



PRINCE REGENT  
STREET TRUST

HARTBURN  
PRIMARY SCHOOL



## PRINCE REGENT STREET TRUST

### Invitation to Tender

**Renovation of 'Caretakers' House into Offices and all associated works**

In partnership with

**Pyramid Architectural Designs**

**TENDER CLOSING DATE: 11.59pm Friday 25<sup>th</sup> October 2024**



PRINCE REGENT STREET TRUST

Company Registered Number: 11474011 | CEO: Julia Armstrong  
C/O Hartburn Primary School, Adelaide Grove, Hartburn, Stockton-on-Tees, TS18 5BS  
Tel: 01642 425116 | Email: [admin@princeregenttrust.co.uk](mailto:admin@princeregenttrust.co.uk)

WWW.PRINCEREGENTTRUST.CO.UK

## Tender Accompaniment - Outline of Works

### Project Location

Kader Academy  
Staindrop Drive  
Acklam  
Middlesbrough  
TS5 8NU



### Points of Contact

#### Client

Ryan Powner  
Chief Financial and Operations Manager  
Prince Regent Street Trust  
01642 646001

[ryan.powner@princeregenttrust.co.uk](mailto:ryan.powner@princeregenttrust.co.uk)

#### Architectural Designers

Alex McKay / Ben Wears  
Pyramid Architectural Designs  
01642 280339

[alex@pyramiddesigns.co.uk](mailto:alex@pyramiddesigns.co.uk)  
[ben@pyramiddesigns.co.uk](mailto:ben@pyramiddesigns.co.uk)

### Project Overview

Renovation of existing caretaker's house within Kader Academy grounds into staff office. External facade works, structural changes and internal works. Works to install new fence around property, hardscaping to property boundaries, and section of existing property land to become extension to school yard, with new hardscaping.

## Outline of Works

### Structural

- Existing roof is to have the felt covering removed. 25mm battens and counter battens to be laid on existing rafters with slate roofing tiles to be laid on those. Existing rafters are to be assessed prior to work commencing to ensure they can provide the structural loading required for the new roof tiles.
- Existing chimney is to be removed and chimney breasts on the ground and first floor are also to be removed.
- Within the side extension, all existing substation equipment is to be removed. A new timber stud wall is to be inserted to all external walls, with a 50mm cavity and filled with 70mm Kingspan Kooltherm and faced with 52.5mm Kingspan Kooltherm insulated plasterboard. 3mm skim plaster finish to be applied to the internal. A steel beam will span front to back to be supported on the existing walls. A structural engineer will provide calculations for the profile and size of this beam, along with how it will be supported within the space. The roof in this section will be removed and replaced with a new warm roof. C24 195mm x 47mm joists which will span side to side, between external walls and the new steel beam that will be inserted. 18mm plywood will sit above these joists with 150mm Celotex XR4000 insulation above this. The final elements of this roof will be 18mm exterior grade plywood with a GRP system laid above. Openings will be created for 3x 1835mm x 1550mm black/anthracite UPVC windows, two to the front and one to the rear. These will be accompanied by a new 1835mm x 2150mm black/anthracite UPVC set of French doors to the rear also. New flooring, wall covering and final finishes are to be specified by the client.
- The existing rear extension will be converted into a DDA compliant shower room with WC. The same insulated studwork buildup that is to be applied to the existing substation extension, will be applied here, and two existing doors will be bricked up also. The existing roof will be removed and replaced with a new cold roof. C24 150mm x 47mm joists will sit above 62.5mm Kingspan K118 insulated plasterboard, with 100mm Kingspan K107 insulation between the joists to provide a 50mm airgap. There is to be an 18mm exterior grade plywood with a GRP system laid above. New flooring, wall covering and final finishes are to be specified by the client. All new bathroom
- The existing front entrance is to be retained in situ, but replaced with black/anthracite UPVC door with one sidelight.
- All existing windows will be retained in situ and style, but either replaced with black/anthracite UPVC windows or painted black/anthracite. To be specified by the client.
- New kitchen to be fitted and plumbed in.
- New opening to be created for 1775mm x 2150mm French doors to rear of main property.
- Land around new rear entrance will be raised to form level ramp access up into offices.

- Walls to be removed on first floor level.
- Smallest front, first-floor bedroom to have left wall removed in part to open up to next bedroom and form large office space.
- Plastering work in all rooms to provide base for final finishes. Client to then decide on final wall and floor finishes in all rooms.
- Client may require new radiator locations. To be discussed with client.
- Upper floor bathroom to be reviewed and if needed, all new bathroom fittings to be provided and installed.
- Smoke detectors to be installed within office rooms, conference room and hallways/landing.
- Heat detectors provided to kitchen.
- Mechanical extraction provided to both bathrooms and kitchen.
- All lighting in every room to be confirmed in style by client.

## Fixtures and Fittings

Based on discussions with the client, a separate costings package may need to be prepared for all fixtures and fittings within the space.

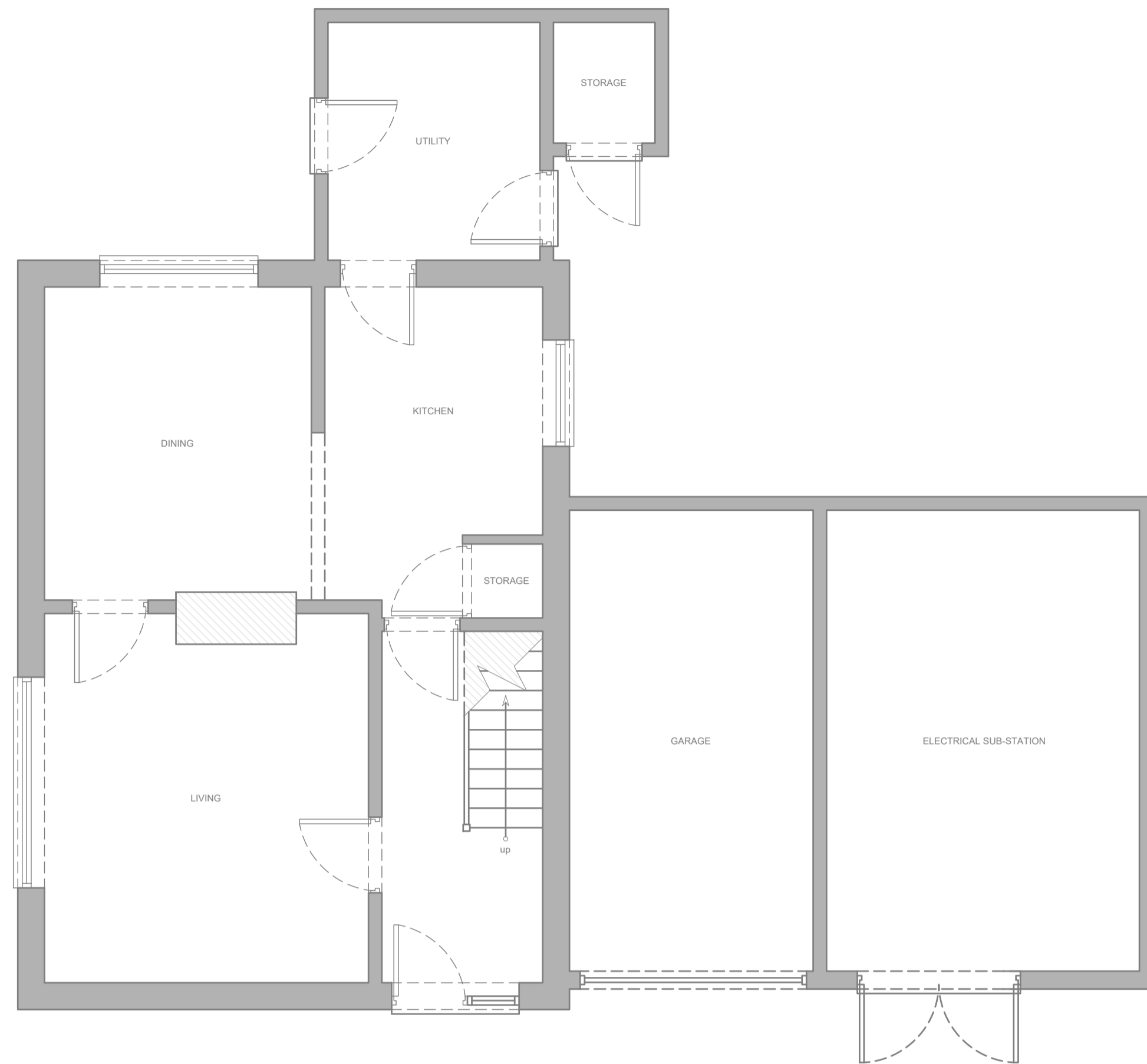
- New desks for each office room. 8 desks and working stations are shown on plans however this is to be confirmed with client prior to ordering and fitting. Desk chairs need to be ordered for each workstation also.
- Large conference desk to be provided or built for new conference room. Current desk shown (supplied by Calibre Furniture) seats 13 persons and current understanding is that this is an appropriate number of seats required.
- Interactive TV/board and small media wall to be installed in conference room.
- Privacy film to be applied to all ground floor doors and windows.
- Breakfast bar to be installed between kitchen and breakout space.
- 3-seater sofa to be included in breakout space.
- Floor to ceiling storage for office stationery/paperwork/files to be built within all office rooms as shown in location on our plans. Style to be confirmed with client.

## External

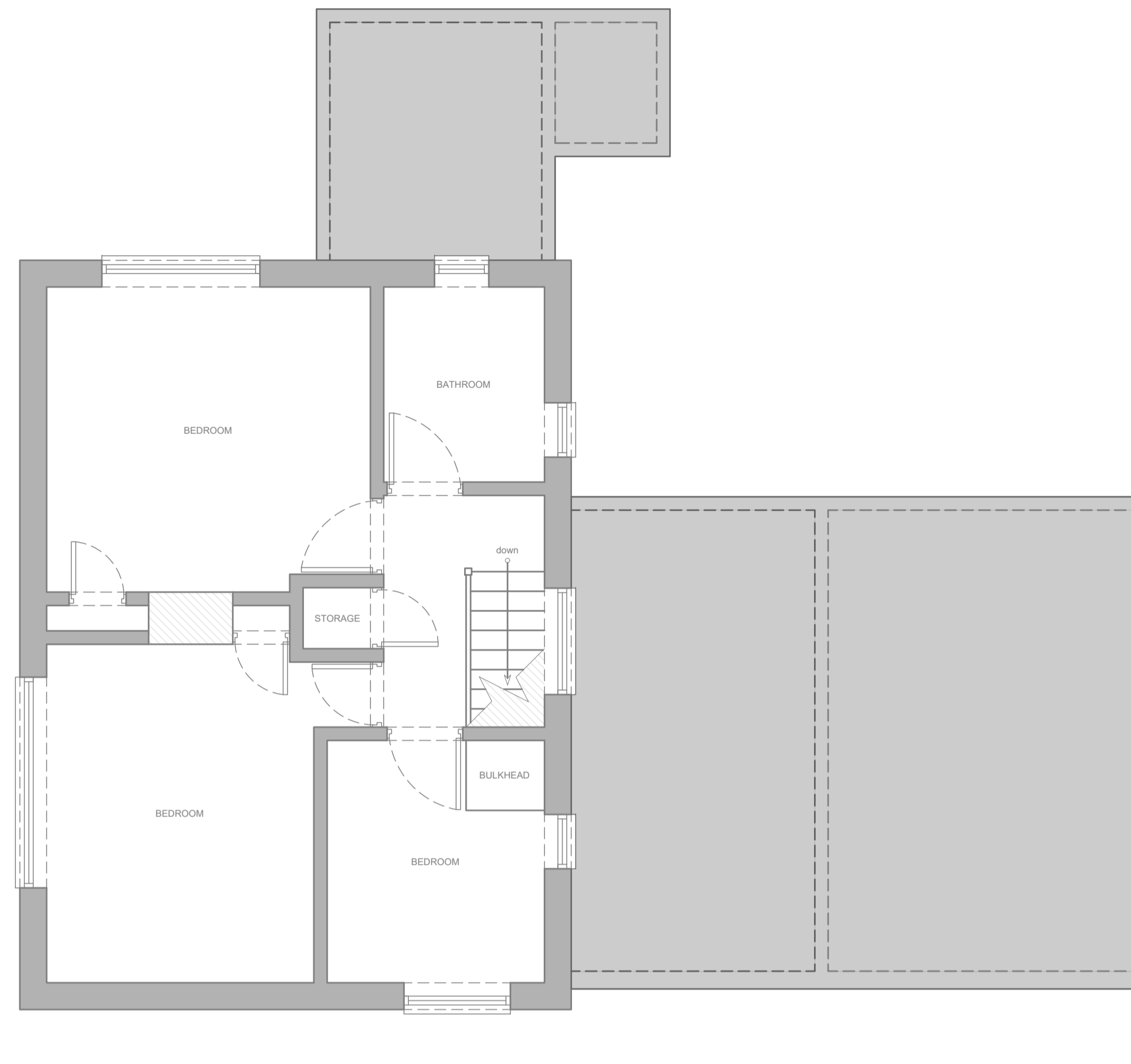
- Navy blue, horizontal composite cladding panels to be installed to exterior. All locations shown on plans. Strip covering north-east corner. Strip around and above main entrance and upper window. Strips above each conference room window.
- Overhead block canopy installed above
- Existing feature bricks to the front of the property are to be painted navy blue to match cladding.
- New 1800mm timber closeboard fence to be installed around property (location shown on plans). Land within new fence boundary to be hardscape, possibly tarmac but client to confirm.
- Land previously belonging to property at rear (shown on plans) will be reclaimed for school yard area, foliage and lawn removed and replaced with matching tarmac.

All IT/electrical services such as new trunking for offices, CAT-6 data points and sockets are to be installed and prepared by the client's own IT department.

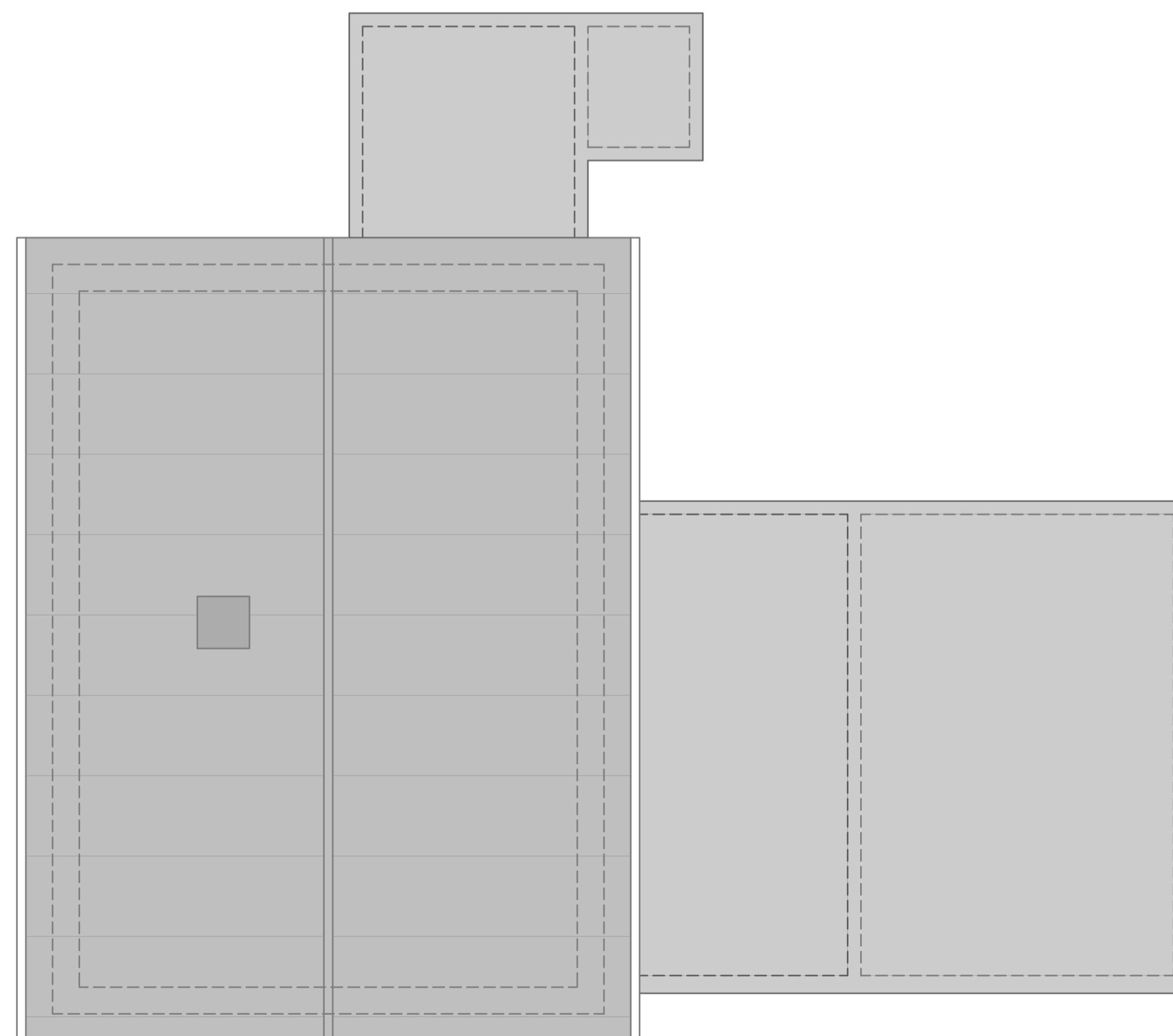
Local council to be instructed to form new dropped curb to front and make good planting around entrance path.



