

BUILDING REGULATIONS OUTLINE SPECIFICATION

for:

Sleek Direct London Ltd

at:

53-54 Swanley Centre, Swanley, Kent BR8 7TQ

Interior alterations and exterior alterations by means of new stairs to the upper floor level, creating 2no. self-contained flats

Prepared by Archicraft designs LIMITED

Job number: 25-010



Note:

- 1. Ensure '**Notice of Intent**' is sent to the Building Control Inspector no less than 2 days prior to site start.
- 2. Ensure '**Notice of Commencement**' is sent to the Building Control Inspector no less than 5 days prior to completion of the lowest ground floor level. Notice will automatically lapse if commencement has not begun within 3 years. In which case, a new notice of commencement will need to be made.
- 3. Due to recent change in legislation, a **desktop soil investigation report** may be requested by Building Control during the plans check stage. If require, a Geotechnical Engineer will need to be appointed. I will be happy to make a recommendation, if required.

GENERAL NOTE:

ALL MATERIALS AND COMPONENTS MUST BE SUITABLE FOR THEIR INTENDED PURPOSE AND LOCATION AND MUST BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH ALL RELEVANT, CURRENT BRITISH STANDARDS AND CODES OF PRACTICE, NHBC REQUIREMENTS AND MANUFACTURER'S SPECIFICATION.

Any reference to an Approved Document in this Specification relates to the relevant Approved Document of the Building Regulations.

Section 01 – External Walls

General

• Thermal bridging

- Install continuous perimeter insulation with a min R value of 0.75m²K/W. Floor insulation must tightly abut the blockwork wall.
- Seal all penetrations through the floor (air barrier) with a flexible sealant.
- 225 x 30mm thick threshold insulation (SD expanded polystyrene board (0.038 w/my) to be inserted below all external door entry positions to outer face of cavity and filled behind and below with Gen 1 cavity fill – ensure dpc is inserted and laps with dpm and outer wall dpc at cill level to prevent bridging of the cavity.
- Ensure wall insulation is installed at least 150mm below the top of floor insulation.

Damp Proof courses

 Suitable polyethylene damp proof course on mortar bed at a minimum 150mm above finished ground level. 100mm D.P.C. in outer leaf of external cavity wall, 100mm D.P.C. in inner leaf of external wall, party walls and internal load bearing walls to be continuous with damp proof membrane. Ensure damp proof courses do not project into cavities. Joined damp proof courses to be lapped minimum 150mm. Damp proof course to be totally imperforate and to have superstructure brick and blockwork bedded on top surface.

External Masonry Walls

Upgrade to solid existing wall (U-value 0.26W/m2K)

Solid existing walls (where applicable) to be lined with 72.5mm Kingspan Kooltherm K118 boards
 - taped, jointed and skimmed. Insulation boards to be mechanically fixed to 25x47mm treated
 softwood timber battens @ maximum of 600mm c/c over strips of DPC.

Wall Ties

- 225mm long (stainless steel) placed at staggered 750mm horizontal centres and at 450mm vertical centres and at every blockwork course within 150mm of all openings. Max wall height set by BBA certificate should not be exceeded for the appropriate wall tie used.
- Wall tie type to structural engineer's specification.
- BS 5628: The use of Masonry Pt1 allows wall ties to either DD140 or BS 1243 to be used. Recommendations are given on embedment, length of tie, density (as above) and positioning. The strength and rigidity of above specified ties were compared with the requirements of DD140 Pt2 (refer to BBA Certificate) for a Type 4 tie and were found to be equal to or greater than them in all respects. Any deviation from the wall ties specified should be checked by Structural Engineer.

Mortar

- The selection of the appropriate mortar should follow the recommendations given in BS 5628: Part 3; and NHBC Standards Appendix 6.1-C:
- Unless recommended otherwise by the brick manufacturer, the mixes in the table below should be used for clay bricks.

Mortar mixes using ordinary Portland or sulphate-resisting cements where required (see also Design clauses 6.1-D5 (b) and (d)).

Location		Recommended cement: lime: sand mix	Recommended cement: sand mix with air-entraining plasticiser	Recommended masonry cement: sand mix	Mortar designation to BS EN 1996-1-1
General wall area above dpc	in areas of Severe or Very Severe exposure - high durability	1 : ½ : 4½	1 : 3½	1:3	(ii)
	other exposure categories - general use	1 : 1 : 5½	1 : 5½	1 : 4½	(iii)
Below dpc level and in chimney stacks	- high durability	1 : ½ : 4½	1:3½	1:3	(ii)
Cappings, copings and sills	- low permeability	1 : 0 to ¼ : 3	-	-	(i)

- Sulphate resisting cement should be used where recommended by the brick manufacturer
- Proprietary mortars and admixtures should only be used strictly in accordance with the manufacturer's
 recommendations, taking into account the type of masonry unit and its location.
- Under gauging of Lime bond / sand mixes should be avoided and NHBC guidelines followed
- Recessed or raked joints should be avoided in conjunction with full fill cavity insulation in areas of Moderate and Severe exposure.

Movement Joints

- Movement joints may be required where straight walling occurs in runs in excess of 12 metres in clay brickwork and 6 metres in blockwork, stonework and render (i.e. without returns and openings e.g. in straight terraces). Spacing of expansion joints should be reduced at corners. Manufacturers to be consulted for guidance on their individual requirements. Guarantees must be gained from the supplier in this instance.
- Where thermal movement may occur due to material properties or where differing strata occur in foundations, structural consultant is to confirm their requirements.

 Joints, 16mm in width to be located at the rear of rainwater pipes where possible to minimize visual impact and to be formed with proprietary foamed polyurethane sealing strip with 2 part polysulphide mastic. Structural Engineer to confirm for extent i.e. outer or both leaves of wall. Final flexible pointing in two-part polysulphide mastic to match facing material all to manufacturer's recommendations.

