CLIENT :
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THE CONSTRUCTION OF A SINGLE STOREY EXTENSION AT THE REAR OF THE EXISTING DWELLING HOUSE + EXTERNAL & INTERNAL ALTERATIONS.

Space Heating & Domestic Hot Water Systems

1. System Extension & Statutory Compliance

- **Contractor Qualification:** All modifications, extensions, and commissions to the gas heating infrastructure must be executed solely by a competent, currently registered **Gas Safe** installer.
- **Regulatory Compliance:** The entire installation must strictly comply with the **Gas Safety (Installation and Use) Regulations**, the **Water Supply (Water Fittings) Regulations 1999**, **Approved Document L (Conservation of Fuel and Power)**, and **BS 7671** (IET Wiring Regulations) for all associated electrical controls.

2. Emitter & Control Specifications

- **Radiator Installation:** Supply and install new steel panel radiators sized adequately to offset the calculated heat loss of the new single-storey extension space. Radiators must be securely wall-mounted using heavy-duty brackets fixed to structural timber studs or solid blockwork.
- **Thermostatic Controls:** Provide a new **Thermostatic Radiator Valve (TRV)** to every new radiator emitter to ensure independent zone temperature control in compliance with Approved Document L.
- **System Zoning:** If the extension forms a large open-plan living zone distinct from the main dwelling, consider installing a programmable room thermostat or smart zoning valve to allow the extension's heating profile to operate independently from the rest of the house.

3. Pipework, Insulation & Integration

- **Pipe Routing:** Extend the existing space heating flow and return pipework from the main dwelling house using copper or barrier-PEX pipework. All pipe runs routed through cold zones, floor voids, or unheated spaces must be fully insulated with mineral wool or phenolic foam lagging to prevent heat loss and freezing.
- **System Flushes & Additives:** Prior to connecting the new pipework to the existing loop, the new circuit must be thoroughly flushed to remove flux residues and debris. Upon filling, treat the entire domestic heating system with a high-performance chemical corrosion inhibitor (e.g., Fernox, Sentinel, or equivalent) to protect the existing boiler and new emitters.

4. Commissioning & Certification

- **Testing:** The complete extended circuit must be hydrostatically pressure tested to ensure integrity prior to any floors or ceilings being closed up by the builder.
- **Handover Documentation:** On completion, the Gas Safe specialist must fully balance the system, verify TRV operation, and provide the client with a formal benchmark commissioning checklist and a Gas Safe notification certificate.

Traditional Strip Foundation

1. Excavation & Ground Conditions

- **Dimensions:** Excavate foundation trenches to a typical baseline depth of 900mm and a minimum width of 600mm. The actual depth must be extended on-site where dictated by local subsoil conditions, frost lines, or the presence of shrinkable clay.
- **Building Control Liaison:** All foundation excavations must be inspected and approved by the **Registered Building Control Approver (RBCA)** or Local Authority Building Control officer prior to pouring any concrete. All dimensions are provisional until verified on-site.
- **Adverse Conditions:** If soft ground, peat, un-compacted made ground, or significant tree roots are discovered during excavation, work must stop immediately. The building control officer must be informed, and a qualified structural engineer must be consulted to alter the foundation design.

2. Concrete Specification & Compliance

- **Compliance Standards:** All foundation design and works must strictly comply with **Approved Document A (Structure)** of the current Building Regulations and **BS 8004:2015+A1:2020** (Code of Practice for Foundations).
- **Concrete Mix Design:** Foundation concrete must conform to BS EN 206-1 and BS 8500-2. Provide a minimum **GEN3 mix (C20 strength class)** for unreinforced foundations, or **RC25/30** if reinforcement is introduced.
- **Sulphate Resistance:** Test the subsoil for chemical aggression if required. If aggressive ground conditions or high sulphate levels are present, the concrete mix must utilize sulphate-resisting cement (Design Chemical Class FND compliant).

