

CONSTRUCTION NOTES & SPECIFICATION

GENERAL NOTES

These drawings and the copyright thereof are the sole property of the consultants and must not be reproduced without their written consent.

The contractor is to check all levels and dimensions before work commences, any discrepancies to be reported immediately to the consultants.

Work to figured dimensions in preference to scaling.

All materials and workmanship to comply with current British Standards, Codes of Practice and relevant Agreement Certificates.

These drawings are for purposes of obtaining statutory consents only.

The finished buildings will require to receive service maintenance in accordance with custom and practice and the manufacturers recommendations.

The drawings are to be read in conjunction with the Engineers and all specialist manufacturers/suppliers drawings.

Note: -

Any amendments to general specification in relation to materials etc, may have implications to SAP Rating Calculations provided, and may reduce rating to produce a Fail result, therefore any change must be highlighted to the Code for Sustainable Homes Assessor, for prior approval.

SUBSTRUCTURE

1. Carefully excavate to reduce levels for new dwellings.
2. Where raising levels, all fill to be compacted well in layers not exceeding 150 mm.
3. All soft spots on site (once levels reduced and foundations excavated) to be fully excavated down to firm rock base and filled up to over-site/formation level with lean-mix concrete to Building Inspectors approval on site.
4. Excavate area for new foundations as indicated on drawings including engineer's drawings. Backfill with material excavated from trench and compacted in maximum 300 mm layers. Areas under paving, backfilled with compacted hardcore.
5. During excavation, set aside all topsoil for re-use.
6. Hardcore to comprise granular material, free from harmful matter and excessive dust, clay and water sulphates. Hardcore to be well graded with all pieces less than 75 mm in any direction, and in any one layer only from either gravel/ hoggins, crushed rock or clean masonry free from plaster. No frozen or timber material. Spread and thoroughly compact in 150 mm layers but in combined layers not exceeding 600 mm overall depth.
7. Blinding over hardcore and under damp proof membrane to comprise sand, fine gravel, or other approved fine material up to 25 mm thickness.
8. Solid floors laid over 150 mm thick layer of type MOT 1 compacted hardcore with soft sand blinding and damp proof membrane/radon barrier.
9. Sub-structure walls - Normally to be 1440mm thick inner leaf of dense concrete block, 70mm cavity filled to within 150mm of DPC level with lean-mix concrete and 140mm dense concrete block to outer leaf.
10. House floor construction provisionally to be beam & block method to structural engineers details - 75mm liquid screed, on 2000 gauge reinforced Radon Barrier / DPM to BS 5750, on 100mm HD Jablite thermal insulation (or similar approved), on 2000 gauge reinforced Radon Barrier / DPM to BS 5750, on 25mm thick screed on beam and block construction.

Lay floor slab on clean surfaces, free from debris, fastenings or free water. Do not lay onto frozen surfaces or where temperatures drop below 5°C. Compact concrete to full depth to remove air especially at corners and joints. Protect concrete from evaporation during curing period and from shock, indentation and physical damage. Trowel finish slab on completion within garage to form uniform, smooth but not polished surface, free from trowel marks and blemishes, and suitable to receive specified flooring material.

11. Lay 500 gauge (0.12 mm) polythene layer between the floor insulation and screed/slab to avoid grouting insulation boards. Polythene joints to be lapped 150mm and taped and at floor perimeter edges should be upturned to just below skirting level (minimum 38mm) and fixed behind the skirting board. Within timber frame, lap polythene with dpc and vapour control layer in wall.
12. Damp proof membrane/radon barrier comprising Visqueen Radon Membrane with sealed joints laid over blinding or soft layer and overlapped/sealed with dpc and vapour control layer in timber frame wall. Allow for sealed top hat sections at all pipe penetrations. Install in strict accordance with manufacturer's instructions to achieve gas tight installation including all recommended accessories.
13. GEN1 or grade STS 2 to BS 8500-2 concrete foundations to load bearing walls provisionally strip foundations 600 mm wide x 300 mm deep and subject to confirmation by Engineers / building control officer. Ground assumed to be non-engineered fill without

wide variation in ground conditions within loaded area. Foundation depth minimum 750 mm from upper surface to ground level.