Galvanised Steel Lintels

- Galvanized steel lintels designed, tested and manufactured fully in accordance with the British standard, with integral insulation to suit 100mm cavity width. Openings over 1.2m wide may require 'propping' until the brickwork over has matured. Minimum bearing of lintels to be 150mm each end. Bearing to be onto complete block. Lintels above internal doors to have minimum 100mm end bearing up to 1200mm clear span and 150mm bearing over 1200mm openings. All lintels to manufacturer's schedules and calculations. Expanded metal reinforcement over meter boxes. Lintels having base plates to have effective conductivity not exceeding 30W/mK.
- Lintels to be fully filled with insulation.
- Thickness of Lintel flanges to be no more than 3.2mm.

Steel Beams

- Any steelwork (to Engineers calculations) to be built-in solid (supported on pad stones to Engineers design) and levelled with steel shims provided and treated with either:
 - a. One coat high build zinc phosphate primer and one coat of bituminous paint to beams supporting cavity walls or
 - b. One coat red oxide or zinc chromatic primer to beams in floor/roof voids etc or

Cavity Trays

- Proprietary preformed polypropylene stepped cavity tray components (may be specified with factory fitted code 4 lead flashings) all installed in accordance with manufactures instructions provided. Flexible polyethylene (450mm wide rolls) horizontal cavity trays formed on site. These should be continuous so as not to form slip planes in joints. Weep holes to be used to the lowest tray (catchment tray), positioned in perpendicular joint of brickwork.
- Tray and abutment details to take account of tile type and appropriate flashing arrangements. Refer to manufacturers details.
- Preformed internal and external trays to be used where stepped and horizontal trays meet.
- Cavity trays are to be provided at all interruptions which are likely to direct rainwater across the cavity such as:
 - a. Horizontal and stepped roof abutments separating internal and external environments.
 - b. Continuous horizontal cavity tray immediately above acoustic / fire barrier to all separating floor levels.
 - c. Continuously above lintels where openings are separated by short piers and above openings where the lintel supports a brick soldier course.
- Cavity trays are to rise at least 140mm from the outer to the inner leaf, to be self-supporting or fully supported (where built into the inner leaf do not exceed ¼ of bed joint).
- Continuous horizontal cavity tray to be provided if insulation is not continued to verge level.
- Watertight stop ends to be secured at the ends of all cavity trays or lintels which are intended to act as trays to prevent water discharging from the ends into the cavity.

• Insect-proof weep holes to be installed at not more than 900mm ctrs to drain water from the cavity trays. Ctrs to be reduced to 450mm to fair faced masonry above openings and at least 2 per opening.

Section 02 – Roofs

General

- Ensure the gap between the wall plate and the proprietary eaves ventilator (ventilated roof) is completely filled with insulation having a min R-value across the thickness of the insulation of 1.2m²K/W.
- Ensure continuity of the insulation throughout the junction and ensure that the full depth of insulation between and over the joists abuts the eaves insulation. Tuck compressible insulation down into the head of the cavity.
- Ensure wall plate bedded on continuous bed of mortar.
- Insulated access hatch to be proprietary (Glidevale or equal approved) injection moulded polypropylene
 having closed cell compressible seals and anti-wind uplift mechanism with rigid integral insulation to
 Table 2 of the ADL (30 minute fire resistance versions where specified) Air leakage through the access
 hatch including the frame when tested to BS EN 13141-1:2004 to be less than 1.0m³/hr@2pa.
- Where applicable ceiling lining to be continuous across the heads of partitions (fixed first) and seal all gaps between the ceiling and masonry wall with either plaster, adhesive or flexible sealant.
- Below the roof voids of a "room in the roof" seal all penetrations in the plasterboard with a proprietary or flexible sealant.
- Install a double full depth timber noggin between the floor beams or ties and seal between the noggin, ceiling and upper stud wall with a flexible sealant.
- Dead and imposed loads should be calculated in accordance with the British Standard. Structural timber should be specified according to strength classes of the British Standard in conjunction with Approved Document A of the Building Regulations. Wind loads appropriate to the site location should be calculated in accordance with the British Standard and the roof designed to resist wind uplift, holding down straps should be utilised where the self-weight of the roof is not sufficient – Check with the local building control body.
- For low pitches below tile manufacturer's recommendations, a proprietary (Ondutile or equal) sarking system may be utilised provided the BBA Certification and manufacturers installation guidance is followed.

Longhorn beetle infestation

- **Hylotrupes bajulus** This was original a forest insect, breeding in dead branches of conifers in Southern Europe. As climatic conditions changed the insect gradually spread northwards, at least as far as the countries bordering on the Baltic, and at the same time spread into the timbers of buildings to breed and feed.
- The larvae are most active in the sapwood of softwoods, but although it was formerly a general belief that hardwoods were immune, recent cases of infestation of oak and other hardwoods have been reported from the Continent. Serious outbreaks in Great Britain were virtually unknown until recent years, and at present are restricted to certain localities. The house longhorn beetle causes extensive damage to timbers in South Africa.
- It is known that, in England, the larval period may be as long as 11 years, in which case the damage
 caused in a roof member or piece of joinery may be so extensive that only a thin shell of sound timber is
 left. There is very little external evidence of infestation except that sometimes the course of the borings
 may be detected by an unevenness of the wood over them.

• Description of the Beetle

The house longhorn beetle is somewhat flattened, measures from 8mm to 25mm in length and is brown or black in colour. The head and prothorax, the first body segment, are thickly covered with grey hairs except for a smooth central line on the prothorax, on each side of which is a shiny black prominence. On each wing cover the grey hairs are grouped in patches which are often fused to form two transverse bands.

