Llangwryd Uchaf, Llwynmawr, Llangollen, LL20 7BD

CONSERVATION METHOD STATEMENT & SPECIFICATION

FOR

THE RENOVATION & CONVERSION OF FORMER BARN INTO A NEW DWELLING AND FOR THE CONSTRUCTION OF A NEW TIMBER FRAMED AND CLAD OUT BUILDING

TO

LLANGWRYD UCHAF
LLWYNMAWR, LLANDGOLLEN.

June 2018

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Llangwryd Uchaf, Llwynmawr, Llangollen – Renovation & Conversion of former Barn into a New Dwelling and the Construction of a New Timber Framed & Clad Outbuilding.

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1.0 Planning Permission GLY P/2005/1479.
2.0 Listed Building Consent GLY/P/2005/1480.
3.0 Kingspan Insulation Ltd – Thermal Calculations for Building Design.
4.0 Ty-Mawr – Insulate floor thermal calculations
5.0 Tyvec Technical Information for 'Reflex' and 'Supro' breathable membranes.
6.0 Telling Lime Products Ltd. – Lime mortar technical specification.
7.0 Planning approval GLY/P/2013/0113
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This document is an amended version of the approved conservation method statement & specification associated with the approved planning applications GLY P/0113 & GLY P/0114 both July 2013. Amendments differing from the approved document are shown in red and further revisions in blue and green.

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CONSERVATION METHOD STATEMENT & SPECIFICATION

CONTENTS :-

Section One : Introduction & Proposed Scope of Works.

This 'Conservation Method & Statement & Specification' schedules the proposed renovation and conversion works to be undertaken to the former barn Llangwryd Uchaf at Llwynmawr. It is to be read in conjunction with the survey and construction drawings, as scheduled below and all other Consultants / Specialists Reports and / or recommendations appertaining to the works.

The farmyard barn at Llandwrydd Uchaf is an 17th-18th Century random stone/slate rubble two storey structure, formerly with a slate roof (currently corrugated steel sheet) on timber rafter & purlins resting across timber 'king post' trusses and was apparently constructed in two stages some years apart. Most of the door & window openings are still original, however all the joinery frames have long since decayed and have been replaced.

The external staircase to the first floor loft, located to the garden side of the earlier section of the barn, has collapsed entirely. There has also been significant structural movement to the upper half of the south-west gable with the south west gable requiring rebuilding in line with drawing no. Demo/02.

The 'arrow slit' high and low level ventilators still remain to the side walls of the more recent section of the building and will be preserved in the proposed design.

The original first floor structure has been replaced to the older section of the building but remains in a state of collapse elsewhere.

The proposed scope of renovation & conservation works to be undertaken to the barn is therefore as follows" –

- Underpin the building in line with the construction issue drawings.
- Install temporary structural support to roof structure and to side walls prior to commencing.
- Dismantle the upper half of the south-west gable wall and reconstruct in line with the details on the construction drawings and carefully interface new masonry facing work with existing.
- Install retaining wall and French drain around south-west gable.
- Evacuate trench runs and install new foul & surface water drainage systems and connections.
- Remove existing corrugated tin sheet roof finish, label all structural components to a layout plan and carefully dismantle roof structure so as to avoid collapse / damage.

- Dismantle any loose masonry to wall tops until firmly bonded construction is reached. Reconstruct stone / slate random rubble wall tops and build in new wall plates.
- Replace failed external / internal oak lintels only, to existing openings and form new window opening to approved details / specification.
- Reconstruct roof structure, inspect / refurbish / repair existing trusses and re-install, replace existing purlins (following structural inspection / approval of each section), install new rafters, form structural openings & install velux conservation roof lights and infill masonry to wall tops.
- Install breathable membrane and slating battens with new riven natural slate finish to full roof capped in clay ridge tiles to match existing farmhouse.
- Excavate existing floors and construct new insulated concrete floor slabs over new dpm layer.
- Inspect structure for causes of water ingress and rising damp i.e. high external ground adjacent walls, natural high ground water table, old / broken drainage etc. and deal with all issues at source. (Note: No remedial dpc treatment to be installed.)
- Construct new first floor support structure and boarded deck.
- Construct new secondary 'breathable' insulted lining internally to all existing walls as specified, hand float finish in rough lime plaster.
- Position original slate cattle dividers against the kitchen wall and lounge wall as indicated on the construction drawings.
- Re-lay existing slate floor to central hall / utility area and additional areas of new slate floors throughout to match, as specified.
- Install ceilings to ground floor (between exposed joists) and to first floor (to underside of roof structure) with plaster skim finish to create pitched ceilings.
- Install new oak window and door frames and glaze.
- Install mechanical & electrical systems.
- Flue and duct terminals to be concealed behind period wall outlet details wherever possible, otherwise to be installed as roof outlets – all to the prior written approval of the Planning Conservation Officer.
- Following the completion of plastering (and drying out) install internal joinery.
- Reconstruct external masonry staircase and install wrought iron balustrade.
- Construct new timber framed & clad outbuilding.
- Construct new drive & courtyard hard-standing, paths & edgings and other associated external works.

The proposed layout and detailing of these works is all as illustrated in the following drawings: -

- Drg. 366c/PD03A – Joinery Details Sheet – As Proposed.
- Drg. DEMO-01 demolition / rebuild & pointing elevations Sheet 1 of 2
- Drg. DEMO-01 demolition / rebuild & pointing elevations Sheet 2 of 2
- Drg. DR-01 Drainage Layout
- Drg. DR-02 Water Course route
- Drg. EX-01 External works Layout
- Drg. EX-02 Site Sections
- Drg. EX-03 Site services Plan
- Drg. 01Gorund and first floor plans

- Drg. 02 Proposed elevations
- Drg. 03 Gorund and first floor stud wall setting out
- Drg. 04 First floor joist setting out plans and details
- Drg. 05 Existing roof plan
- Drg. 06 Proposed roof plan and details
- Drg 07 Section 1-1, 2-2 & 6-6 & typical construction details
- Drg 08 Section 3-3 to 5-5
- Drg 09 External steps to bedroom 4
- Drg 10 Underpinning layout & ground floor slab layout.
- Drg 11 Underpinning layout & ground floor details.
- Drg. 12 Lintel details
- Drg. 13 Lounge wood burning stove details
- Drg. 14 Existing slate cattle stall repositioning details
- Drg. 15 Proposed ceiling joist layout
- Drg 16 Existing slot works to perimeter walls.

- Drg 100 Proposed Garage Plans and Elevations
- Drg 101 Garage slab foundation and ground floor slab plan
- Drg 102 Proposed roof truss and post details

- 9816-1 Topographical survey
- 9816-2 measured survey
- 9816-3 Elevations and Vertical survey

Section Two: Inspection / Approval Protocol.

A basic programme of site inspections will be arranged to allow the appointed Planning/Conservation Officer to attend site at critical intervals to monitor the nature, extent and quality of the ongoing works.

Should any features of particular interest be uncovered during the refurbishment works the Planning/Conservation Officer will be notified / requested to attend site to provide guidance in respect of the retention / recording of such features.

All work is to be undertaken strictly in accordance with the approved documentation and any work samples as subsequently approved on site by the appointed Planning Conservation Officer.

Particular care must be taken in the dismantling, checking and re-assembly of the roof structure, preservation and re-installation of the slate slab floors and cattle stall dividers and the detail of any wall or roof penetrations, all of which will require the inspection and approval of the Planning Conservation Officer.

Any variations to the approved works must only be undertaken following the receipt of a specific written approval from the appointed Planning/Conservation Officer.

The building control officer is to be notified at all relevant inspection intervals with a suitable period of notice being given.

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Section Three: Renovation Methods & Construction Specification for Conversion of Barn into Dwelling.

1.0 Temporary Support Structure and Building Stabilisation Works: -

Prior to any construction works commencing on site the Contractor is to install structural support to the remaining building structure by constructing a surrounding temporary support frame / access scaffold, suitable to prevent the force of any lateral collapse of the remaining structure.

Following the propping of the building structure / wall panels, inspect all component elements of the remaining structure for individual item stability and undertake any further necessary works to achieve a safe working environment.

Remove existing corrugated tin sheet roofing. Carefully record and then dissemble or stabilise the roof trusses to remain in place during the works.

As the work progresses, subsequent modifications to the support frame / access scaffold are only to be undertaken under site management control by a trained operative and then re-inspected prior to use.

Following removal of the roof structure carefully dismantle the collapsing south-west gable and the north west panel as detailed on drawing numbers demo 01 and 02 commencing from the top, all to an approved working method / risk assessment.

2.0 Existing Foundations: -

Following excavation of trial pits it is deemed that underpinning of the building is necessary.

Note: Foundation underpinning work is a specialist operation and must only be undertaken with extreme caution to an approved 'method statement' and 'risk assessment', always ensure that there is additional lookout supervision, fully familiar with the site emergency protocol.

3.0 Underpinning Works: -

Underpinning works should proceed as instructed / as follows: -

Excavate new strip foundations to a firm sub-base at a depth of 0.9m below proposed external ground levels. Trench fill concrete foundations are to be poured to a level beneath the proposed ground levels and the remainder of the operation carried out in random stone / slate to the u/s of the existing wall.

The underpinning is to be carried out in 600mm max lengths unless otherwise specified by the engineer in accordance with the construction foundation plan.

Note: Arrange in advance for immediate inspection of trench and foundation casting to avoid the risk of localised settlement and further collapse.

450mm wide random stone/slate masonry wall above where exposed to view.

Note: Subject to ground conditions Structural Engineer / Building Control Officer to advise if foundation trenches are to be back-filled with weak mix concrete / clean stone rubble to prevent subsequent fill settlement.