EXISTING GROUND FLOOR PLAN  
SCALE 1:50



EXISTING FIRST FLOOR PLAN  
SCALE 1:50



EXISTING ROOF PLAN  
SCALE 1:50

**LEGEND**

- Full Fill Cavity Wall  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K.  
New cavity wall to comprise of 100mm suitable facing brick. Full fill cavity with 100mm Celotex Cavity insulation as manufacturer's details. Inner leaf to be 100mm medium block. 0.45 W/m<sup>2</sup>K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.
- FULL FILL CAVITY WALL  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K.  
20mm two coat sand/cement render to comply to BS EN 13914-1 with waterproof additive on 100mm standard block. 0.45 W/m<sup>2</sup>K. Fully fill the cavity with 100mm Celotex Cavity insulation as manufacturer's spec. Inner leaf to be 100mm standard block. 0.45 W/m<sup>2</sup>K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.
- INTERNAL STUD PARTITIONS  
100mm x 50mm softwood treated timbers studs at 400mm ctrs with 50 x 100mm head and sole pieces and solid intermediate horizontal noggins at 1/3 height or 450mm. Provide min 10kg/m<sup>2</sup> density acoustic soundproof quilt tightly packed (eg. 100mm Rockwool or Iso wool mineral fibre sound insulation) in all voids the full depth of the stud. Partitions built off doubled up joists where partitions run parallel or provide noggins where at right angles, or built off DPC on thickened concrete slab if solid ground floor. Walls faced throughout with 12.5mm plaster board with skim plaster finish. Taped and jointed complete with beads and stops.
- INTERNAL MASONRY PARTITIONS (BLOCKWORK)  
Construct non load bearing internal masonry partitions using dense concrete blocks built off thickened floor slab and face at 200mm centres with proprietary steel profiles or block bonded to all internal and external walls. Walls faced throughout with 12.5mm plasterboard on dabs with skim plaster finish or 13mm lightweight plaster.
- SUPPORTING BEAM  
New steel beams to be encased in 12.5mm Gyproc FireLine board with staggered joints. Gyproc FireCase or painted in Nulite 5 or similar intumescent paint to provide 1/2 hour fire resistance as agreed with Building Control. All fire protection to be installed as detailed by specialist manufacturer. Engineer to confirm all steel and structural work.
- EXTERNAL BRICKWORK WALL  
100mm brick external walls with 100 X 400mm piers at maximum 3.0m ctrs.

**REVISIONS**

REV	DATE	CHANGES
0	14/03/24	Initial Draft
1	26/03/24	Internal Changes

**JOB INFORMATION**

ADDRESS: KADER ACADEMY,  
STAINSDROP AVENUE,  
MIDDLESBROUGH, TS5 8NU

CLIENT NAME: RYAN POWNER

PROJECT: CONVERT DWELLING TO  
SCHOOL OFFICE

**DRAWINGS :**

Existing Plans - Page 01

**DATE :**

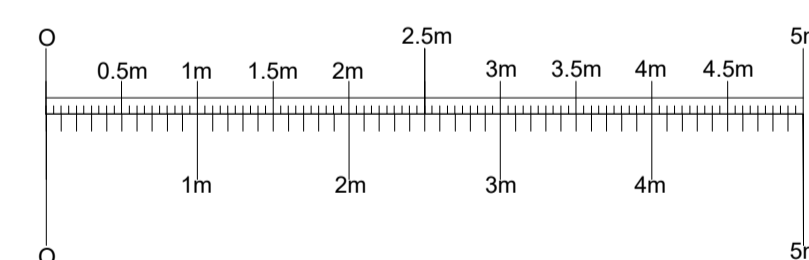
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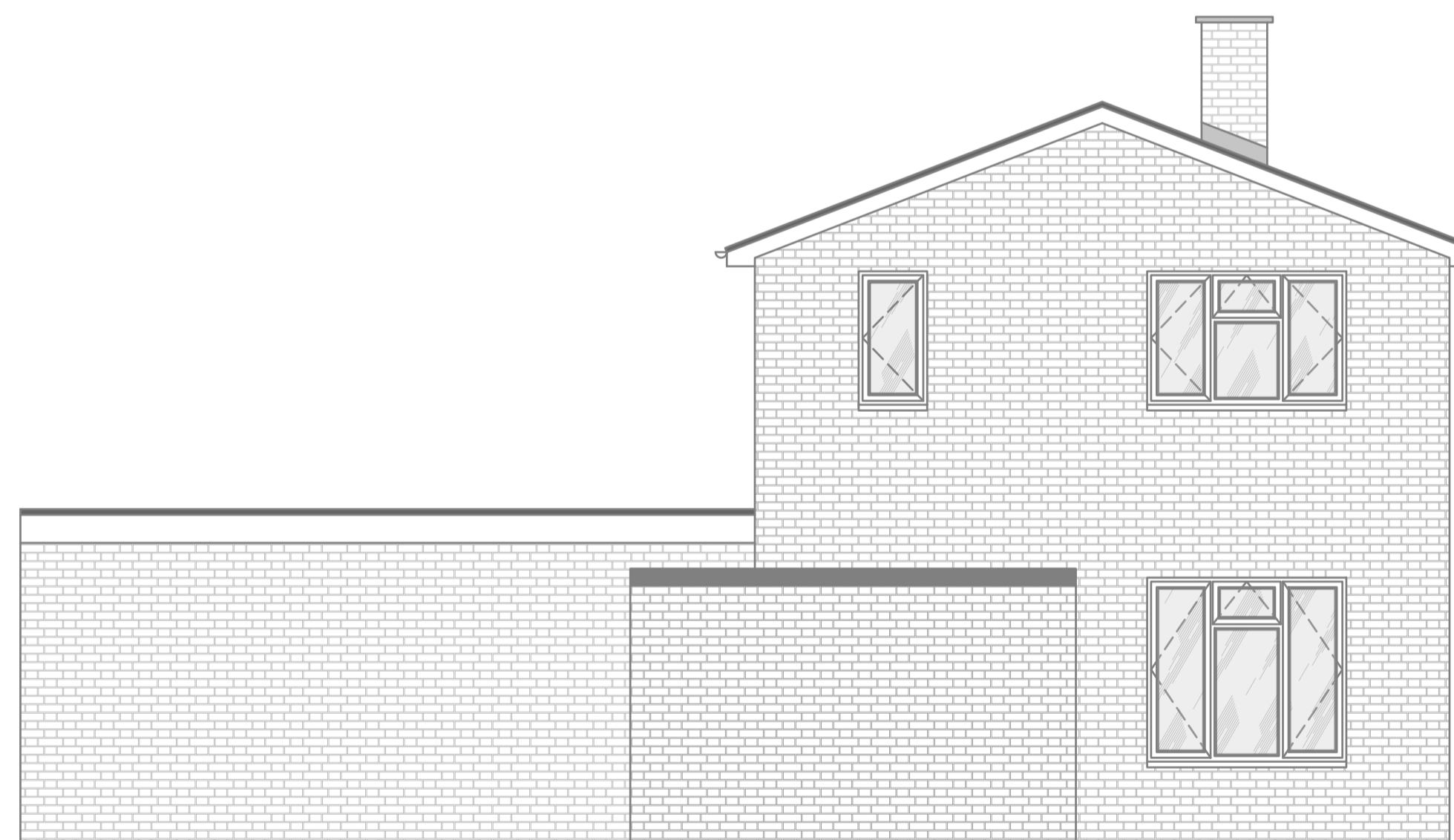
EXISTING FRONT ELEVATION  
SCALE 1:50



EXISTING LEFT SIDE ELEVATION  
SCALE 1:50



EXISTING RIGHT SIDE ELEVATION  
SCALE 1:50



EXISTING REAR ELEVATION  
SCALE 1:50

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CLIENT NAME: RYAN POWNER

PROJECT: CONVERT DWELLING TO  
SCHOOL OFFICE

**DRAWINGS :**

Existing Elevations - Page 02

DATE :

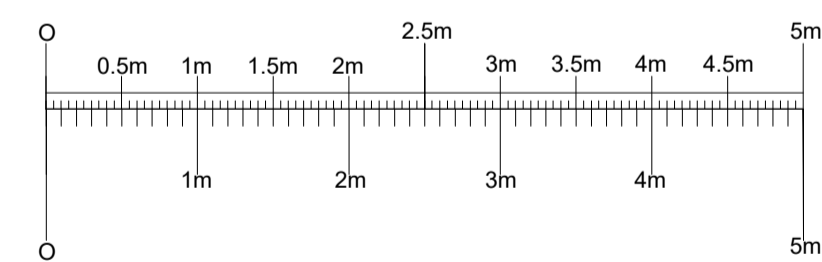
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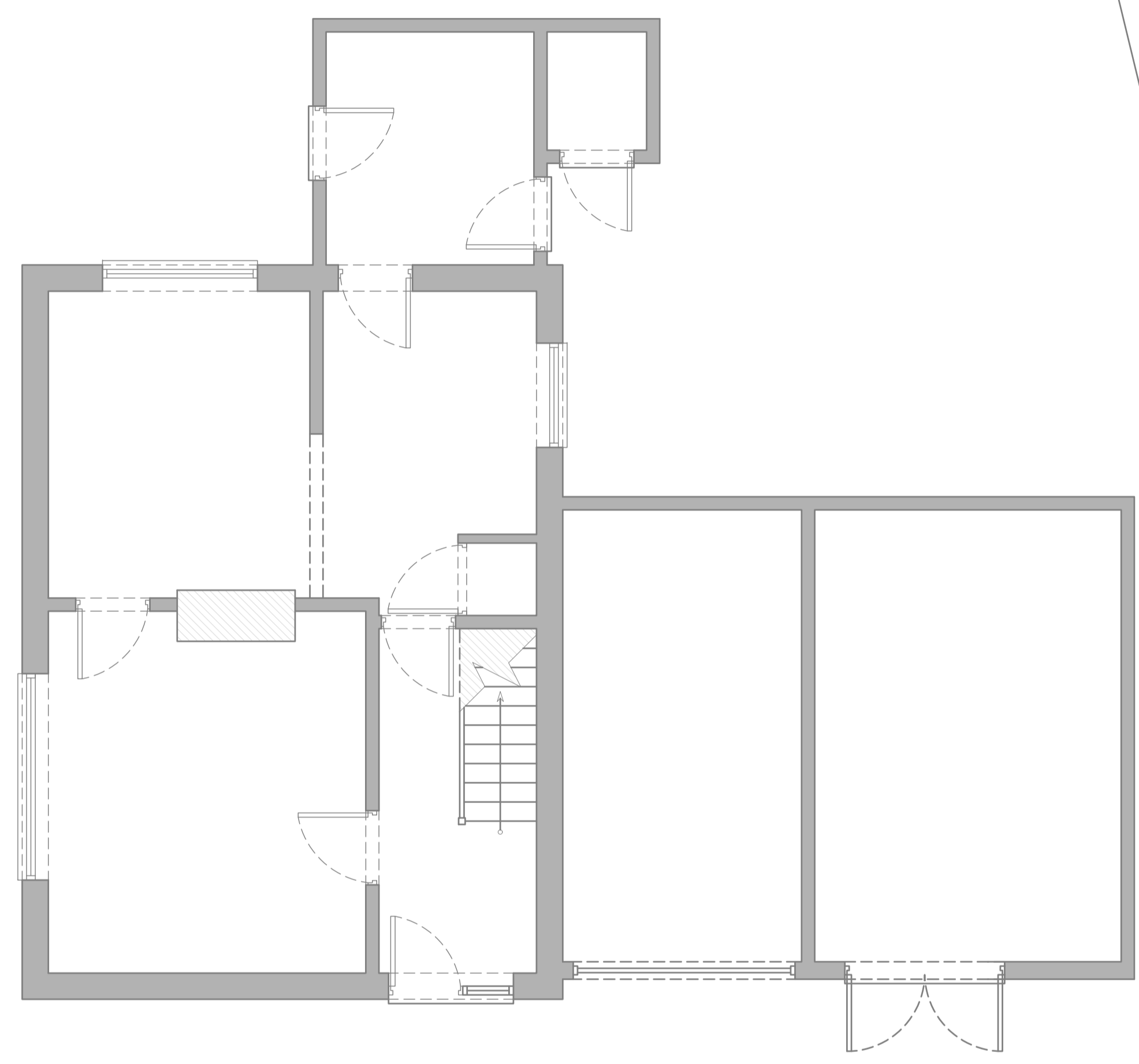
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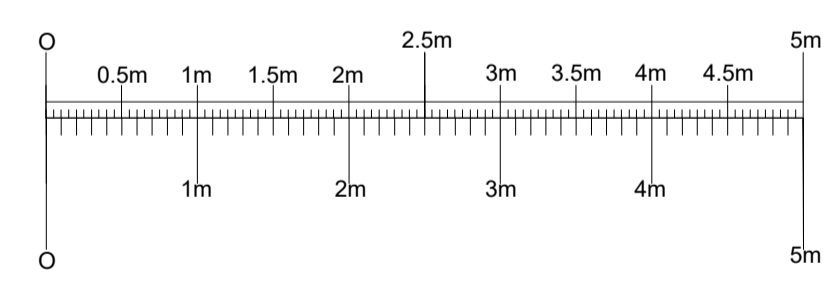
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Existing Site Plan - Page 03

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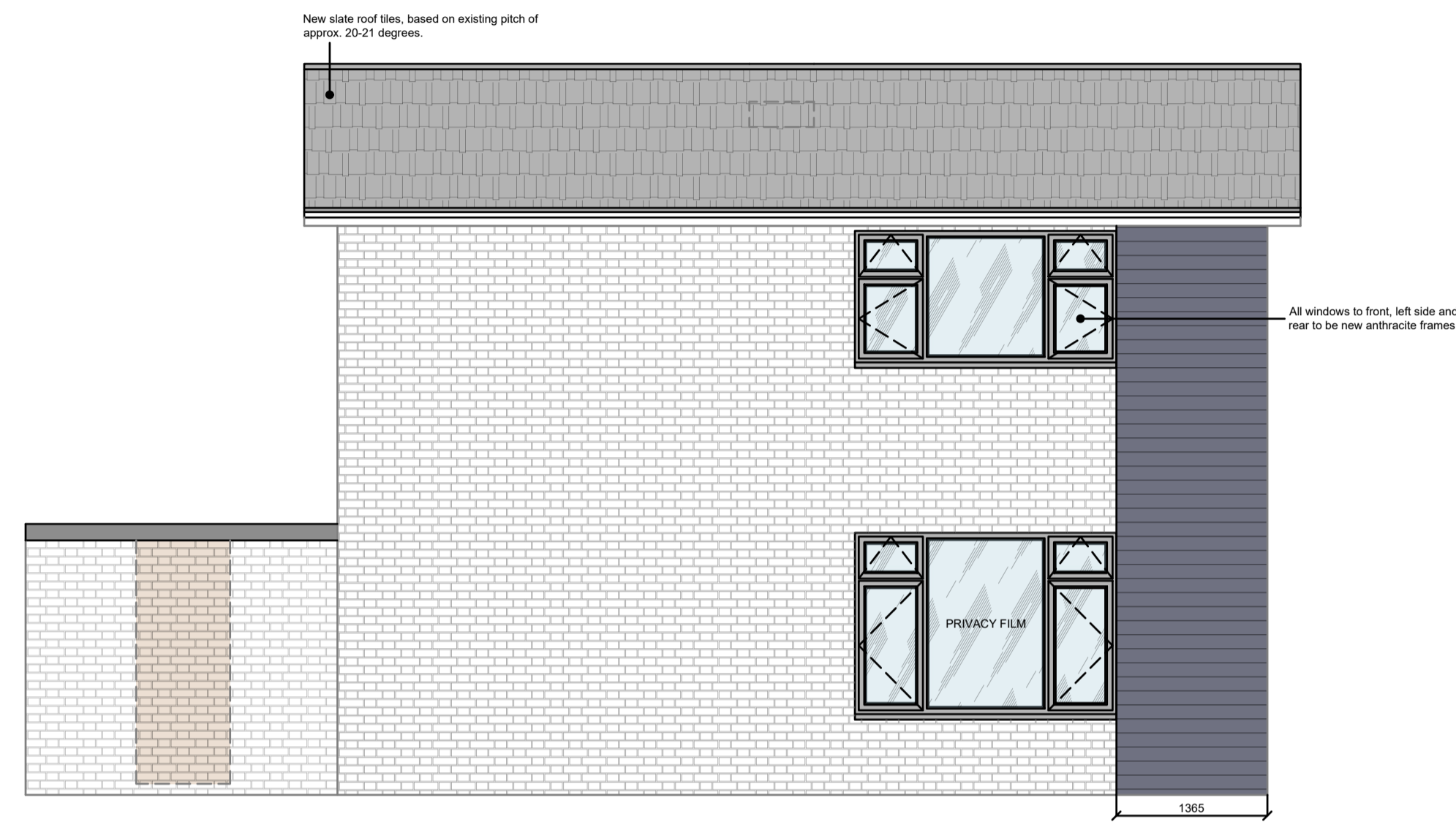
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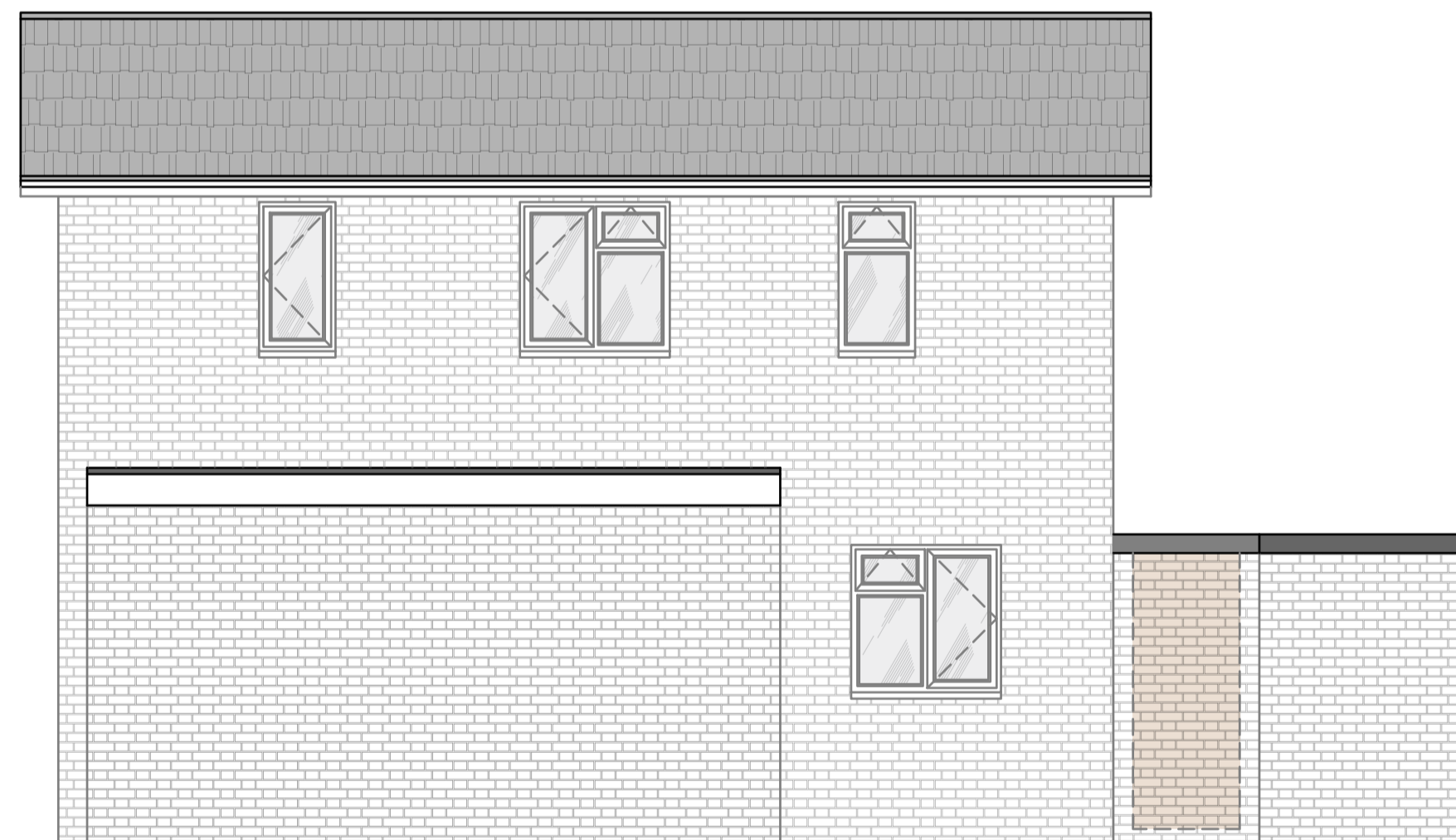




