommendations.

**29|** MECHSLIP Cleat to secure Aluminium Window Flashing to MECHSLIP Cladding Rail & Mullion System. Cleat is to be site cut.

**30|** 2.5mm aluminium soffit PPC to RAL 7015 on 18mm WBP plywood (EN636-3) on timber framing. Fascia to be secret fixed with fully welded corners and joints. At wall abutments, soffit shall be formed to form a drip edge.

**31|** 2.5mm Aluminium Window Flashing PPC to RAL 7015. Fascia to be fixed with MECHSLIP cleat.

**32|** Frameless Glass Balustrade System to be supplied and fitted by FGC.

**33|** BAUDER Insulated Outlet Extension to be fitted on top of the insulation extension unit housing. To be installed following manufactures instructions.

**34|** BAUDER 60mm thick insulation extension unit housing (500 x 500mm) to be fitted under the Outlet Extension Unit.

**35|** Polyester Powder Coated (PPC) Aluminium Threshold Angle to cover Glass Balustrade connection. Coping to be secret fixed and have welded corners and joints.

**36|** Galvanised Steel Beam to follow Structural Engineers specification and details.

**37|** BAUDER polyamide domical leaf grille to be connected to installed outlet bowl.

**38|** BAUDER insulated outlet bowl to be installed to the plywood deck, and BAUDERTEC KSA MICA to be lapped over edges.

**39|** BAUDER sealing ring to be inserted to be fitted into the outlet bowl to ensure waterproof integrity as per manufactures instructions.

**40|** Insulated fillet to cut on site from BAUDER PIR FA-TE Insulation. Chamfered edge to be provided to the perimeter of the specified drainage system.

**41|** Timber firring to give a 1:60 minimum fall for drainage. Fall to be in the direction of the specified drainage system.

**42|** 18mm Exterior Grade Plywood to be laid and suitably fixed to timber firring.

**43|** CLT Floor Panel to be correctly prepared with joints taped and BAUDER Polymer Primer applied.

**44|** Bakor 790-11 Hot Melt system to be applied on top of fully dried BAUDER Polymer Primer on the CLT floor panel. Hot Melt system to be applied following manufacturers instructions.

**45|** BAUDER AP2 Protection Membrane to be laid on BAKOR 790-11 Hot Melt once cooled.

**46|** 75mm BAUDERGLAS Inverted Insulation to be laid under BAUDER XPS WFRL Membrane.

- Thermal conductivity λcor ≤ 0.043
- Reaction to fire A1

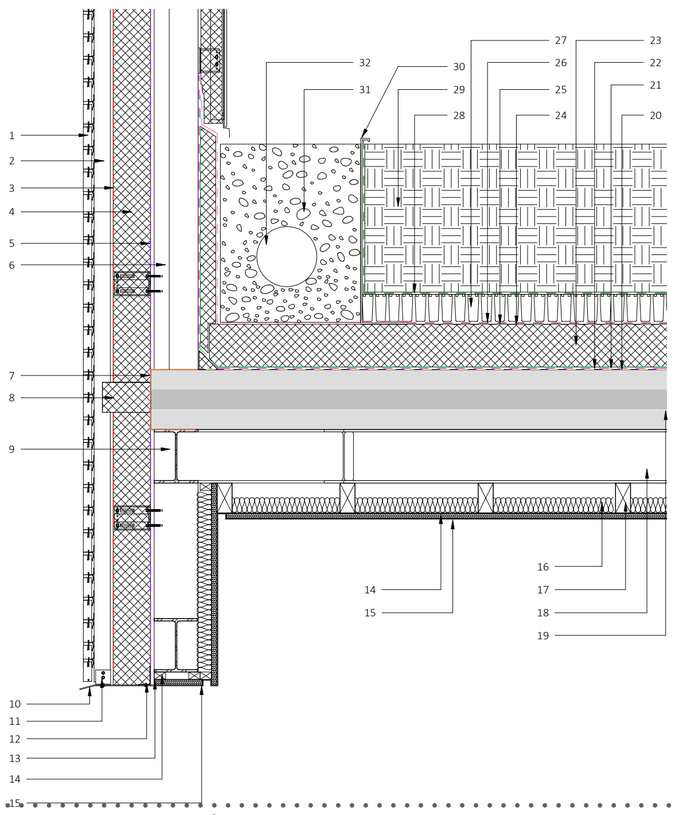
**47|** BAUDER XPS Water Flow Reducing Layer (WFRL) Membrane to be laid on top of insulation.