4.0 Ground Floor Slab: -
(Limiting U-Value 0.25W/m2K / Achieves U-Value 0.17W/m2K)

Carefully break out and remove all existing floors and excavate to the required formation level. Do not exceed the depth of any adjacent existing foundations unless they have been under-pinned. Consult Structural Engineer / Building Control Officer if in doubt.

The new limecrete ground floor is to be constructed as follows;-
Finishes on 100mm thick limecrete fibre reinforced slab containing underfloor heating pipes on geo-grid on Visqueen Radon protective membrane (lapped and sealed in accordance with the specialist details) on geotextile membrane on 300mm Galpor Cellular glass insulating hardcore compacted in accordance with limecrete specification on geotextile membrane on formation level.

Note: To provide 'Radon Gas Protection' Visqueen DPM to be sealed to internal face of external walls at DPC level with taped and sealed sheet joints to form a continuous gas proof barrier and to be sealed internally at slab level to existing walls.

5.0 External / Internal Walls & Partitions: -

Existing External / Internal Full Height Masonry Walls: -
(Limiting U-Value 0.3W/m2K)

Existing external and internal masonry wall panels to be manually dismantled to all areas suffering de-bonding due to frost damage, structural instability or settlement. All to be agreed with appointed Planning / Conservation Officer prior to commencement and as work progresses.

Following dismantling of all existing internal and external 450mm thick masonry walls back to sound structure, reconstruct to full height in original / matching materials using a lime based mortar mix to match as existing mortar. See Telling Lime Products Ltd full contact and specification details in appendix or used similar local supplier, to be approved.
(Note: Install a new slate dpc concealed at finished floor level to any wall sections reconstructed at ground level.)

Following reconstruction of external 450mm thick masonry walls install a dry lined system as follows:-

50x150 timber softwood framing at 600mm centres with 50x150 c16 noggins at 1.2m centres set 25mm off the face of the existing wall to form cavity with Tyvec reflex breathable sheet membrane with tapped joints to the rear of the frame. 150mm Ty-Mawr thermaFleece sheep's wool insulation between studs and 1000g vapour

control layer to the front of the studs. 12.5mm Ty-Mawr wood wool board fixed across front of studs with a 6mm lime plaster finish.
Note: Structural Engineer and Building Control Officer to advise on extent of dismantling required in order to re-align any eccentrically loaded wall panels to achieve correct structural stability. Appointed Planning Conservation Officer to be advised accordingly prior to proceeding with any wall dismantling works.

New Oak Lintels:
Any existing internal and external timber lintel(s) to door and window openings that have failed are to be replaced as approved. Externally with new structural oak sections to match existing in size and details (min. 150mm end bearing) and internally with multiple concrete lintels.
Note: Refer to door & window schedule and construction details for reconstruction design using multiple reinforced concrete lintels where internal oak lintels have failed.

Masonry Reinforcement: -
All internal/external walls to be bonded/tied at junctions and reinforced as necessary to Structural Engineers specification.

Specialist Instillation of Damp Proof Course: -
Install a new slate dpc concealed at finished floor level to any wall sections re-constructed at ground level.
Note: Inspect structure for causes of water ingress and rising damp i.e. high external ground adjacent outside walls, natural high ground water table, old / broken drainage etc. and deal with all issues at source.
Note: No precautionary dpc treatment to be installed whatsoever.

Mortar / Joint Pointing and Re-pointing Existing External Walls: -
Lime based mortar mix to match as existing mortar. See Telling Lime Products Ltd full contact and specification details in appendix or used similar local supplier, to be approved.

To existing external walls rake out loose mortar and re-point in matching lime based mortar but only as required.

Do not use a pointing trowel to finish new work or re-pointing, but leave mortar until nearly dry then brush back with a stiff bristle brush to expose the aggregate within the lime mortar mix.

New Stud Frame Partitions: -
To bathroom and bedroom enclosures construct 50x75mm treated softwood stud frame at 450mm horizontal and vertical ccs., line internally to bathroom in 12.5mm WBP plywood and overlay with 12.5mm damp resistant foil backed plasterboard, pack wall voids with 75mm semi-rigid mineral wool cavity bats and close off externally with 12.5mm foil backed plasterboard to give min. 10Kg/m2 density for sound reduction.

Partition walls under trusses:-

1st Floor block walls are to be built off the top of the existing cross walls / new steel beam to the underside of the existing trusses the walls are to be built tight against the truss to provide support to trusses. The walls are to be constructed from 100mm block 7.3N compressive strength laid flat to form a 215mm wide wall. Both sides of the wall are to be finished in 6mm lime plaster.

The internal voids within the truss are to be in filled with a stud frame infilled with an acoustic fleece and a layer of 12.5mm wood wool board with a lime plaster finish.

The existing truss profile is to be left open to view.

Fire/Smoke Protections: -

Partition walls to be constructed full height to underside of roof, ensure all gaps are sealed around walls and partitions to reduce air-borne noise and to form an effective fire / smoke seal.

Lintels, Sills and Steps: -

To external openings in masonry walls external exposed lintels to be an existing / new structural oak section (with chamfered lower arris) and where existing internal lintels have failed, backed by multiple reinforced concrete lintels as detailed.

Window sills to be constructed in blue/grey slate slab as shown on detail sheets, set to form a projecting drip sill.

Door openings D3a and D5 are to have reconstructed blue engineering brick steps, materials recovered from existing and re-instated.

All other door steps are to be in natural stone to match as elsewhere with threshold bar installed.

Note: Threshold bar design not to impede wheelchair users.

External Staircase / Ballustrade: -

External stone staircase to be reconstructed in random slate facing to blockwork walls and solid stone steps all as detailed on construction drawings.

Flight to have a wrought iron balustrade consisting of a 900mm high guarding to the flight (measured above line of treads) and 1100mm high guarding to the landing with simple 12x12mm vertical steel bar balustrade, 8x50mm flat steel section handrail, and 25x25mm structural verticals every 1200mm ccs approx. and at corner positions to be bolted into the side face of the stair, no opening in balustrade or between balustrade and flight to exceed 100mm dia, as required by Building Regulations – Part K for domestic staircases.

Install continuous lapped vertical DPC between staircase construction and dwelling side wall with stainless steel mechanical ties to masonry at 450mm horizontal and 225mm vertical centres.

Damp Proof Course to Frame Openings: -

Build in vertical DPC to the jambs of all window and door openings to external walls.

All horizontal and vertical D.P.C's to be black polythene 500 micron to BS 743. DPC's.

Note: To all contact / abutment points with the external leaf of the cavity wall DPC to have additional 10mm bonded insulation to prevent cold bridging.

6.0 New First Floor Construction: -

New first floor constructed of 19x150mm t&g softwood floor boards screwed down to 75x175mm C16 Grade structural softwood floor joists set at 450mm centres bearing onto 75x175 C16 batten bolted to the wall @ 600mm centres with 16 diameter resin anchors at 600mm centres (100mm embedment), 25x50mm softwood battens fixed to side of joists and 50x50mm cross noggins installed at 600mm ccs to leave 100mm floor void filled with compacted acoustic quilt, ceiling finished between joists in 12.5mm foil backed plasterboard and skim, lower joist arris edges to be chamfered with 'stop end detail' 50mm from face of internal linings'.

Under floor heating is to be fixed to the u/s of the t+g softwood floor joists in accordance with the heating suppliers details.

7.0 Roof and Ceiling Construction: -

Roof Construction Generally: -
Roof finish to be natural clay ridge tiles to match as existing farmhouse, mortar bedded over 230x460mm natural river slates from reclamation supply, on 38x50mm treated softwood battens (set at gauge to suit site exposure) fixed with copper nails over breathable roofing membrane as 'Tyvec Supro' for non-ventilated pitched roof systems, on 50x125mm C16 Grade structural softwood rafters fixed at 600 ccs to clear span from new treated 75x100mm softwood wallplate to new oak purlins and from purlins to 38x225mm softwood ridge board, all as specified on roof layout drawing and construction sections.
Note: Oak structural section sizes as shown on the Architectural drawings are the minimum architectural timber section size required to be visually acceptable, these section sizes must however be verified by check calculations by the Structural Engineer.
Roof Restraint Straps and Ties:
Lateral restraint to gable wall to be provided by L shaped galvanised mild steel anchor straps size 30 x 5mm thick with 100mm minimum downstand built into gable wall and fixed across min.3 No. rafters at maximum 2.0m linear centres. 75 x 50mm softwood blocking to be fixed between rafter members for additional anchorage to all strap positions.
Wall plate to be bolted to the head of the wall with 12mm diameter resin anchors (100mm embedment) at 1800mm centres countersunk into the wall plate.

Roof with Pitched Insulated Ceiling to Underside of Rafters: -
(Required U-Value 0.2W/m2K / Actual U-Value 0.19W/m2K.)
Between wallplate and top purlin line throughout, roof construction as above specification with 80mm Kingspan 'Kooltherm' K107 fitted tightly between rafters to leave a 25mm clear air gap to the back of the breathable roofing membrane, to underside of rafters install 32.5mm thick Kingspan 'Kooltherm' K118 rigid insulation / plaster board composite with 3.0mm plaster skim.

Roof with Horizontal Insulated Ceiling at lower level: -
(Required U-Value 0.2W/m2K / Actual U-Value 0.13W/m2K.)
Between top purlins roof construction to be as above specification with 50x125mm C16 Grade softwood horizontal ceiling joists set at 600mm ccs over first floor rooms,

install 125mm Kooltherm K107 to fit tightly between ceiling joists with 12.5mm foil backed plasterboard and skim ceiling below, ceiling overlaid with min 60mm of kingspan Kooltherm K107 continuous insulation board.

Bathroom Ceiling Ceiling: -
bathroom ceiling constructed in 50x200mm C16 Grade softwood horizontal ceiling joists set at 600mm ccs, ceiling finished below joists in 12.5mm foil backed plasterboard and skim.

