

PRELIMINARY DESIGN. NOT FOR CONSTRUCTION

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 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:

- (a) Last longer than 30 working days and has more than 20 workers working simultaneously at any point in the project.
- Or:
- (b) Exceeds 500 person days.

PARTY WALL ACT

The owner, should they need to do so under the requirements of the Party Wall Act 1996, has a duty to serve a Party Structure Notice on any adjoining owner if building work on, to or near an existing Party Wall involves any of the following:

- Support of beam
- Insertion of DPC through wall
- Raising a wall or cutting off projections
- Demolition and rebuilding
- Underpinning
- Insertion of lead flashings

Excavations within 3 metres of an existing structure where the new foundations will go deeper than adjoining foundations, or within 6 metres of a notified structure where the new foundations are within a 45 degree line of the adjoining foundations.

A Party Wall Agreement is to be in place prior to start of works on site.

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.

FULL RADON PROTECTION- IN-SITU (GROUND-SUPPORTED) CONCRETE FLOOR

Floor slab to be reinforced concrete slab designed by structural engineer and supported on the inner leaf of the cavity wall on 150mm consolidated well-rammed hardcore.

Provide a 1200g (300 micrometre) continuous polythene DPM radon-proof barrier over the slab, lapped and sealed at all joints, around service penetrations with radon gas proof tape and linked to DPCs in the cavity wall.

Provide a radon sub-floor sump, depressurization pipe with up stand beneath the floor slab as sump manufacturer's details. Radon test to be undertaken if required by building control after completion, and if unacceptably high levels of radon are found, provide an electrically powered fan to the pipework.

80mm PIR insulation over DPM and 75mm reinforced concrete slab. All in accordance with BRE G86 73.

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 the Building Control Officer.

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.

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, with a concrete strength of 50 or 40 N/mm² and incorporating steel strands to BS S896 to support loadings assessed to BS 5977 Part 1.

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.

STRAPPING FOR PITCHED ROOF

Gable walls should be strapped to roofs at 2m centres. All external walls running parallel to roof rafters to be restrained at roof level using 1000mm x 30mm x 5mm galvanised mild steel horizontal straps or other approved to BS EN 845-1 built into walls at max 2000mm centres and to be taken across minimum 3 rafters and screw fixed. Provide solid nogging between rafters at strap positions. All wall plates to be 100 x 50mm fixed to inner skin of cavity wall using 30mm x 5mm x 1000mm galvanised metal straps or other approved to BS EN 845-1 at maximum 2m centres.

STRAPPING OF FLOORS

Provide lateral restraint where joists run parallel to walls, floors are to be strapped to walls with 1000mm x 30mm x 5mm galvanised mild steel straps or other approved in compliance with BS EN 845-1 at max 2.0m centres, straps to be taken across minimum of 3 joists. Straps to be built into walls. Provide 38mm wide x 4 depth solid nogging between joists at strap positions.

FLAT ROOF RESTRAINT

100m x 50mm C16 grade timber wall plates to be strapped to walls with 1000mm x 30mm x 5mm galvanised mild steel straps at maximum 2.0m centres fixed to internal wall faces.

OPENINGS AND RETURNS

An opening or recess greater than 0.1m² shall be at least 550mm from the supported wall (measured internally).

TRENCH FOUNDATION

Provide 750mm x 600mm trench fill foundations, concrete mix to conform to BS EN 206 and BS 8500-2. All foundations to be a minimum of 1000mm below ground level, exact depth to be agreed on site with Building Control Officer to suit site conditions. All constructed in accordance with 2010 Building Regulations A1/2 and BS 8004 Code of Practice for Foundations. Ensure foundations are constructed below invert level of any adjacent drains. Base of foundations supporting internal walls to be min 600mm below ground level. Sulphate resistant cement to be used if required. Please note that should any adverse soil conditions or difference in soil type be found or any major tree roots in excavations, the Building Control Officer is to be contacted and the advice of a structural engineer should be sought.

STEPPED FOUNDATION (trench)

Stepped foundations should overlap by twice the height of the step, or 1m whichever is the greater. The height of the step should not be greater than the thickness of the foundation.

SOLID FLOOR INSULATION OVER SLAB

To meet min U value required of 0.18 W/m²K

Solid ground floor to consist of 150mm consolidated well-rammed hardcore. Blinded with 50mm sand blinding. Provide 1000mm ST2 or Gen2 ground bearing slab concrete mix to conform to BS 8500-2 over a 1200 gauge polythene DPM. DPM to be lapped in with DPC in walls. Floor to be insulated over slab and DPM with min 80mm thick Kingspan K103.