PROPOSED FRONT ELEVATION  
SCALE 1:50



PROPOSED LEFT SIDE ELEVATION  
SCALE 1:50



PROPOSED RIGHT SIDE ELEVATION  
SCALE 1:50



PROPOSED REAR ELEVATION  
SCALE 1:50

**LEGEND**

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- INTERNAL MASONRY PARTITIONS (BLOCKWORK)**  
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- SUPPORTING BEAM**  
New steel beams to be encased in 12.5mm Gyproc FireLine board with staggered joints. Gyproc FireCase or painted in Nulite 5 or similar intumescent paint to provide 1/2 hour fire resistance as agreed with Building Control. All fire protection to be installed as detailed by specialist manufacturer. Engineer to confirm all steel and structural work.
- EXTERNAL BRICKWORK WALL**  
100mm brick external walls with 100 X 400mm piers at maximum 3.0m ctrs.

**REVISIONS**

REV	DATE	CHANGES
0	14/03/24	Initial Draft
1	26/03/24	Internal Changes
2	18/06/24	Signage removal

**JOB INFORMATION**

ADDRESS: KADER ACADEMY,  
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MIDDLESBROUGH, TS5 8NU

CLIENT NAME: RYAN POWNER

PROJECT: CONVERT DWELLING TO  
SCHOOL OFFICE

**DRAWINGS :**

Proposed Elevations - Page 05

DATE :

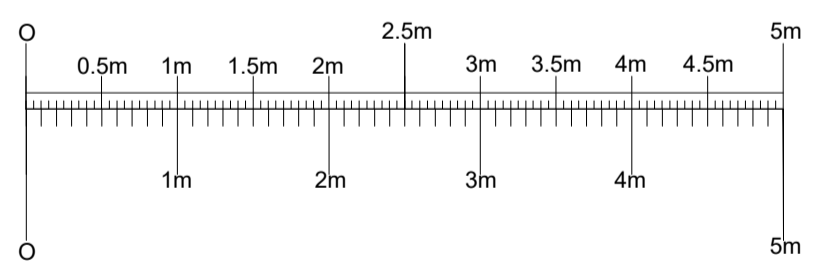
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WEBSITE: WWW.PYRAMIDDESIGNS.CO.UK



PROPOSED GROUND FLOOR PLAN  
SCALE 1:50







ELECTRICAL LEGEND

-  DOUBLE GANG SOCKET - 1200mm HIGH AFI (2 PER DESK)
-  CAT-6 CONNECTION POINT (2 PER DESK)
-  SPOTLIGHT
-  CABLE TRUNKING - 1200mm HEIGHT



PROPOSED FIRST FLOOR PLAN  
SCALE 1:50

LEGEND

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REVISIONS

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DRAWINGS :

Proposed Electrical Plans - Page 06

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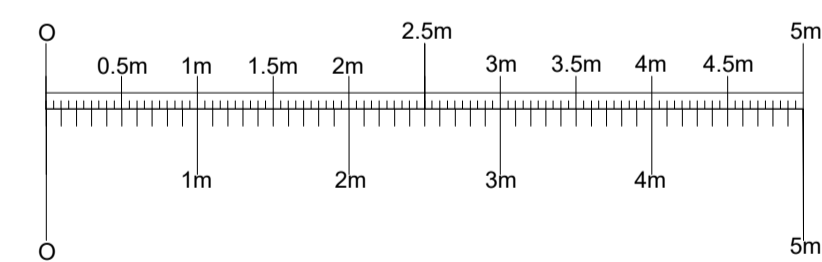
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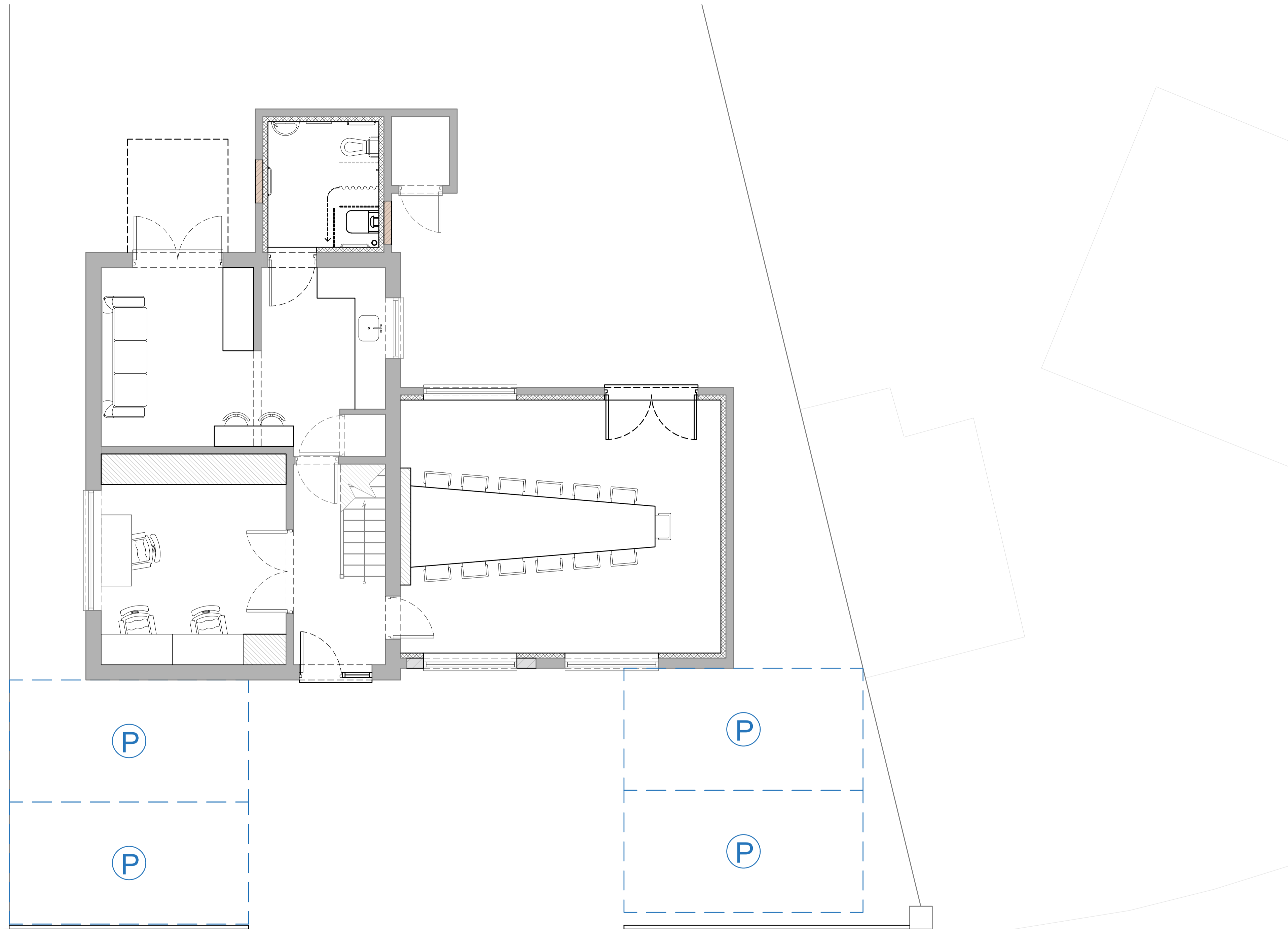
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WEBSITE: WWW.PYRAMIDDESIGNS.CO.UK



REPLACE FENCE TO FRONT OF PROPERTY WITH SIMILAR IRON RAILING TO COMPLIMENT NEW ACCESS

NEW DROPPED CURB. CUTBACK GRASS VERGE ON LEFT AND PLANT GRASS VERGE TO RIGHT.

KADER AVENUE

**LEGEND**

**Full Fill Cavity Wall**  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K.  
New cavity wall to comprise of 100mm suitable facing brick. Full fill cavity with 100mm Celotex Cavity insulation as manufacturer's details. Inner leaf to be 100mm medium block. 0.45 W/m<sup>2</sup>K.  
Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.

**FULL FILL CAVITY WALL**  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K.  
20mm two coat sand/cement render to comply to BS EN 13914-1 with waterproof additive on 100mm standard block. 0.45 W/m<sup>2</sup>K. Fully fill the cavity with 100mm Celotex Cavity insulation as manufacturer's spec. Inner leaf to be 100mm standard block. 0.45 W/m<sup>2</sup>K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.

**INTERNAL STUD PARTITIONS**  
100mm x 50mm softwood treated timbers studs at 400mm ctrs with 50 x 100mm head and sole pieces and solid intermediate horizontal nogginns at 1/3 height or 450mm. Provide min 10kg/m<sup>2</sup> density acoustic soundproof quilt tightly packed (eg. 100mm Rockwool or Iso wool mineral fibre sound insulation) in all voids the full depth of the stud. Partitions built off doubled up joists where partitions run parallel or provide nogginns where at right angles, or built off DPC on thickened concrete slab if solid ground floor. Walls faced throughout with 12.5mm plaster board with skim plaster finish. Taped and jointed complete with beads and stops.

**INTERNAL MASONRY PARTITIONS (BLOCKWORK)**  
Construct non load bearing internal masonry partitions using dense concrete blocks built off thickened floor slab and laid at 200mm centres with proprietary steel profiles or block bonded to all internal and external walls. Walls faced throughout with 12.5mm plasterboard on dabs with skim plaster finish or 13mm lightweight plaster.

**SUPPORTING BEAM**  
New steel beams to be encased in 12.5mm Gyproc FireLine board with staggered joints. Gyproc FireCase or painted in Nulite 5 or similar intumescent paint to provide 1/2 hour fire resistance as agreed with Building Control. All fire protection to be installed as detailed by specialist manufacturer. Engineer to confirm all steel and structural work.

**EXTERNAL BRICKWORK WALL**  
100mm brick external walls with 100 X 400mm piers at maximum 3.0m ctrs.

**REVISIONS**

REV	DATE	CHANGES
0	14/03/24	Initial Draft
1	26/03/24	Internal Changes

**JOB INFORMATION**

ADDRESS: KADER ACADEMY,  
STAINSDROP AVENUE,  
MIDDLESBROUGH, TS5 8NU

CLIENT NAME: RYAN POWNER

PROJECT: CONVERT DWELLING TO SCHOOL OFFICE

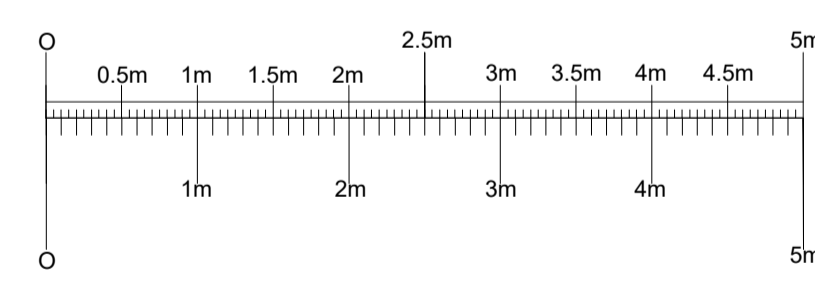
**DRAWINGS :**

Proposed Site Plan - Page 07

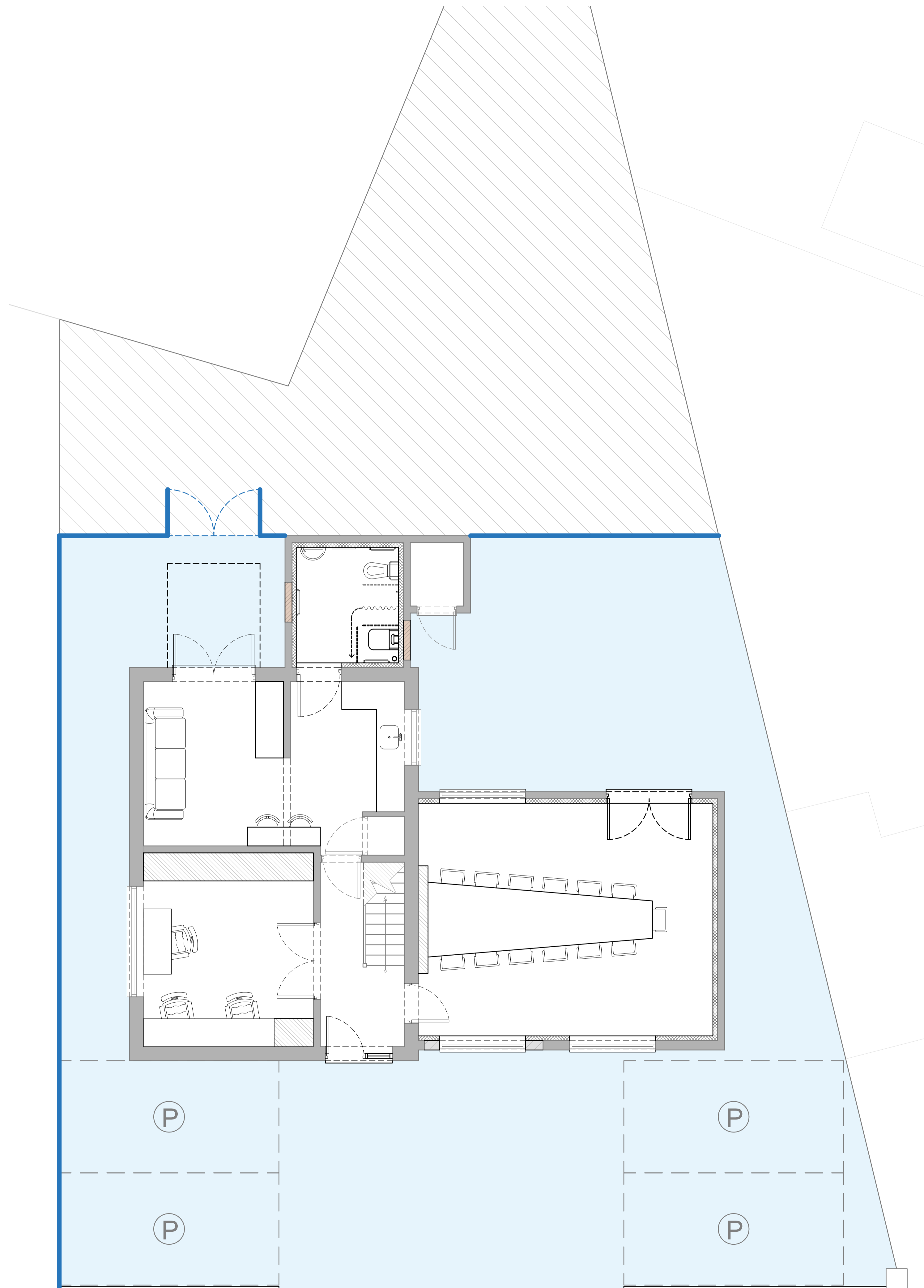
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14/03/24



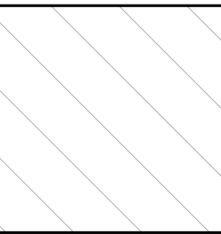
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**DRAWN BY :**  
AM









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-  Land around property to be hardscaped.
-  New 1800mm high timber closeboard fence.
-  Existing property land to be taken over for school grounds. Foliage and lawn to be removed and replaced by matching tarmac hardstanding for school grounds.