Eaves, Verge and Roof Abutment: -
Eaves to have vertical cut exposed rafter ends with wide slate tilt board in planed softwood to provide visual soffit cover to the breathable roof membrane. At eaves roof membrane to be dressed over a black proprietary gutter tray.

Clipped Verge detail to be constructed over slate drip support below battens and pointed between in lime based mortar.

8.0 New Doors, Window Frames, Roof-lights & Joinery: -
New Doors to achieve a U-Value of 1.8W/m2K. – selected manufacturer to confirm prior to supply, copy information to be forwarded to Building Control.
New Windows to achieve a U-Value of 1.6W/m2K. – selected manufacturer to confirm prior to supply, copy information to be forwarded to Building Control.
All opening windows below 800mm above floor level are to have openings restricted to 100mm.

Oak Glazed Entrance Door Screen & Frame Set: -
Oak glazed entrance door screen & frame sets (with and without glazed opening fanlight above) with oak sill over stone/brick sill, all as detailed on construction drawings. Fitted with five letter security dead-lock / shoot bolts and three brass hinges to each door leaf.
General Note: To comply with the Planning Development Conditions, door and window samples are to be approved by the Planning Authority prior to ordering / manufacture.
General Note: All frame surrounds to be mastic/silicone pointed externally and all voids sealed internally with polyurethane injected foam gap filler, to prevent water / air penetration and / or heat loss.

Oak Half Glazed Stable Door & Frame Sets: -
Oak half glazed / half boarded stable door & frame set with oak sill over stone sill, all as detailed on construction drawings. Fitted with five lever security dead-lock shoot bolts and two pair of brass hinges.
General Note: To comply with Planning Development Conditions, door and window samples are to be approved by Planning Authority prior to ordering / manufacture.
General Note: All frame surrounds to be mastic/silicone pointed externally and all voids sealed internally with polyurethane injected foam gap filler, to prevent water / air penetration and / or heat loss.

Oak Half Glazed False Door / Top Opening Window & Frame Sets: -
Oak half glazed/ half boarded false stable door & frame set with oak sill over stone sill, all as detailed on construction drawings. Bottom door leaf fixed shut, top window

opening inwards from top hinged at mid rail. Fitted with brass 'drop back' retainer stays, shoot bolts and two pairs of brass hinges.
General Note: To comply with Planning Development Conditions, door and window samples are to be approved by Planning Authority prior to ordering / manufacture.
General Note: All frame surrounds to be mastic/silicone pointed externally and all voids sealed internally with polyurethane injected foam gap filler, to prevent water / air penetration and / or heat loss.

False Top Door Shutter to D2, D3 & D6.
Install false top door shutter to D2, D3 & D6 as shown on door details drawing. Door to be hung from black wrought iron strap hinges and held back by a traditional latch and tapered keep pin driven into face of stone wall.

Oak Cottage Style Windows: -
Oak fully glazed cottage style windows with matching fixed frame and opening lights all as detailed on construction drawings. Filled with brass hinges and locking latch & lever. Oak frame to have overhanging still drip to weather-boarded positions and docked sill over slate sill to masonry positions.
Note: Spacers within double glazed units to be black anodised not silver.
Note: New windows to extension to have concealed trickle ventilators equal to 8000mm2 at high level through primary frame. Concealed ventilator detail/sample to be agreed with appointed Planning / Conservation Officer prior to manufacture.
General Note: To comply with Planning Development Conditions, door and window samples are to be approved by Planning Authority prior to ordering / manufacture.
General Note: All frame surrounds to be mastic/silicone pointed externally and all voids sealed internally with polyurethane injected foam gap filler, to prevent water / air penetration and / or heat loss.

Oak Cottage Style 'Escape' Windows: -
Oak fully glazed cottage style escape windows to bedrooms, with matching rebated opening lights, i.e. no fixed centre meeting stile, all as detailed on construction drawings. Fitted with brass hinges, shoot bolts and locking latch & lever. Oak frame to have overhanging sill drip to weather-boarded positions and docked sill over slate sill to masonry positions.
Note: Spacers within double glazed units to be black anodised not silver.
Note: New windows to extension to have concealed trickle ventilators equal to 8000mm2 at high level through primary frame. Concealed ventilator detail/sample to be agreed with appointed Planning / Conservation Officer prior to manufacture.
Note: Emergency egress windows to all bedrooms are to have an unobstructed openable area of at least 0.33m2 and at least 450mm high and 450mm wide. The bottom of the openable area must not be more than 1100mm above the internal floor level and where they are below 800mm above floor level are to have openings restricted to 100mm and be fitted with a child resistant restrictor release for escape.

General Note: To comply with Planning Development Conditions, door and window samples are to be approved by Planning Authority prior to ordering / manufacture.
General Note: All frame surrounds to be mastic/silicone pointed externally and all voids sealed internally with polyurethane injected foam gap filler, to prevent water / air penetration and / or heat loss.

Conservation Rooflights: - (Typical U-Value 1.4W/m2K)
Velux GHL range top-hung black finished conservation roof-lights, recessed installation to slate roof finish, see appendix for further information.

Oak Internal Door & Frame Sets: -
Oak boarded & braced door & frame sets, all as detailed on construction drawings. Fitted with lever / latch, shoot bolts to bedroom, bathroom and a pair of wrought iron strap & pin hinges.
General Note: To comply with Planning Development Conditions, door and window samples are to be approved by Planning Authority prior to ordering / manufacture.

Oak Internal Joinery: -
Oak 19x75mm chamfered section architrave, oak 19x100mm chamfered section skirting, oak sills and internally exposed plinth capping in 19mm glued multiple section with chamfered leading edge, with 19x38mm chamfered edge inverted trim bead below. All finishing joinery to be countersunk screw fixed with matching oak plug.

9.0 Glazing and Safety Glazing: -
All glazing to comply with B/Regs, Part N.
Windows:
All glazing to windows between floor level and 800mm, and glazing to windows adjacent to doors up to 1500mm shall be safety glass as defined in BS6206 1981, Clause 5.3.
Doors:
All glazing to doors between floor level and 1500mm shall be safety glass as defined in BS6206 1981, Clause 5.3.
Note: Spacers within double glazed sealed units to be black anodised not silver.

10.0 Building Heat Loss Reduction: -
Comply wherever possible with the manufacturers approved details and best practice for construction, as follows: -

- Avoid cold bridges and achieve construction airtight construction by the accurate continuity of insulation and or draught proofing materials, securely fixed in placed and sealed
- Agree incidental improvement works with the Building Inspector as the works progress.
- Fit draught stripping to the rebates of opening windows, doors and around loft hatch(s).
- Ensure boxing to services are sealed at top, bottom and where they penetrate walls / roof.
- Seal with silicone / polyurethane injected foam all gaps between the lining and masonry walls, the edge of doors and windows, and at the junctions of walls, floors and ceilings.
- All door and window openings to have the head and reveal lined with insulation / plasterboard sheet composite to prevent cold bridging.

11.0 Existing and New Timber Treatment: -
Existing Timber structure found to be structurally sound to be treated only if signs of infestation and / or rot are detected. Consult specialist as Peter Cox Ltd. Or similar

approved specialist and obtain a report/quotation for approval by the appointed Planning/Conservation Officer and Client.

General Requirements: -

- All structural and caucusing timber to be treated with preservative as new works progress.
- All fabrication and drilling to be carried out prior to treatment where possible.
- All cut ends to be liberally treated with two coats Protim cut-end preservative.
- All preservative treatment to be in accordance with BS 5707 Parts 1 and 3.
- External timbers in contact with ground to be C.C.A. preservative treated.

12.0 External / Internal Finishes:

External Oak Doors, False Doors and Windows:
External oak doors and windows are generally to be finished in two coats of Danish Oil.
External Wall Finishes:
External Walls to be repointed and joints brushed back to expose lime mortar aggregate.
Internal Doors and Joinery:
Internal Oak Door sets, windows, sill boards, architrave and skirting to be finished in two coats of Danish Oil.
Internal Wall and Ceiling Finish:
Following adequate drying out all internal plasterwork to be decorated in one blinding coat and two finishing coats of matt emulsion (to remain in matt emulsion finish for 12 months)
Internal Floor Finishes:
Floor to Coats/Boot Lobby , Utility, Kitchen / Dining, Entrance Hall & wc. To be finished in 12mm thick rustic terrocotta red/brown clay tile with moisture resistant bedding and jointing. Floor finish to bedrooms to be interlocking oak veneered plank floating floor on thin sheet insulation.

Note: Samples of all finishes to be submitted to Planning Conservation Officer for approval prior to application.

13.0 Fittings and Fixtures: -

Fittings to bathroom to be selected and supplied by the Client, fitted by Contractor.
Cupboard base and Wall Units to Kitchen & Utility to be selected and supplied by the Client, fitted by the Contractor.
Bedroom storage and Wardrobe Units to be selected and supplied by the Client, fitted by Contractor.

14.0 Electrical Installations: -

All to comply with I.E.E. regulations, latest amendment and to be undertaken by a registered electrical contractor, approved to B/Regs Part P.
Sub-contractor to prepare sockets and lighting layout scheme for prior comment / approval.
(NB: Heights of switch plates and sockets to comply with B/Regs. Part M. for disabled accessibility.)

Note: To comply with Building Regulations Part L1, the provision of 'Energy Efficient' lighting is to be a minimum 75% of total number of new fixed installation fittings. Low energy lighting types such as fluorescent tubes or compact fluorescent lamps are to operate at not less than 45 lumens per circuit watt (Condition 4 of B/Regs Approval).
Note: To demonstrate compliance with Building Regulations Part L1, following building completion provide a 'Fixed Services Installation Commissioning Notice' undertaken by an accredited tester, to prove that the fixed services installations are in accordance with the requirements specified in the 'Approved Documents'.
Note: See also automatic smoke detection and fire alarms as below.