14. Floor insulation laid above damp proof membrane to comprise 150 mm thickness with thermal conductivity not exceeding 0.25 W/m.k such as Celotex. Floor insulation must tightly abut the internal wall face and line perimeter with 25 mm thick upstand. Insulation covered with polythene layer to receive floating screed/slab.
15. Backfill all foundation trenches with compacted hardcore/clean broken stone. All backfilling to trenches to be well compacted in 200 mm thick layers and free draining. Backfilling to deep excavations to be carried out in stages.
16. Garage floor slab – provisionally comprising of 150 mm thick concrete ground bearing slab to BS 8500-2: Grade ST2. Damp proof membranes as Note 111.
17. Ramped / graded approach to garage door / garage floor level to be formed using sett brick pavements or similar to match driveway. Drive laid to falls to yard gully. Alternately provide a ramped concrete apron and Aco drain slot and connect onto storm water drainage system.
18. Dense concrete blockwork below DPC minimum compressive strength 10 N/mm². Blockwork density above DPC's to be 7N/mm².
19. All concrete/screeded ground floors to be sealed. All floor finishes to Client's approval.
20. Allow for spray treatment of existing ground to remove/kill all vegetation below floor structure to beam and block floors only. All debris etc to be removed. Voids to be left to laid to falls to rear external walls. Weepholes provided at maximum 2400mm centres for sub-floor drainage. Heights to all voids to be confirmed and extent to be confirmed on site ABD.
21. **Radon measures:** Where standard foundations are constructed- Full Radon protection required, Fit proprietary radon sumps below dpm level, vented through stepped cavity ventilators- Contractor to follow Radon specification/ details
22. Excavations to site generally: - All excavations to site/reducing levels to remove all vegetable matter/topsoil to reduce levels down to firm/rock bases. All removed material to be disposed of off site.

SUPERSTRUCTURE

1. Concrete common blockwork to BS EN 771-3. Compressive strength 2.9N/mm² (dry strengths) and thermal properties 1.39W/mK, size 440 x 215 x 100mm. Lay in 1:3 cement/sand mortar half lap stretcher bond. Lay on full bed of mortar and fully fill vertical joints.
2. Timber frame external walls:
 - a. 225 mm wide polythene DPC under sole plate. 38 x 140 treated soleplate, shot fired or similar to foundation walls. (It is assumed the base is level and square). Timber frame designed to BS5268 Part 2. Factory prefabricated wall panels of treated 38 x 140 softwood at maximum of 600 mm centres with preformed window and door openings to suit openings and loads, sheathed externally with 9 mm WBP Spruce Plywood or Equal fixed to form a structural frame, and erected in strict accordance with manufacturers' specification and nailing schedules. Approximate overall wall height 2400 mm. All voids filled with 140 mm thick Rockwool 'flexi' mineral insulation, all walls covered with polythene sheet sealed around service penetrations and finished with 12.5 mm plasterboard and dry lined. Note: fix compressible seals to bottom of timber frame to give a 12mm gap allowing for settlement/ shrinkage to timber frame structure.
 - b. Breather membrane – Factory fixed "Frame Shield" to external wall surface and gable panels with reinforcement tape and stud positions marked to show frame tie or batten fixing positions. Loose breather paper supplied for site joints and repairs.
 - c. Gable Panels/Internal Partitions – 38 x 89 softwood stud partitions in positions shown on plan. Load bearing partitions fitted with lintels and noggins as required by structural engineer.
 - d. Note: to all stepped gables where timber frame and masonry outer skin abuts: lightweight structure comprising of marine ply or similar approved fixed off timber frame studs, with breather vapour barrier laid on top, treated battens fixed over to achieve a vented and drained cavity, dpc membrane laid over each batten, paper backed metal lath membrane fixed onto battens- 3nr coats of cement render finish on top- allow 10mm gap for a movement joint where timber abuts masonry and mastic seal.
 - e. Note: code 5 lead flashings, soakers to wall/ roof abutments- fix propriety metal render beads over before render finishes, Adjoining roof membrane and wall membrane dressed over/ under each other.
 - f. Head Binders – 38 x 140 and 89 additional treated head binders to external walls and load-bearing partitions.
 - g. Service Noggins/Temporary Bracing – Supply only 25m in random lengths supplied for temporary bracing during erection of frame. This timber will remain on site for use by other trades.
 - h. Window Fixings – 225 mm wide polythene damp proof course on 38 x 50 tanalised timber closers to the perimeter of all external openings.
 - i. Cavity Closer – Flexible polythene covered mineral wool closer fixed to top of cavity (see timber frame manufacturers details).
3. Ensure insulation in floor voids extends over all partition heads. Insulation at eaves to be fully packed to ensure continuity with wall and roof insulation. Provide unobstructed ventilation to roof void by using proprietary ventilation tray/guard above roof insulation. Ensure continuity of insulation between sloping rafters and horizontal sections of ceiling. Ensure under rafter and between rafter insulation are in full contact. Ensure wall

insulation is taken to top of wall. Roof insulation to extend into gable ladders to ensure overlap with wall insulation.