**48|** Bauder Non-Combustible Pedestal (NC) to be laid on top of WFRL Membrane. Pedestal to be laid to falls towards the drainage system.

**49|** 50mm Tobermore Sienna Permeable Paving Blocks. Blocks to be a mix of 208 x 173mm and 173 x 173mm.

**50|** ACO Profiline X to be installed at door threshold following manufactures installation instructions.

## Intensive Green Roof




**1|** MECHSLIP Brick Slip cladding system to support IBSTOCK Clay Brick Slips. Brick slips are to be mounted to the MECHSLIP cladding support system laid in a stretcher bond pattern. Brick colour to be confirmed by Client after reviewing samples of:
Darker Selection - Bradgate Medium Grey with Dark Grey Mortar
Lighter Selection - Moseley with Light Grey Mortar

**2|** MECHSLIP cladding rail and mullion system fixed back to CLT wall panel via specialist bracketry (as per manufacturers instructions). Minimum 38mm vented cavity must be maintained.

**3|** Protect TF200 breather membrane applied to external face of Kingspan insulation.

**4|** 110mm Kingspan Kooltherm K5 rigid insulation board, positioned and fixed to the external face of CLT wall panel.

**5|** Pro Clima DA airtight weather resistant vapour check membrane applied to external side of CLT wall panel.

- Moisture vapour diffusion resistance factor (μ): 5000
- Temperature Resistance : -40 °C to 100 °C
- Thermal conductivity 0.17 W/mK
- Water column >2500 mm
- Fire Rating Fire Class E

**6|** Steel Column and Secondary Vertical Rail Structure (as per Structural Engineers specification and details)

**7|** All CLT panel ends to be preservative treated with Teknoseal 4000 water borne end grain sealer. Suppliers instructions regarding application and drying time to be strictly followed.

**8|** Rainscreen Fast Fix Ventilated Cavity Barrier (FFCB) for horizontal application at each floor level. Cavity barrier to be mechanically fixedto the CLT substrate at maximum 500mm centres with non-combustible fixings. Contractor to ensure there are no gaps between the substrate and the barrier when attached as per manufacturers specifications.

**9|** To support the excessive loading weight of the intensive green roof system the underside of CLT floor panels are to be supported by a steel beam structure (to be as per Structural Engineers specification and details).

**10|** 2.5mm Aluminium Window Flashing PPC to RAL 7015. Fascia to be fixed with MECHSLIP cleat.

**11|** MECHSLIP Cleat to secure Aluminium Window Flashing to MECHSLIP Cladding Rail & Mullion System. Cleat is to be site cut.

**12|** MECHSLIP Aluminium angle bracket to be fixed to CLT Wall Panel with Vapour Control Layer lapped underneath. Aluminium angle to be fixed to Aluminium Window Flashing as per manufactures recommendations.

**13|** 18mm Exterior Grade Plywood to support PPC Aluminium Flashing. Plywood to be suitably fixed to Timber Framing.

**14|** 38 x 25mm Timber framing to be suitably fixed to the underside of the Steel Beam.

**15|** 2.5mm aluminium soffit PPC to RAL 7015 on 18mm WBP plywood (EN636-3) on timber framing. Fascia to be secret fixed with fully welded corners and joints.
At wall abutments, soffit shall be formed to form a drip edge.

**16|** 80mm Isover APR1200 Glasswool Acoustic Insulation within suspended ceiling void. A minimum 50mm service void to be maintained between the underside of CLT floor panel and Gyproc plasterboard.

- Thermal conductivity 0.043 W/mK
- Fire rating A1

**17|** 50 x 100mm Timber framing to be suitably fixed to the underside of the Steel Beam.

**18|** To support the excessive loading weight of the intensive green roof system the underside of CLT floor panels are to be supported by a steel beam structure (to be as per Structural Engineers specification and details).