15.0 Mechanical Installations: -

Air Extract Systems

Kitchen
To be fitted with a mechanical extract fan ducted to the outside air in accordance with the fans limitations and the manufactures written instruction capable of an extract rate of not less than 30l/sec (intermittent).

Utility room
To be fitted with a mechanical extract fan ducted to the outside air in accordance with the fans limitations and the manufactures written instruction capable of an extract rate of not less than 30l/sec (intermittent) and trickle ventilation equal to 4000mm^2.

Bathroom/ Shower rooms
To be fitted with a mechanical extract fan ducted to the outside air in accordance with the fans limitations and the manufactures written instruction capable of an extract rate of not less than 15l/sec (intermittent).

Toilet
To be fitted with a mechanical extract fan capable of at least 6l/sec extract fan to the outside air with a 15 minute overrun facility and have an air inlet (i.e. from under the door by a 10mm gap).

Space and Water Heating Systems:
The central heating system will be via a ground source heat pump with the plant located in the utility room in the area marked on the drawings. All to comprise of NIBE 1155 ground source heat pump, energy pro 400 litre super delux unvented stainless steel hp cylinder and a 400 litre buffer tank all to NU-Heat specification and client supply.

The space heating is to be by 'under-floor' wet piped matrix system throughout the ground floor level & 1st floor levels with wall mounted heated towel rail to the bathrooms, all to be controlled by programmable timer and thermostatic sensors to regulate automated valves to the distribution manifold.

Hot & Cold Water Services
Provided hot and cold water services distribution to the new Bathrooms, toilets utility & and Kitchen.
Provide external water feed to outdoor tap, fitted with non-return valve, positioned externally to rear entrance.

Allowance for water storage tanks are to be made within the roof space of each bathroom and the roof space within the workshop in the garage.
Note: To demonstrate compliance with Building Regulations Part L1, following building completion provide a 'Fixed Services Installation Commissioning Notice' undertaken by an accredited tester, to prove that the fixed services installations are in accordance with the requirements specified in the 'Approved Documents'.

16.0 **Foul and Surface Water Drainage:**

General:
All external domestic drainage to be a propriety system as Osma drainage pipework system or similar approved refer to the drainage drawings for details.
Any drainage trench passing below a building shall be encased in concrete, or passing within 1000mm of the buildings foundations, or running adjacent to that foundation shall be encased in concrete to the level of the underside of the foundation, as applicable / instructed by the Building Control Officer.
Any drain running in a vehicular area with a pipe crown depth of less than 600mm shall be cased in concrete.
All manholes and covers within vehicular accessible areas to be vehicle duty specification.
All manhole covers are to be 'double lock' safety type.
Where new drainage pipes pass through a footing install a pre-cast concrete lintel over to leave 50mm clear all around and surround the pipe in a granular fill material.

Foul Drains:

The Foul drainage is to be collected and treated in a foul treatment plant in accordance with the approved scheme. See planning approval to condition 7 GLY P/2018/0163

Surface Water Drains
The Surface water drainage is to be collected and discharged to a natural water course in accordance with the approved scheme. See planning approval to condition 7 GLY P/2018/0163

Rainwater fall-pipes to terminate in spitter shoe to trapped gully, then drain to new drainage system.

17.0 Gutters, Fall-pipes and Soil Vent Pipes:

External 110mm half round gutters, 63mm dia. fall-pipes to be black painted cast iron. Gutters to be set to falls on black painted galvanised steel wall mounted 'stirrup support' irons.
External SVPs in 110mm dia.round 'collar jointed' black cast iron vertical drop pipes vented by reducing to 75mm diameter at eaves level and rising in roof rafter zone to ridge vents.
SVPs and any connection stub stacks to be fitted with rodding access points at bends and at 600mm above FFL terminal.

18.0 Internal Plumbing

All fittings to be uPVC to BS 4513:1983 and all plumbing to comply with relevant Water supply Authority Regulations. To be installed by approved sub-contractors in accordance with the B/Regs Approved Document.

Typical minimum trap sizes and seal depths as following chart: -

Appliance	**Diameter of trap**	**Depth of seal (mm) (mm of water or equivalent)**
Washbasin (1) Bidet	32	75
Bath (2) Shower (2)	40	50
Food waste disposal unit Urinal bowl Sink Washing machine (2) Dishwashing machine (2)	40	75
WC pan – outlet <80mm WC pan – outlet >80mm	75 100	50

NOTES: -
1 The depth of seal may be reduced to 50mm only with flush grated wastes without plugs on spray tap basins
2 Where these appliances discharge directly to a gully the depth of seal may be reduced to not less than 38mm.
3 Traps used on appliances with flat bottom (trailing waste discharge) and discharging to a gully with a grating may have a reduced water seal of not less than 38mm
4 The plumbing pipe sizes are to suit the trap outlets.
5 All ground floor waste pipes from fittings to drop vertically to a foul drain capped 'floor boss' connection to the appropriate o-ring seal diameter to suit the discharge

pipe, unless connection to an adjacent SVP or 'stub stack' (with air intake only vent) is indicated.

19.0 Provision for Means of Escape:

All wall tops throughout are to be fire / smoke stopped to assist 'means of escape' and to restrict the extent of smoke damage.

Emergency egress windows to bedrooms are to have an unobstructed opening area of at least 0.33m2 and at least 450mm high and 450mm wide. The bottom of the opening area must not be more than 1100mm above the internal floor level.

20.0 Automatic Smoke Detection & Alarms:

Install new Automatic Alarmed Smoke Detection System to be designed, installed and maintained in accordance with BS 5839-6:2004.

21.0 External Entrance Steps and retaining walls:

Construct an external flight of steps to front the Main entrance doors, layout as shown on ground floor plan. Side stub walls to be constructed in random slate rubble. Steps, landing and wall copings in natural stone slabs.

Construct gable end retaining wall, with 'french drain' as detailed on drawings.

22.0 Advisory Notes:

Take full account of advisory notes as follows: -

1. Contractor to confirm all proposed external materials / components with the Planning Department prior to commencing works.
2. Contractor to confirm all roof structure repairs with the Planning Department prior to commencing works.
3. Refer to the Structural Engineers report on the condition and recommended for remedial works to the existing structure, and consult on 'safe working methods' & 'full specification' of proposed works.

Llangwryd Uchaf, Llwynmawr, Llangollen – Renovation & Conversion of former Barn into a New Dwelling and the Construction of a New Timber Framed & Clad Outbuilding.

CONSERVATION METHOD STATEMENT & SPECIFICATION

Section Four : Construction Spec. for Garage & Workshop.

1.0 New Foundations & Stub Walls: -
Excavate 600mm wide trench foundations to a formation depth 0.9m min below OGL to a firm sub-base to the approval of the Building Control Officer. Cast concrete trench fill foundations to carry the 250mm wide slate/stone rubble masonry walls centrally, to finish 150mm above finished slab level on a slate dpc course set at slab level over 50mm lapped dpm.

2.0 Floor Slab: -
New ground floor construction to be 150mm light mesh reinforced concrete slab on 2000gauge Visqueen polythene DPM (all joints double lapped and taped), on 30mm sand blinding, over min. 150mm of compacted hardcore to firm sub-base, all to the approval of the Building Control Officer.

3.0 External Walls & Internal Partitions: -
Construct primary timber post and beam frame and all secondary side wall and partition framing in larch sections (to min. design size as shown on drawings and as approved by Structural Engineer), clad externally in 19x225mm larch weather-boarding or similar approved. Weather-boards to be taper shaped in section to lap tightly and under-cut with a formed drip to the leading lower edge, sample to be approved by appointed Planning / Conservation Officer.
Between sole plates and stub wall tops apply a bitumen liquid dpm to bed timber section and through fix anchor bolts at 450mm ccs.
Stud framing outer corner panels to every wall panel, wall panel junction to be diagonally braced. Structural support post connections to eaves beams and purlins to be strengthened with tennon & mortice jointed knee-braces.
To door and window surrounds, to overlap abutments to side walls and to overhangs to stub walls install a 50mm wide 'Compriband' bitumen impregnated expanding foam seal set back 25mm within the board lap joint to form a full weather-tight seal.

Note: Do not lay timber frame sole-plate directly onto a polythene dpc as this will hold moisture against the timber and advance decay.

4.0 Mortar Mix & Pointing: -
Lime base mortar mix to match as existing mortar. See Telling Lime product Ltd full contact and specification details as noted in the appendix and on approved drawings number demo01 and demo 02 or use similar local supplier, to be approved.

5.0 Lintels, Sills/Steps and Head Drip-Board

Lintels and sills are to be formed in double section timber stud frame surround trimming to structural openings.
All door steps, opening thresholds and slab edge are to be in natural stone to match as existing barns.
To external openings in timber framed walls, window / door heads are trimmed structurally by a double stud-frame section, external weather boarding trimmed to overhang frame and external head drip-board cut into boarding at a 45 degree pitch on oak support brackets to further protect each opening.

6.0 Roof Construction: -

Roof finish to be natural clay ridge tiles to match as existing farmhouse, mortar bedded over 230x460mm natural riven slates from reclamation supply, on 38x50mm treated softwood battens (set at gauge to suit site exposure) fixed with copper nails over breathable roofing membrane as 'Tyvec Supro' for non-ventilated pitched roof systems, on 75x100mm SC3 Grade structural softwood rafters fixed to clear span from eaves beams, across purlins to 38x225mm softwood ridge board, all as specified on roof layout drawing.

Roof Restraint Straps and Ties:
Lateral restraint to gable wall to be provided by L shaped galvanised mild steel achor straps size 30x5mm thick with 100mm minimum downstand built into gable wall and fixed across min.3 No. rafters at maximum 2.0m linear centres. 75 x 50mm softwood blocking to be fixed between rafter members for additional anchorage to all strap positions.