4. Allow for differential movement between timber structure and masonry by leaving clear gap as recommended by timber frame manufacturers. As noted in 202.
5. Masonry generally to comply with BS 5628-1 and 3.
6. Ventilate cavity by open perpend 10 x 75 mm minimum at 1.5 m maximum centres using proprietary plastic ventilators and also at cavity wall trays at abutment.
7. Cavities bases to be filled with concrete GEN 1. Maintain 75 mm gap between top of fill and external ground level and minimum 225 mm between top of fill and ground level damp proof course. Keep all cavity faces clean, with all ties and dpcs free from mortar and debris. Cavity to have clear unobstructed width minimum 50 mm.
8. Lay proprietary weep holes through outer leaf at following locations: immediately above base of cavity, above cavity trays, stepped dpcs and external openings. Position at maximum 900 mm centres and provide not less than two No over each opening.
9. Air bricks in external wall to BS 493, class 1 and fitted with telescopic sleeves where required. Fit cavity tray directly above. Insect mesh panels to airbricks required.
10. Garage Walls

Constructed from 2 No 100 mm dense concrete block skins, with 50 mm clear cavity wall ties as before described. Blockwork to be continued to underside of roofing felt. Space between wall and felt filled with flexible closer material as recommended by Rockwool.

11. Masonry cavity wall ties to garage cavities only to be vertical twist austenitic stainless steel vertical twist type to comply with BS EN 845-1. Embed tie fully in mortar bed minimum 50 mm. Place tie sloping slightly downward towards outer leaf away from inner skin without bending. Position drip centrally to cavity and pointing downwards. Space ties at staggered centres 750 mm horizontally and 450 mm vertically. Provide additional ties at not more than 300 mm centres vertically within a 225 mm distance from the vertical edges of all openings, movement joints and roof verges.
12. Flexible stainless steel ties to timber frame at centres/type recommended by timber frame manufacturer. Fix ties into timber frame securely with 50 mm x 11 gauge stainless steel annular ringed shank nails and as advised by structural calculations. Flexible wall ties embedded in masonry and nailed to timber studs (not sheathing). Stainless steel ties at stud centres horizontally and 450 mm centres vertically. Top row of ties located 1 x course below top of cladding. At sloping verge ties located within 225 mm from top of masonry and every 4th course down the slope. At window/door openings not more than 215 mm vertical centres within 250 mm of jambs.
13. Concrete cills or facing brick canted brick cills with dpc tucked under joint, up and back of cill in one piece to avoid direct contact between cill and inner leaf and back up behind window cill.
14. Horizontal damp proof course to be positioned minimum 150 mm above external ground level externally. Dpc to be flush to timber frame to avoid bunching breather membrane. Install horizontal dpc in continuous length on full even bed of fresh mortar, with 100 mm laps at joints and full laps at angles. Dpc width to match width of masonry leaf with no edges of dpc covered with mortar or projecting into cavity. Provide 150 mm overlap and continuous seal with damp proof membrane at ground level. Provide support to all dpc crossing cavity to prevent snagging.

15. Preformed cavity trays to have minimum 150 mm step from outer to inner leaf. Allow for all stop ends, internal/external corners, lead flashings and weepholes to form robust detail. Seal all laps with dpcs and/or cavity trays to provide a free draining and watertight installation. Provide above all lintels and under cills or at location where cavity is bridged. Cavity Trays Ltd or equivalent preformed dpc/trays typically in following locations:
16. Provide vertical dpc at opening reveals. Install in one piece where possible. At joints, upper part to overlap lower not less than 100 mm. At opening jambs, fully lap vertical dpc behind cavity tray/lintel at head and over horizontal dpc at cills. Project not less than 25 mm into cavity maintaining full contact with frames. Fix dpc into back of built in timber frames securely using galvanised clout nails or staples and avoid bunching breather membrane.
17. Precast concrete lintels or similar approved to blockwork to BS EN 845-2 with minimum size to be calculated by manufacturer. Lintel bearing lengths to be minimum 100 mm for spans up to 1200 mm.
18. Steel lintels over openings to masonry cavity wall (garage door) to perforated base plate and insulated core with thermal conductivity no more than 0.30 W/mK and overlap frame by minimum 30 mm. Size to be calculated by manufacturer.
19. Trussed rafter design and fabrication: To BS 5268-3. Manufacturer to be firm/ company currently registered under a third party quality assurance scheme. Ancillary components to be supplied by fabricator. Keep trussed rafters vertical for storage and handling. Allow for doubling up rafters and trimming around rooflights. (if required)
20. Structural timber treatment 60 years as Commodity specification C8 for constructional timber. Retreat timber sawn lengthways, thickness planed or ploughed and surfaces exposed by minor cutting/drilling with two flood coats of a solution recommended by main treatment solution manufacturer etc. Carry out as much cutting/machining as possible before treatment.
21. Moisture content of wood and wood based products at time of installation not more than 20% in covered and heated spaces.
22. Provide additional studs, noggings and/or battens to support edges of sheet materials, and wall/floor/ceiling mounted appliances, fixtures etc. Timber to be of adequate size and have the same treatment as adjacent timber supports.
23. Structural design of roof to BS 5268-2 and with BS 5268-3 Code of Practice for trussed rafter roofs and Trussed Rafter Association site installation guide with relevant recommendations for bracing or with Eurocode 5. Do not modify trusses without approval and disguard-damaged trusses. Fix using galvanised or stainless steel truss clips. Use 32 x 3.5 ° mm galvanised or sherardized square twisted nails in every hole and as advised by structural calculations. Bottom chords of standard trusses and rafters of raised tie trusses to bear fully on wall plates. Complete roofing installation before fixing bottom chord or truss to internal walls. Permanently brace by fixing to every rafter, strut or tie with not less than two fasteners. Trussed rafters fixed to head rail/top binder by proprietary truss fixing clips.
24. Lateral restraint straps not less than 30 x 5 mm cross section and 1200 mm long in galvanised steel complying with BS EN 845. Fix to top of rafter at not more than 2 m centres. Ensure that cranked ends are in tight contact with face of wall inner leaf and is not pointing upwards. Fix noggings and packs tightly beneath straps where straps span rafters/ties perpendicularly. Size of noggings and packs: not less than three quarters of rafter depth and not less than 38 mm wide. Do not notch rafters/ties for straps. Gable walls to be strapped to roofs.
25. Concrete floors to have minimum 90 mm bearing onto supported wall, where suspended.