**LEGEND**

	<b>Full Fill Cavity Wall</b> To achieve minimum U Value of 0.18 W/m <sup>2</sup> K. New cavity wall to comprise of 100mm suitable facing brick. Full fill cavity with 100mm Celotex Cavity insulation as manufacturer's details. Inner leaf to be 100mm medium block. 0.45 W/m <sup>2</sup> K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.
	<b>FULL FILL CAVITY WALL</b> To achieve minimum U Value of 0.18 W/m <sup>2</sup> K. 20mm two coat sand/cement render to comply to BS EN 13914-1 with waterproof additive on 100mm standard block. 0.45 W/m <sup>2</sup> K. Fully fill the cavity with 100mm Celotex Cavity insulation as manufacturer's spec. Inner leaf to be 100mm standard block. 0.45 W/m <sup>2</sup> K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.
	<b>INTERNAL STUD PARTITIONS</b> 100mm x 50mm softwood treated timbers studs at 400mm ctrs with 50 x 100mm head and sole pieces and solid intermediate horizontal noggins at 1/3 height or 450mm. Provide min 10kg/m <sup>2</sup> density acoustic soundproof quilt tightly packed (eg. 100mm Rockwool or Isowool mineral fibre sound insulation) in all voids the full depth of the stud. Partitions built off double up joists where partitions run parallel or provide noggins where at right angles, or built off DPC on thickened concrete slab if solid ground floor. Walls faced throughout with 12.5mm plaster board with skim plaster finish. Taped and jointed complete with beads and stops.
	<b>INTERNAL MASONRY PARTITIONS (BLOCKWORK)</b> Construct non load bearing internal masonry partitions using dense concrete blocks built off thickened floor slab and face at 200mm centres with proprietary steel profiles or block bonded to all internal and external walls. Walls faced throughout with 12.5mm plasterboard on dabs with skim plaster finish or 13mm lightweight plaster.
	<b>SUPPORTING BEAM</b> New steel beams to be encased in 12.5mm Gyproc FireLine board with staggered joints. Gyproc FireCase or painted in Nulite 5 or similar intumescent paint to provide 1/2 hour fire resistance as agreed with Building Control. All fire protection to be installed as detailed by specialist manufacturer. Engineer to confirm all steel and structural work.
	<b>EXTERNAL BRICKWORK WALL</b> 100mm brick external walls with 100 X 400mm piers at maximum 3.0m ctrs.

**REVISIONS**

REV	DATE	CHANGES
0	14/03/24	Initial Draft
1	26/03/24	Internal Changes

**JOB INFORMATION**

ADDRESS: KADER ACADEMY,  
STAINSDROP AVENUE,  
MIDDLESBROUGH, TS5 8NU

CLIENT NAME: RYAN POWNER

PROJECT: CONVERT DWELLING TO  
SCHOOL OFFICE

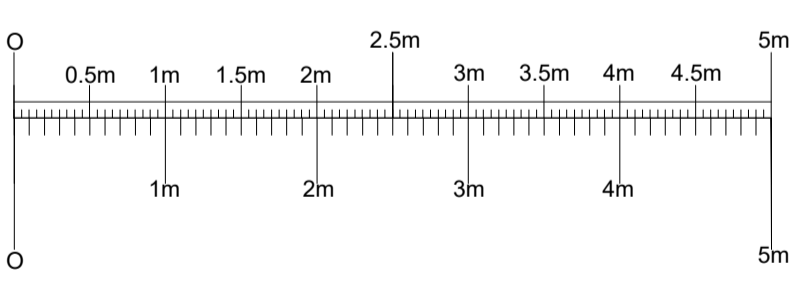
**DRAWINGS :**

Proposed Landscaping Plan - Page 08

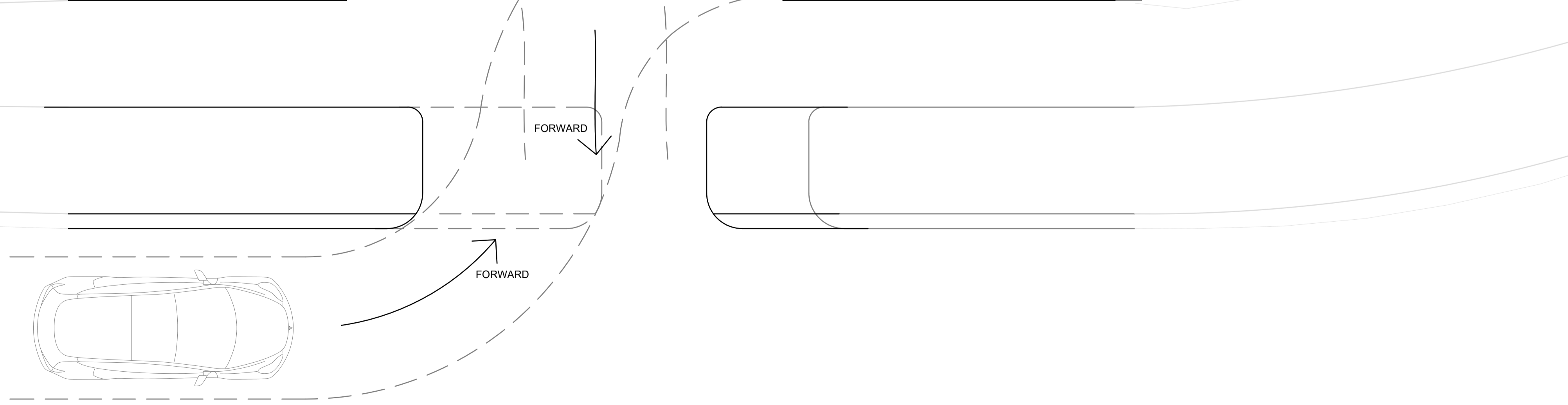
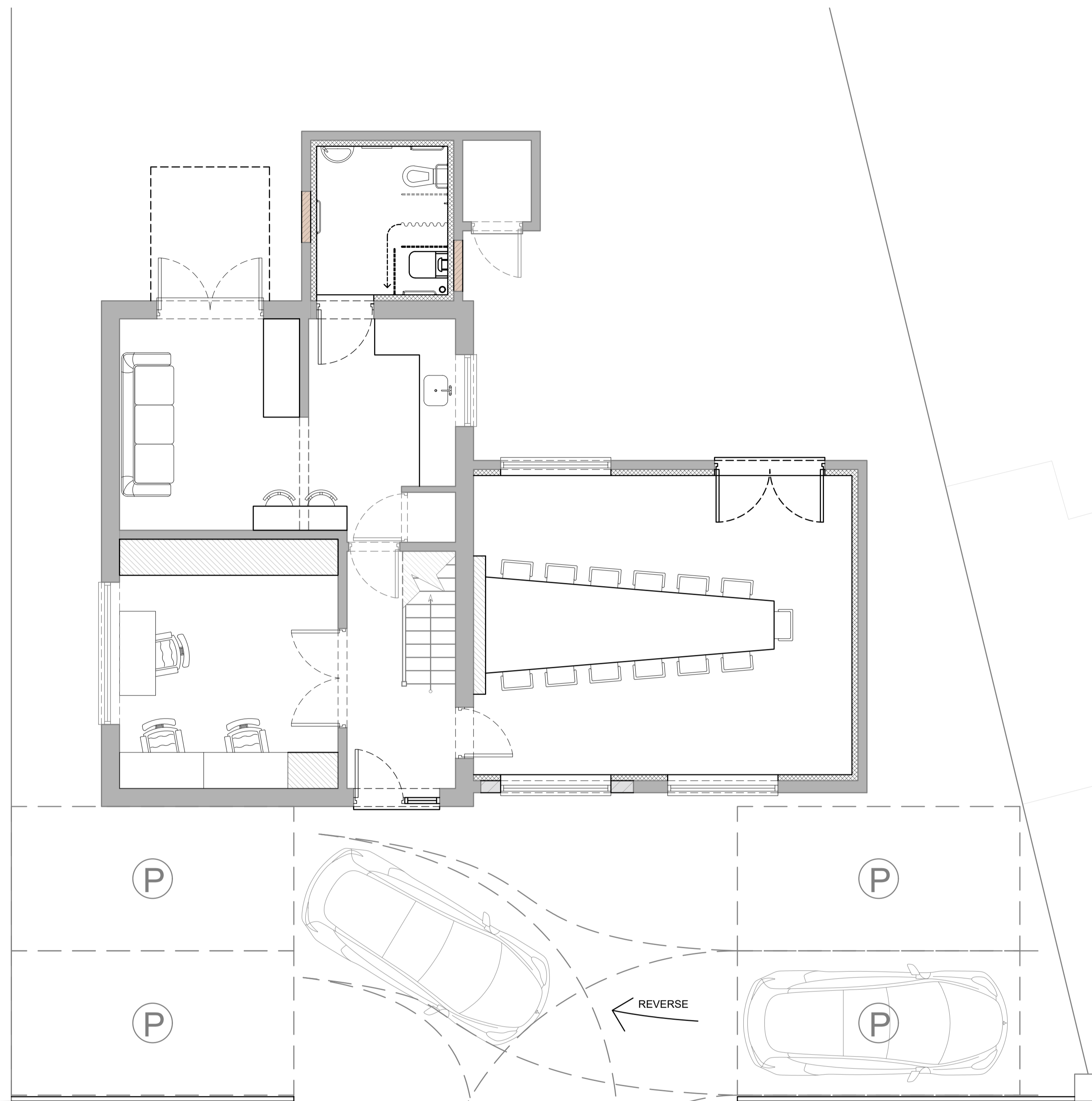
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14/03/24

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KADER AVENUE

**LEGEND**

**Full Fill Cavity Wall**  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K.  
New cavity wall to comprise of 100mm suitable facing brick. Full fill cavity with 100mm Celotex Cavity insulation as manufacturer's details. Inner leaf to be 100mm medium block. 0.45 W/m<sup>2</sup>K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.

**FULL FILL CAVITY WALL**  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K.  
20mm two coat sand/cement render to comply to BS EN 13914-1 with waterproof additive on 100mm standard block. 0.45 W/m<sup>2</sup>K. Fully fill the cavity with 100mm Celotex Cavity insulation as manufacturer's spec. Inner leaf to be 100mm standard block. 0.45 W/m<sup>2</sup>K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.

**INTERNAL STUD PARTITIONS**  
100mm x 50mm softwood treated timbers studs at 400mm ctrs with 50 x 100mm head and sole pieces and solid intermediate horizontal noggins at 1/3 height or 450mm. Provide min 10kg/m<sup>2</sup> density acoustic soundproof quilt tightly packed (eg. 100mm Rockwool or Iso wool mineral fibre sound insulation) in all voids the full depth of the stud. Partitions built off doubled up joints where partitions run parallel or provide noggins where at right angles, or built off DPC on thickened concrete slab if solid ground floor. Walls faced throughout with 12.5mm plaster board with skim plaster finish. Taped and jointed complete with beads and stops.

**INTERNAL MASONRY PARTITIONS (BLOCKWORK)**  
Construct non load bearing internal masonry partitions using dense concrete blocks built off thickened floor slab and fixed at 200mm centres with proprietary steel profiles or block bonded to all internal and external walls. Walls faced throughout with 12.5mm plasterboard on dabs with skim plaster finish or 13mm lightweight plaster.

**SUPPORTING BEAM**  
New steel beams to be encased in 12.5mm Gyproc FireLine board with staggered joints. Gyproc FireCase or painted in Nulite 5 or similar intumescent paint to provide 1/2 hour fire resistance as agreed with Building Control. All fire protection to be installed as detailed by specialist manufacturer. Engineer to confirm all steel and structural work.

**EXTERNAL BRICKWORK WALL**  
100mm brick external walls with 100 X 400mm piers at maximum 3.0m ctrs.

**REVISIONS**

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**JOB INFORMATION**

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CLIENT NAME: RYAN POWNER

PROJECT: CONVERT DWELLING TO  
SCHOOL OFFICE

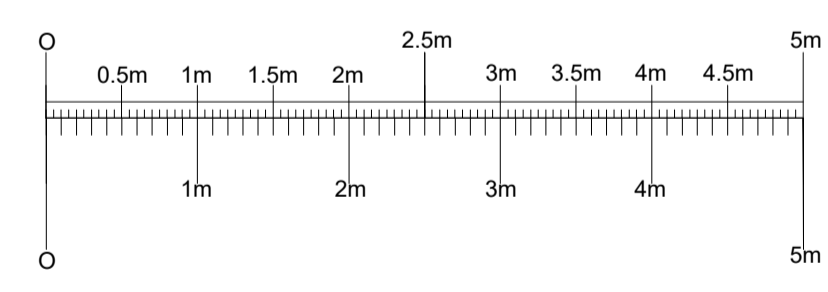
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Proposed Parking Plan - Page 09

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14/03/24

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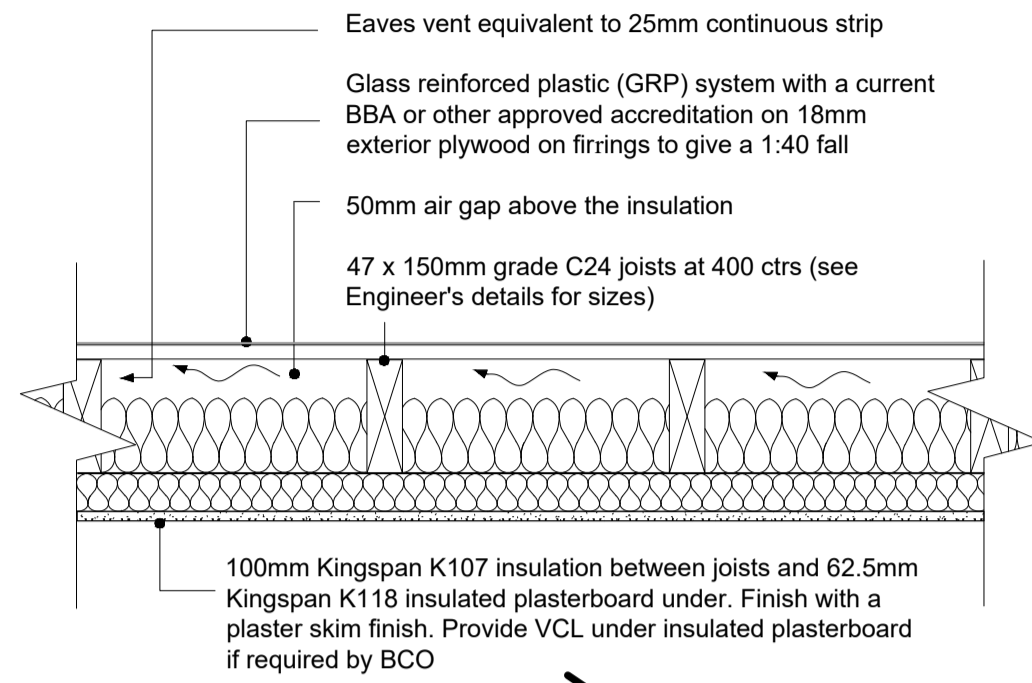
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# PROPOSED ROOF PLAN

## SCALE 1:30

### COLD FLAT ROOF

U-value 0.15 W/m<sup>2</sup>K



### VENTILATED FLAT ROOF

(imposed load max 1.0 kN/m<sup>2</sup> - dead load max 0.75 kN/m<sup>2</sup>)  
To achieve U value of 0.15 W/m<sup>2</sup>K

Flat roof covering to be glass reinforced plastic (GRP) system with BROOF(t4) fire rating in accordance with BS EN 13501-1:2018 and with a current BBA or other approved accreditation. GRP to be laid in compliance with manufacturer's details by flat roofing specialist on 18mm exterior grade plywood, plywood to be laid on firings to give a 1:40 fall on 47 x 150mm grade C24 timber joists at 400 ctrs, max span 3.22m (see Engineer's details for sizes). Cross-ventilation to be provided on opposing sides by a proprietary eaves ventilation strip to give 25mm continuous ventilation, with fly proof screen. Flat roof insulation is to be continuous with the wall insulation but stopped back to allow a continuous 50mm air gap above the insulation for ventilation. Insulation to be 100mm Kingspan K107 between joists and 62.5mm Kingspan K118 insulated plasterboard under. Finish with plaster skim (provide VCL under insulated plasterboard if required by Building Control). Provide restraint to flat roof by fixing using of 30 x 5 x 1200mm ms galvanised lateral restraint straps at maximum 2000mm centres fixed to 100 x 50mm wall plates and anchored to wall.