25mm insulation to continue around floor perimeters to avoid thermal bridging. A VCL should be laid over the insulation boards and turned up 100mm at room perimeters behind the skirting, all joints to be lapped 150mm and sealed. Finish with 65mm sand/cement finishing screed with light mesh reinforcement.

Where drain runs pass under new floor, provide A142 mesh 1.0m wide and min 50mm concrete cover over length of drain.

Where existing suspended timber floor air bricks are covered by new extension, ensure cross-ventilation is maintained by connecting to 100mm dia UPVC pipes with 1000mm concrete cover laid under the extension. Pipes to terminate at new 65mm x 215mm air bricks with cavity tray over.

SOLID FLOOR INSULATION UNDER SLAB

To meet min U value required of 0.18 W/m²K

Solid ground floor to consist of 150mm consolidated well-rammed hardcore. Blinded with 50mm sand blinding. Provide a 1200 gauge polythene DPM, DPM to be lapped in with DPC in walls. Floor to be insulated over DPM with 80mm thick Kingspan Kooltherm K103.

25mm insulation to continue around floor perimeters to avoid thermal bridging. A VCL should be laid over the insulation boards and turned up 100mm at room perimeters behind the skirting, all joints to be lapped 150mm and sealed. Provide 1000mm ST2 or Gen2 ground bearing slab concrete mix to conform to BS 8500-2 over VCL. Finish with 65mm sand/cement finishing screed with light mesh reinforcement.

Where drain runs pass under new floor, provide A142 mesh 1.0m wide within bottom of slab min 50mm concrete cover over length of drain.

Where existing suspended timber floor air bricks are covered by new extension, ensure cross-ventilation is maintained by connecting to 100mm dia UPVC pipes to terminate at new 65mm x 215mm air bricks built into new cavity wall with 1000mm concrete cover laid under the extension. Ducts to be sleeved through cavity with cavity tray over.

TIMBER SUSPENDED FLOOR

Ground preparation -Remove top soil and vegetation, apply total weed killer and 150mm min thick sand blinded hardcore, then either -

- (i) Provide concrete ground cover of at least 100mm thick or
- (ii) Prepare the ground to an even surface and lay a ground cover of concrete at least 50mm thick, on a damp-proof membrane of at least 1200 gauge polyethylene, laid on a bed of fine blinding material.

Floor construction - min 20mm tongue and groove softwood boards or moisture resistant particle/chipboard grade type C4 to BS EN 1996-1-1. Cavities below ground level to be filled with lean mix concrete min 225mm below damp proof course. Or provide lean mix backfill at base of cavity wall (150mm below damp course) laid to fall to weepholes.

The top surface of the ground cover under the building shall be above the finished level of the adjoining ground. The underside of the floor joists are not to be less than 150mm above the top of the ground cover. The underside of any wall plate is to be not less than 75mm above the top of the ground cover.

Provide cross-ventilation under floor to outside air by ventilators in at least 2 opposite external walls of the building. Ventilation openings having an opening area of 1500mm² per metre run of perimeter wall or 500mm² per square metre of floor area whichever gives the greater opening area. All sleeper walls or similar under floor obstructions shall be of honeycombed construction or have similar provision for distribution of ventilation. The under floor space shall be free from debris. Ducts to be sealed using gas proof tap if they pass through the radon barrier.

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WALLS BELOW GROUND

All new walls below ground to be constructed using blockwork compliant with BS EN 771 and suitable for below ground level or semi engineering brickwork. Walls to be built using 1:4 masonry mortar mix or equal approved specification to BS EN 1996-1-1. Cavities below ground level to be filled with lean mix concrete min 225mm below damp proof course. Or provide lean mix backfill at base of cavity wall (150mm below damp course) laid to fall to weepholes.

SOLID EXTERNAL WALL

To achieve min U-value of 0.18W/m²K

Wall constructed using brickwork to match existing at least 348mm thick. Use 215mm Celcon Solar. Insulate wall on the inside using 90mm Celotex GA4000 insulated plasterboard and skim. Batten out to provide a nominal 25mm cavity between the masonry and insulation and fix a vapour control layer under the insulation, (50mm cavity to be provided if required by building control).

FULL FILL CAVITY WALL

To achieve minimum U Value of 0.18W/m²K. New cavity wall to comprise of 105mm facing brick to match existing. Full fill cavity with 150mm D10mm 32 cavity insulation as manufacturer's details. Inner leaf to be 100mm block K value 1.13, e.g. (Armstrong dense, Masterblock Monacore 100s). Internal finish to be 12.5mm plasterboard on dabs. Walls to be built with 1:1:6 cement mortar.