The larvae are straight-bodied fleshy white grubs, clearly divided by deep transverse folds into a number of rings or segments. The head is sunk in the prothorax segments so that only the dark brown jaws are visible. When fully grown the larvae are commonly 18mm long but may attain a length of about 30mm. The grubs feed for a relatively long time, which, however, varies to some extent as in the case of other longhorn beetle larvae, with the moisture content of the wood and with the temperature.

• Treatment

Roof timbers will be protected against House Longhorn Beetle by vacuum treatment using Protim. Tanalith or similar.

Attack by any of the wood-destroying beetles found in Great Britain can be prevented by adequate treatment, with a suitable preservative, of the wood before use. The vacuum and pressure method gives the maximum protection with any timber. Permeable timbers may be effectively treated by the hot-and-cold open tank process or by prolonged soaking for several days in suitable preservatives. Dipping, brushing and spraying with a suitable preservative can give effective protection if the preservative is thoroughly applied.

Cold deck flat roof construction (Vented) - Retrofit

(U -value of 0.16W/m2K)

Retrofit <u>1no. layer 125mm Kingspan Kooltherm K107 Pitched Roof Board rigid insulation</u> between existing joists leaving minimum 50mm air space above joists. Install ventilation cowls to top of roof and waterproof accordingly to ventilate void. Insulate underside of joists with <u>1no.</u> <u>layer 37.5mm Kingspan K118 insulated plasterboard</u> with integral vapour barrier. Existing roof joists are believed to be 50 x 175mm @ 350mm c/cs.

Section 03 – External Components

General

• External Components refers to those products that are applied to the main structure of the building such as Dormers, GRP chimneys, canopies and porches.

GRP Products

- It is almost certain that dormers will be constructed on site and therefore the note below will not apply. However it is included for reference if applicable.
 - a. Pre-formed Glass Reinforced Polyester (GRP) outer structural roof with true reproduction lead finish and colour. All patterns dressed in lead with rolled joints and flashing up stands as indicated on the approved working drawings. The GRP is manufactured by spray or hand lay-up technique with specially formulated fire retardant resins to provide a performance in accordance with the Approved Document B (Appendix A6) to give a resistance to external fire exposure or not less than designation AC (small canopies and roofs are exempt from this requirement). The pigmented gel coat is to be evenly applied and the final laminate is to have a minimum density for 3,600-6,000 grams per square metre with minimum glass content of 36%. All cut edges that are exposed after erection is to be treated with flow coat resin pigmented to match roof colour. The GRP fascia and soffit is manufactured to represent the construction of the main house and is to be bonded to the roof and structural frame. The structural frame to be softwood stress graded to M50 and will be VAC VAC treated with organic solvent based chemicals to manufacturer's instructions. The bay roof complete is to be as the approved working drawings. Eaves ventilation to be provided equal to a 10mm continuous air gap to all insulated flat roofs and equally to pitched roofs where the plan

area exceeds 3m². Integral insulation should achieve a U value in accordance with Table 2 of Approved Document L1a 2006. Protect at rear by a breather membrane or similar capable of resisting water penetration.

Section 04 – Internal Walls

General

- Separating Walls to be fully filled with effective edge sealing in accordance with Robust Details as appropriate.
- Ensure all gaps are sealed around partition perimeters and junctions apply flexible sealant as necessary.
- Seal all penetrations where service pipes pass through any walls, partitions and duct casings with
 expanding foam or other suitable flexible sealant.
- Soil pipes passing through ALL rooms to be lagged with minimum 25mm sound deadening insulation quilt (unfaced, with a minimum density of 10kg/m3), fixed to prevent settlement or slippage. 2 layers 12.5mm plasterboard screw fixed to metal or timber framing.
- Long external walls may need to be provided with intermediate buttressing walls or partitions, designed for the purpose, where in doubt check with structural engineer.

Load bearing Walls

- 12.5mm hard wall plaster in 2 coats & 3mm thistle multi finish to both sides. Single or twin leaf 100mm aggregate blockwork of density 1350 1600Kg/m³ and 3.5N/mm² compressive strength, or as designed by the Structural engineer if their spec' is greater. To be mechanically tied at every course at junctions with external walls.
- Steel lintels can be used in lieu of concrete where they have been designed to be of heavy-duty type
 and designed of a cavity type construction to avoid additional fire protection. Care must be taken when
 specifying that all lintels of this type are heavy duty avoid incorrect lintels being installed. All lintels to be
 as per manufacturers specification and schedules but must take account of the above recommendation
 which may involve some lintels being over designed to avoid complications on site. Refer to structural
 engineer's specification for details.

Timber Stud Partitions

- 100mm x 50mm timber stud partitions at 400mm ctrs. Fit 12.5mm Plasterboard either side with 3mm skim coat over.
- The construction must achieve minimum airborne sound insulation laboratory values (40 Rw dB) where required to comply with Part E of the Building Regulations with minimum 50mm Isover APR 1200 in the stud cavity or equivalent approved material see manufacturers Performance substantiation report. Must achieve a 30minutes fire rating for use in 3 storey stairway enclosure. See plans for partitions with mineral wool insulation.
- Install moisture resistant plasterboard to bath and shower rooms. A bonding agent may be required prior to a skim application, check manufactures recommendations.
- Partitions built off insitu slabs should have a dpc between.

Section 05 – Fire Protection

General

- Fire protection is not solely defined by the fabric performance but also means of detection, alarms, means of escape and fire rescue.
- Reference in this section may overlap into other parts of the specification such as internal doors, but will also be covered here for clarity.
- Upgrade hall with smoke detector to comply with Part B. Should typically consist of mains-wired, interlinked alarms conforming to BS 5446-1:2000 or BS 5446-2:2003 to at least a Grade D category LD3 standard and must be benefit from standby power supply.

Integrity of Elements

- 30 Minutes Fire Resistance: Required between rooms and hallways.
- **60 Minutes Fire Resistance**: Required to structural frames, beams, columns and elements of the structure (separating walls and floors).