3. Depths, Levels & Service Protection

- **Minimum Depths:** The base of all external foundations must be a minimum of **900mm below finished ground level** to ensure structural stability against frost action and seasonal drying. Internal load-bearing wall foundations must be excavated to a minimum depth of 600mm below ground level.
- **Adjacent Drains:** Foundations running adjacent to or near subterranean pipework must be excavated below the invert (lowest infernal) level of the drain to prevent transferring structural loads onto the drainage run.
- **Steps and Levels:** Where steps in the foundation are required due to sloping ground, they must be constructed in strict accordance with the detailing rules set out in Approved Document A.

Electrical Installation (Competent Person Scheme)

1. Statutory Compliance & Standards

- **Regulations:** All electrical design, installation, inspection, testing, and commissioning must strictly comply with **Approved Document P (Electrical Safety)** of the current Building Regulations and the requirements of **BS 7671** (the **IET Wiring Regulations, 18th Edition**, including all current active amendments).
- **Installer Registration:** All works must be executed by a fully qualified installer registered with an authorized electrical self-certification Competent Person Scheme (e.g., NICEIC, NAPIT, or equivalent) approved by the Secretary of State.

2. Certification & Handover Sequence

- **Electrical Installation Certificate (EIC):** Upon successful completion and testing of the installation, the registered installer must issue a full **BS 7671 Electrical Installation Certificate** (or Minor Electrical Works Services Certificate, where applicable) directly to the client.
- **Building Regulations Compliance:** The competent person must notify their registration body of the completed works within 30 days. The registration body will subsequently issue a formal **Building Regulations Compliance Certificate** (Self-Certification Certificate) to the **Registered Building Control Approver (RBCA)** or Local Authority Building Control office.
- **Client Handover:** The client must be provided with copies of both the BS 7671 safety certificate and the Building Regulations Compliance Certificate. These documents are mandatory for the final sign-off of the extension and must be retained for future property sales.

3. Installation Detailing (Extension Additions)

- **Energy Efficiency:** All new internal and external light fittings installed within the extension must utilize high-efficiency LED luminaires to comply with the energy targets of **Approved Document L**.
- **Chasing & Cable Routing:** Where cables are concealed or chased into walls, they must run vertically or horizontally within designated safety zones in accordance with BS 7671. Ensure all new circuits are fully protected by a 30mA Residual Current Device (RCD) or Residual Current Breaker with Overcurrent protection (RCBO) at the consumer unit.

BATHROOM & EN-SUITE WALL FINISHES

Substrate: Line all bathroom and en-suite walls with 12.5mm Knauf Aquapanel Indoor (or approved cement-based tile backer board equivalent).
Installation: Fix boards in strict accordance with the manufacturer's instructions. Use recommended corrosion-resistant screws and Aquapanel Joint Filler & Tape at all board joints to ensure structural integrity and moisture resistance.
Tiled Areas: Apply tiling to agreed specifications using a flexible, polymer-modified cementitious tile adhesive and waterproof grout. Do not exceed the maximum weight limit of the board (50kg/m² including adhesive).
Painted/Plastered Areas: Where a smooth finish is required instead of tiling, finish the board using Knauf Aquapanel Skim coat (or an approved tanking and skim system compatible with cement boards) prior to decoration with moisture-resistant paint.

GLAZING NOTE:
All new windows AND All glazing fitted within the proposed extensionand alterations is to be high-performance, thermally broken double-glazed units featuring Solar Control Glass with an integrated Low-E coating. All works to include making good to adjacent masonry and ensuring weather-tight structural junctions.

All glazing within critical zones (below 800mm FFL, and within 300mm of doors up to 1500mm height) to be safety glass to BS EN 12600. Manufacturer's safety stamp must be visible after installation – must be fitted with safety glass (toughened or laminated) conforming strictly to BS EN 12600 Class 1. All safety glass panes to feature permanent, visible manufacturer identification stamps post-installation.