**19|** 200mm CLT floor panel supplied by KHL. Panel to be secured to CLT wall panels (KHL) by specialist angle bracket (as per manufacturers & structural engineers specifications)

**20|** CLT Floor Panel to be correctly prepared with joints taped and BAUDER Polymer Primer applied.

**21|** Bakor 790-11 Hot Melt system to be applied on top of fully dried BAUDER Polymer Primer on the CLT floor panel. Hot Melt system to be applied following manufacturers instructions.

**22|** BAUDER AP2 Protection Membrane to be laid on BAKOR 790-11 Hot Melt once cooled.

**23|** 185mm BAUDERGLAS Inverted Insulation to be laid under BAUDER XPS WFRL Membrane.

- Thermal conductivity λcor ≤ 0.043
- Reaction to fire A1

**24|** BAUDER XPS Water Flow Reducing Layer (WFRL) Membrane to be laid on top of insulation.

**25|** BAUDER PE Foil to be laid on top of BAUDER XPS (WFRL) Membrane.

**26|** BAUDER 6mm Pro Mat protection layer to the underside of DSE 60 Drainage Layer.

**27|** BAUDER DSE 60 Drainage & Protection Layer to be infilled with Single size Limestone Aggregate Mineral Drain (MD).

- Compressive strength ≥1000kN/m² when filled with MD
- Water storage capacity 10-12 litres/m² when filled with MD

**28|** BAUDER Filter Fleece to be installed to the underside of substrate. Filter fleece is to be lapped vertically to the inside of the edge drainage trim.

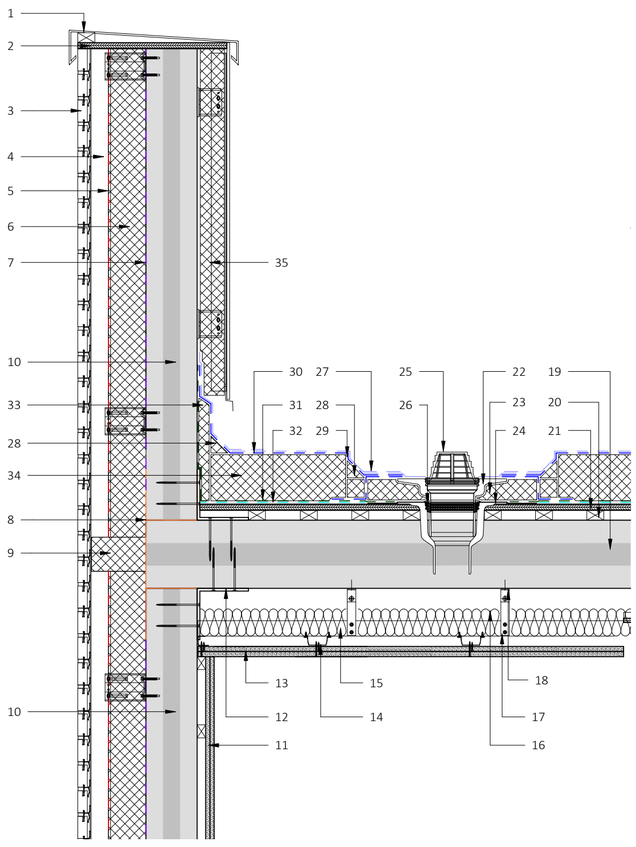
**29|** 500mm Intensive Substrate planted with a diverse mix of herbaceous plants, shrubs and trees.

**30|** Specialist Aluminium Drainage Trim. Trim is to be mechanically fixed, with the BAUDER WFRL, PE Foil amd Pro Mat lapped over.

**31|** 450 x 500mm single size Limestone Aggregate. BAUDER 6mm ProMat protection layer to be laid under granular backfill.

**32|** 200mm Perforated Drain to be laid at an appropriate depth within Limestone Aggregate.

## Upper Parapet & Drainage




**1|** Polyester Powder Coated (PPC) Aluminium Coping with drip flashing to each side. Coping to be secret fixed and have welded corners and joints.