One & Two Storey Houses

• Except for kitchens all habitable rooms on the first floor (served by one stair) should be provided with an escape window. The window should have an unobstructed operable area that is at least 0.33m² and at least 450 x 750mm in size.

Section 06 – Mechanical & Electrical

General

- Please note the section below is generic and the M&E consultant's drawings and specifications must take precedence if it is available.
- When Electric Gates are installed reference must be made to the HSE Bulletins which highlight recent incidents and actions to be taken. HSE Bulletins FOD WSW 1-2010 & FOD 7-2010.
- Socket outlets which might reasonably be used for external appliances should be protected by a residual current device (RCD).
- In accordance with the revised British Standard new harmonised (EU) cable core colours for all new fixed wiring are to be adopted. Guidance and examples of these should be included in the Home Owners Guide.
- Mechanical extract ventilators in external walls and ceilings to be supplied with sealing gaskets.
- Intumescent gaskets may be utilised as an alternative to a flexible sealant to light fittings penetrating the (plasterboard) air barrier.
- Must be designed and installed in accordance with the **Domestic Building Services Compliance** Guide 2010 Edition & Domestic Ventilation Compliance Guide 2010 Edition

Meter Box Connection

Where the site is "self-connect" i.e. the electrical contractor makes the connection from the consumer
unit to the meter, this is normally to switch fuse in the meter cupboard, in which case there should not be
a restriction on the "tails" between the meter box and cu positions. Where the electricity utility provider
makes the connection, they will normally insist on a maximum distance of approx. 2m between the two
unless a separate switch fuse is provided which they will normally allow to be positioned in the meter
box. Therefore the designer should be aware of the implications and avoid situations where the meter
box and cu are remote.

- Consumer units to have lockable covers to help prevent circuits being energised accidentally.
- Ensure there is at least a 300mm separation between an extract fan terminal and flue termination of a gas boiler and 500mm between an extract fan and a background (window trickle) ventilator.
- To assist those people whose reach is limited and to use the dwelling more easily, light switches, socket outlets and other equipment (not consumer unit) should be located in habitable rooms at appropriate heights between 450 and 1200mm from finished floor level in accordance with Diagram 22 of Approved Document M of the Building Regulations.
- 100% low energy lighting to be used throughout the dwelling and in accordance with the specification noted below, Energy Efficient Lighting. Note: To be confirmed and agreed with the client.
- Downlighters to be IP60 (65 above baths and showers) rated limiting air leakage. They must have been designed and tested such that they will not cause overheating when overlain with insulation e.g. low voltage systems with dimmable transformers which can also be changed through the bezel. They should have a 30 minute fire rating in ceilings below roof spaces and 60 minutes in separating floors. They should have been satisfactorily assessed in accordance with the procedure described in Appendix F of ADE Robust Details. A copy of the test report shall be handed to the site manager. They should be spaced at no more than one light per 2m² of ceiling area measured in each room and at ctrs not less than 750mm unless tested otherwise.
- Socket outlets to be provided not less than NHBC requirements (8.1 D11)
- Gang switches to be provided within kitchens for all appliances.

Electrical Cables



LOCATION OF CABLES WITHOUT SPECIAL PROTECTION

 Where cables are concealed within a wall, they should be located at a minimum depth of 50mm from the surface opposite to where the electrical point is positioned – refer to partition manufacturer's installation guidelines and ensure this is strictly adhered to.

- Cables without special protection, such as an earthed metal conduit, must be positioned as indicated in NHBC Standards (8.1 S4). This applies to all walls.
- The presence of insulation around a cable has the effect of reducing the current carrying capacity:
- Circuits run within thermal insulation must be protected with cartridge fuses or mini circuit breakers (MCBs), re-wirable fuses are not suitable.
- Cables fully enclosed by insulation may need to be increased in size above the standard recommended by as much as 20% if they pass at right angles through an insulating layer and as much as 50% if they are enclosed along the length for more than 500mm.
- For cables enclosed by insulation but in contact with a thermally conductive surface on one side, the larger of the standard recommended sizes will generally need to be used.
- uPVC Cables should NOT come in contact with polystyrene and where located on walls faced with laminated polystyrene backed plasterboard should be suitably protected.
- TV distribution cable to be CT 100 digital satellite / terrestrial.

Smoke & Heat Detection

- Smoke alarms to be mains operated with a battery backup and connected to the lighting circuit. To be of
 the lonization type where positioned in living rooms and of the Optical type when located in circulation
 areas. They should be ceiling mounted, within 7.5m of doors to habitable rooms and 300mm min from
 light fittings and bulkheads. Minimum of one smoke alarm per storey and interlinked.
- Where the kitchen area is not separated from the circulation space by a door, there should be a compatible, interlinked heat detector located in the kitchen in addition to smoke alarm(s).

Energy Efficient Lighting

- Fixed lighting capacity (lm) = 185 x total floor area
- Efficacy of all fixed lighting = 80 Im/W
- 100% low energy lights required throughout the dwelling. Note: To be confirmed and agreed with the client who may wish for a reduced amount.
- Energy efficient lighting is to be provided in accordance with Approved Document L1A and the Domestic Building Services Compliance guide.
- Light fittings can be either dedicated fittings or standard fittings with low energy lamps. Low energy
 fittings should have lamps with a luminous efficacy greater than 40lamp lumens per circuit-watt and a
 total output greater than 400 lamp lumens. Light fittings whose supplied power is less than 5 circuit-watts
 are excluded from the overall count of the number of light fittings.
- Standard fittings supplied with low energy lamps with integrated control gear (e.g. bayonet or Edison screw based compact fluorescent lamps). Light fittings with GLS tungsten filament lamps or tungsten halogen lamps would not meet the standard.
- Kitchens having pelmet fluorescent lighting will comply.
- Recessed down lights can be either GU10 type LED type fittings or alternative low energy compact fluorescent type. LED lamps produce little or no heat and should be considered where insulation may cover the fittings. Confirmation should be gained from the manufacturer and contractor and installed in accordance with manufacturers details.
- External lighting if provided must also comply with the following if attached to the building:
 - Either a)
 - Lamp capacity not greater than 100 lamp-watts per light fitting; and