Updated Contractor Responsibilities & Statutory Compliance Specification

1. Site Surveys, Discrepancies, and Tendering

- **Site Investigation:** The contractor must visit the site prior to submitting a tender or final quotation to fully satisfy themselves regarding all local conditions, access restrictions, and spatial constraints. The final pricing must include all necessary site clearance, demolition, and preparatory works before structural assembly begins.
- **Discrepancy Reporting:** The contractor must thoroughly cross-examine all detailed drawings, structural calculations, and site measurements. Any discrepancies, omissions, or contradictions must be immediately brought to the attention of the lead designer and client, and formal approval must be obtained in writing before proceeding with the affected works.
- **Exclusions:** The contractor must clearly itemise and identify any works, finishes, or connections that are explicitly excluded from the tender figure but are required to achieve full completion of the project.

2. Site Management & Welfare (Statutory CDM 2015 Compliance)

- **Welfare Facilities:** In strict compliance with the **Construction (Design and Management) Regulations 2015 (CDM 2015)**, the contractor must provide suitable and sufficient temporary welfare facilities from day one on site. This includes temporary flushing or chemical toilet accommodation (serviced and emptied at a minimum of weekly intervals), hand-washing facilities with running water, and a sheltered area for taking breaks.
- **Site Discipline:** The site must be kept clean, safe, and tidy at all times. Waste materials must be stored safely in designated skips and disposed of via a licensed waste carrier. No fires or burning of refuse are permitted on site under any circumstances. Normal, locally permitted working hours must be strictly observed to minimize neighborhood disruption.

3. Statutory Building Control & Services Sign-Off

- **Regulatory Compliance:** All workmanship, materials, and installations must comply entirely with the **latest editions of the UK Building Regulations**, relevant British Standards (BS), and Eurocodes active at the time of construction.
- **Electrical Installations (Approved Document P):** All electrical design, installation, testing, and certification works must be executed by a fully qualified electrician registered with a recognized **Part P Competent Person Scheme** (such as **NICEIC** or **NAPIT**). Upon completion, a formal Electrical Installation Certificate (EIC) and a Building Regulations Compliance Certificate must be provided to the client and Building Control.
- **Gas Supplies & Heating:** All gas supply modifications, appliance installations, and flue configurations must be executed strictly by a **Gas Safe registered engineer** holding the valid specific categories for the equipment being installed. The installer must formally notify the work to Gas Safe to trigger the statutory Building Regulations Compliance Certificate.

Blueprint-*PlanZ*

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BUILDING PRECAUTIONS:
The temporary support of the existing building whilst building work is under progress is to be carried out in a diligent, professional, careful and safe manner by the builder. It is the sole responsibility of the builder to ensure that the existing property is safely and securely supported at all times whilst building work is being undertaken and to obtain all professional advice/guidance as required to ensure this.
The builder and owner are to employ a cdm specialist to oversee the health and safety requirements for the overall project if the building work is deemed to be 'NOTIFIABLE' under the CDM Regulations
The owner is to satisfy all party wall issues with the neighbor/s prior to allowing the builder to commence any work on site.

NEW AND REPLACEMENT EXTERNAL DOORSETS WITH SECURITY SPECIFICATION

1. Secure Construction & Certification (Approved Document Q)

- **PAS 24 Compliance**: All new and replacement external doorsets (including frames, leaf cores, hinges, locks, and handles) must be manufactured, tested, and certified to meet the security requirements of **PAS 24** (or an approved equivalent standard like STS 201 or LPS 1175).
- **Multipoint Locking**: Doorsets must be fitted with a robust **multipoint locking system** featuring a cylinder certified to **BS EN 1303 (Grade 4)** or **TS 007 (3-star minimum combination)** to resist picking, drilling, snapping, and bumping.
- **Structural Fixing**: Frames must be securely anchored to the surrounding structural masonry or timber opening at maximum 600mm centres and within 150mm of every locking point and corner, using heavy-duty corrosion-resistant fixings.

2. Thermal & Environmental Performance (Part L)

- **Glazed Doors**: Doors with a glazed area exceeding 60% (e.g., bi-fold, sliding patio, or French doors) must achieve a maximum **U-value of 1.4 W/m²K** or a minimum Window Energy Rating (WER) of Band B.
- **Semi-Glazed/Solid Doors**: All other external doors must achieve a maximum **U-value of 1.4 W/m²K**.
- **Glazing Profile**: Factory-sealed double-glazed units featuring a minimum 16mm argon gas-filled cavity, warm-edge spacer bars, and high-performance soft-coat Low-E glass.