DPC

Provide horizontal strip polymer (lylodon) damp proof course to both internal and external skins minimum 150mm above external ground level. New DPC to be made continuous with existing DPC's and with floor DPM. Vertical DPC to be installed at all reveals where cavity is closed.

CAVITIES

Provide cavity trays over openings. All cavities to be closed at eaves and around openings using Thermabate or similar non combustible insulated cavity closures. Provide vertical DPCs around openings and abutments. All cavity trays must have 150mm upstands and suitable cavity weep holes (min 3) at max 900mm centres.

EXISTING TO NEW WALL

Cavities in new wall to be made continuous with existing where possible to ensure continuous weather break. If a continuous cavity cannot be achieved, where new walls abuts the existing walls provide a movement joint with vertical DPC. All tied into existing construction with suitable proprietary stainless steel profiles.

CAVITY BARRIERS

30 minute fire resistant cavity barriers to be provided at all cavity walls, gable end walls and vertically at junctions with separating walls and horizontally at separating walls with cavity tray over installed according to manufacturer's details.

MOVEMENT JOINTS

Movement joints to be provided at the following maximum spacing:

Clay brickwork - 12m.

Calcium silicate brick - 7.5m

Lightweight concrete block - density not exceeding 1,500kg/m³ - 6m.

Dense concrete block - density exceeding 1,500kg/m³ - 7.5m.

Any masonry in a parapet wall (length to height ratio greater than 3:1) - half the above spacings and 1.5m from corners.

Movement joint widths for clay bricks to be not less than 13mm/1m i.e. 12m = 16mm and for other masonry not less than 10mm.

Additional movement joints may be required where the aspect ratio of the wall (length :height) is more than 3:1. Considerations to be given to BS EN 1996-1-2:2005 Eurocode 6. Design of masonry structure.

WARM FLAT ROOF

(Imposed load max 1.0 kN/m² - dead load max 0.75 kN/m²)

To achieve U value 0.15 W/m²K

12.5mm spa solar reflective chippings to achieve as designated fire rating for surface spread of flame bedded in bitumen on three layer felt to BS 6229 on 22mm external quality ply (ply optional, see manufacturer's details) over 165mm Celotex XR4000 insulation.

Insulation bonded to VCL which is bonded to 22mm exterior grade plywood on firrings to give 1:60 fall on 47 x 195mm C24 timber joists at 400 centres max span 4.51m (see engineer's details for sizes). Ceilings of 12.5mm plasterboard over vapour barrier with skim plaster finish.

Provide restraint to flat roof by fixing of 30 x 5 x 1000mm ms galvanised lateral restraint straps at maximum 2000mm centres fixed to 100 x 50mm wall plates and anchored to wall.

COLD FLAT ROOF

(Imposed load max 1.0 kN/m² - dead load max 0.75 kN/m²)

To achieve U value of 0.15 W/m²K

To Structural Engineer's details. Ventilated flat roof construction comprising: 12.5mm spa solar reflective chippings to achieve as designated fire rating for surface spread of flame bedded in bitumen on three layer felt to BS 6229 on 22mm exterior grade plywood, laid on firrings to give a 1:40 fall fixed to 47 x 175mm grade C24 joists at 400 centres max span 3.89m. Cross ventilation to be provided on opposing sides by a proprietary eaves ventilation strip equivalent to 25mm continuous with fly proof screen. Flat roof insulation is to be continuous with the wall insulation but stopped back to allow a 50mm air gap above the insulation for ventilation. Insulation to be 120mm Celotex GA4000 between joists and 50mm under joists. Ceilings to be 12.5mm plasterboard over vapour barrier with skim plaster finish.

Provide restraint to flat roof by fixing using of 30 x 5 x 1000mm ms galvanised lateral restraint straps at maximum 2000mm centres fixed to 100 x 50mm wall plates and anchored to wall.