- All lamps automatically controlled so as to switch off after the area lit by the fitting becomes unoccupied; and
- All lamps automatically controlled so as to switch off when daylight is sufficient.

o Or b)

- Lamp efficacy greater than 45 lumens per circuit watt; and
- All lamps automatically controlled so as t switch off when daylight is sufficient; and
- Light fittings controllable manually by the occupants

Electrical Provision in & Around Bathrooms

- Section 601 of the BS wiring regulations relates to locations containing a bath or shower which are classified into the following zones:
 - a. **ZONE 0** Represents the interior of the bathtub or shower tray.
 - **b. ZONE 1** Wraps around and on top of zone 0 and is limited to a height of 2.25m.
 - c. ZONE 2 Reaches 0.6m outside of zone 1 and sits above zones 0 & 1 at a minimum height of 2.25m. Insulation should not cover the fitting as the fitting could overheat, reducing lamp life and creating a fire risk (those installed in ceiling voids to compartment floors should have be 1hr fire rated and meet with RSD's Appendix F requirements). Extract Fans IPX4 rated (protection against splashing).
 - d. ZONE 3 The outer layer is therefore the rest of the bathroom extending to the same height Shaver Sockets / Batten Holders.
 - e. Section 601 defines where 240volt electrical items can and cannot be placed in these rooms in accordance with the zoning. This means fan / lighting positions and wiring accessories unless they are SELV (Safety Extra Low Voltage).

Pull Chord/Rocker Switches in wet rooms

Are permissible outside this zones

• Rocker switches preferred and to be located outside the wet rooms.

Fan Isolating Switch

Should be outside zone 3 e.g. located 2.25m above this zone or outside the room where the assessment / inspection body permits.

• In addition section 601 stipulates that elect cables in partitions adjacent to zones 0 & 1 need to be a minimum 50mm away from the wall face.

Section 07 – Plumbing & Heating

General

- Please note the section below is generic and the M&E consultant's drawings and specifications must take precedence if it is available.
- Individual Gas engineers or gas installation businesses are required to be Gas Safe Registered. Systems cannot be installed or commissioned by those without the appropriate certification.
- Extended Gas Flues should be avoided wherever possible. Where it is felt this is unavoidable refer to specialist advice/details.
- Heating & Hot Water systems must be designed and installed in accordance with the "Domestic Building Services Compliance Guide 2010 Edition".

• Fit "top hat" S & vp collar – 110mm Visqueen or equal approved material. Sealed with Visqueen double sided jointing tape at ceiling level below a roof void.

Rainwater Goods

 Rainwater gutters and down pipes to be manufactured in heavy grade to the British Standard in black unless stated otherwise.

Flashings

- Where a roof abuts a vertical surface, cover flashings, stepped flashings, soakers and back or parapet gutters should be provided. They should link with cavity trays where there is an enclosed space below.
- Code 4 milled lead sheet to BS 1178 in lengths not exceeding 1.5m. Step and cover flashing dressed over tiles by at least 150mm and turned up brickwork at least 150mm to all abutments. To avoid damage to (unattached) cavity trays the joint for lead flashings should be raked out to a depth of 25mm as work proceeds (all in accordance with recommendations made by the Lead Development Association). Lead work to be cleaned and coated with patination oil.
- Unless factory fitted lead flashings are installed, the "free edge" of the lead cover should be adequately clipped at max 500mm ctrs which are to be mechanically fixed to the tiling batten.
- For weathering of plain tiles use either a (GRP) secret gutter or soakers and cover flashing in accordance with tile manufactures fitting instructions.

Plumbing



• All fittings to have traps in ABS plastic confirming to the British Standard. Provide waste for washing machine and dishwashers where applicable. All waste pipes shall be laid to fall. All plumbing shall be installed in accordance with approved manufacturer's instructions.

Appliances	Dia.	Min trap seal	Max length	Pipe gradient	Max bends	Max drop
			Of pipe			
Washbasin	32	75	1.7	2.2	0	0
Washbasin	40	75	3.0	1.8 to 4.4	2	0
Bath or shower	40	50	No limit	1.8 to 9.0	No limit	1.5
Kitchen sink	40	75	No limit	1.8 to 9.0	No limit	1.5
Washing mach	40	75	3.0	1.8 to 4.4	No limit	1.5
WC	110	50	No limit	1.8 min	No limit	1.5

- Soil and ventilating stack and fittings to the British Standard with ring seal or solvent joints to terminate via tile or ridge tile ventilator. (The dry part of the stack may reduce from 100mm to 75mm diameter above the highest branch). Ground floor WC to be taken direct to drain or to dedicated stub stack serving ground floor only. WC's to be specified with integral overflow kits.
- Air admittance valves Valves should be installed within the building in a ventilated duct or roof space where there is no risk of freezing and must be accessible for inspection and testing. Each valve is supplied boxed with a polystyrene insulation cover that should remain in position after installation, as this will protect the valve against freezing, particularly when installed in a roof space.
- To ventilate the underground drainage system and to minimise the effects of back pressure should a
 blockage occur, the branch or main drain serving a stack or stacks fitted with Durgo valves may require
 conventional venting at a point upstream of the stack connection.
 For up to and including four dwellings, 1, 2, or 3 storeys in height, additional drain venting is not
 required. Where a drain serves more than four such dwellings equipped with the valve, the drain should
 be vented according to the following rules:
 - o 5 to 10 such dwelling conventional ventilation to be provided at the head of the system.
 - 11 to 20 such dwellings conventional ventilation to be provided at the mid-point and at the head of the system.
- All domestic supply and space heating pipe work is to be "thermoplastic" with demountable or slim-line
 fittings to the British Standard, except in exposed locations above floor level and visible in airing
 cupboards containing the hot water cylinder where it is to be copper to the British Standard, of British
 manufacture with compression or brass push fit fittings.