3. Safety Glazing & Impact Resistance (Part K)

- **Critical Locations**: All glass panels within doors up to 1500mm from finished floor level, and any adjacent side-glazing panels within 300mm of the door edge up to 1500mm from floor level, must be designated as **Critical Safety Zones**.
- **Glass Standards**: All glazing within critical zones must comprise toughened or **laminated safety glass** certified to **BS EN 12600 (Class 1 or 2)** and **BS 6262-4**. All panes must carry a permanent, visible kitemark stamp confirming certification after installation.
- **Security Glazing**: Where a doorset contains glass, at least one pane of the double-glazed unit must be laminated glass meeting the requirements of **BS EN 356 (Class P1A minimum)** to prevent forced entry via glass breakage.

4. Ventilation & Workmanship

- **Background Ventilation (Part F)**: Where required, doorsets must be fitted with controllable **trickle vents** complying with Approved Document F (minimum 8,000mm² equivalent area for habitable rooms).
- **Workmanship Compliance**: All external frame sizing, hardware integration, perimeter structural foaming, and weather-seal bedding must be executed strictly to **BS 8000 Part 7** (Glazing).

NEW AND REPLACEMENT WINDOWS SPECIFICATION (COMPLIANT TO PART L & F)

1. Thermal & Environmental Performance

- **Target Parameters**: All new and replacement windows must achieve a maximum **U-value of 1.4 W/m²K** OR a minimum **Window Energy Rating (WER) of Band B**.
- **Glazing Profile**: Factory-sealed double-glazed units featuring a minimum 16mm argon gas-filled cavity, high-performance soft-coat Low-E glass, and warm-edge spacer bars.

2. Total Glazing Allowance (Part L Continuity)

- **Area Limitation**: The total combined area of new windows, rooflights, and doors must be strictly **limited to 25% of the total extension floor area**, plus the exact floor area of any existing dwelling openings that are covered or built over by the extension.
- **Excess Glazing**: If glazed openings exceed this 25% threshold, an area-weighted U-value calculation or full SAP calculation must be provided to Building Control before work begins.

3. Ventilation & Safety Requirements

- **Background Ventilation (Part F)**: All new windows must be fitted with controllable **trickle vents**, providing background ventilation in strict accordance with Approved Document F. (Provide 8,000mm² equivalent area for habitable rooms and 4,000mm² for kitchens/bathrooms, or match existing provisions if greater).
- **Safety Glazing (Part K)**: Provide toughened or laminated safety glass complying with **BS EN 12150** to all glazing located within critical safety zones (e.g., within 800mm of the finished floor level, or within 300mm of a door opening up to 1500mm high).

Workmanship Compliance: All window frames, fixings, perimeter insulation, and structural lintel beddings must be installed strictly to **BS 8000 Part 7** (Glazing).

GROUND-BEARING CONCRETE FLOOR SLAB SPECIFICATION (COMPLIANT TO PART L & C)

1. Sub-Base Preparation & Moisture Barriers

- **Hardcore Foundation**: Provide a minimum **150mm thick layer of consolidated, well-rammed hardcore** (Type 1 clean crushed stone or approved equivalent), free from sharp projections and organic matter.
- **Blinding**: Blind the core surface with a continuous **50mm thick layer of clean sand blinding** to provide a smooth, puncture-free bedding plane.
- **Damp Proof Membrane (DPM)**: Lay a heavy-duty, minimum **1200-gauge (300-micron) polythene DPM** directly over the sand blinding.
  - All membrane joints must be overlapped by a minimum of 150mm and hermetically sealed using proprietary gas-proof double-sided jointing tape.
  - The floor DPM must be dressed up and seamlessly **lapped in with the matching Damp Proof Course (DPC)** embedded within all new and existing perimeter walls to ensure complete water-tight continuity.