**2|** 18mm Exterior Grade Plywood underneath PPC Aluminium Coping. Plywood to be suitably fixed to CLT Wall Panel.

**3|** MECHSLIP Brick Slip cladding system to support IBSTOCK Clay Brick Slips. Brick slips are to be mounted to the MECHSLIP cladding support system laid in a stretcher bond pattern. Brick colour to be confirmed by Client after reviewing samples of:
Darker Selection - Bradgate Medium Grey with Dark Grey Mortar
Lighter Selection - Moseley with Light Grey Mortar

**4|** MECHSLIP cladding rail and mullion system fixed back to CLT wall panel via specialist bracketry (as per manufacturers instructions). Minimum 38mm vented cavity must be maintained.

**5|** Protect TF200 breather membrane applied to external face of Kingspan insulation.

**6|** 110mm Kingspan Kooltherm K5 rigid insulation board, positioned and fixed to the external face of CLT wall panel.

**7|** Pro Clima DA airtight weather resistant vapour check membrane applied to external side of CLT wall panel.

- Moisture vapour diffusion resistance factor (μ): 5000
- Temperature Resistance : -40 °C to 100 °C
- Thermal conductivity 0.17 W/mK
- Water column >2500 mm
- Fire Rating Fire Class E

**8|** All CLT panel ends to be preservative treated with Teknoseal 4000 water borne end grain sealer. Suppliers instructions regarding application and drying time to be strictly followed.

**9|** Rainscreen Fast Fix Ventilated Cavity Barrier (FFCB) for horizontal application at each floor level. Cavity barrier to be mechanically fixedto the CLT substrate at maximum 500mm centres with non-combustible fixings. Contractor to ensure there are no gaps between the substrate and the barrier when attached as per manufacturers specifications.

**10|** 150 x 2950mm CLT wall panel supplied by KHL. Panel to be secured to 200mm x 2950mm CLT floor panels (KHL) by specialist angle bracket (as per manufacturers & structural engineers specifications).

**11|** 2no. 12.5x 2400 x 1200mm British Gypsum Glasroc F-Multiboard secured with 35mm British Gypsum Collated Drywall Screws to C16 timber framing system. 25 x 38mm framing to be secured to CLT wall panel with suitable fixing screws at 600mm centres. Concealed electrical wiring to be positioned & fixed within framing system. Multiboard to be finished with 2mm Thistle Multi-Finish.

- Fire Rating A1
- Thermal conductivity 0.3W/mK
- Water vapour permeability 10m

**12|** STRONGTIE Galvanised Steel Angle Bracket (ABR255) centres specified by KHL & Structural Engineer. Bracket to be secured to CLT wall panel and CLT floor panel with CSA screws.

**13|** 2no. layers 15mm Gyproc plasterboard fixed to Gypframe MF5 with suitable British Gypsum screws at 230mm centres in field of board and 150mm centres at board ends

**14|** Gypframe MF5 Ceiling Sections to be spaced at a maximum of 450mm centres. Each MF5 Section to be fixed to each MF7 Primary Support Channel with two suitable British Gypsum wafer head screws

**15|** Gypframe MF7 Primary Support Channels to be spaced at a maximum of 450mm centres.

**16|** 80mm Isover APR1200 Glasswool Acoustic Insulation within suspended ceiling void. A minimum 50mm service void to be maintained between the underside of CLT floor panel and Gyproc plasterboard.