Hot Water Supply

- Baths to incorporate a thermostatic blending valve (ideal Standard Bath Thermostatic Valve S7436AA) or similar approved to ensure the temperature of the water delivered to the bath does not exceed 48°C.
- Valve to be fitted below the bath behind the bath panel.

Cylinders & Cupboards

- Indirect open vented copper hot water cylinder or indirect sealed system capacity dependant on demand requirements (see design drawings) shall be positioned 50mm clear of the floor on bearers. See individual heating drawings for cylinder capacity. 0.5 square metres of shelving to be provided and at least 500mm clear space above. Immersion heating switch to be located in cupboard. 225 x 150mm grille at high level above door (should not vent onto landings in 3 storey houses).
- Combined units: The compartment must be ventilated in accordance with manufacturer's instructions. Any vents to be intumescent air transfer grills in a door. The compartment shall be a fixed rigid structure large enough to allow it and the boiler to be inspected and serviced. A minimum width between door jambs of 560mm must be provided. Internal surfaces should be non-combustible or lined with non-combustible material. Examples of non-combustible materials having a fire resistance of not less than ½ hour are plaster skimmed plasterboard and fireproof boarding. The floor need not be lined. Doors or shelves made from combustible material, e.g. Wood must be at least 75mm from the front or top of the

boiler. The flue pipe must be protected by the ducting supplied by Potterton or by another no less suitable non-combustible enclosure.

Section 08 – Doors & Windows

General

- Factory fitted double glazed units to be fitted and sealed into the door (clear glazed). Glazing to be laminated glass.
- The doors to be pre-hung at works (unless handling weights become an issue) into traditional timber frames and fitted with a proprietary weather seal threshold system (aluminium with gold effect finish) suitable for mobility access requirements to principle entrance and non-mobility version to secondary entrance.
- Main Entrance door to be fitted with a multi-point locking system with a key/thumb-turn cylinder. Additional ironmongery to consist of a double sided sleeved letter plate, eye viewer and door chain.

New dwelling – Opaque doors (U-value 0.1W/m2K)

Opaque doors with glazed area less than 30%

New dwelling – Semi-glazed doors with glazed area less than 30 -60% (U-value 0.1W/m2K)

For new builds, U-values of opening areas, windows, roof windows, rooflights and doors, should be the same as for actual dwelling not exceeding a total area of openings 25% of the total floor area.

New dwelling – Semi-glazed doors with glazed area greater than 60% (U-value 0.12W/m2K)

New dwelling – Windows (1.2W/m2K)

Frame factor 0.7

New dwelling - Roof windows (1.2W/m2K)

When in vertical position (for correction due to angle, see specification in SAP 10 Appendix R)

New dwelling – Rooflights (1.7W/m2K)

When in horizontall position (for correction due to angle, see specification in SAP 10 Appendix R)

Frames

- Outer frame fully welded, transoms and mullions mechanically jointed or welded to provide a strong and durable, watertight construction. Frames manufactured with concealed drainage. Weather seals to openings tested to severe weather rating.
- Cills are factory fitted and sized to suit set back of frame and sub-cill detail. The window manufacturer should ensure they have a copy of the latest site layout plan indicating the handing of plots.
- Cill profile acceptors to receive MDF internal boards.
- Each and every frame should have the appropriate BS or BBA certification reference clearly visible

Glazing

a. Factory glazedglass units. Obscure glazing to all rooms containing sanitary fittings. Toughened glass to locations required to meet with Building Regulations ADM. See elevations for other obscured glazed windows required for Town Planning purposes.

b. Each and every glazed unit should have the appropriate BS Kitemark (on the glazing bar) permanently marked.

Ironmongery and Security

- Opening lights to be hung on stainless steel friction hinges concealed in frame rebates giving easy clean facility (min 95mm between frame and casement). They are to have multi-point espagnolette locking head system with mushroom head bolts for high security. If windows are vertical sliding sash, they are to be suitably hinged to aid cleaning in accordance with Building Control requirements.
- Die-cast handles with cylinder locking (except to escape windows) are to be factory fitted.

Fitting

- PVC-U building in profile / cavity closer system used to form opening in masonry cavity walls during construction. Made from extruded profiles formed into a template with welded corners at the cill or threshold and an overhead ventilator at the head and complete with EDPM window stop gasket to suit minimum setback. All supplied fully assembled, ready to be built in on site.
- Cavity closers to be insulated to aid thermal bridging factors.
- Windows are to be supplied with the requisite fixing cleats and head fixing ties. A reveal stop is required (fitted to the closer) for frames in a check reveal or those located in rendered elevations. Internal plaster stops are not required. The sub-frame is to be manufactured to suit the exact brickwork opening; the window to be fitted is to be exactly sized to give the manufacturers required clearance. The sub-frame is to be built in as work proceeds in accordance with the BBA Certificate procedure and will eliminate the need to fit a conventional vertical and horizontal dpc to the opening.