PITCHED ROOF INSULATION AT CEILING LEVEL

Pitch 22-45° (Imposed load max 0.75 kN/m² - dead load max 0.75 kN/m²)

To achieve U value of 0.16 W/m²K
Timber roof structures to be designed by an Engineer in accordance with NHBC Technical Requirement R5 Structural Design. Calculations to be based on BS EN 1995-1-1. Roofing tiles to match existing on 25 x 38mm tanalised sw treated battens on minimum 25mm thick treated vertical counter battens with a proprietary eaves carrier system on breathable sarking felt to relevant BBA Certificate. Supported on 47 x 150mm grade C24 rafters at max 400mm centres max span 3.47m. Rafters supported on 100 x 50mm sw wall plates. Roof construction - 47 x 150mm Grade C24 rafters at max 400mm centres max span 3.47m. Insulation to be 100mm Celotex GA4000 between rafters and 60mm under rafters. Fix 12.5mm foil backed plasterboard (joints staggered) to the underside of all ceilings using galvanised plasterboard nails. Finish with 5mm skim coat of finishing plaster.

(Cavity of 25mm provided by fixing battens between plasterboard and under rafter insulation recommended where insulation under rafters exceeds 50mm).

Maintain a 50mm air gap above insulation to ventilate roof. Provide opening at eaves level at least equal to continuous strip 25mm wide and opening at ridge equal to continuous strip 5mm wide to promote ventilation or provide equivalent high and low level tile vents in accordance with manufacturer's details.

Mono pitched roofs to have ridge/high level ventilation equivalent to a 5mm gap via proprietary tile vents spaced in accordance with manufacturer's details.

Restraint strapping - 100mm x 50mm wall plate strapped down to walls. Ceiling joists and rafters to be strapped to

walls and gable walls, straps built into cavity, across at least 3 timbers with noggin. All straps to be 1000 x 30 x 5mm galvanised straps or other approved to BS EN 845-1 at 2m centres.

UNVENTED PITCHED ROOF

Pitch 22-45° (Imposed load max 0.75 kN/m² - dead load max 0.75 kN/m²)

To achieve U-value 0.18 W/m²K

Timber roof structures to be designed by an Engineer in accordance with NHBC Technical Requirement R5 Structural Design. Calculations to be based on BS EN 1995-1-1. Roofing tiles to match existing on 25 x 38mm tanalised sw treated battens on minimum 25mm thick treated vertical counter battens with a proprietary eaves carrier system on breathable sarking felt to relevant BBA Certificate. Supported on 47 x 150mm grade C24 rafters at max 400mm centres max span 3.47m. Rafters supported on 100 x 50mm sw wall plates. Insulation to be 100mm Celotex GA4000 between rafters and 52mm Celotex T14000 insulated plasterboard under rafters. Provide 5mm skim coat of finishing plaster to the underside of all ceilings.

Restraint strapping - Ceiling joists tied to rafters (if raised collar roof consult structural engineer). 100mm x 50mm wall plate strapped down to walls. Ceiling joists and rafters to be strapped to walls and gable walls, straps built into cavity, across at least 3 timbers with noggin. All straps to be 1000 x 30 x 5mm galvanised straps or other approved to BS EN 845-1 at 2m centres.

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WARM PITCHED ROOF

Pitch 22-45° (Imposed load max 0.75 kN/m² - dead load max 0.75 kN/m²)

To achieve min U-value required of 0.18 W/m²K

Timber roof structures to be designed by an Engineer in accordance with NHBC Technical Requirement R5 Structural Design. Calculations to be based on BS EN 1995-1-1. Roofing tiles to match existing fixed to tile battens secured over breathable sarking felt to relevant BBA Certificate allowing the breather felt to sag at least 10mm over preservative-treated counter battens (min 38mm x 50mm). Provide 75mm Celotex GA4000 insulation boards under the counter battens and 40mm Celotex TBA000 between 47 x 150mm timber rafters strength class C24 at 400 c/c - to give a max 3.47m span. A vapour control layer should be provided to the underside of the rafters. Finish with 12.5mm plasterboard and skim.

Restraint strapping - Ceiling joists tied to rafters (if raised collar roof consult structural engineer). 100mm x 50mm wall plate strapped down to walls. Ceiling joists and rafters to be strapped to walls and gable walls, straps built into cavity, across at least 3 timbers with noggin. All straps to be 1000 x 30 x 5mm galvanised straps or other approved to BS EN 845-1 at 2m centres.

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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 noggin at 1/3 height or 450mm. Provide min 10kg/m² density acoustic soundproof quilt tightly packed (eg. 100mm Rockwool or Isovol mineral fibre sound insulation) in all voids the full depth of the stud. Partitions built off doubled up joists where partitions run parallel to joists and provide noggin 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

Construct non load bearing internal masonry partitions using dense concrete blocks built off thickened floor slab and tied at 25mm centres with proprietary steel profiles at all internal and external walls. Walls faced throughout with 12.5mm plasterboard on dabs with skim plaster finish or 13mm lightweight plaster.