Eaves beam/wall plate to be strapped to internal wall face with L-shaped galvanised mild steel anchor straps size 30 x 5mm thick at 1800mm ccs extending min. 900mm down wall face and mechanically fixed.

7.0 New Doors & Window Frames: -

Larch Boarded Door & Frame Set:
Vertical boarded and braced external door & frame set with hardwood threshold bar over stone step, all as detailed on construction drawings. Fitted with lock & latch set, internal shoot bolts and pair of wrought iron strap hinges.
General Note: To comply with the Planning Development Conditions, door and window samples are to be approved by the Planning Authority prior to ordering / manufacture.
General Note: All frame surrounds to be mastic/silicone pointed externally and all voids sealed internally with polyurethane injected foam gap filler, to prevent water / air penetration and / or heat loss.

Oak Cottage Style Horizontal Bar Windows:
Oak fully glazed horizontal bar cottage style windows with matching fixed frame and opening lights all as detailed on construction drawings, single glazed. Fitted face mounted lock and latch & lever set. Oak frame to have overhanging sill drip externally to weather-boarding and internal sill projecting 50mm beyond face of stud frame surround.

Note: New windows to extension to have concealed trickle ventilators equal to 8000mm2 at high level through primary frame. Concealed ventilator detail/sample to be agreed with appointed Planning / Conservation Officer prior to manufacture.
General Note: To comply with the Planning Development Conditions, door and window samples are to be approved by the Planning Authority prior to ordering / manufacture.
General Note: All frame surrounds to be mastic/silicone painted externally in black.

8.0 Glazing and Safety Glazing: -

All glazing to comply with B/Regs. Part N.
Windows:
All glazing to windows between floor level and 800mm, and glazing to windows adjacent to doors up to 1500mm shall be safety glass as defined in BS6206 1981, Clause 5.3.
Doors:
All glazing to doors between floor level and 1500mm shall be safety glass as defined in BS6206 1981, Clause 5.3.

9.0 Existing and New Timber Treatment: -

Existing timber structure fund to be structurally sound to be treated only if signs of infestation and / or rot are detected. Consult specialist as Peter Cox Ltd. or similar approved specialist and obtain a report/quotation for approval by the appointed Planning/Conservation Officer and client.
General Requirements:-

- All structural and carcass timber to be treated with preservative as new works progress.
- All fabrication and drilling to be carried out prior to treatment where possible.
- All cut ends to be liberally treated with two coats Protim cut-end preservative. All preservative treatment to be in accordance with BS 5707 Parts 1 and 3.
- External timbers in contact with ground to be C.C.A. preservative treated.

10.0 Electrical Installations:

All to comply with I.E.E. regulations, latest amendment and to be undertaken by a registered electrical contractor, approved to B/Regs Part P.
Sub-contractor to prepare a sockets and lighting layout scheme for prior comment / approval by Client.
(NB: Heights of switch plates and sockets to comply with B/Regs. Part M. for disabled accessibility.)
Note: To comply with Building Regulations Part L1, the provision of 'Energy Efficient' lighting is to be a minimum 75% of total number of new fixed installation fittings. Low energy lighting types such as fluorescent tubes or compact fluorescent lamps are to be operate at not less than 45 lumens per circuit watt.
Note: To demonstrate compliance with Building Regulations Part L1, following building completion tester, to prove a 'Fixed Services Installation Commissioning Notice' undertaken by an accredited tester, to prove that the fixed services installations are in accordance with the requirements specified in the 'Approved Documents'.
Note: See also automatic smoke detection and fire alarms as below.

11.0 Surface Water Drainage:

The Surface water drainage is to be collected and discharged to a natural water course in accordance with the approved scheme. See planning approval to condition 7 GLY P/2018/0163

12.0 Gutters & Fallpipes:

External 110mm half round gutters, 63mm dia. fallpipes to be black painted cast iron. Gutters to be set to falls on black painted galvanised steel rafter end fixed 'stirrup support' irons.

Llangwryd Uchaf, Llwynmawr, Llangollen – Renovation & Conversion of former Barn into a New Dwelling and the Construction of a New Timber Framed & Clad Outbuilding.

CONSERVATION METHOD STATEMENT & SPECIFICATION

Section Five: CDM Regulations – Designers Risk Assessment.

Where the Main Contractor appoints another Contractor or Sub-Contractor the Main Contractor must be satisfied as to the competence and allocation of resources of the appointee.

ADS : ARCHITECTURAL DESIGN SERVICES.

Tel. 01978 711900. / E-mail: cloy_ent@btinternet.com

Project: Llangwryd Uchaf
Barn Conversion & Out Buildg.
Job No: 366c
Date: 21:01:13

HAZARDOUS ACTIVITY & PRINCIPAL RISKS		GENERAL GUIDANCE: REDUCING THE RISK	
1.00	**SITE USAGE & ACCESS**		
A	Vehicular movement	A-JKL	BAS Construction Safety Section 19
B	Underground services	B-JK	HSE Guidance Booklet HS(9) 47
		JKL	Principal contractor to identify sequence of works and prepare method statements. Obstructing the highway by parking inc. delivery of goods, is not permitted.
D	Flammable materials and gases		
E	Health hazards		
F	Confined spaces		
G	Noise	A-EJ	HSE Guidance note GS29 Parts 1-4
H	Vibration		Part 1 – Preparation and Planning
I	Existing services		Part 2 – Legislation
J	Lifting and Transporting		Part 3 – Techniques
K	Works adjacent to overhead electric power lines.		Part 4 – Health Hazards
L	Adjacent occupied premises, parking and access	L	BS6187, HSE HS(G)151 Protecting the Public.
		E	HSE Guidance note GS6
		F	HSE Guidance note HS(g) 47
		G	HSE Guidance notes EH10, EH28, EH29, EH35-37 & EH40
		H	Contract Preliminaries
		I	BS5228
		J	HSE L113 Safe use of lifting equip: AcoP L23 Manual Handling.
3.00	**WORKS AT HIGH LEVEL**		
A	Lifting to high level	A	HSE Guidance Notes 'Health and Safety weight limits for manual handling'
B	Falls from high level	B	BAS Construction Safety Section8G.
C	Scaffolding collapse, downfall of load.	C	BAS Construction Safety Section 9. Scaffolding to be erected (and altered) by approved sub-contractor only. Scaffolding to be tested, certified and maintained in accordance with current legislation. HSE GN GS 15 'General Access Scaffolds'

ADS : ARCHITECTURAL DESIGN SERVICES.

Tel. 01978 711900. / E-mail: cloy_ent@btinternet.com

HAZARDOUS ACTIVITY & PRINCIPAL RISKS		GENERAL GUIDANCE: REDUCING THE RISK	
4.00	**WORKING WITH TOXIC, HARMFUL IRRITANT, CORROSIVE:- SUBSTANCES (e.g. solvents, paints, adhesive, dust etc.) MATERIALS (e.g. insulation, cement, asbestos cement, chemical fixings etc.)**		
A	Inhalation	A-E	HSE GN EH40 'Occupational Exposure Limits'
B	Ingestion		HSE Construction Summary Sheet No. 16.
C	Skin Absorption		COSHH Regulations 1994
D	Skin Damage		Product Manufacturers Data Sheets and guidance on safe use and Storage.
E	Escape of substances		Requirements for use of protective clothing (eye protection, face masks, overalls etc) to be identified and regulated by the Main Contractor.
5.00	**STORAGE OF FLAMMABLE LIQUIDS AND GASES**		
A	Fire and explosion	A-B	HSE HG(G) 3 'Highly Flammable Material on Construction Sites'
B	Escape of substances		
6.00	**NOISE AND VIBRATION (drilling, cutting, chasing etc)**		
A	Hearing Damage	A	BAS Construction Safety Section 4.
B	Noise and Vibration		CIRIA Report 120.
			CIRIA Technical Note 138.
		B	BAS Construction Safety Section 4.
			CIRIA Report 120.
			CIRIA Technical Note 138.
7.00	**WORK TO HARDENED CONCRETE (e.g. cutting and breaking out)**		
A	Dust	A	HSE Guidance Summary Sheet No. 16.
B	Noise and vibration (as above)		COSHH Regulations 1994.
			HSE GN EH40 –'Occupational Exposure Limits'.
		B	(as above)
8.00	**MODIFICATIONS TO EXISTING DRAINAGE**		
A	Leptospirosis	A	BAS Construction Safety Section 4
B	Personal injury	B	Refer to Item 10 A-E above.
	- inhalation		
	- ingestion		
	- skin contact		

ADS : ARCHITECTURAL DESIGN SERVICES.