Internal Doors

- Standard Doors: to be min. 35mm thick to suit size and height noted on the working drawings.
- Door kits to be used throughout to ensure consistency of installation and will consist of 25mm thick linings of width to match the wall thickness within which the opening is situated.
- To ensure good transfer of air thought the dwelling, there should be an undercut of minimum area 7600mm² in all internal doors above the floor finish. This is equivalent to an undercut of 10mm for a 760mm wide door. This should be achieved by making an undercut of 10mm above the floor finish if the floor finish is fitted or by 20mm undercut above the floor if the finish has not been fitted. This undercut is to be agreed and confirmed acceptable by the client.
- Fire Doors: Provide FD 30 fire doors, 44mm thick, at every storey level opening onto a fire protected escape route (landings / hallway). Ensure 30 minutes fire rated construction is maintained in the floor zone above partitions separating rooms from the escape route, fire doors may be omitted from bathrooms but must be fitted to storage areas.
- Fire ratings for fire door assemblies are given in minutes and prefixed by the letters "FD".
- Door leaf must have a full test report to the British Standard and have BWF Certifier Accreditation. The complete fire door assembly, including its frame, intumescent seals, hinges, glazing and ironmongery must perform to the British Standard.
- Reference should be made to Approved Document B1 appendix B for appropriate fire door testing requirements and relevant BS/EN standards.
- The door assembly must carry a permanent and tamper evident label.
- The manufacturer's specific and comprehensive installation instructions must be followed.
- 1½ pair 100 x 76 x 3mm stainless steel ball bearing hinges to the British Standard to be fitted per door leaf.

• MDF linings require intumescent seals on 3 edges.

Section 09 – Ventilation (BR Part F, Vol 1)

Applicable to:

All residential dwellings (New builds and renovation projects)

General

- Air Leakage rates, both design and actual, also have an influence on the amount of background ventilation required for any one solution. These must be carefully considered when formulating the ventilation strategy.
- For airtight new-build dwellings, as-built air leakage rates are set at a default of 5m³/(h.m²)@50Pa with design value set at 8m³/(h.m²)@50Pa. This will allow for a varied approach on air leakage testing to be agreed with Building Control.
- Few less airtight existing dwellings, airtightness should be set at a default greater than 3m³/(h.m²)@50Pa with the design value set at higher than 5m³/(h.m²)@50Pa
- Background ventilators should be positioned to avoid draughts e.g. typically 1.7m above floor level.
- In noisy areas it may be necessary to use either sound attenuating background ventilators or mechanical ventilation solutions depending on the noise level and any planning conditions. Manufacturers are required to provide options to these situations as requested.
- Ventilation systems should be designed to minimise the intake of pollutants. This could be achieved by using MVHR system with high grade filtration.
- Manufacturers are required to produce the appropriate background ventilation table for compliance with the Building Regulations in accordance with the ventilation strategy.
- Details of background ventilation to be added to all working drawings.



Airtight Dwellings

Interactions with other Building Regulation requirements

Interaction with Part B

The requirements of Part B apply if, for example, ducts pass through any of the following. a. A fire resisting structure. b. A fire compartment. c. A protected stairway. This approved document gives guidance on window openings for ventilation. In addition, Approved Document B gives guidance on the size of escape windows. The larger of the window openings specified in Approved Document B or Approved Document F should be applied in all cases.

Interaction with Part J

Ventilation fans might cause combustion gases to spill from open-flued appliances. These combustion gases might fill the room instead of going up the flue or chimney, even if the combustion appliance and fan are in separate rooms. The guidance in Approved Document J should be followed when installing and testing ventilation appliances. Combustion appliances must operate safely whether or not fans are running.

Interaction with Part L

Energy efficiency should be considered when specifying ventilation systems. Energy efficiency, including the control of infiltration, is dealt with under Part L of the Building Regulations.

Interaction with Part K and Part M •

Manual controls, where provided for a ventilation device, should be within reasonable reach of the occupants. Follow the guidance in Approved Documents K and M.

Interaction with Part O

This document sets minimum standards for purge ventilation for rapidly diluting indoor air pollutants and extracting water vapour where necessary in habitable rooms in dwellings. For domestic-type buildings, Part O may require a higher standard than the guidance given in this document for purge ventilation to remove excess heat. In this case, the higher of the two standards should be followed.

Purge Ventilation

- Purge ventilation should be capable of achieving at least 4 air changes per hour (ACH) achievable via openings or mechanical extract ventilation.
- Purge ventilation to be in accordance with Approved Document F Appendix B which requires hinged or pivot windows that open 30° or more to have an opening part of at least 1/20th of the floor area of the room. For windows that open less than 30° reference should be made to the appendix.

Table 1.4 Purge ventilation openings		
Opening type	Minimum total area of openings	
Hinged or pivot windows with an opening angle of 15 to 30 degrees	1/10 of the floor area of the room	
Hinged or pivot windows with an opening angle of greater than or equal to 30 degrees	1/20 of the floor area of the room	
Opening sash windows		
External doors	-	

Mechanical Ventilation with Heat Recovery System

- MVHR is a whole dwelling ventilation system which supply and extracts air continuously at a low rate. It
 has an in-built heat-exchanger that recovers energy form the stale air and recovers it into fresh incoming
 air.
- Mechanical Ventilation with Heat Recovery systems do not provide background ventilation. MVHR systems should have a minimum of 73% efficiency.
- Note: Background ventilators should not be installed with MVHR system as they can provide unwanted additional ventilation and reduce the system efficiency.

Whole dwelling ventilation

- Supply air for the dwelling should be delivered through one of the following means:
 i. Continuous supply fans
 - ii. Background ventilators.
- The minimum whole dwelling ventilation rate for the supply of air to the habitable tooms in a dwelling should meet <u>both</u> points below:
 - i. A minimum rate of 0.3L/s per m2 of internal floor area (this includes all floors, e.g., for a twostorey building, add the ground and first floor areas).
 - ii. A minimum rate determined by the number of bedrooms as specified in Table 1.3 below.
- Internal doors should be undercut by 10mm to floor finish or 20mm above floor surface. This applies to all ventilation systems.