- Thermal conductivity 0.043 W/mK
- Fire rating A1

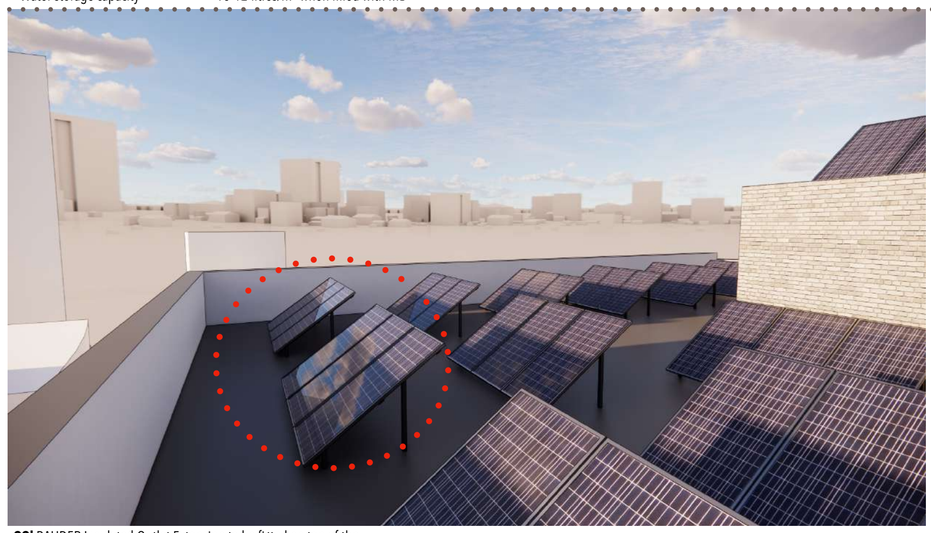
**17|** Gypframe MF8 Strap Hanger fixed to MF7 Primary Support Channels with two suitable British Gypsum wafer head screws. MF8 Strap Hanger to be spaced at a maximum of 450mm centres.

**18|** Gypframe MF12 Soffit Cleat to be fixed to MF8 Strap Hanger with MF11 Nut and Bolt. MF12 Soffit Cleat to be suitably fixed to underside of CLT floor panel.

**19|** 200mm CLT floor panel supplied by KHL. Panel to be secured to CLT wall panels (KHL) by specialist angle bracket (as per manufacturers & structural engineers specifications)

**20|** Timber firring to give a 1:60 minimum fall for drainage. Fall to be in the direction of the specified drainage system.

**21|** 18mm Exterior Grade Plywood to be laid and suitably fixed to timber firring.



**22|** BAUDER Insulated Outlet Extension to be fitted on top of the insulation extension unit housing. To be installed following manufactures instructions.

**23|** BAUDER 60mm thick insulation extension unit housing (500 x 500mm) to be fitted under the Outlet Extension Unit.

**24|** BAUDER insulated outlet bowl to be installed to the plywood deck, and BAUDERTEC KSA MICA to be lapped over edges.

**25|** BAUDER polyamide domical leaf grille to be connected to installed outlet bowl.

**26|** BAUDER sealing ring to be inserted to be fitted into the outlet bowl to ensure waterproof integrity as per manufactures instructions.

**27|** BAUDER K5K Grey Slate Capping Sheet to be torch applied to specified underlayer following manufactures recommendations.

**28|** Insulated fillet to cut on site from BAUDER PIR FA-TE Insulation. Chamfered edge to be provided to the perimeter of the specified drainage system.

**30|** BAUDERTEC KSA Duo Self-Adhesive Underlayer to be laid on top of BAUDER PIR Insulation. Junctions and edges to be lapped as indicated and in accordance to manufactures recommendations.

**31|** BAUDERTEC KSA Mica Air & Vapour Control Layer to be laid under insulation. The mica finished upper surface is to be bonded to the underside of the insulation using BAUDER Insulation Adhesive. Laps to be heat sealed using hot air/gas torch as appropriate.

**32|** Random Nailed Isolating Layer to be laid on top of plywood as recommended by BAUDER.

**33|** BAUDER 30mm Insulated Upstand Support and Bracket system to be fixed to CLT Wall Panel. BAUDERTEC KSA Mica Layer to be lapped under insulated upstand for a minimum of 300mm.

**34|** BAUDER 150mm thick PIR FA-TE Insulation to be laid onto the installed deck after application of BAUDERTEC KSA Mica Layer.

**35|** KINGSPAN 80mm thick QuadCore Evolution Recess Wall Panel to be installed to CLT Wall Panel. BAUDERTEC KSA Duo Underlayer & BAUDER K5K Capping Sheet to be lapped under cladding for a minimum of 100mm as per manufactures recommendations.