26. Ungraded softwood to be free from decay, insect attack and with no knots wider than half the width of the section.
27. All roofs ventilated by over fascia ventilators equivalent to 25 mm continuous ventilation above fascia board. All vents fitted with insect mesh. Cross flow ventilator to be fitted to maintain flow of air across top of insulation at eaves. Roofing felt carried over fascia vent on proprietary eaves skirt and dressed into gutter.
28. Provisionally 'Celuform' or similar approved fascias, bargeboards and soffits to BS 1186-3, Class 2; Moisture content at time of fixing not exceeding 24%.- capped with Upvc boarding.
29. Structural softwood grading standard to BS 4978, BS EN 14081-1, or other national equivalent and so marked. Timber of a target thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried). Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'. Strength class to BS EN 338: generally C24.
30. Ridge tiles to be interlocking. Mortar bedding for ridges 1:3 cement: sand, with plasticizing admixtures permitted. Bond strength to BS 5534. Do not use in wet or frosty conditions or when imminent and finish neatly with remove residue. Mortar bed ridge tiles on continuous bed to edges, solid to joints and fill ends to gables with mortar and slips of tile finished flush. Where rigid masonry walls support or abut ridge, secure ridge tiles within 900 mm of such walls with nails/wire ties or screws.
31. No openings in walls below ground level except for small holes for services/ventilation, which do not exceed maximum area of 0.1 m² at not less than 2 m centres.
32. Vertical chases in walls to be no deeper than 1/3 of wall thickness or leaf of cavity wall. Horizontal chases to be no deeper than 1/6 thickness of the wall or leaf of cavity wall. Chases should be positioned to avoid impairing stability of wall.
33. 300 mm mineral wool insulation quilt to all horizontal ceilings to main house. 150 mm between joists and 150 mm over joists. 'U' value 0.15 W/m² °C approximate.
34. Radon barrier to be formed by laying Visqueen Radon Barrier over grouted beam and block floor or below in-situ concrete slab. At perimeter's overlap with Visqueen Zedex Radon DPC and fit Visqueen Zedex CPT DPC immediately above to prevent gas entering cavity. All laps/joints to be minimum 150 mm and taped/sealed with Visqueen Top Hat sections and use pre-formed sections at internal/external corners. Lay in strict accordance with manufacturers details. Ventilate sub floor voids where applicable as described in substructure section.
35. Pitched roofs covered in manmade blue/ black slates fixed in accordance with manufacturer's recommendation and to BS 473 550: 1971 (1980) and BS 5750; Part 2: 1987 to 25 x 38 mm battens on high performance vapour permeable felt/breather membrane. Ensure the whole roof is sound and weathertight at earliest opportunity. Set out to true lines and regular appearance.
36. Dress underlay or underlay support tray to form drip into gutter and fix under course and first course slate with tail projecting minimum 50 mm over gutter or to centre of gutter. Provide minimum 100 overlap in roofing felt and slightly drape between rafters to provide drainage and ventilation. Where exposed, roofing underlay must be BS 8747, Annex B, Type 5U, or equivalent UV durable type or fitted with proprietary eaves skirt/carrier. Lay course of underlay over ridge and overlap minimum 150 mm.
37. Treated sawn battens to BS 5534 with maximum moisture content at time of fixing of 22% and organic solvent preservative treatment as Wood Protection Association

Commodity Specification C8. Batten length minimum 3 x rafter span with butt joints located centrally on supports. Batten joints to be staggered to prevent occurring more than once in any group of four battens on one support. Provide additional battens where unsupported laps in underlay occur between battens. Battens nailed to rafters with annular ring shank nails with nail dimensions to be determined in accordance with BS 5534 to suit site exposure, withdrawal resistance and suppliers recommendations.