2. Thermal Performance & Core Insulation (Part L Target)

- **Target U-Value**: Floor construction profile must achieve a maximum **U-value of 0.18 W/m²K** in strict accordance with Approved Document L (Volume 1).
- **Core Insulation**: Lay a minimum **100mm to 125mm thick high-performance rigid PIR insulation board** (e.g., Kingspan Thermafloor TF70 or Celotex GA4000/XR4000) tightly butt-jointed over the DPM layer.
- **Perimeter Cold-Bridge Prevention**: Install a continuous **30mm thick vertical strip of rigid PIR insulation** around all external and structural floor perimeters. This barrier must match the full height of the concrete slab and internal screed/finishing envelope to eliminate linear thermal bridging at the wall-to-floor junction.
- **Separation Layer (VCL)**: Overlay the rigid insulation boards with a **500-gauge polythene vapour control layer (VCL)** / slip-sheet. Turn the VCL up 100mm at all room perimeters (to sit behind the skirting line) and lap all joints by 150mm to prevent wet concrete from bleeding into the insulation joints during the pour.

3. Structural Concrete Slab & Reinforcement

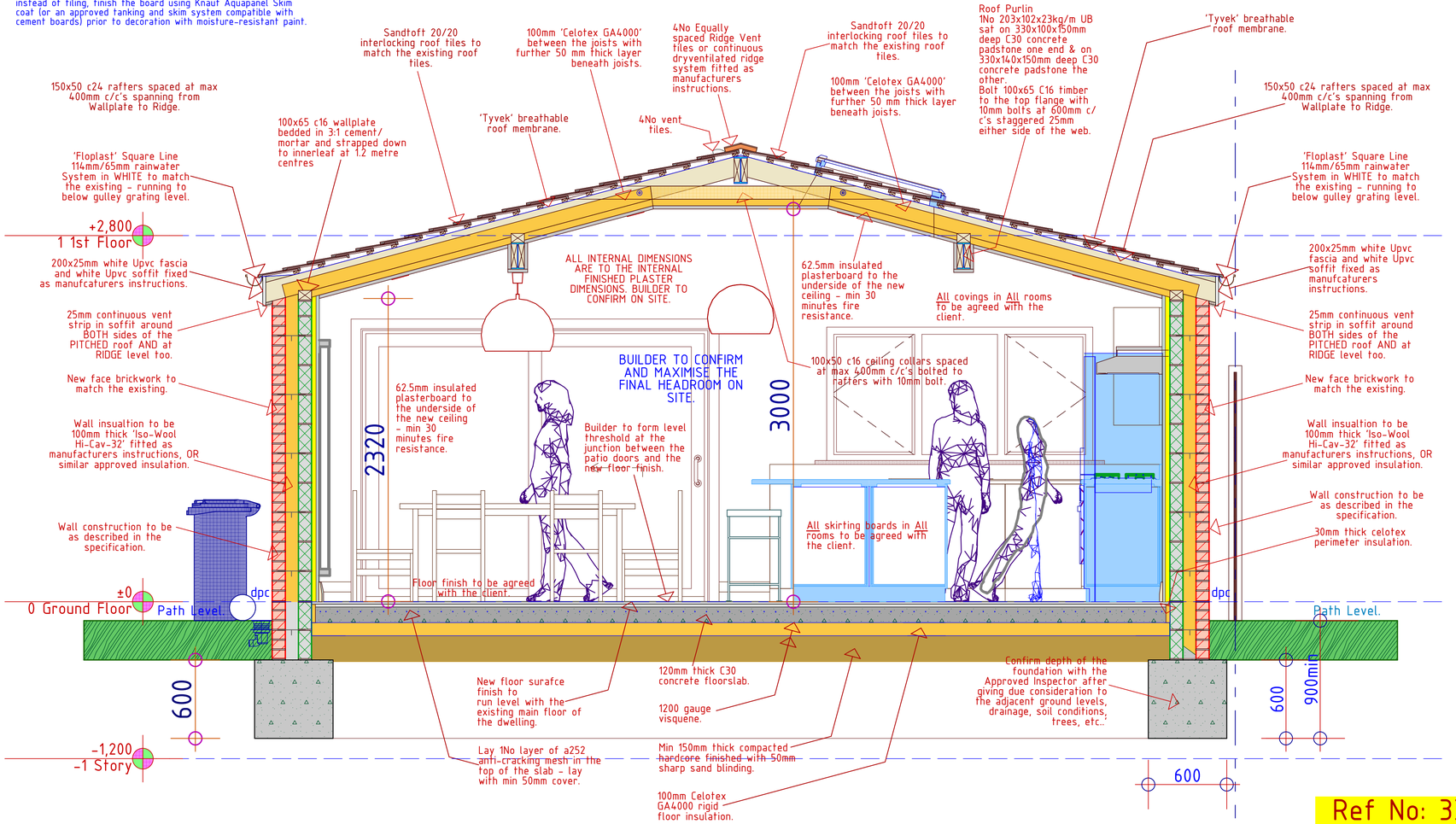
- **Concrete Specification**: Pour a minimum **125mm thick ground-bearing concrete slab** utilizing an **ST2 or GEN2 (C35 grade minimum structural performance equivalent)** concrete mix, formulated in strict compliance with **BS 8500-2**.
- **Level Accuracy**: The main contractor must cast the slab to the exact finished structural levels required, factoring in underfloor heating loops or specific manufacturer tolerances for the client's chosen final floor finish.
- **Sub-Slab Drainage Protection**: Where sub-site drainage or foul pipes pass directly beneath the new slab footprint, provide **A142 structural steel mesh reinforcement** (1.0m wide array) embedded within the bottom third of the concrete slab, ensuring a minimum continuous concrete protective cover of 50mm over the entire length of the pipe run.