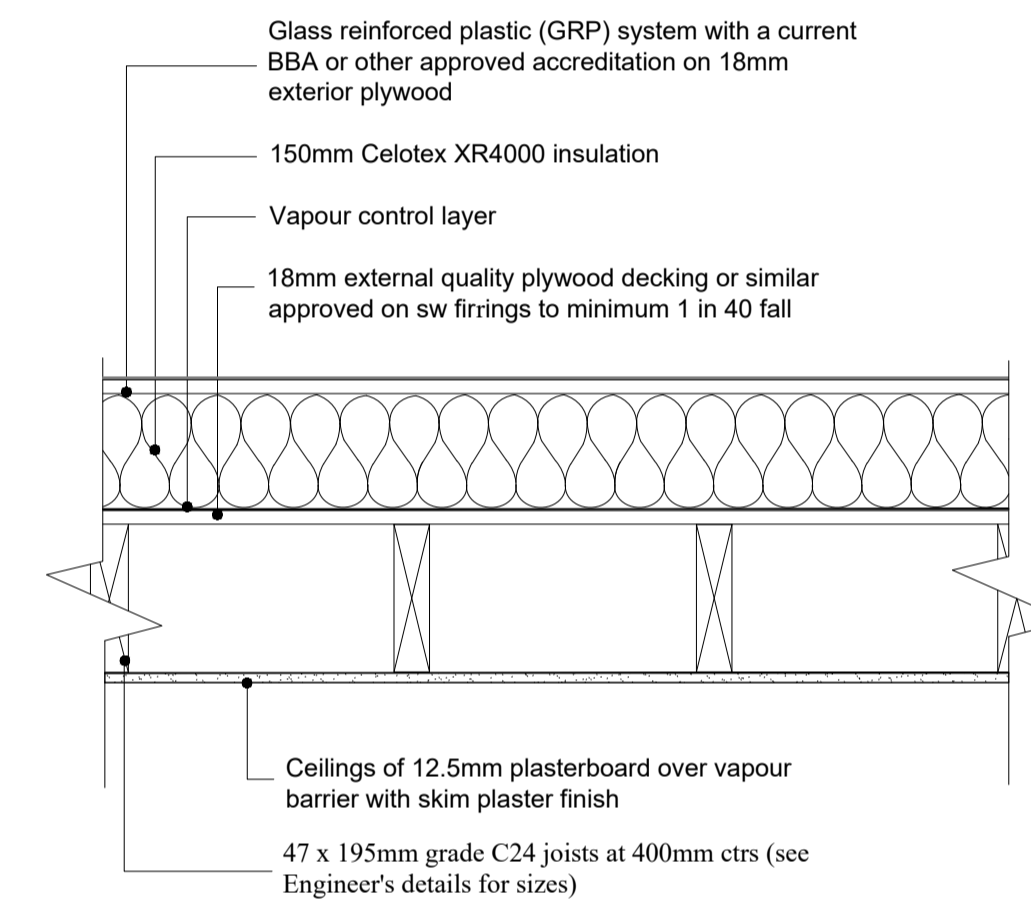
### WARM FLAT ROOF

(imposed load max 1.0 kN/m<sup>2</sup> - dead load max 0.75 kN/m<sup>2</sup>)  
To achieve U value 0.15 W/m<sup>2</sup>K

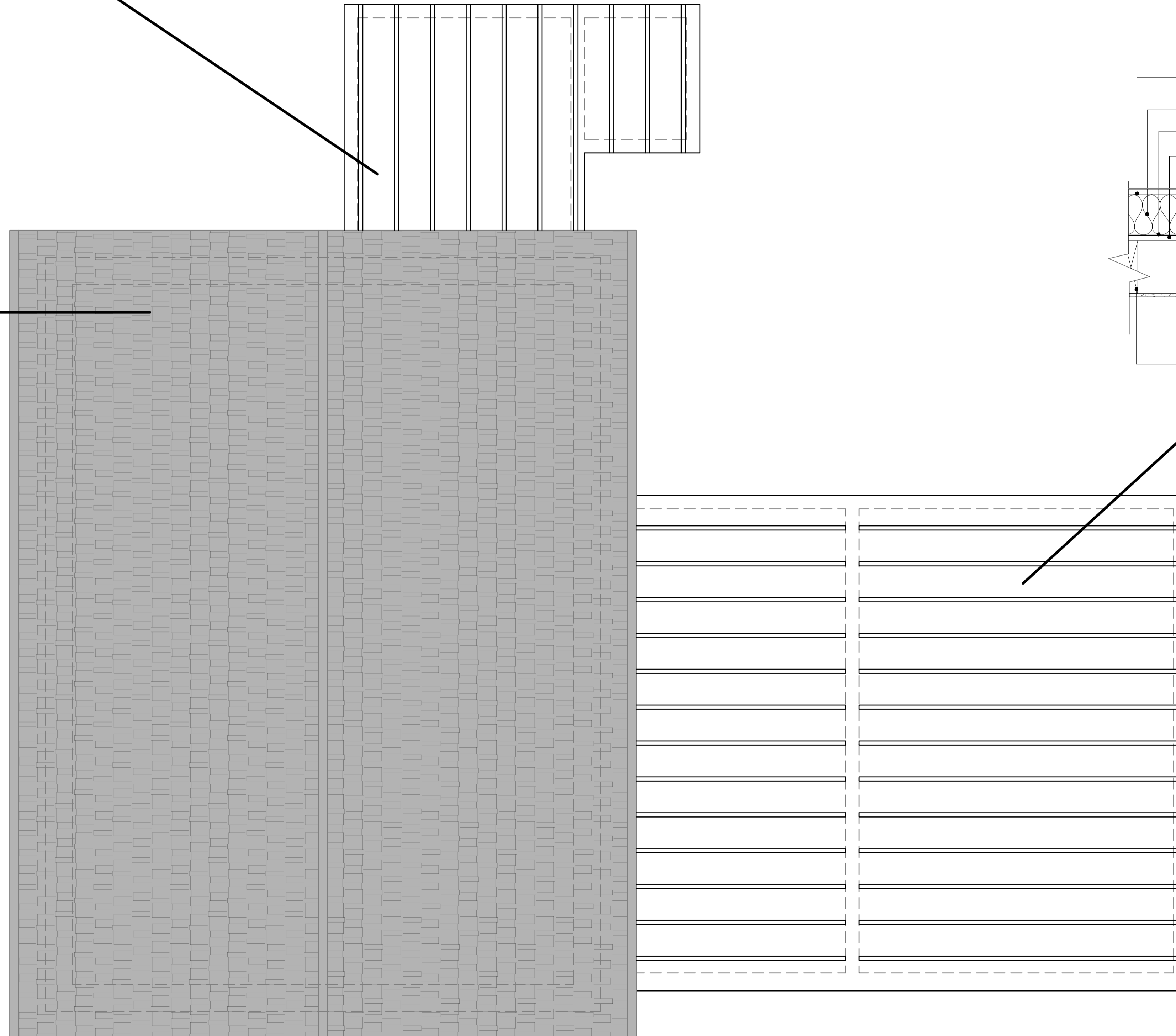
Flat roof covering to be glass reinforced plastic (GRP) system with BROOF(t4) fire rating in accordance with BS EN 13501-1:2018 and with a current BBA or other approved accreditation. Roof covering to be laid in compliance with manufacturer's details by flat roofing specialist onto 18mm exterior quality plywood over 150mm Celotex XR4000 on sw firings to minimum 1 in 40 fall on sw treated 47 x 195mm C24 flat roof joists at 400mm ctrs to give a max span of 4.51m or as Structural Engineer's details and calculations. Fix 12.5mm plasterboard over vapour barrier to underside of joists, finish a with plaster skim. Provide cavity tray to where new roof abuts existing house. Provide restraint to flat roof by fixing of 30 x 5 x 1200mm ms galvanised lateral restraint straps at maximum 2000mm centres fixed to 100 x 50mm wall plates and anchored to wall.

### WARM FLAT ROOF

U-value 0.15 W/m<sup>2</sup>K



Remove existing felt roof covering and replace with counter battens and slate roof tiles to suit 20-21degree pitch as existing. Existing rafters to be assessed for suitability of loading of new tiles.



### LEGEND

- FULL FILL CAVITY WALL**  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K  
New cavity wall to comprise of 100mm outside facing brick. Full fill cavity with 100mm Celotex Cavity insulation as manufacturer's details. Inner leaf to be 100mm medium block. 0.45 W/m<sup>2</sup>K  
Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.
- FULL FILL CAVITY WALL**  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K  
20mm two coat sand/cement render to comply to BS EN 13914-1 with waterproof additive on 100mm standard block. 0.45 W/m<sup>2</sup>K. Fully fill the cavity with 100mm Celotex Cavity insulation as manufacturer's spec. Inner leaf to be 100mm standard block. 0.45 W/m<sup>2</sup>K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.
- INTERNAL STUD PARTITIONS**  
100mm x 50mm softwood treated timbers studs at 400mm ctrs with 50 x 100mm head and sole pieces and solid intermediate horizontal nogging at 1/3 height or 450mm. Provide min 10kg/m<sup>2</sup> density acoustic soundproof quilt tightly packed (eg. 100mm Rockwool or Iso wool mineral fibre sound insulation) in all voids the full depth of the stud. Partitions built off double up joists where partitions run parallel or provide nogging where at right angles, or built off DPC on thickened concrete slab if solid ground floor. Walls faced throughout with 12.5mm plaster board with skim plaster finish. Taped and jointed complete with beads and stops.
- INTERNAL MASONRY PARTITIONS (BLOCKWORK)**  
Construct non load bearing internal masonry partitions using dense concrete blocks built off thickened floor slab and fixed at 200mm centres with proprietary steel profiles or block bonded to all internal and external walls. Walls faced throughout with 12.5mm plasterboard on dabs with skim plaster finish or 13mm lightweight plaster.
- SUPPORTING BEAM**  
New steel beams to be encased in 12.5mm Gyproc FireLine board with staggered joints. Gyproc FireCase or painted in Nulite 5 or similar intumescent paint to provide 1/2 hour fire resistance as agreed with Building Control. All fire protection to be installed as detailed by specialist manufacturer. Engineer to confirm all steel and structural work.
- EXTERNAL BRICKWORK WALL**  
100mm brick external walls with 100 X 400mm piers at maximum 3.0m ctrs.

### REVISIONS

REV	DATE	CHANGES
0	14/03/24	Initial Draft
1	26/03/24	Internal Changes

### JOB INFORMATION

ADDRESS: KADER ACADEMY,  
STAINSDROP AVENUE,  
MIDDLESBROUGH, TS5 8NU

CLIENT NAME: RYAN POWNER

PROJECT: CONVERT DWELLING TO  
SCHOOL OFFICE

### DRAWINGS :

Proposed Construction Details - Page 10

### DATE :

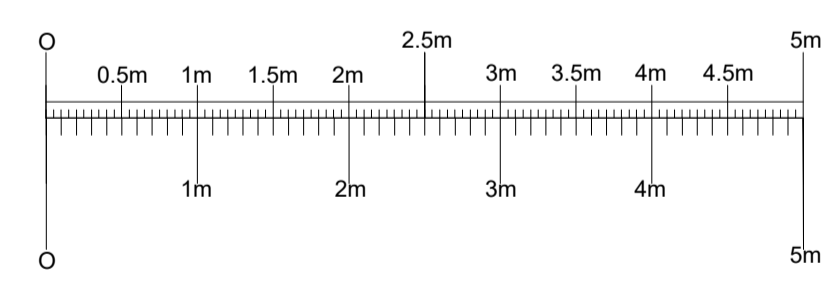
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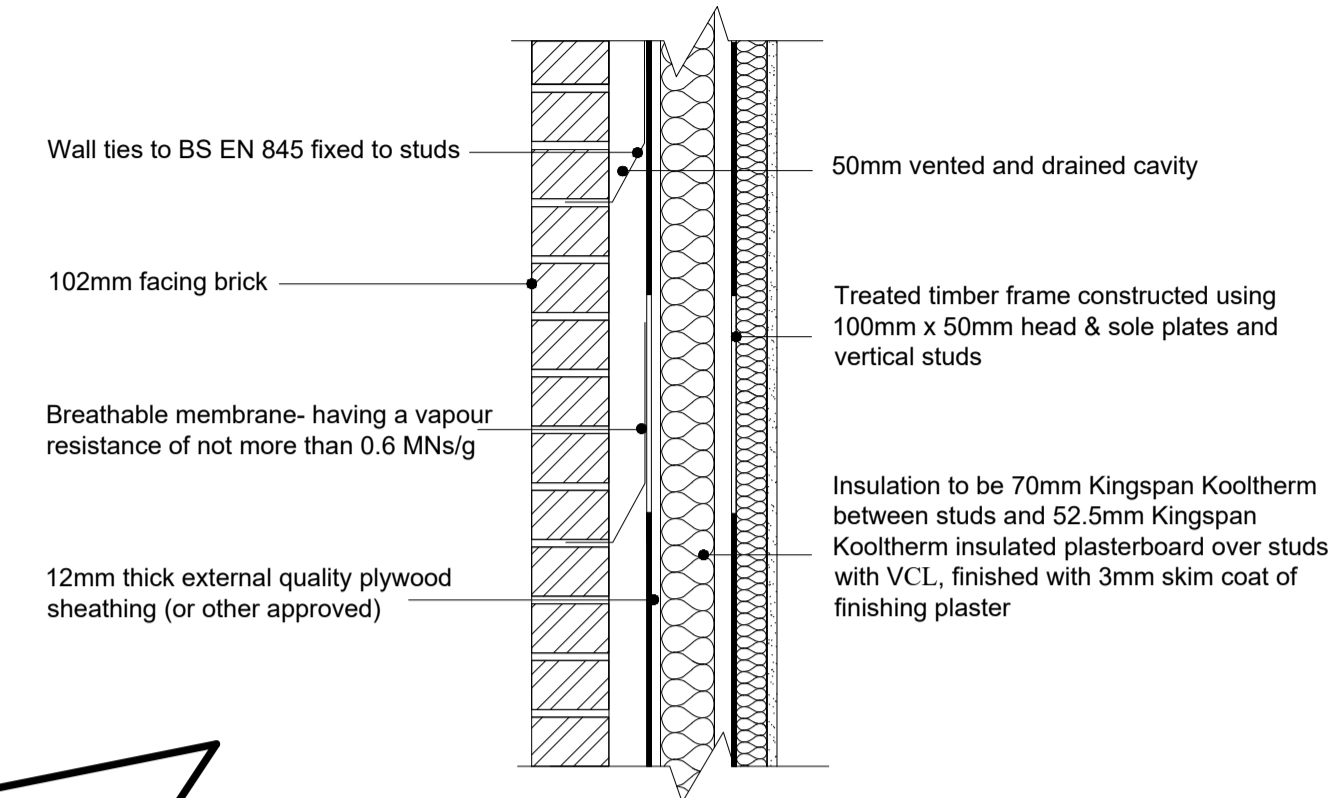
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# PROPOSED CONSTRUCTION PLAN

## SCALE 1:30

### BRICK FINISH TIMBER FRAMED WALL

U-value 0.18 W/m<sup>2</sup>K

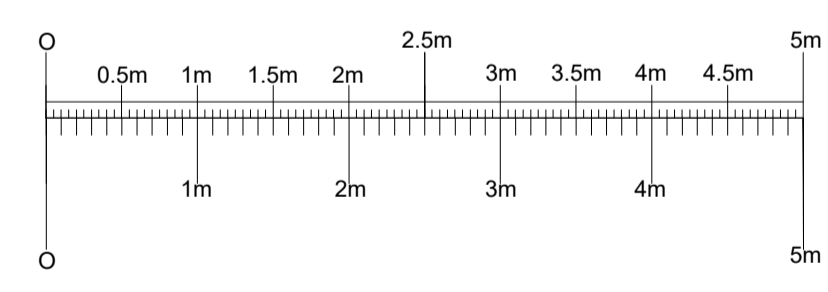


LEGEND	
	Full Fill Cavity Wall To achieve minimum U Value of 0.18 W/m <sup>2</sup> K. New cavity wall to comprise of 102mm outside facing brick. Full fill cavity with 100mm Celotex Cavity insulation as manufacturer's details. Inner leaf to be 100mm medium block. 0.45 W/m <sup>2</sup> K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.
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	INTERNAL STUD PARTITIONS 100mm x 50mm softwood treated timbers studs at 400mm ctrs with 50 x 100mm head and sole plates and solid intermediate horizontal noggins at 1/3 height or 450mm. Provide min 10kg/m <sup>2</sup> density acoustic soundproof quilt tightly packed (eg. 100mm Rockwool or Iso wool mineral fibre sound insulation) in all voids the full depth of the stud. Partitions built off double up joists where partitions run parallel or provide noggins where at right angles, or built off DPC on thickened concrete slab if solid ground floor. Walls faced throughout with 12.5mm plaster board with skim plaster finish. Taped and jointed complete with beads and stops.
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	EXTERNAL BRICKWORK WALL 100mm brick external walls with 100 X 400mm piers at maximum 3.0m ctrs.