38. Dry verge systems – to manufacturer's details fixing instructions.
39. At metal valleys cut and dress underlay over tilting fillets to lap onto metal valley and do not lay under metal. Cut slates adjacent to valley to fit neatly with valley width minimum 150 mm between slates. Sloping valleys constructed with WBP plywood bases and building paper lining covered with Code 5 lead. Leadwork dressed with welted edge over tilting fillet and extending minimum 225 mm from slating raking edge. Valley to be minimum 150 mm wide. Lead sheets lengths not to exceed 150 mm with joints lapped not less than 150 mm. Welt edges and fix by nailing top edge of each sheet with copper clout nails.
40. Plywood manufactured to the relevant standards and quality control procedures specified in BS 5268-2, and so mared. External type quality ply grade WBP with bonding quality to BS EN 314:Part 2.
41. Cover flashings Code 5 lead sheet in lengths not exceeding 1500 mm. Lap joints 100 mm and overlap upstand by minimum 75 mm. Secure with lead wedges into mortar joint or chase in masonry at 450 mm centres. Stepped flashings minimum 150 mm width and secured with lead wedges at every step.
42. Lead soakers Code 3 rolled sheet cut and dressed into shape for fixing by roofer. Length to suit slate gauge +lap + 25 mm with upstand minimum 75 mm and underlap not less than 100 mm.
43. Timber for use with leadwork to be planed, free from wane, pitch pockets, decay and insect attack with moisture content at time of fixing and covering: not more than 22%. Preservative treatment of organic solvent as Wood Protection Association Commodity Specification C8. Quality of timber and fixing to BS 1186: Part 3. Rot decay, insect attack (except ambrosia beetle damage) and wane with square plain edges. Finished face width exposed width after fixing 150 mm. Preservative impregnation to British Wood Preserving and Damp proofing Association Commodity Specification C8 with desired life: 60 years. Fix with lost head nails minimum. 2 per board/joist intersection.
44. Fix lead sheet with 50 mm wide lead clips cut from sheets of the same thickness/code as sheet being secured. Secure each to substrate with either two screw or three nail fixings not more than 50 mm from edge of lead sheet. Use additional fixings where lead downstands exceed 75 mm. Secure lead sheet by welting clips around edges and turn over 25 mm.
45. Wedge fix lead sheeting into joints/chases to a depth not less than 25 mm and secure with lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead. Point gap neatly and fully with polysulphide mastic.
46. Lead workmanship generally to BS 6915 and latest editions of 'The Lead Sheet Manual' and Updates published by the Lead Sheet Association. Provide a secure, free draining and weather tight installation with operatives trained in the application of lead. Finished work should be fully supported and adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress. Cover timber substrates as soon as possible and prevent staining, discolouration and damage by subsequent works. Leave sheets free from ripples, kinks, buckling and cracks when bossing and forming. Insitu lead welding not permitted. Finish all leadwork neatly with patination oil.