4. Bridging Existing Suspended Floor Ventilation

- **Telescopic Air Ducting**: Where the new solid extension floor covers existing external air bricks, sub-floor cross-ventilation to the retained historic structure must be permanently maintained.
- **Ducting Assembly**: Connect existing openings to proprietary **65mm x 215mm uPVC rectangular cranked/telescopic ventilation ducts** routed beneath the new slab envelope.
- **Termination**: Terminate ducts at new 65mm x 215mm high-airflow vermin-proof air bricks built flush into the new external cavity wall face.
- **Protection**: All under-slab ducting tracks must be encased in a minimum **100mm thick concrete protective surround**. Where the duct penetrates the new external cavity wall, it must be sleeved cleanly with a proprietary **stepped cavity tray installed directly above** to redirect descending cavity moisture safely to the outside.
- **Workmanship Compliance**: All site excavation, blinding, membrane taping, insulation cutting, and concrete casting must be executed strictly to **BS 8000 Part 3** (Masonry), **Part 4** (Waterproofing/Vapour seals) and **Part 8** (Concrete).

Below-Ground Specification (150mm Cavity)

- **Masonry Leaves: 100/140mm solid dense concrete blocks** (minimum compressive strength **7.3 N/mm²**, Class A / BS EN 771-3) used for both the inner and outer leaves below ground level. Alternatively, Class B semi-engineering bricks are acceptable.
- **Cavity Width:** Maintained at **50-100mm** to match the above-ground footprint perfectly and ensure structural alignment.
- **Mortar Mix:** Laid in a highly durable **1:3 cement to sand mix** (Class M12 / Designation i) or a **1:4 masonry cement mix** to withstand continuous moisture saturation in sub-base soil.
- **Cavity Filling:** The 50-100mm cavity must be completely filled with a solid, lean-mix concrete (Grade **GEN 1 / consistence class S3** or better).
- **Fill Height:** Concrete fill must terminate exactly **225mm below the lowest Damp Proof Course (DPC)**.
- **Thermal Bridge Prevention:** The remaining 225mm gap between the top of the concrete fill and the main DPC must be packed with **150mm Knauf Dritherm 32 insulation**. This must step down at least 150mm below the floor insulation to prevent a cold bridge at the floor-to-wall junction.



All dims are to be checked on site by builder.

1 Proposed Section 1
1:20

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