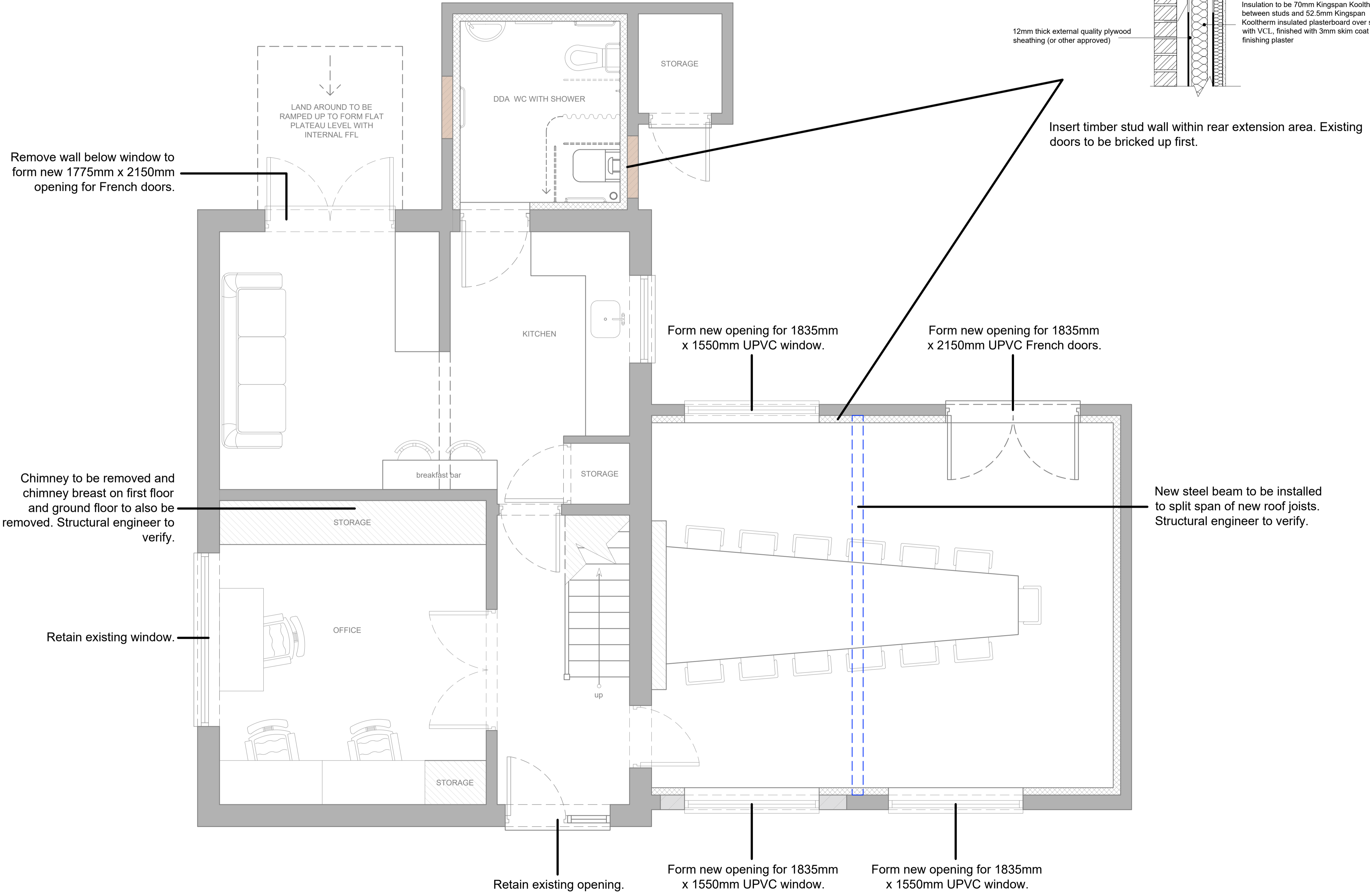
REVISIONS		
REV	DATE	CHANGES
0	14/03/24	Initial Draft
1	26/03/24	Internal Changes

JOB INFORMATION	
ADDRESS:	KADER ACADEMY, STAINSDROP AVENUE, MIDDLESBROUGH, TS5 8NU
CLIENT NAME:	RYAN POWNER
PROJECT:	CONVERT DWELLING TO SCHOOL OFFICE

DRAWINGS :	
Proposed Construction Details - Page 11	
DATE :	14/03/24
SCALE :	1:30 @A1
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# ADDITIONAL REGULATION NOTES

PLANNING NOTE - The local Planning department to be consulted on any local requirements relating to Planning Permissions and Permitted Development rights. An Artical 4, which removes certain rights, maybe in place.

Prior approval to be sought where required.

## SINGLE-STOREY EXTENSION

An extension or addition to your house is considered to be permitted development, not requiring an application for planning permission, provided certain limits and conditions are met.

- On designated land\* - no cladding of the exterior. \*Designated land (Article 2(3)) includes national parks and the Broads, Areas of Outstanding Natural Beauty, conservation areas and World Heritage Sites.
- On designated land\* - no side extensions. Rear extension - No permitted development for rear extensions of more than one storey. The regime for larger single-storey rear extensions (see point 9) does NOT apply to houses on designated land.
- No more than half the area of land around the "original house" would be covered by additions or other buildings. Sheds and other outbuildings must be included when calculating the 50 per cent limit.
- No extension forward of the principal elevation or side elevation fronting a highway.
- Materials to be similar in appearance to the existing house.
- Side extensions to be single storey. Width of side extension must not have a width greater than half the width of the original house.
- Side extensions to have a maximum height of four metres and width no more than half that of the original house.
- If the extension is within 2m of a boundary, maximum eaves height should be no higher than 3m to be permitted development.
- Single-storey rear extensions must not extend beyond the rear wall of the original house by more than 4m if a detached house; or more than 3m for any other house. Where not on designated land (Article 2(3)) or a Site of Special Scientific Interest, this limit is increased to 8m if a detached house; or 6m for any other house.
- Maximum height of a single-storey rear extension of 4m. (or less than 3m if within 2m of a property boundary)
- Maximum eaves and ridge height of extension no higher than existing house.

## TWO-STOREY REAR EXTENSION

An extension or addition to your house is considered to be permitted development, not requiring an application for planning permission, provided certain limits and conditions are met.

- On designated land extensions of more than one storey are not permitted development. \* Designated land includes national parks and the Broads, Areas of Outstanding Natural Beauty, conservation areas and World Heritage Sites.
- Extensions (including previous extensions) and other buildings must not exceed 50% of the total area of land around the original house. \* Sheds and other outbuildings must be included when calculating the above 50% limit.
- Maximum eaves and ridge height of extension no higher than existing house. If extension is within two metres of a boundary maximum eaves height should be no higher than three metres to be permitted development.
- Extensions of more than one storey must not extend beyond the rear wall of original house by more than three metres or be within seven metres of any boundary opposite the rear wall of the house.
- Roof pitch of extensions higher than one storey to match that of the existing house, as far as is practicable.
- Materials used in exterior work to be similar in appearance to those of the exterior of the existing house.
- Any upper-floor window in a wall or roof slope in a side elevation must be obscure-glazed and nonopening unless the parts which can be opened are more than 1.7 metres above the floor of the room in which it is installed.
- No balconies or verandas are permitted development.

## NOTICE OF COMMENCEMENT

A notice of commencement is to be submitted to Building Control within 5 days of work being regarded as commenced, under regulation 16 of The Building Regulations etc. (Amendment) (England) Regulations 2010.

Work will be deemed to have commenced when the build has progressed to at least one of the following:

For complex buildings – Foundations are constructed, and the structure of the lowest floor level is complete.

For new buildings and horizontal extensions - Sub surface structure of the building or the extension including all foundations and the structure of the ground floor level is completed.

For all other works – constructed 15% of the overall work.

## NOTICE OF COMPLETION

A Notice of Completion to be given to Building Control not more than 5 days after the work has been completed. The notice to contain the following information:

- The name, address, telephone number and (if available) email address of the client, principal contractor, and principal designer.
- A statement from the applicant to say that the works have been completed and complies with all the applicable regulations to the best of their knowledge.
- A statement from both the principal contractor and principal designer to confirm they have fulfilled their duties under Part 2A (duty holders and competence).

## CDM REGULATIONS 2015

The client must abide by the Construction Design and Management Regulations 2015. The Client must appoint a Contractor, if more than one Contractor is to be involved, the Client will need to appoint (in writing) a Principal Designer (to plan, manage and coordinate the planning and design work), and a Principal Contractor (to plan, manage and coordinate the construction and ensure there are arrangements in place for managing and organising the project).

## Domestic Clients

The Domestic Client is to appoint a Principal Designer and a Principal Contractor when there is more than one Contractor, if not your duties will automatically be transferred to the Contractor or Principal Contractor.

The Designer can take on the duties, provided there is a written agreement between you and the Designer to do so.

The Health and Safety Executive is to be notified as soon as possible before construction work starts if the works:

- Last longer than 30 working days and has more than 20 workers working simultaneously at any point in the project.

Or:

- Exceeds 500 person days.

## THERMAL BRIDGING

Care shall be taken to limit the occurrence of thermal bridging in the insulation layers caused by gaps within the thermal element, (i.e. around windows and door openings). Reasonable provision shall also be made to ensure the extension is constructed to minimise unwanted air leakage through the new building fabric.

## MATERIALS AND WORKMANSHIP

All works are to be carried out in a workmanlike manner. All materials and workmanship must comply with Regulation 7 of the Building Regulations, all relevant British Standards, European Standards, Agreement Certificates, Product Certification of Schemes (Kite Marks) etc. Products conforming to a European technical standard or harmonised European product should have a CE marking.

The latest edition of the British Standard (including any amendments) applies to any undated references within these specifications.

## SITE PREPARATION

Ground to be prepared for new works by removing all unsuitable material, vegetable matter and tree or shrub roots to a suitable depth to prevent future growth. Seal up, cap off, disconnect and remove existing redundant services as necessary. Reasonable precautions must also be taken to avoid danger to health and safety caused by contaminants and ground gases, e.g. landfill gases, radon, vapours etc. on or in the ground covered, or to be covered by the building.

## EXISTING STRUCTURE

Existing structure including foundations, beams, walls and lintels carrying new and altered loads are to be exposed and checked for adequacy prior to commencement of work and as required by Building Control.

## BEAMS

Supply and install new structural elements such as new beams, roof structure, floor structure, bearings, and padstones in accordance with the Structural Engineer's calculations and details. New steel beams to be encased in 12.5mm Gyproc FireLine board with staggered joints, Gyproc FireCase or painted in Nullifire S or similar intumescent paint to provide 1/2 hour fire resistance, as agreed with Building Control. All fire protection to be installed as detailed by specialist manufacturer.

## FLAT ROOF RESTRAINT

100m x 50mm C16 grade timber wall plates to be strapped to walls using 1200mm x 30mm x 5mm galvanised mild steel straps at maximum 2.0m centres, straps to be fixed to internal wall faces.

## OPENINGS AND RETURNS

An opening or recess greater than 0.1m<sup>2</sup> shall be at least 550mm from the supported wall (measured internally).

## LINTELS

- For uniformly distributed loads and standard 2 storey domestic loadings only

Lintel widths are to be equal to wall thickness. All lintels over 750mm sized internal door openings to be 65mm deep pre-stressed concrete plank lintels. 150mm deep lintels are to be used for 900mm sized internal door openings. Lintels to have a minimum bearing of 150mm on each end. Any existing lintels carrying additional loads are to be exposed for inspection at commencement of work on site. All pre-stressed concrete lintels to be designed and manufactured in accordance with BS EN 1992-1-1:2023 Eurocode 2, with a concrete strength of 50 or 40 N/mm<sup>2</sup> and incorporating steel strands to BS 5896 to support loadings assessed to BS EN 845-2:2013.

For other structural openings provide proprietary insulated steel lintels suitable for spans and loadings in compliance with Approved Document A and lintel manufacturer's standard tables.

Stop ends, DPC trays and weep holes to be provided above all externally located lintels.

Independent lintels to have an insulated cavity closure between the inner and outer lintel.

## TIMBER FRAME WALL

To achieve minimum U Value of 0.18 W/m<sup>2</sup>K

Outer skin to be 102mm suitable facing brick with 50mm vented and drained cavity provided between the stud and brick cladding.

Inner stud to have breathable membrane (a vapour resistance of not more than 0.6 MNs/g) fixed to 12mm thick W.B.P external quality plywood sheathing (or other approved). Ply fixed to treated timber frame studs constructed using 100mm x 50mm treated timbers with head and sole plates and noggins at 400mm ctrs or to s/engineer's details and calculations. Insulation to be 70mm Kingspan Kooltherm between studs with 52.5mm Kingspan Kooltherm insulated plasterboard with VCL provided over. Finish with 3mm skim coat of finishing plaster. All junctions to have water tight construction, seal all perimeter joints with tape internally and with silicon sealant externally.

## VENTILATED FLAT ROOF

(imposed load max 1.0 kN/m<sup>2</sup> - dead load max 0.75 kN/m<sup>2</sup>)

To achieve U value of 0.15 W/m<sup>2</sup>K

Flat roof covering to be glass reinforced plastic (GRP) system with BROOF(t4) fire rating in accordance with BS EN 13501-1:2018 and with a current BBA or other approved accreditation.

GRP to be laid in compliance with manufacturer's details by flat roofing specialist on 18mm exterior grade plywood, plywood to be laid on firings to give a 1:40 fall on 47 x 150mm grade C24 timber joists at 400 ctrs, max span 3.22m (see Engineer's details for sizes). Cross-ventilation to be provided on opposing sides by a proprietary eaves ventilation strip to give 25mm continuous ventilation, with fly proof screen. Flat roof insulation is to be continuous with the wall insulation but stopped back to allow a continuous 50mm air gap above the insulation for ventilation. Insulation to be 100mm Kingspan K107 between joists and 62.5mm Kingspan K118 insulated plasterboard under. Finish with plaster skim (provide VCL under insulated plasterboard if required by Building Control).

Provide restraint to flat roof by fixing using of 30 x 5 x 1200mm ms galvanised lateral restraint straps at maximum 2000mm centres fixed to 100 x 50mm wall plates and anchored to wall.

THIS IS A GENERAL GUIDE BASED ON NORMAL LOADING CONDITIONS FOUND IN DOMESTIC CONSTRUCTION. IT IS YOUR RESPONSIBILITY TO ASSESS YOUR DESIGN TO ASCERTAIN WHETHER ENGINEER'S DETAILS/CALCULATIONS ARE REQUIRED. PLEASE REFER TO THE TRADA DOCUMENT – 'SPAN TABLES FOR SOLID TIMBER MEMBERS IN FLOORS, CEILINGS AND ROOFS FOR DWELLINGS' OR ASK YOUR STRUCTURAL ENGINEER FOR ADVICE.

## WARM FLAT ROOF

(imposed load max 1.0 kN/m<sup>2</sup> - dead load max 0.75 kN/m<sup>2</sup>)

To achieve U value 0.15 W/m<sup>2</sup>K

Flat roof covering to be glass reinforced plastic (GRP) system with BROOF(t4) fire rating in accordance with BS EN 13501-1:2018 and with a current BBA or other approved accreditation.

Roof covering to be laid in compliance with manufacturer's details by flat roofing specialist onto 18mm exterior quality plywood over 150mm Celotex XR4000 on sw firings to minimum 1 in 40 fall on sw treated 47 x 195mm C24 flat roof joists at 400mm ctrs to give a max span of 4.51m or as Structural Engineer's details and calculations. Fix 12.5mm plasterboard over vapour barrier to underside of joists, finish a with plaster skim. Provide cavity tray to where new roof abuts existing house.

Provide restraint to flat roof by fixing of 30 x 5 x 1200mm ms galvanised lateral restraint straps at maximum 2000mm centres fixed to 100 x 50mm wall plates and anchored to wall.

THIS IS A GENERAL GUIDE BASED ON NORMAL LOADING CONDITIONS FOUND IN DOMESTIC CONSTRUCTION. IT IS YOUR RESPONSIBILITY TO ASSESS YOUR DESIGN TO ASCERTAIN WHETHER ENGINEER'S DETAILS/CALCULATIONS ARE REQUIRED. PLEASE REFER TO THE TRADA DOCUMENT – 'SPAN TABLES FOR SOLID TIMBER MEMBERS IN FLOORS, CEILINGS AND ROOFS FOR DWELLINGS' OR ASK YOUR STRUCTURAL ENGINEER FOR ADVICE.

## LEAD WORK AND FLASHINGS

All lead flashings, any valleys or soakers to be Code 5 lead and laid in accordance with BS 5534 and BS EN 12588. Flashings to be provided to all jambs and below window openings with welded upstands. Joints to be lapped min 150mm and lead to be dressed 200mm under tiles, etc.

## INTERNAL STUD PARTITIONS

100mm x 50mm softwood treated timbers studs at 400mm ctrs with 50 x 100mm head and sole plates and solid intermediate horizontal noggins at 1/3 height or 450mm c/cs. Provide min 10kg/m<sup>3</sup> density acoustic soundproof quilt tightly packed (e.g.100mm Rockwool or Isowool mineral fibre sound insulation) in all voids the full depth of the stud. Partitions to be built off doubled up joists where partitions run parallel or provide noggins where at right angles, or to be built off DPC on thickened concrete slab if solid ground floor. Walls faced throughout with 12.5mm plasterboard with skim plaster finish. Plasterboard to be taped and jointed complete with beads and stops.

## ELECTRICAL

All electrical work required to meet the requirements of Part P (electrical safety) must be designed, installed, inspected and tested by a Competent Person registered under a Competent Person Self Certification Scheme such as BRE certification Ltd, BSI, NICEIC Certification Services or Zurich Ltd. An appropriate BS7671 Electrical Installation Certificate is to be issued for the work by a person competent to do so. A copy of a certificate will be given to Building Control on completion.