47. All habitable rooms on ground floor and first floor to have window (or door), which forms means of escape from fire. Window to have unobstructed openable area of 0.33 m² with minimum width of 450 mm and height of 450 mm. Bottom of openable area to be no more than 1100 mm above floor level.
48. Provide purge ventilation to each habitable room via window or opening minimum 1/20th of room area.
49. Apply flexible sealant to junction between wall lining and window board, between window board and window frame. Externally apply flexible filler to seal around window and doorframes. Prepare joints for sealant by removing temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond. Clean using materials and methods recommended by sealant manufacturer. Mask vulnerable surfaces adjacent to joints to prevent staining or smearing with primer or sealant. Apply sealant to dry surfaces (unless recommended otherwise) and unaffected by frost, ice or snow. Do not dry or raise temperature of joints by heating. Fill joints completely and neatly, ensuring firm adhesion to substrates. Finish joint with slightly concave profile. Protect finished joints from contamination or damage until sealant has cured.
50. Verge: Proprietary UPVC dry verge system: UPVC bargeboard and soffit on gable ladder.
51. Accessible plasterboard ducting on softwood framing to all soil and vent pipes. All wastes to be boxed out. Low-level boxing to all wastes or run behind units where possible. Air admittance valves/Durgo valve to locations as shown on plans in vented boxing. All soil and vent pipes to terminate at slate/ridge vents, including ducting through roof voids. Include mineral wool insulation quilt between stud framing for improved sound reduction to clients approval.
52. Internal non load-bearing partitions to be 38 x 89 mm at 400 c/c softwood stud partitions – to timber frame manufacturers details, with top and bottom rails and intermediate noggins as required for stability and for fixings of shelving; WHB's etc. Face both sides with 12.5 mm thick 10 db sound check board (density 100 kg/m³) with skim finish to achieve 40 db air borne sound insulation.
 - a. Partitions to bathrooms and between bedrooms to have 25 mm thick un-faced mineral wool batts or quilt installed between studs for sound insulation, minimum density 10 kg/m³. Plasterboard to bathroom and ensuite to be moisture resistant type 3 to BS 1230. Walls finished with either 3 mm Gypsum skim finish or scrim taped and filled boards. 100 mm Upvc half round gutters and 68 mm diameter downpipes including all necessary fixing brackets.
53. Purpose made Upvc side/ top hung windows/ screens, fully weather stripped, double glazed (low "E" glass/Argon filled as necessary to achieve "U" value) with trickle ventilators to equal 8000 mm² to all habitable rooms and 4000 mm² elsewhere. Obscure inner pane to WC/bathroom and en suite, opening lights as indicated on drawings. All glazing below 800 mm (1500 mm to doors) off FFL to be toughened/safety glass. Facing brickwork sub-cills on DPC's throughout. Timber or Upvc window boards throughout. All openings to include insulated horizontal and vertical DPC's as necessary. All windows to have "U" value as stated in SAPS calculations. Refer to plans for minimum opening area of windows for emergency egress through windows in case of fire. Windows measured/provided and installed by manufacturer, including facing brick soldier courses over windows/doors as shown on elevations.

54. External Doors

To be purpose made high performance UPVC or GRP doors supplied and fitted all in accordance with manufacturer's instructions and to the requirements of BS EN 1279, double glazing CE marked and Kite marked. Colours to be agreed with "U" value not exceeding rating specified in SAPS calculations (with double glazing as for new windows where applicable) and 100% draught proofing complete with thresholds and weather strips. Any glazing in doors or adjacent panels shall be 6.4 mm laminated/toughened safety glazing to BS 6206 1981, with obscure finish to comply with Part N of the Building approved documents – type/specification to be agreed by client/contractor.

55. GRP or similar approved, manually operated, up and over/sectional overhead garage door, to Client's approval.
56. Timber internal doors and frames/linings to Client's approval. Note: Glazed internal doors to be toughened safety glazing ABD up to 1500 mm high above FFL. Note: All doors/frames opening onto protected route of stairwell to be FD30 fire rated standard.
57. Front entrance door to include proprietary low level threshold system and DPC's to achieve wheelchair access.
58. 2 coats sand/cement smooth render to all external walls where applicable with masonry paint decoration or self-coloured render.
59. 12.5 mm Gyproc wallboard Ten plasterboard to give min mass of 10 Kg/m² for transmission of sound, "U" value 0.19 W/mk to BS 1230 - type 1 – Part E Building Regulations. Skim finish to all ceilings with painted finish throughout. Duplex board to bathroom/ensuite. Artex finish to clients approval. Ceilings to follow line of rafters where necessary. Boards to be fixed to all ceilings and to stud partitions.
60. 100 mm Gyproc coving to all ceilings to main house only, if required by client.
61. 150 mm SW painted grade skirtings. Gloss/stain finish to all areas to Client's choice.
62. All joists to be grade C16 – provisionally shown on plans at 195 x 47 mm at 450 mm c/c. Full sizing/design to be carried out by timber frame manufacturer. Approved herringbone strutting to be provided to mid-spans between spans 2.5 – 4.5 mm. Provide lateral restraint by means of 30 x 5 mm galvanised mild steel straps to be secured to wall and fixed across at least 3 joists, including packers and noggins under straps to ensure construction is in tight contact with walls straps spaced at 2 m c/c maximum. Joists doubled up under partitions. Floor and ceiling finishes as before described.
63. All walls and ceilings to receive 1 mist and 2 full coats emulsion.
64. Extent of wall tiling/splashbacks etc to kitchen/WC/en suite/bathroom and utility to be agreed with Client.
65. Proprietary insulated ceiling access hatch to location as shown on plans.
66. SW frames, linings and 75 mm ogee or torus architraves. Gloss/stain finish to all internal doors, frames etc, to Client's approval.
67. Purpose made timber staircases to main houses to Client's approval. Supporting newel posts to stairs to Stair Manufacturer's details, (floorstruction). Stairs to be minimum 800 mm clear width. Maximum 200 mm risers and minimum 223 mm mm goings. 50 x 75 mm handrail to stairs, 900 mm maximum above pitch line of stairs and 1100 mm above landing levels. Minimum 75 x 75 mm turned newel posts, with 32 x 32 mm turned balusters at maximum 100 mm centres. Minimum 2000 mm clear headroom over stairs. 1 layer 12.5 mm plasterboard and skim linings to underside of stairs/soffits of stairs. 22 mm flooring grade chipboard to steps and winders etc. Stairwells to be trimmed around

by doubled up floor timber joists trimmers, including profiled softwood capping to edge of stairwells to Client's approval.