Number of bedrooms ⁽¹⁾⁽²⁾	Minimum ventilation rate by number of bedrooms (1/s)
	19
2	25
3	31
4	37
5	43

2. For each additional bedroom, add 61/s to the values in Table 1.3.

Installation of ventilation systems

- Adequate space shod be available for access to maintain ventilation equipment.
- Rigid ducts should be used wherever possible. Flexible ducting should only be used for final connections where possible with max. 1.5 metre length. Flexible ducts should meet BSRIA's BG 43/2013 standard.
- Flexible ducts should be pulled taut to ensure the full internal dimeter is maintained and flow resistance is minimised.
- Duct bends should be minimised.
- Duct connections should be both mechanically secured and adequately sealed to prevent leaks. Rigid connectors and jubilee clips should be used for flexible ducting to ensure a good seal.
- Use centrifugal fans for duct lengths over 1.5 metres. Axial fan will not be appropriate for use in this scenario.
- Each air terminal should have a free area of at least 90% of the free area od its associated duct.
- Mechanical ventilation systems must be commissioned in accordance with approved procedure. See completion checklist and commissioning sheet in Section 4 of Approved Document Part F1.

Section 10 – Additional Items

General

- This section deals with items that do not fall easily into other categories but play an important part in the construction of the dwellings.
- Due to changes in VOC legislation premature yellowing has occurred using solvent based paints. Along
 with reduced air leakage rates and further changes to the legislation proposed it is recommended to
 change to a water based acrylic paint all in accordance with manufacturers details.

Decoration (internal)

Surface Preparation

- Architraves, Skirting's, Window Boards and Door Linings are to be pre-primed MDF.
- MDF surfaces should be de-nibbed using either a fine grade Scotch Brite Pad (grey) or a fine grade abrasive paper. Do not polish or break the surface of the base coating.
- All minor defects in the Walls, Ceilings and MDF surfaces are to be filled with fine surface filler. Do NOT use decorator caulk.

- Bare Smooth Planed Timber (PSE). Remove all excess resin from live knots and other resinous areas with a hot air paint stripper, wipe immediately with methylated spirit and apply two coats of "knotting".
- Localised damage or deterioration due to exposure of factory based coatings for longer than four months, must be treated with a primer suitable for the chosen paint system.
- All surfaces must be clean, dry and free from any other substance that will interfere with the application of the finishes.
- Prior to painting the moisture content of the surfaces to be decorated should not exceed 18%.

Walls & Ceilings

 Walls and Ceiling surfaces require stabilising, either with a coat of thinned paint or with a sealer recommended by the manufacturer and are then to receive two full coats of Crown Trade Covermatt Emulsion (or other Premium brand) to prepared sound and clean surfaces. Allow a minimum of four hours drying time between coats under normal drying conditions.

MDF and PSE timber

- MDF surfaces are to receive one full coat of Crown New Build Acrylic Primer Undercoat Water-Based and two full coats of Crown New Build Acrylic Gloss Water-Based (or other in accordance with the current group agreement at the time). Allow adequate drying time under normal conditions between applications (acrylic primer requires 2 – 3 hours drying time). Repair any surface blemishes between coats in accordance with the Surface Preparation Specification above.
- PSE timber following preparation is to receive one coat of Crown New Build Acrylic Primer Undercoat Water-Based followed by two full coats of Crown New Build Acrylic Gloss Water-Based (or other Premium brand). Allow a minimum of four hours drying time under normal drying conditions between applications. Repair any surface blemishes between coats in accordance with the Surface Preparation Specification above.
- External Softwood Door Frames (Factory Primed). Apply one coat of Crown New Build Acrylic Primer Undercoat Water-Based followed by two full coats of Crown New Build Acrylic Gloss Water-Based (or other Premium brand). Allow a minimum of four hours drying time under normal drying conditions between applications.
- **Do not apply** when temperatures are likely to fall below 8°C or when the relative humidity is above 80% during application or the drying period.
- Acrylic paints must be applied with a good quality synthetic brush. Pure bristles brushes will absorb moisture which can cause excessive brush marks.

Tiling

Wall Tiling

- All tiles are to be fixed using a proprietary waterproof adhesive and mould resistant waterproof grout. Wall tiles in shower enclosures are to be bedded on a solid bed and NOT A KEYED BED. All excess grout to be cleaned off and a tool finish applied to all joints. Tiling to be taken over the lip of shower trays when they have them. If electrical fittings and radiators are removed during the course of the works, they are to be rehung immediately after completing grouting. Wall tiling heights are as agreed with the client and to be carried behind all fixtures and fittings except kitchen units and baths.
- Alternative fixing may be suggested by the manufacturer. In this instance guarantees must be obtained from contractor and supplier.

Floor Tiles on Screeds

 Screeds should be completely cured to allow for any shrinkage before tiling. Solid bed fixing is vital using a notched trowel and if necessary 'back buttering of tiles' to ensure no voids are left behind the tiles. It is recommended that a bed of adhesive between 3 and 6mm be applied to the screed. Once the adhesive has dried, normally after 24hrs, grouting may take place. Either ready mixed or cement based grout can be used. • Alternative fixing may be suggested by the manufacturer. In this instance guarantees must be obtained from contractor and supplier.

Floor Tiles on Timber

- Check floorboards are securely fixed as before described. Plywood of a minimum thickness of 18mm should then be laid over and secured at 300mm centres with additional fixings at the edges. It is recommended that the area to be tiled is then primed and left to dry. The same solid bed fixing method should then be carried out as above. If a normal cement based adhesive is to be used, it is recommended that an admix be added to increase bonding. Alternatively a flexible grout could be used. Grouting can normally take place 24 hrs after fixing. Check adjacent floor levels for compatibility with the sub base and tile thicknesses.
- Alternative fixing may be suggested by the manufacturer. In this instance guarantees must be obtained from contractor and supplier.