## INTERNAL LIGHTING

Install low energy light fittings that only take lamps having a luminous efficiency better than 80 lumens per circuit watt. All fixed to have lighting capacity (lm) 185 x total floor area, to comply with Part L of the current Building Regulations and the Domestic Building Services Compliance Guide.

## HEATING

Extend all heating and hot water services from existing and provide new TRVs to radiators. Heating system to be designed, installed, tested and fully certified by a GAS SAFE registered specialist. All work to be in accordance with the Local Water Authorities bye laws, the Gas Safety (Installation and Use) Regulations 1998 and IEE Regulations.

The energy performance of the new components to be assessed. The results should be recorded and given to the building owner.

All accessible pipes to be insulated to the standards in Table 4.4 Approved Document L.

## NEW AND REPLACEMENT WINDOWS

New and replacement windows to be double glazed with 16-20mm argon gap and soft coat low-E glass. Window Energy Rating to be Band B or better and to achieve U-value of 1.4 W/m<sup>2</sup>K. The door and window openings should be limited to 25% of the extension floor area plus the area of any existing openings covered by the extension.

Insulated plasterboard to be used in reveals to abut jambs and to be considered within reveal soffits. Fully insulated and continuous cavity closers to be used around reveals.

Windows and door frames to be taped to surrounding openings using air sealing tape.

Windows to be fitted with trickle vents to provide adequate background ventilation in accordance with Approved Document F.

## NEW AND REPLACEMENT DOORS

New and replacement doors to achieve a U-Value of 1.4W/m<sup>2</sup>K. Glazed areas to be double glazed with 16-20mm argon gap and soft low-E glass. Glass to be toughened or laminated safety glass to BS 6206, BS EN 14179 or BS EN ISO 12543-1 and Part K of the current Building Regulations.

Insulated plasterboard to be used in reveals to abut jambs and to be considered within reveal soffits. Fully insulated and continuous cavity closers to be used around reveals.

Windows and door frames to be taped to surrounding openings using air sealing tape.

## SAFETY GLAZING

All glazing in critical locations to be toughened or laminated safety glass to BS EN 12600:2002, BS EN 14179 or BS EN ISO 12543-1 and Part K of the current Building Regulations, i.e. within 1500mm above floor level in doors and side panels within 300mm of door opening and within 800mm above floor level in windows.


## EXTRACT TO KITCHEN


Kitchen to have mechanical ventilation with an extract rating of 60 l/s, or 30 l/s if adjacent to hob to external air. Internal doors should be provided with a 10mm gap below the door to aid air circulation. Ventilation provision in accordance with the Domestic Ventilation Compliance Guide. Intermittent extract fans to BS EN 13141-4. Cooker hoods to BS EN 13141-3. All fixed mechanical ventilation systems, where they can be tested and adjusted, shall be commissioned and a commissioning notice given to the Building Control Body.


## EXTRACT TO WC


WC to have mechanical ventilation ducted to external air with an extract rating of 15 l/s operated via the light switch. Vent to have a 15min overrun if no window in room. Internal doors should be provided with a 10mm gap below the door to aid air circulation. Ventilation provision in accordance with the Domestic Ventilation Compliance Guide. Intermittent extract fans to BS EN 13141-4. All fixed mechanical ventilation systems, where they can be tested and adjusted, shall be commissioned and a commissioning notice given to the Building Control Body.


## LEGEND

 Full Fill Cavity Wall  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K.  
New cavity wall to comprise of 102mm suitable facing brick. Full fill cavity with 100mm Celotex Cavity insulation as manufacturer's details. Inner leaf to be 100mm medium block. 0.45 W/m<sup>2</sup>K.  
Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.

 FULL FILL CAVITY WALL  
To achieve minimum U Value of 0.18 W/m<sup>2</sup>K  
20mm two coat sand/cement render to comply to BS EN 13914-1 with waterproof additive on 100mm standard block. 0.45 W/m<sup>2</sup>K. Fully fill the cavity with 100mm Celotex Cavity insulation as manufacturer's spec. Inner leaf to be 100mm standard block. 0.45 W/m<sup>2</sup>K. Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1.6 cement mortar.

 INTERNAL STUD PARTITIONS  
100mm x 50mm softwood treated timbers studs at 400mm ctrs with 50 x 100mm head and sole plates and solid intermediate horizontal noggins at 1/3 height or 450mm. Provide min 10kg/m<sup>3</sup> density acoustic soundproof quilt tightly packed (eg. 100mm Rockwool or Isowool mineral fibre sound insulation) in all voids the full depth of the stud. Partitions built off doubled up joists where partitions run parallel or provide noggins where at right angles, or built off DPC on thickened concrete slab if solid ground floor. Walls faced throughout with 12.5mm plaster board with skim plaster finish. Taped and jointed complete with beads and stops.

 INTERNAL MASONRY PARTITIONS (BLOCKWORK)  
Construct non load bearing internal masonry partitions using dense concrete blocks built off thickened floor slab and laid at 200mm centres with proprietary steel profiles or block bonded to all internal and external walls. Walls faced throughout with 12.5mm plasterboard on dabs with skim plaster finish or 13mm lightweight plaster.

 SUPPORTING BEAM  
New steel beams to be encased in 12.5mm Gyproc FireLine board with staggered joints, Gyproc FireCase or painted in Nullifire S or similar intumescent paint to provide 1/2 hour fire resistance as agreed with Building Control. All fire protection to be installed as detailed by specialist manufacturer. Engineer to confirm all steel and structural work.

 EXTERNAL BRICKWORK WALL  
100mm brick external walls with 100 X 400mm piers at maximum 3.0m ctrs.

## REVISIONS

REV	DATE	CHANGES
0		
1	14/03/24 26/03/24	Initial Draft Internal Changes

## JOB INFORMATION

ADDRESS: KADER ACADEMY,  
STAINSDROP AVENUE  
MIDDLESBROUGH, TS5 8NU

CLIENT NAME: RYAN POWNER

PROJECT: CONVERT DWELLING TO  
SCHOOL OFFICE

## DRAWINGS :

Proposed Construction Details - Page 12

## DATE :

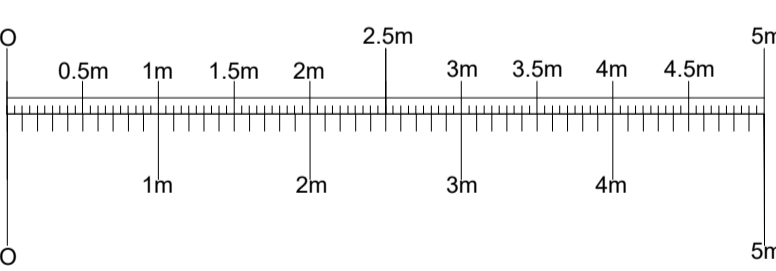
14/03/24

## SCALE :

NA @A1

## DRAWN BY :

AM



- All Rights Reserved.
- This Drawings must not be reproduced without permission.
- Do not Scale off Drawings.
- All dimensions to be checked by contractor on-site.
- Construction must only commence once planning, building control and any other relevant approvals have been obtained.
- It is the responsibility of the owner to ensure approvals have been granted.
- Any discrepancies must be reported to the architect, surveyor, engineer or responsible person immediately.
- The contractor is responsible for ensuring compliance with the cdm regulations and mandatory h&s on site precautions.
- The client/building owner must obtain the necessary party wall agreements prior to commencing works on site.



WEBSITE: WWW.PYRAMIDDESIGNS.CO.UK



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STRUCTURAL CALCULATIONS FOR RYAN POWNER – KADER  
ACADEMY

KADER ACADEMY  
STAINSDROP AVENUE  
MIDDLESBROUGH  
TS5 8NU

DESIGN AND CALCULATIONS FOR REMOVAL OF LOAD BEARING  
WALL AT GROUND FLOOR

### **General Construction Notes and Guidance:**

1. Calculations are not to be used for the purpose of ordering materials and should only be used for Building Regulations submissions. All dimensions should be checked by the contractor on site.
2. All steelwork to be mechanically wire brushed and painted two coats of red oxide. Steelwork located in the cavity or below DPC to be suitably protected with 2 coats of bituminous paint.
3. All timber to be graded C24 (SC4) unless stated otherwise. Preservative treated to Architect's details
4. To be read in conjunction with architect's drawings, any inconsistencies should be reported.
5. For details of fire protection to steelwork, see Architects drawings.
6. The contractor is to ensure that all existing construction is adequately supported, using needles and props as required. Where a new beam supports the existing construction adequate pre-load is to be applied and suitable packs such as driven dry-state introduced, then pointed up with mortat.
7. All blockwork to be 7.3 N/mm<sup>2</sup> in class III mortar below DPC in accordance with BS5628:Part3:2005 or suitable 7.0 N/mm<sup>2</sup> foundation quality blocks in class II mortar in accordance with the manufacturer's instructions. All brickwork below DPC to be engineering bricks DPC in accordance with BS 5628: Part 3: 2005.
8. The builder is to take into consideration the placement of the structural elements, ensuring that the method of lifting and placement is safely carried out. Responsibility for this element lies with the Contractor. As the existing walls need to be propped in order to introduce some of the lintels, this should also be considered in relationship to the risk assessment of the Contractor. Safe working procedures must be adopted. Responsibility for this element lies with the Contractor. Splice details for long-span beams can often be accommodated if required.
9. By using these calculations you agree to have read and agreed to our terms and conditions. Details of these can be found at <https://www.pmce.co.uk/terms-and-conditions> should you have any queries relating to our terms and conditions please inform us in writing prior to commencing structural works

### **Party Wall Act 1996**

If part of the work is adjacent to the boundary, the adjacent neighbours right to support could be affected; the issues associated with Party Wall Act may need to be considered. This may include providing information to the adjoining owner, giving sufficient notice of works in compliance with the Act. If the following list applies to this project then the Party Wall Act will apply.

1. Installing a new beam into the shared wall between properties
2. Demolishing, building or under-pinning an existing shared wall
3. Building a new wall at or on the boundary or junction of two properties
4. Damp-proofing all the way through a party wall
5. Digging foundations that are within 3m of a Party Wall, where the new foundations are deeper than the existing ones
6. Where the new foundations are within 6m and lower than a 45° line from the bottom of the existing foundations.

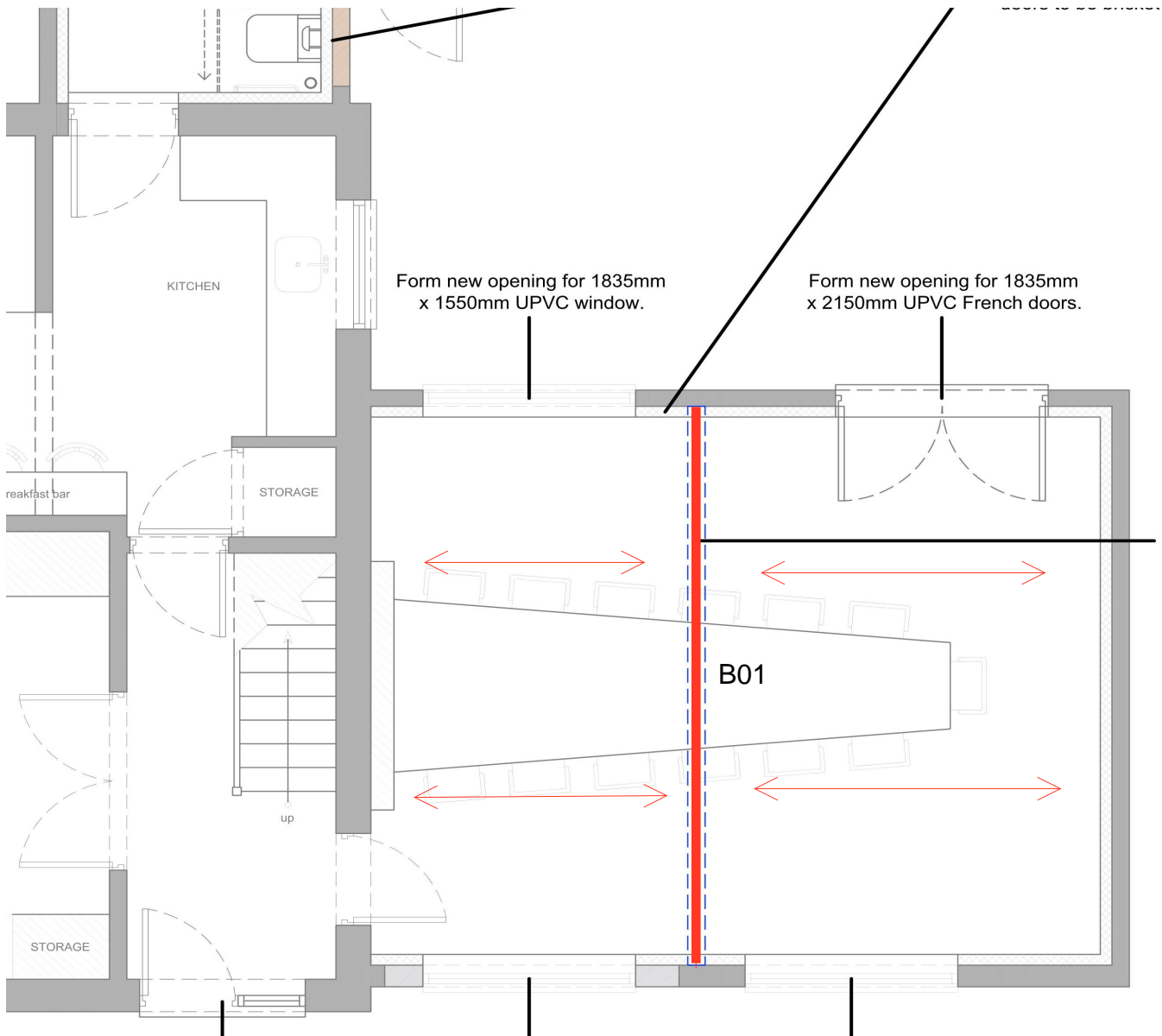
### **Codes**

BS EN 1990+A1:2006/NA: 2005-06	Basis of structural design
BS EN 1991-1-1	Part 1-1: General actions - Self-weight, imposed loads for buildings
BS EN 1991-1-3/NA: 2005-12	Part 1-3: General actions - Snow loads
BS EN 1995-1-1+A1:2008/NA: 2006	Part 1-1: General - Common rules and rules for buildings
BS EN 1995-1-2	Part 1-2: General - Structural fire design
BS EN 1991-1-4/NA: 2006	Part 1-4: General actions - Wind loads
BS EN 14080:2013-08	Timber structures - Glued laminated timber and solid timber - Requirements
BS EN 338:2010-03	Structural timber - Strength classes

## Loading

				<u>Dead</u>	<u>Live</u>
<b>Roof1b</b>					
	Tiles	$g_1 =$	0.65 kN/m <sup>2</sup>		
	Rafters, felt, insulation etc	$g_2 =$	0.30 kN/m <sup>2</sup>		
	Plasterboard	$g_3 =$	0.25 kN/m <sup>2</sup>		
		$g_0 =$	1.20 kN/m <sup>2</sup>		
	Roof pitch	$a =$	35 °		
		$g_k = g_0 / \cos(a)$	=	<b><u>1.46 kN/m<sup>2</sup></u></b>	
	Roof snow loading	$q_k = 0,60 * ((60-a)/30)$	=		<b><u>0.50 kN/m<sup>2</sup></u></b>
<b>Roof2a</b>					
(Flat)	Joist & boarding, finishes	$g_1 =$	0.35 kN/m <sup>2</sup>		
	Plasterboard	$g_2 =$	0.25 kN/m <sup>2</sup>		
		$g_k = g_1 + g_2$	=	<b><u>0.60 kN/m<sup>2</sup></u></b>	
	Imposed	$q_k =$	=		<b><u>1.50 kN/m<sup>2</sup></u></b>
<b>Floor</b>					
	Joist & boarding, finishes	$g_1 =$	0.25 kN/m <sup>2</sup>		
	Plasterboard	$g_2 =$	0.25 kN/m <sup>2</sup>		
		$g_k = g_1 + g_2$	=	<b><u>0.50 kN/m<sup>2</sup></u></b>	
	Imposed	$q_k =$	=		<b><u>1.50 kN/m<sup>2</sup></u></b>
<b>Walls</b>					
W1	External cavity blockwork	$g_1 = 2,7 * (2,1 + 1,4) =$	9.45 kN/m		
	Plasterboard	$g_2 = 2,4 * 0,25$	0.60 kN/m		
		$g_k = g_1 + g_2$	=	<b><u>10.05 kN/m</u></b>	
W5	Internal 100 blockwork	$g_1 = 2,4 * 1,40 =$	3.36 kN/m		
	Plasterboard both sides	$g_2 = 2,4 * 0,25 * 2 =$	1.20 kN/m		
		$g_k = g_1 + g_2$	=	<b><u>4.56 kN/m</u></b>	

	<b>Profile</b>	<b>Padstone</b>
<b>B01</b>	254 x 146 UB 31	440 long x 102.5 wide x 215 deep concrete padstone to each end