68. Any structural beams to openings, to Engineer's spec notes. All infill joists (cut to required angles), supported to Engineer's details/ requirements. Beams to be generally located within floor zones.
69. Floorboards throughout first floor to be 1200 x 600 x 22 mm chipboard tongue and groove flooring or similar approved, see timber frame manufacturer, all boards to be screw fixed to timber joists (all joints to be staggered fixed). Boards to be minimum mass of 15 kg/m² all to comply to Part E Building Regulations EN 323 test method.

DRAINAGE

1. All gullies to be roddable, Upvc bottle gullies. Roddable back inlet gullies where indicated bedded in concrete.
2. Inspection chambers under 900 mm in depth to be 450 mm diameter, Upvc Universal Inspection Chambers, complete with Upvc bases and sealed covers and frames, bedded to Manufacturer's recommendations. HD cover and frame to drive, including recessed covers to areas of paving etc – see Engineers Design for full details.
3. Inspection chambers over 900 mm in depth to be constructed in engineering brick, 450 x 600 mm, with concrete benching, haunching and Upvc channels, and single sealed cover and frame. HD cover and frame to drive. Recessed covers to IC to paved areas – see Engineers design for full details.
4. 110 mm diameter Upvc soil and vent pipes including boxing. 110 mm Upvc foul and surface water drains laid in pea shingle to minimum 1:40 fall. Minimum depth – 900 mm under drive, 600 mm under garden.
5. Drains shallower than the above depths to be bridged by concrete paving slabs or RC as appropriate with minimum 75 mm pea shingle above top of pipe.
6. PS concrete lintol over drains passing through walls minimum 50 mm space around pipe filled with compressible sealant to prevent gas entry and masked both sides with rigid sheet material to prevent entry of vermin.
7. Trenches for drains not to be excavated deeper than the foundations of the building.
8. Locate and connect onto existing foul drainage systems – see drainage layouts on drawings 10 and 11.
9. New surface water drainage to connect to soakaways. Fit universal upvc inspection chamber at point of connection. Note: approximate layouts of all foul and surface water drains shown on Engineers layouts – exact layouts to be confirmed/agreed on site with contractor/Building Control officer.
10. All waste pipes to run within floor zones where possible, as shown on plans. All boxed out wastes to be fully insulated/lagged for sound absorption. Allow for proprietary fixing bracket/hangers to underside of floors/beam and block floors to maintain 1 in 40 falls to waste pipes.
11. Provide channel drain to low-level threshold door entrances – Type to be agreed, and connected into storm drainage.

MECHANICAL INSTALLATION

1. The plumbing works are to be carried out in accordance with the relevant Codes of Practice, Building Standard Specification, and WWA requirements.
2. It is the Plumbing Contractors responsibility to ensure that the system as installed will give adequate hot water.
3. Design drawings are to be provided to Client before commencement, indicating all pipe runs, sizes, valves, fittings etc of the complete system, and this is to be provided as an 'as built' drawing.
4. 15 mm and 22 mm Copper hot and cold water distribution to all fittings to be BS 2871, including washing machine etc, as indicated, with isolating valves at each terminal.
5. All pipes in cold zone to be lagged with 25 mm polythene foam, properly fitted and secured.
6. All pipework in accessible ducts to WWA requirements, to be earthed and bonded in accordance with current IEE Regulations.
7. Hot and cold water risers brought up/down in ducts/cupboards where possible.
8. 110 mm Upvc soil and vent stacks in full height insulated accessible ducting. Vent pipes to terminate at ridge vent or slate vent tile – Durgo valves where indicated.
9. Waste sizes to be 110 mm to WC, 50 mm to bath, sink, shower and washing machine, 32 mm to wash basin. All fittings to have 75 mm deep seal trap.
10. Overflows to WC cisterns to discharge through walls to outside.
11. All heating systems to run off wall/floor-mounted gas fired Combi Condensing boiler – type to be confirmed – to client's approval. Refer to SAP calculations booklet for all details of heating system/ventilation/solar heat gains/losses etc.
12. Heating system suitably sized by specialist/Plumbing Contractor to maintain the following room temperatures when the outside temperature is -1°C: -
 - a. Living rooms and dining areas - 21 °C
 - b. Kitchen and circulation areas - 18 °C
 - c. Bedrooms - 18 °C
 - d. Bathroom/WC - 22 °C
 - e. Toilets - 18 °C
13. Heating/hot water system to be a mains pressure un-vented hot water heating system. System to comprise condensing boiler as described in energy calculations etc. System to manufacturers specification including non self-resetting thermal cut out to BS 3955 1986 including motorised valve to shut off flow to the primary heater. Sedbuk Rating of 90%.
 - Approved by a member of EOTA eg BBA/NACCB.
 - Temperature relief valves to BS 6283 Part 2 and Part 3
 - Discharge pipe (D1)

The system shall be installed/designed by a competent person holding a current operative identity card by the construction industry training board CITB or institute of plumbing or similar. Design drawings/as-built drawings to be provided by plumber to client.