Tel. 01978 711900. / E-mail: cloy_ent@btinternet.com

HAZARDOUS ACTIVITY & PRINCIPAL RISKS		GENERAL GUIDANCE: REDUCING THE RISK	
9.00	**MISCELLANEOUS CONSTRUCTION PHASE RISKS**		
A	Work with insulations	A-B	Manufacturers guidance for safe Handling and storage. Face masks to be used. See also Item 10 above.
B	Use of PVC adhesives, solvents etc		
C	Working with cement.	C	Eye protection to be used. See also Item 10 above.
D	Heavy, large or awkwardly shaped Equipment	D	Comply with the Manual Handling Operations Regulations
E	Disinfecting chemicals	E	Manufacturers guidance for safe handling and storage. COSHH Regulations 1994 Use protective clothing and equipment.
F	Metal corrosion treatment	F	Manufacturers guidance for safe handling and storage COSHH Regulations 1994. Use protective clothing and equipment.
G	Trench excavations	G	HSE Guidelines in 'Health and safety in excavations' HSG185.
H	Structural Dismantling / Repairs / Reconstruction, risk of Structural Collapse	H, I & J	Structural Engineer and/or Temporary Works Engineer to be consulted on structural repairs/alterations, New foundations or underpinning works, temporary support works, sequence of structural works, structural method statements, structural designers risk assessments and to provide full specifications. N.B. Repeat consultations & safety inspections for each element of structural alterations and at adaptations of temporary works e.g. scaffolding / propping etc.
I	Underpinning Foundations to Existing Structures, risk of Structural Collapse		
J	Temporary Structural Support Works and ongoing Adaptations, risk of Structural Collapse		

1.0 Planning Permission GLY P/2005/1479.

In pursuance of its powers under the Acts and Orders referred to below, the County Borough Council as Local Planning Authority, hereby determines your application in accordance with the particulars and plans comprising the application

7
Expiry Date: 16/02/2006
Decision Notice Sent:
06/06/2006
Grid Reference:
E 323279
N 336265

A

Applicant	Mr & Mrs D Joy	**Code No**	GLY P/2005/1479
Agent	John R Miles, RIBA 36 Castle Street Llangollen LL20 8RT	**Date Received**	23/12/2005
		Decision Date	05/06/2006

Town and Country Planning Act, 1990

Location of application

Llangwyryd Ucha, Llwynmawr, Llangollen,Wrexham LL207BD

Description of application

Conversion of former agricultural building to dwelling

In reaching this decision the Council has had regard to the relevant policies in the Wrexham Unitary Development Plan which are as follows:-

EC9	Listed buildings of special architectural or historic interest
GDP1	Development objectives
H3	Residential conversion of buildings outside settlement limits
PS2	Development and the environment

Particulars of decision that permission be GRANTED
Subject to the following:-

Condition(s)

1. The development hereby permitted shall be begun before the expiry of five years from the date of this permission.
2. The development shall only be carried out in strict conformity with the details shown on the approved drawings and in the application documentation.
3. Before development commences details of the foul and surface water drainage shall be submitted to and approved by the Local Planning Authority. The development shal only be carrie dout in accrodance with those approved details.
4. A bat roost and breeding bird report shall be undertaken, before alterations are made, by specialist consultants to be able to assess the likely impacts of the proposal on any statutory protected species can be assessed. The report must also propose and deliver appropriate conservation schemes and 'Reasonable Avoidance Measures' and be submitted to and approved by the Local planning Authority. Any mitigation measures

Applicant	Mr & Mrs D Joy	**Code No**	GLY P/2005/1479
Agent	John R Miles, RIBA 36 4Castle Street Llangollen LL20 8RT	**Date Received**	23/12/2005
		Decision Date	05/06/2006

required shall be implemented in accordance with time scales to be agreed as part of the measures before development commences on site.

Reason(s)

1. To comply with Section 91(3) of the Town and Country Planning Act, 1990.
2. To ensure that the conversion scheme is only implemented in accordance with the approved plans.
3. To ensure that the redevelopment does not cause drainage or pollution issues to the area
4. In order to protect wildlife interests, which are afforded special protection.

Note(s) to applicant

You are advised that if there is any evidence of storage or spillage of agro-chemicals in the barn, it would be prudent to investigate whether there is any residual contamination. Should you require any further advise on this issue please contact the Public Protection department of the Council.

This permission is granted subject to the above conditions. Some conditions may require your attention prior to you carrying out any work on the proposal. These conditions are known as "conditions precedent". You should be aware that it is important that you comply with any "conditions precedent". If you do not, then any work you undertake on the development subject of this permission would not have planning permission.

You are advised that this permission does not in itself authorise the carrying out of the development hereby permitted until the necessary Listed Building Consent has been obtained. Your concurrent application for Listed Building Consent has now been forwarded to the National Assembly for Wales.

Officer Appointed for this purpose
Refer to the Statement of Applicant's Rights and General Information Enclosed

Chief Planning Officer, Lambpit Street, P O Box 1290, Wrexham, LL11 1WL.

2.0 Listed Building Consent GLY/P/2005/1480.

In pursuance of its powers under the Acts and Orders referred to below, the County Borough Council as Local Planning Authority, hereby determines your application in accordance with the particulars and plans comprising the application

Expiry Date:
16/02/2006
Grid Reference:
E 323279
N 336265

Applicant	Mr & Mrs D Joy	**Code No**	GLY P/2005/1480
Agent	John R Miles, RIBA 36, Castle Street Llangollen LL20 8RT	**Date Received**	23/12/2005
		Decision Date	07/08/2006

Planning (Listed Buildings and Conservation Areas) Act 1990

Location of application

Llangwyryd Ucha, Llwynmawr, Llangollen, Wrexham LL207BD

Description of application

Listed Building Consent for conversion of redundant outbuilding to dwelling

In reaching this decision the Council has had regard to the relevant policies in the Wrexham Unitary Development Plan which are as follows:-

EC9	Listed buildings of special architectural or historic interest
GDP1	Development objectives
PS2	Development and the environment
T8	Parking

Particulars of decision that Listed Building Consent be GRANTED Subject to the following:-

Condition(s)

1. The works hereby granted consent shall be begun before the expiry of five years from the date of this consent.
2. The development shall only be carried out in strict conformity with the details shown on the approved drawings and in the application documentation.
3. All rainwater goods shall be cast iron, painted black.
4. Details of the colour and finish of external joinery shall be submitted to and approved with the Local Planning Authority before any windows or doors are first installed, and the work shall only be carried out in accordance with this approved detail,

5. No damp proof course or damp proof membrane shall be installed without further approval with the Local Planning Authority, and the work shall only be carried out in accordance with this approval.
6. A sample panel of the mortar mix to be used in connection with any repair work to be carried out to the building shall be submitted to and approved in writing by the Local Planning Authority before work commences. Work shall only be undertaken in accordance with that appproval.
7. A sample of the slates to be used on the building shall be submitted to and approved by the Local Planning Authority. Development shal only be carried out in accordance with that approval.
8. Before work starts on the building, a photographic survey of the existing building(s) shall be undertaken, a copy shall be submitted to and approved by the Local Planning Authority.
9. Notwithstanding the approved plans, no approval is given to the installation of rooflights for the following first floor rooms: study, bedrooms 2, 3 and 4, the en-suite and bathroom. The remaining rooflights approved for the stairwell, landing and upper area to the entrance hall shall be of cast metal and installed so as to be flush with the roof slope.
10. Notwithstanding the approved plans, the existing door opening at first floor level on the east elevation shall be retained. A door/window shall be installed in accordance with details to be submitted to and approved in writing by the Local Planning Authority.
11. Notwithstanding the approved plans, no approval is given to the blocking up of the ventilation slits within the walls. Details for their treatment, including glazing wherever practicable, shall be submitted to and approved in writing by the Local Planning Authority prior to the commencement of this elements of the development, and shall only be carried out in accordance with the approved detail(s).

Reason(s)

1. To comply with Section 18 of the Planning (Listed Building and Conservation Areas) Act 1990.
2. To ensure that the work reflect the character and appearance of the Listed Building.
3. To ensure that this detail reflects the character and appearance of the Listed Building.
4. To ensure that the colour appearance reflect the character and appearance of the Listed Building.
5. To ensure that the work respects the integrity of the Listed Building.
6. To ensure that the work respects the integrity of the Listed Building.
7. To ensure that the material is sympathetic to the character and appearance of the Listed Building.
8. To ensure that a photo record of this important building is recorded before any alterations are made.
9. To ensure that the number of rooflights are not excessive for the development, and to ensure that the work reflects the character and appearance of the Listed Building.
10. To ensure that the work reflects the character and appearance of the Listed Building.

Applicant	Mr & Mrs D Joy	**Code No**	GLY P/2005/1480
Agent	John R Miles, RIBA 36 Castle Street Llangollen LL20 8RT	**Date Received**	23/12/2005
		Decision Date	07/08/2006

11. To ensure that the work reflects the character and appearance of the Listed Building.

Note(s) to applicant

With regards to condition 8 above a copy of the photo survey shall be deposited with the Royal Commissions on the Ancient and Historical Monuments of Wales for their deposit is the National Monumments record for Wales.

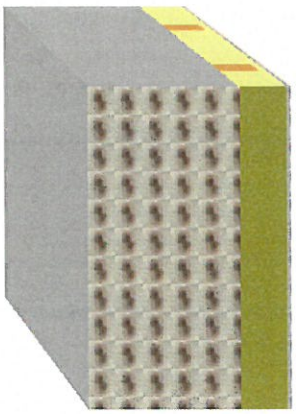
Officer Appointed for this purpose
Refer to the Statement of Applicant's Rights and General Information Enclosed

Chief Planning Officer, Lambpit Street, P O Box 1290, Wrexham, LL11 1WL.

3.0 Kingspan Insulation Ltd – Thermal calculation.

Documentation of the component
Thermal transmittance (U-value) according to BS EN ISO 6946
Source: **own catalogue - External walls**
Component: **Tim Maddock - cosywool & wood wool IWI - 31-7-18**

OUTSIDE INSIDE



This illustration of inhomogeneous layers is provided only to assist in visualising the arrangement.