↔ Denotes proposed span direction for new warm roof timbers

### Loadings:

#### B01:

Span 5.20 m

**Live**

**Dead**

Roof 2a       $6.40 / 2 * 0.60 =$

1.92 kN/m

Roof 2a       $6.40 / 2 * 1.50 =$

4.80 kN/m

**Dead Loads = 1.92 kN/m**

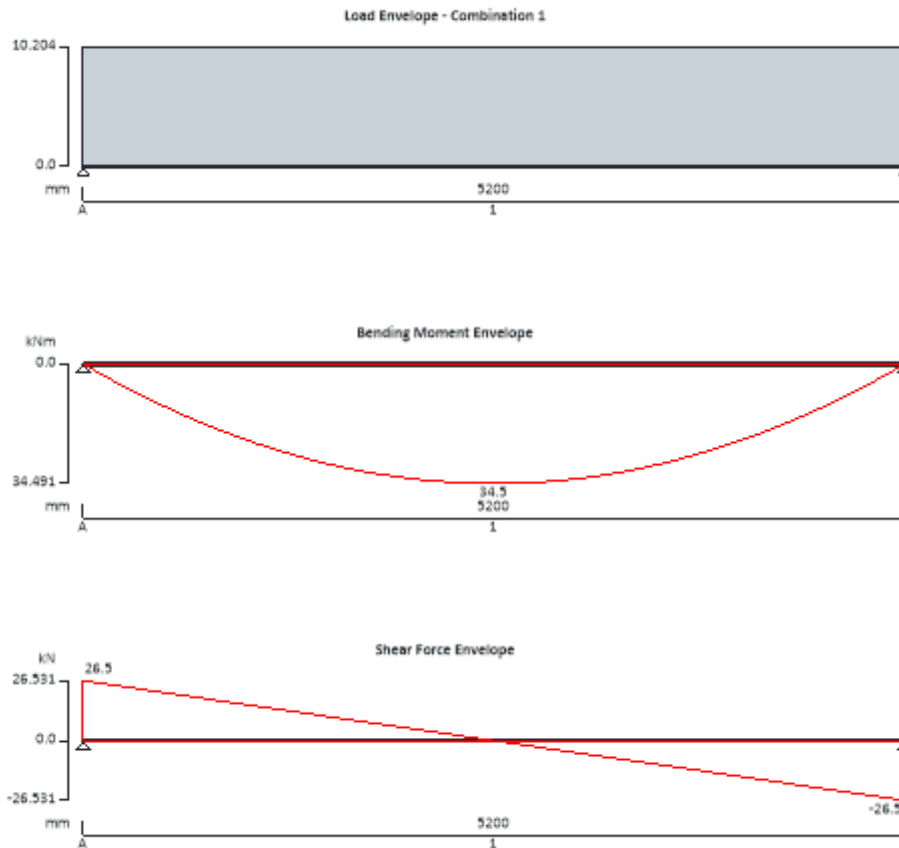
**Live Loads = 4.80 kN/m**

PM Consulting Engineers LTD 1 Millenium Court, Ellerbeck Way Stokesley TS9 5JZ	Project Kader Academy, Staindrop Avenue, Middlesbrough			Job no. PM24344	
	Calcs for Ryan Powner			Start page no./Revision 1	
	Calcs by PM	Calcs date 02/09/2024	Checked by	Checked date	Approved by

### STEEL BEAM ANALYSIS & DESIGN (EN1993-1-1:2005)

In accordance with EN1993-1-1:2005 incorporating Corrigenda February 2006 and April 2009 and the UK national annex

TEDDS calculation version 3.0.14



#### Support conditions

Support A	Vertically restrained
	Rotationally free
Support B	Vertically restrained
	Rotationally free

#### Applied loading

Beam loads	Permanent self weight of beam × 1
	Permanent full UDL 1.92 kN/m
	Variable full UDL 4.8 kN/m

#### Load combinations

Load combination 1	Support A	Permanent × 1.35
		Variable × 1.50
		Permanent × 1.35
		Variable × 1.50
	Support B	Permanent × 1.35
		Variable × 1.50

PM Consulting Engineers LTD 1 Millenium Court, Ellerbeck Way Stokesley TS9 5JZ	Project Kader Academy, Staindrop Avenue, Middlesbrough				Job no. PM24344	
	Calcs for Ryan Powner				Start page no./Revision 2	
	Calcs by PM	Calcs date 02/09/2024	Checked by	Checked date	Approved by	Approved date

### Analysis results

Maximum moment	$M_{max} = 34.5 \text{ kNm}$	$M_{min} = 0 \text{ kNm}$
Maximum shear	$V_{max} = 26.5 \text{ kN}$	$V_{min} = -26.5 \text{ kN}$
Deflection	$\delta_{max} = 4.9 \text{ mm}$	$\delta_{min} = 0 \text{ mm}$
Maximum reaction at support A	$R_{A\_max} = 26.5 \text{ kN}$	$R_{A\_min} = 26.5 \text{ kN}$
Unfactored permanent load reaction at support A	$R_{A\_Permanent} = 5.8 \text{ kN}$	
Unfactored variable load reaction at support A	$R_{A\_Variable} = 12.5 \text{ kN}$	
Maximum reaction at support B	$R_{B\_max} = 26.5 \text{ kN}$	$R_{B\_min} = 26.5 \text{ kN}$
Unfactored permanent load reaction at support B	$R_{B\_Permanent} = 5.8 \text{ kN}$	
Unfactored variable load reaction at support B	$R_{B\_Variable} = 12.5 \text{ kN}$	

### Section details

Section type **UKB 254x146x31 (Tata Steel Advance)**

Steel grade **S275**

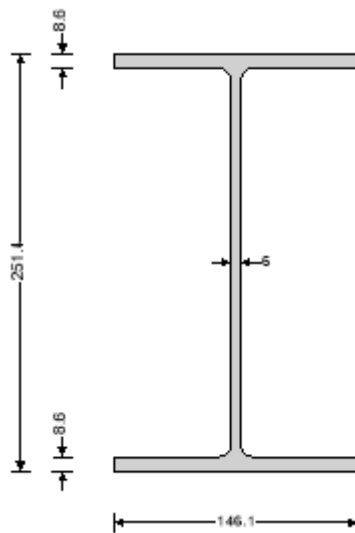
**EN 10025-2:2004 - Hot rolled products of structural steels**

Nominal thickness of element  $t = \max(t_r, t_w) = 8.6 \text{ mm}$

Nominal yield strength  $f_y = 275 \text{ N/mm}^2$

Nominal ultimate tensile strength  $f_u = 410 \text{ N/mm}^2$

Modulus of elasticity  $E = 210000 \text{ N/mm}^2$



### Partial factors - Section 6.1

Resistance of cross-sections  $\gamma_{M0} = 1.00$

Resistance of members to instability  $\gamma_{M1} = 1.00$

Resistance of tensile members to fracture  $\gamma_{M2} = 1.10$

### Lateral restraint

Span 1 has lateral restraint at supports only

### Effective length factors

Effective length factor in major axis  $K_y = 1.000$

Effective length factor in minor axis  $K_z = 1.000$

Effective length factor for torsion  $K_{LT,A} = 1.200 + 2 \times h$

$K_{LT,B} = 1.200 + 2 \times h$



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	Calcs for			Start page no./Revision	
Ryan Powner			3		
Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
PM	02/09/2024				

### Classification of cross sections - Section 5.5

$$\varepsilon = \sqrt{[235 \text{ N/mm}^2 / f_y]} = \mathbf{0.92}$$

### Internal compression parts subject to bending - Table 5.2 (sheet 1 of 3)

Width of section

$$c = d = \mathbf{219 \text{ mm}}$$

$$c / t_w = 39.5 \times \varepsilon \leq 72 \times \varepsilon \quad \text{Class 1}$$

### Outstand flanges - Table 5.2 (sheet 2 of 3)

Width of section

$$c = (b - t_w - 2 \times r) / 2 = \mathbf{62.5 \text{ mm}}$$

$$c / t_f = 7.9 \times \varepsilon \leq 9 \times \varepsilon \quad \text{Class 1}$$

Section is class 1

### Check shear - Section 6.2.6

Height of web

$$h_w = h - 2 \times t_f = \mathbf{234.2 \text{ mm}}$$

Shear area factor

$$\eta = \mathbf{1.000}$$

$$h_w / t_w < 72 \times \varepsilon / \eta$$

Shear buckling resistance can be ignored

Design shear force

$$V_{Ed} = \max(\text{abs}(V_{\max}), \text{abs}(V_{\min})) = \mathbf{26.5 \text{ kN}}$$

Shear area - cl 6.2.6(3)

$$A_v = \max(A - 2 \times b \times t_f + (t_w + 2 \times r) \times t_f, \eta \times h_w \times t_w) = \mathbf{1637 \text{ mm}^2}$$

Design shear resistance - cl 6.2.6(2)

$$V_{c,Rd} = V_{pl,Rd} = A_v \times (f_y / \sqrt{3}) / \gamma_{M0} = \mathbf{259.9 \text{ kN}}$$

PASS - Design shear resistance exceeds design shear force

### Check bending moment major (y-y) axis - Section 6.2.5

Design bending moment

$$M_{Ed} = \max(\text{abs}(M_{s1_{\max}}), \text{abs}(M_{s1_{\min}})) = \mathbf{34.5 \text{ kNm}}$$

Design bending resistance moment - eq 6.13

$$M_{c,Rd} = M_{pl,Rd} = W_{pl,y} \times f_y / \gamma_{M0} = \mathbf{108.1 \text{ kNm}}$$

### Slenderness ratio for lateral torsional buckling

Correction factor - Table 6.6

$$k_c = \mathbf{0.94}$$

$$C_1 = 1 / k_c^2 = \mathbf{1.132}$$

Curvature factor

$$g = \sqrt{[1 - (I_z / I_y)]} = \mathbf{0.948}$$

Poissons ratio

$$\nu = \mathbf{0.3}$$

Shear modulus

$$G = E / [2 \times (1 + \nu)] = \mathbf{80769 \text{ N/mm}^2}$$

Unrestrained length

$$L = 1.2 \times L_{s1} + 2 \times h = \mathbf{6743 \text{ mm}}$$

Elastic critical buckling moment

$$M_{cr} = C_1 \times \pi^2 \times E \times I_z / (L^2 \times g) \times \sqrt{[I_w / I_z + L^2 \times G \times I_t / (\pi^2 \times E \times I_z)]} = \mathbf{53.7 \text{ kNm}}$$

Slenderness ratio for lateral torsional buckling

$$\bar{\lambda}_{LT} = \sqrt{(W_{pl,y} \times f_y / M_{cr})} = \mathbf{1.419}$$

Limiting slenderness ratio

$$\bar{\lambda}_{LT,0} = \mathbf{0.4}$$

$\bar{\lambda}_{LT} > \bar{\lambda}_{LT,0}$  - Lateral torsional buckling cannot be ignored

### Design resistance for buckling - Section 6.3.2.1

Buckling curve - Table 6.5

$$b$$

Imperfection factor - Table 6.3

$$\alpha_{LT} = \mathbf{0.34}$$

Correction factor for rolled sections

$$\beta = \mathbf{0.75}$$

LTB reduction determination factor

$$\phi_{LT} = 0.5 \times [1 + \alpha_{LT} \times (\bar{\lambda}_{LT} - \bar{\lambda}_{LT,0}) + \beta \times \bar{\lambda}_{LT}^2] = \mathbf{1.428}$$

LTB reduction factor - eq 6.57

$$\chi_{LT} = \min(1 / [\phi_{LT} + \sqrt{(\phi_{LT}^2 - \beta \times \bar{\lambda}_{LT}^2)}], 1, 1 / \bar{\lambda}_{LT}^2) = \mathbf{0.464}$$

Modification factor

$$f = \min(1 - 0.5 \times (1 - k_c) \times [1 - 2 \times (\bar{\lambda}_{LT} - 0.8)^2], 1) = \mathbf{0.993}$$

Modified LTB reduction factor - eq 6.58

$$\chi_{LT,mod} = \min(\chi_{LT} / f, 1) = \mathbf{0.467}$$

Design buckling resistance moment - eq 6.55

$$M_{b,Rd} = \chi_{LT,mod} \times W_{pl,y} \times f_y / \gamma_{M1} = \mathbf{50.5 \text{ kNm}}$$

PASS - Design buckling resistance moment exceeds design bending moment

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	Calcs for <b>Ryan Powner</b>				Start page no./Revision <b>4</b>	
	Calcs by <b>PM</b>	Calcs date <b>02/09/2024</b>	Checked by	Checked date	Approved by	Approved date

**Check vertical deflection - Section 7.2.1**

Consider deflection due to variable loads

Limiting deflection

$$\delta_{lim} = L_{s1} / 360 = \mathbf{14.4 \text{ mm}}$$

Maximum deflection span 1

$$\delta = \max(\text{abs}(\delta_{max}), \text{abs}(\delta_{min})) = \mathbf{4.931 \text{ mm}}$$

PASS - Maximum deflection does not exceed deflection limit

## Padstone

COMPLIES WITH LATEST EUROPEAN DESIGN CODES

structural calculations for padstones

Beam End Reaction = **26.50** kN (factored) Variable Load Safety Factor = 1.5  
Factored Load at End of Beam Permanent Load Safety Factor = 1.35

Characteristic strength of masonry = **2.6** N/mm<sup>2</sup> ( Brickwork usually = 4.5 N/mm<sup>2</sup> )  
( 3.6N Blockwork usually = 2.6 N/mm<sup>2</sup> )  
Width of beam end bearing = **102.5** mm ( A Engineering Brick = 13.2 N/mm<sup>2</sup> )  
Length of beam end bearing = **100** mm ( B Engineering Brick = 10.5 N/mm<sup>2</sup> )  
( Weak Brickwork = approx 2.8 N/mm<sup>2</sup> )  
( 7.3N Blockwork usually = 4.2 N/mm<sup>2</sup> )  
( 10.4N Blockwork usually = 5.4 N/mm<sup>2</sup> )

$\gamma_m = 3.0$

Bearing Factor = **1.25**

## Results

Maximum Bearing Stress = **1.08** N/mm<sup>2</sup>  
Actual Bearing Stress = **2.59** N/mm<sup>2</sup>

## Padstone Required

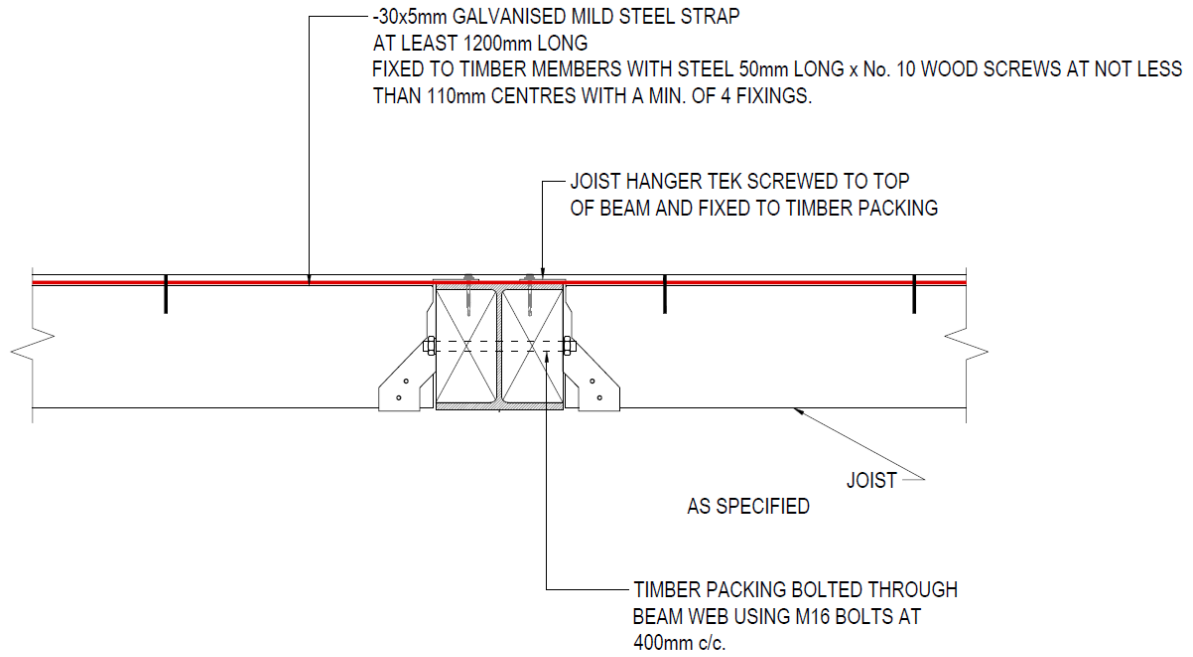
## Padstone Results

Characteristic strength of Padstone = **30.0** N/mm<sup>2</sup> ( A Engineering Brick = 13.2 N/mm<sup>2</sup> )  
( B Engineering Brick = 10.5 N/mm<sup>2</sup> )  
Width of Padstone = **102.5** mm ( Concrete C15 = 15 N/mm<sup>2</sup> )  
Length of Padstone = **440** mm ( Concrete C30 = 30 N/mm<sup>2</sup> )  
( Concrete C40 = 40 N/mm<sup>2</sup> )  
( Steel Plate = 275 N/mm<sup>2</sup> )

Allowable padstone stress = **12.50** N/mm<sup>2</sup>  
Stress under beam end bearing = **2.59** N/mm<sup>2</sup> **Therefore Padstone Stress OK**  
Allowable masonry stress = **1.08** N/mm<sup>2</sup>  
Stress under padstone = **0.59** N/mm<sup>2</sup> **Therefore Masonry Stress OK**

**Provide 440 long x 102.5 wide x 215 deep concrete padstone to each end**

## Flat roof and steel beam connection detail:



### JOISTS TO STEEL BEAM CONNECTION

\* Roof finished and insulation not shown on connection detail. Please refer to architects drawing and specification.