INTERNAL LOADBEARING MASONRY PARTITIONS

Construct load bearing internal masonry partitions using dense concrete blocks built off concrete foundation. Concrete mix to conform to BS EN 206-1. Depth to engineer's details and dependent on ground conditions to be agreed with BCO. Wall tied at 225mm 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.

INTERMEDIATE FLOORS

Intermediate floor to be 25mm tandg flooring grade chipboard or floorboards laid on C24 joists at 400mm ctrs (see engineer's calculation for sizes and details). Lay 100mm Rockwool mineral fibre quilt insulation min 10kg/m³ or equivalent between floor joists. Ceiling to be 12.5 Fireline plasterboard with skim plaster set and finish. Joist spans over 2.5m to be strutted at mid span using 38 x 38mm herringbone strutting or 38mm solid strutting (at least 2/3 of joist depth). In areas such as kitchens, utility rooms and bathrooms, flooring to be moisture resistant grade in accordance with BS EN 312. Identification marking must be laid upper most to allow easy identification. Provide lateral restraint where joists run parallel to walls, floors are to be strapped to walls with 1000mm x 30mm x 5mm galvanised mild steel straps or other approved in compliance with BS EN 845-1 at max 2.0m centres, straps to be taken across minimum 3 no. joists. Straps to be built into walls. Provide 38mm wide x ¼ depth solid noggin between joists at strap positions.

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 the Electrical Installation Condition Report (EICR) or the Domestic Electrical Safety Inspection Scheme (DESS). 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 greater than 45 lumens per circuit watt and a total output greater than 400 lamp lumens. Not less than three energy efficient light fittings per four of all the light fittings in the main dwelling spaces 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.

WOOD BURNING STOVE

Mains operated stove is installed by an APHC, HETAS, NAPIT or NICEIC accredited specialist in compliance with Part J. Supply a suitable flue, hearth and CO / Carbon Monoxide alarm and provide ventilation to ensure the necessary combustion air and to prevent the depletion of oxygen in the room. There must not be an extractor fan fitted in the same room as the stove. A notice plate giving operating and maintenance instructions must be provided and fixed in an obvious place and the Part J installation checklist is to be completed and a copy given to Building Control.

NEW GAS BOILER

Heating and hot water will be supplied via a wall mounted condensing vertical balanced flue pressurised boiler with a min SEDBUK rating of 90%. No combustible materials within 50mm of the flue. System to be fitted with thermostatic radiator valves and all necessary zone controls and boiler control interlocks. The system will be installed, commissioned and tested by a GAS SAFE Registered Specialist and a certificate issued that the installation complies with the requirements of PART L. All work to be in accordance with the Local Water Authorities bye laws, the Gas Safety (Installation and Use) Regulations 1998 and IEE Regulations.

SMOKE DETECTION

Mains operated smoke alarm detection system to BS EN 14604 and BS 5839-6:2019 to at least a Grade D category LD3 standard and to be mains powered with battery back up. Smoke alarms should be sited so that there is a smoke alarm in the circulation space on all levels/ storeys and within 7.5m of the door to every habitable room.

If ceiling mounted they should be 300mm from the walls and light fittings. Where the kitchen area is not separated from the stairway or circulation space by a door, there should be an interlinked heat detector in the kitchen.

ESCAPE WINDOWS

Provide emergency egress windows to any newly created first floor habitable rooms and ground floor inner rooms. Windows to have an Unobstructed openable area that complies with:

- minimum height of 450mm and minimum width of 450mm.
- minimum area 0.33m².
- the bottom of the openable area should be not more than 1100mm above the floor.

The window should enable the person to reach a place free from danger from fire.

any window or door openings to be in accordance with diagram 11.5 in Part B Volume 1 (small unprotected areas).

ROOF LIGHTS

Min U-value of 1.6 W/m²K.

Roof-lights to be double glazed with 16mm argon gap and soft low-E glass. Window Energy Rating to be Band C or better. Roof lights to be fitted in accordance with manufacturer's instructions with rafters doubled up to sides and suitable flashings etc.

SAFETY GLAZING

All glazing in critical locations to be toughened or laminated safety glass to BS 6206, BS EN 14179 or BS EN ISO 12543-1 and Part K (Part N in Wales) 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.

NEW AND REPLACEMENT WINDOWS

New and replacement windows to be double glazed with 16mm argon gap and soft coat low-E glass. Window

Energy Rating to be Band C or better and to achieve U-value of 1.6 W/m²K. 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.