Inspection of the installed system to be carried out by Building Control.

14. External cold water tap to be installed in position and to be agreed with Employer (gully and drain to be provided in approved position). Tap to be fully insulated to avoid frost attack.
15. Contractor to allow for plumbing to washing machine, dishwasher and for building in airbricks and bridging duct through external wall for tumble dryer exhaust. Appliances to be supplied by Client. Indicative layouts to fittings to utility/kitchen/ bathroom etc are shown on plans, and are all subject to Client's approval on site.
16. Part G requirements: Consumption of wholesome water by persons occupying a dwelling erected or formed out of material change of use must not exceed 125 litres per person per day (water efficiency for new dwellings). All hot water to have inline blending valves fitted to limit hot water supply to a max of 48 degrees. M & E engineer/ contractor to give notice of methodology in writing following the guidance set out in Part G (Sanitation, hot water safety and water efficiency) into Building Control Dept within 5 days of completion of works. M&E / plumbing contractor to provide details of fittings to be installed to limit water consumption to no more than 125l/person/day.

ELECTRICAL INSTALLATION

1. All works to comply within all respects with the current edition of the Institute of Electrical Engineer's Regulations and Part P (Electrical Safety) of the Building Regulations 2000. Installation of all electrical works to be carried out by an electrician, registered with an Electrical Self-Certification Scheme authorised by the Secretary of State, and complies with BS 7671 2001. Electrical Installation Completion Certificate to be provided upon completion of works by qualified Electrician.
2. Installation to be completed to the satisfaction of the Electricity Supply Authority and all other statutory acts relevant to the installation.
3. Test and commission the system in accordance with SWE requirements.
4. Standard built-in electricity meter cabinets – positions to be agreed (Lintol and DPC over – exact location to be agreed).
5. Mains operated self-contained; inter connected smoke alarms to BS 5446 Part 1, located as indicated on drawings (within 7 m of lounge/kitchen and 3 m of all bedroom doors). Minimum requirements to a Grade D Category LD2 standard to be provided to BS 5839-6:2004 – Part B Building Regulations.
6. Mechanical vents/extractor hood to kitchens to be capable of extraction at a minimum rate of 60 litres per second operated intermittently. Background ventilation via trickle vents, ABD. Extract vent to utility as above, but minimum extraction rate of 30 litres per second.
7. Mechanical extract vents to bathroom, WC and ensuite to be capable to extracting at a rate of not less than 15 litres per second, operated intermittently. Also include for separate on/off control switch.
8. Mechanical vents to include ducting through wall/roof as applicable. Slate/ridge vent terminals to ducting taken through roof, with condensation trap and overflow through roof void to soffit.
9. Numbers, positions and types of all electrical fittings etc, to be confirmed by the Employer on site.
10. Circuits to be protected by approved earth leakage detector.
11. Allow for batten lampholders and switches near hatches to roof voids.
12. Kitchen and utility room fittings and layouts to be agreed with Client.
13. Ironmongery to be confirmed with Client/Contractor.
14. All sanitary fittings to be agreed with Client.
15. Lighting

External lighting to be fitted with energy efficient fittings. Including landings, halls, living room, dining room, kitchen and utilities internally.

Front and rear entrances to be provided with external PIR lights.

EXTERNAL WORKS

1. Paving slab (provisionally 600 x 1200 slabs) perimeter paths to dwellings laid on 150 mm compacted hardcore laid to falls away from building with 200 mm wide gravel strips between buildings and paths. Please refer to Site Plan, drawing no. 02
2. Block pavior or similar approved to drive/parking/turning areas. Hardcore sub-bases. Ramped/graded approach to main entrance. Maximum 1 in 12. Ramped/graded approach to garage door ABD.
3. 254 x 127 mm PC concrete kerbs on concrete base to edge of drive.
4. All landscaping to be approved by the local Planning Authority.
5. Boundary treatments as described on site plan. 1800 mm close boarded fences to rear and side boundaries/ 1800mm high rendered block walls with copings on top to car parking and house boundaries, Low level picket fences to front gardens – see site plan for location.
6. Grassed/planted surfaces to Clients requirements.
7. Prior to connection to main sewer, contractor/client to liaise with Welsh Water before commencement of works.