Assignment: External wall

		Manufacturer	Name	Thickness [m], number	Lambda [W/(mK)]	Q	R [m²K/W]
		Rse					0.0400
☑	1	Own catalogue	Natural Stone	0.5500	2.400	E	0.2292
☑	2	Own catalogue	Breathable Membrane	0.0005	0.100	E	0.0045
☑	3	Inhomogeneous material layer	consisting of:	0.1400	ø 0.053		2.6591
	3a	Own catalogue	Thermafleece Cosywool Rolls	85.00 %	0.039	E	-
		Air gaps	Level 0: dU" = 0.00 W/(m²K)				
	3b	BS EN 12524	Softwood Timber [500 kg/m³]	15.00 %	0.130	D	-
☑	4	Own catalogue	Celenit N Wood Wool	0.0250	0.064	E	0.3906
		Fixings	M5 5mm diameter stainless steel No./m²:	8/m²	17.000	E	-
		Fixings	equivalent diameter: 0.005 m / alpha: 0.800				
		Air gaps	Level 0: dU" = 0.00 W/(m²K)				
☑	5	Own catalogue	Lime Hemp Plaster	0.0060	0.164	E	0.0366
☑	6	Own catalogue	Lime Hemp Plaster	0.0060	0.164	E	0.0366
☑	7	Own catalogue	Lime Plaster	0.0030	0.800	E	0.0038
		Rsi					0.1300
				0.7305			

$R_T = (R_T' + R_T'')/2 = 3.63$ m²K/W

Correction to U-value for	according to	delta U [W/(m²K)]
Mechanical fasteners	BS EN ISO 6946 Annex D	0.009
Air gaps	BS EN ISO 6946 Annex D	0.000
		0.009

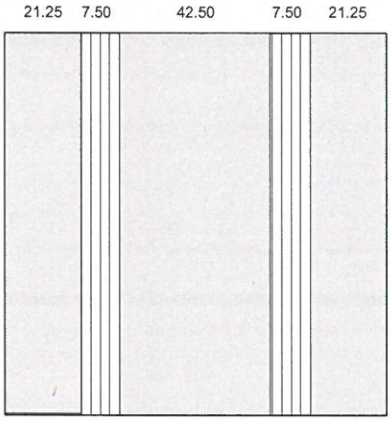
$U = 1/R_T + \Sigma\Delta U = 0.28$ W/(m²K)

Q .. The physical values of the building materials has been graded by their level of quality. These 5 levels are the following
A .. A: Data is entered and validated by the manufacturer or supplier. Data is continuously tested by 3rd party.
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U_{max} = 0.28 W/(m²K) U = 0.28 W/(m²K) R_T= 3.63 m²K/W

Source of Umax value: England and Wales Approved Document L1B 2010 Tab 1 Dwellings Existing New Thermal Elements

Draft of the component (portion in %):



The inhomogeneous layer consists of two zones (A, B).
The portion is given in %.

A	21.25 + 42.50 + 21.25 consisting of material layers: 1, 2, 3a, 4, 5, 6, 7	= 85.00%
B	7.50 + 7.50 consisting of material layers: 1, 2, 3b, 4, 5, 6, 7	= 15.00%

Upper limit of the thermal transfer resistance R

U_A [W/(m²K)] = $\frac{1}{(\Sigma R_{i,A}) + R_{si} + R_{se}}$ = $\frac{1}{4.29 + 0.13 + 0.04}$ = 0.22

U_B [W/(m²K)] = $\frac{1}{(\Sigma R_{i,B}) + R_{si} + R_{se}}$ = $\frac{1}{1.78 + 0.13 + 0.04}$ = 0.51

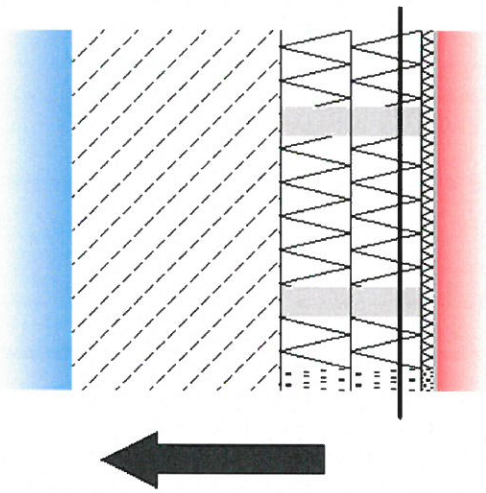
$$R_T' = \frac{1}{A * U_A + B * U_B} = 3.74 \text{ m}^2\text{K/W}$$

Lower limit of the thermal transfer resistance R

R_{se} [m²K/W]		= 0.04
R_1" [m²K/W] = d_1/λ_1 =	0.5500 / 2.400	= 0.23
R_2" [m²K/W] = d_2/λ_2 =	0.0005 / 0.100	= 0.00
R_3" [m²K/W] = $d_3/(\lambda_{3a} * A + \lambda_{3b} * B)$ =	0.1400 /(0.039 * 85.00% + 0.130 * 15.00%)	= 2.66
R_4" [m²K/W] = d_4/λ'_4 =	0.0250 / 0.064	= 0.39
R_5" [m²K/W] = d_5/λ_5 =	0.0060 / 0.164	= 0.04
R_6" [m²K/W] = d_6/λ_6 =	0.0060 / 0.164	= 0.04
R_7" [m²K/W] = d_7/λ_7 =	0.0030 / 0.800	= 0.00
R_{si} [m²K/W]		= 0.13

$$R_T'' = \Sigma R_i'' + R_{si} + R_{se} = 3.53 \text{ m}^2\text{K/W}$$

OUTSIDE INSIDE



The list of materials shown below may differ from those in the U-value calculation printout. Only material layers which are used in the heat capacity calculation are listed.

Single material layers shown in the U-value calculation printout may be separated to meet the exclusion criteria:

A .. The total thickness of the layers exceed 0.1 m.
B .. The mid point in the construction is reached.

For insulation layers the following criteria applies:

C .. An insulating layer is reached (defined as lambda <= 0.08 W/(mK)).

	Name	Thickness [m]	lambda [W/(mK)]	Q	Thermal capacity [kJ/(kgK)]	Q	Density [kg/m³]	Q	Thermal mass kJ/(m²K)	Criteria Exclusion
	End of calculation - Cold									
1	Natural Stone	0.5500	2.400	E	1.00	E	2600.0	E	~~1430.0~~	A, -, C
2	Breathable Membrane	0.0005	0.100	E	1.70	E	322.0	E	~~0.2~~	A, -, C
3	Inhomogeneous material layer consisting of:	0.0800							~~9.6~~	A, -, -
3a	Thermafleece Cosywool Rolls	85.00%	0.039	E	1.80	E	19.0	E	~~2.3~~	A, -, C
3b	Softwood Timber [500 kg/m³]	15.00%	0.130	D	1.60	D	500.0	D	~~9.6~~	A, -, -
3	Inhomogeneous material layer consisting of:	0.0600							7.2	-, -, -
3a	Thermafleece Cosywool Rolls	85.00%	0.039	E	1.80	E	19.0	E	~~1.7~~	-, -, C
3b	Softwood Timber [500 kg/m³]	15.00%	0.130	D	1.60	D	500.0	D	7.2	-, -, -
4	Celenit N Wood Wool	0.0250	0.064	E	2.10	E	460.0	E	~~0.0~~	-, -, C
5	Lime Hemp Plaster	0.0060	0.164	E	1.00	E	1400.0	E	8.4	-, -, -
6	Lime Hemp Plaster	0.0060	0.164	E	1.00	E	1400.0	E	8.4	-, -, -
7	Lime Plaster	0.0030	0.800	E	1.00	E	1600.0	E	4.8	-, -, -
	Start of calculation - Warm									
		0.7305							**28.8**	

Heat capacity = 28.8 kJ/(m²K)

The following exclusion criteria apply:
A .. The total thickness of the layers exceed 0.1 m.
C .. An insulating layer is reached (defined as lambda <= 0.08 W/(mK)).

Q .. The physical values of the building materials has been graded by their level of quality. These 5 levels are the following
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Project ID : Llangwryd Uchaf, Llwynmawr, Llangollen, LL20 7BD
Structure element : Pitched or mansard roof, ceiling at line of pitch
Description : Pitched Roof - Unvented
File reference : 1K154H50E4.FCF

Calculated 'U' value = 0.19W/m²K (Calculated in accordance with BS EN ISO 6946:2017)

Element Description	Element Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m²K/W)	Vapour Resistivity (MNs/gm)	Vapour Resistance (MNs/g)	Mean T (K)	Delta T (K)
Outside surface resistance	-	-	0.104	-	-	80.69	0.21
TILES / SLATES ON BATTENS ; PITCHED ROOF.	30.0	-	0.000	-	0.00	80.79	0.00
BREATHABLE MEMBRANE	0.5	-	0.006	-	0.20	80.80	0.01
TIMBER RAFTER/COUNTER BATTEN CAVITY; U/V. 8.8% roo timber - 47mm @ 600mm ctrs + 1% for noggins + loft hatches (88.0mm)	88.0	-	0.454	-	0.05	81.26	0.91
KOOLTHERM K107 BETWEEN TIMBER RAFTERS 8.8% roof timber - 47mm @ 600mm ctrs + 1% for noggins + loft hatches (80.0mm)	80.0	0.018	4.444	-	22.90	86.14	8.86
KOOLTHERM K118 (12.5mm plasterboard internal finish)	32.5	-	1.177	-	94.70	91.74	2.35
PLASTER SKIM	3.0	0.180	0.017	60.00	0.18	92.93	0.03
Inside surface resistance	-	-	0.100	-	-	93.05	0.20

Detailed U-value Calculation Results

Construction includes 2 bridged layers.

Non-bridged layers

Outside surface resistance	0.104 m²K/W
BREATHABLE MEMBRANE	0.006 m²K/W
KOOLTHERM K118 (12.5mm plasterboard internal finish)	1.177 m²K/W
PLASTER SKIM	0.017 m²K/W
Inside surface resistance	0.100 m²K/W
Resistance of non-bridged layers, R_{NB}=	1.404 m²K/W

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Detailed U-value Calculation Results (continued)

Resistance of heat flow paths

$R_{P1} = R_{NB} + R_{L1} = 1.404 + 4.898 = 6.302$ m²K/W $F_{P1} = 91.167\%$

$R_{P2} = R_{NB} + R_{L2} = 1.404 + 1.292 = 2.696$ m²K/W $F_{P2} = 8.833\%$

Fraction of face area of materials

TIMBER RAFTER/COUNTER BATTEN CAVITY; U/V., $F_{L1} = 91.2\%$

roof timber - 47mm @ 600mm ctrs + 1% for noggins + loft hatches, $F_{B1} = 8.8\%$

Upper resistance limit

$R_{upper} = 1 / ((F_{P1}/R_{P1}) + (F_{P2}/R_{P2}))$

$R_{upper} = 1 / ((0.912/6.302) + (0.088/2.696)) = 5.636$m²K/W

Lower resistance limit

$R_{lower} = R_{NB} + 1 / ((F_{L1}/R_{L1}) + (F_{B1}/R_{B1}))$

$R_{lower} = 1.404 + 1 / ((0.9117/4.8985) + (0.0883/1.2923)) = 4.740$ m²K/W

Total resistance of roof

$R_T = (R_{upper} + R_{lower}) / 2 = (5.636 + 4.740) / 2 = 5.188$ m²K/W

(Correction for mechanical fasteners, Delta Uf = 0.0000W/m²K | Correction for air gaps, Delta Ug = 0.0000W/m²K)
(Alpha 0.0 m^{-1} | Fasteners per square metre 0.0000)
(Fasteners cross-sectional area 0.000 mm² | Thermal conductivity of fastener 0.00 W/mK)

(Delta Uf + Delta Ug) is less than 3% of (1 / Rt) so U = (1 / Rt) = 0.19W/m²K

For further information on the specified products, e.g. literature or specification clauses, please follows the links below:-

KOOLTHERM K107

KOOLTHERM K118

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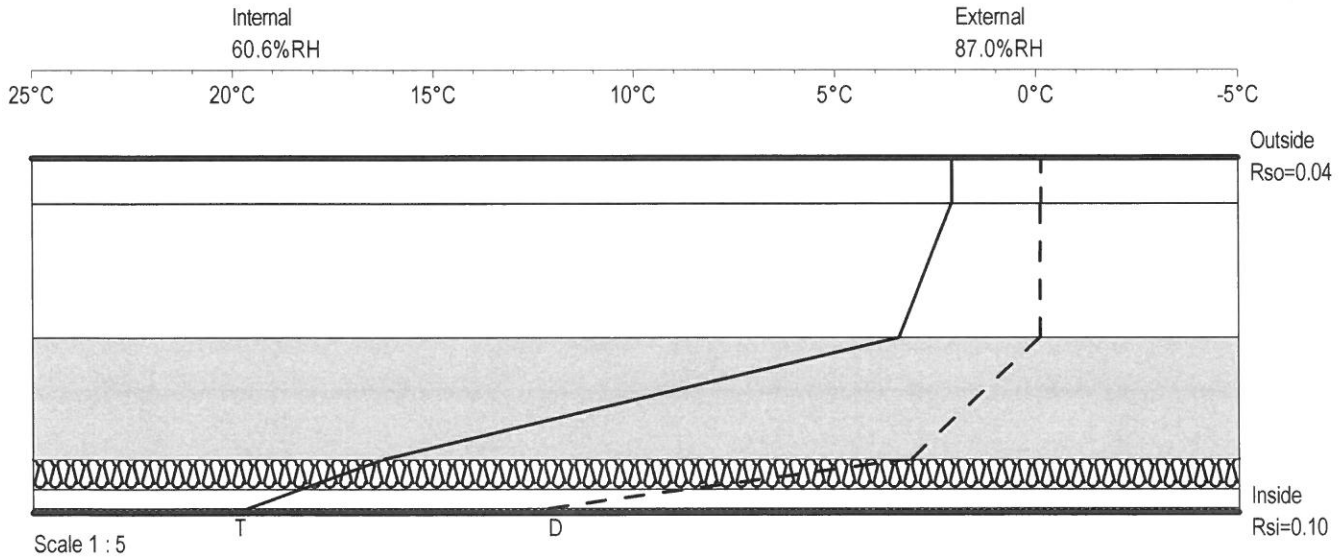
Project ID : Llangwryd Uchaf, Llwynmawr, Llangollen, LL20 7BD
Structure element : Pitched or mansard roof, ceiling at line of pitch
Description : Pitched Roof - Unvented
File reference : 1K154H50E4.FCF
Humidity Class: 3 - Dwellings with low occupancy
Location: 3 England NW & N Wales

Condensation calculations performed in accordance with BS5250: 2011

Month	Int (°C)	Int (%RH)	Ext (°C)	Ext (%RH)
Jan	20.0	60.6	1.8	87.0
Feb	20.0	60.0	1.9	85.0
Mar	20.0	58.5	3.7	80.5
Apr	20.0	57.9	5.9	78.0
May	20.0	58.2	9.3	75.5
Jun	20.0	62.0	12.2	77.5
Jul	20.0	65.5	13.8	79.5
Aug	20.0	66.0	13.7	80.5
Sep	20.0	64.1	11.5	82.5
Oct	20.0	62.4	8.6	85.0
Nov	20.0	60.7	4.3	86.5
Dec	20.0	60.7	2.5	87.5

Gc = Monthly moisture accumulation per area at an interface
Ma = Accumulated moisture content per area at an interface

Peak accumulated moisture content per area at interface (Ma) = 0.00 Kg/m²
Annual moisture accumulation (Ma) = 0.00 Kg/m²



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Project ID : Llangwryd Uchaf, Llwynmawr, Llangollen, LL20 7BD
Structure element : Pitched roof, horizontal ceiling, insulation at ceiling level
Description : Pitched Roof - Unvented
File reference : 1K154H51B9.FCF

Calculated 'U' value = 0.13W/m²K (Calculated in accordance with BS EN ISO 6946:2017)

Element Description	Element Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m²K/W)	Vapour Resistivity (MNs/gm)	Vapour Resistance (MNs/g)	Pitch	Mean T (K)	De
Outside surface resistance	-	-	0.104	-	-	30.0°	80.66	0.
TILES / SLATES ON BATTENS ; PITCHED ROOF.	30.0	-	0.000	-	0.00	30.0°	80.73	0.
BREATHABLE MEMBRANE	0.5	-	0.006	-	0.20	30.0°	80.74	0.
Loft space - unventilated	300.0	-	0.454	-	-		81.07	0.
KOOLTHERM K107 - Fixed in a continuous layer	60.0	0.018	3.333	-	22.90		83.79	4.
TIMBER JOIST CAVITY; U/V. 8.8% roof timber - 47mm @ 600mm ctrs + 1% for noggins + loft hatches (50.0mm)	50.0	-	0.481	-	0.05		86.54	0.
KOOLTHERM K107 BETWEEN TIMBER JOISTS 8.8% roof timber - 47mm @ 600mm ctrs + 1% for noggins + loft hatches (75.0mm)	75.0	0.018	4.167	-	22.90		89.89	6.
1000 GAUGE 0.25mm POLYTHENE VAPOUR CONTROL LAYER	0.3	-	0.001	-	500.00		92.89	0.
PLASTERBOARD	12.5	0.190	0.066	50.00	0.63		92.93	0.
PLASTER SKIM	3.0	0.180	0.017	60.00	0.18		92.99	0.
Inside surface resistance	-	-	0.100	-	-		93.08	0.

Detailed U-value Calculation Results

Construction includes 2 bridged layers.

Non-bridged layers

Outside surface resistance	0.104 m²K/W
BREATHABLE MEMBRANE	0.006 m²K/W
Loft space - unventilated	0.454 m²K/W
KOOLTHERM K107 - Fixed in a continuous layer	3.333 m²K/W
1000 GAUGE 0.25mm POLYTHENE VAPOUR CONTROL LAYER	0.001 m²K/W
PLASTERBOARD	0.066 m²K/W
PLASTER SKIM	0.017 m²K/W
Inside surface resistance	0.100 m²K/W
Resistance of non-bridged layers, R_{NB}=	4.081 m²K/W

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Detailed U-value Calculation Results (continued)

Resistance of heat flow paths
$R_{P1} = R_{NB} + R_{L1} = 4.081 + 4.647 = 8.728$ m²K/W $F_{P1} = 91.167\%$
$R_{P2} = R_{NB} + R_{L2} = 4.081 + 0.962 = 5.042$ m²K/W $F_{P2} = 8.833\%$

Fraction of face area of materials
TIMBER JOIST CAVITY; U/V., $F_{L1} = 91.2\%$
roof timber - 47mm @ 600mm ctrs + 1% for noggins + loft hatches, $F_{B1} = 8.8\%$

Upper resistance limit
$R_{upper} = 1 / ((F_{P1}/R_{P1}) + (F_{P2}/R_{P2}))$
$R_{upper} = 1 / ((0.912/8.728) + (0.088/5.042)) = 8.166$m²K/W
Lower resistance limit
$R_{lower} = R_{NB} + 1 / ((F_{L1}/R_{L1}) + (F_{B1}/R_{B1}))$
$R_{lower} = 4.081 + 1 / ((0.9117/4.6473) + (0.0883/0.9615)) = 7.178$ m²K/W

Total resistance of roof
$R_T = (R_{upper} + R_{lower}) / 2 = (8.166 + 7.178) / 2 = 7.672$ m²K/W

(Correction for mechanical fasteners, Delta Uf = 0.0000W/m²K | Correction for air gaps, Delta Ug = 0.0000W/m²K)
(Alpha 0.0 m^{-1} | Fasteners per square metre 0.0000)
(Fasteners cross-sectional area 0.000 mm² | Thermal conductivity of fastener 0.00 W/mK)

(Delta Uf + Delta Ug) is less than 3% of (1 / Rt) so U = (1 / Rt) = 0.13W/m²K

For further information on the specified products, e.g. literature or specification clauses, please follows the links below:-

KOOLTHERM K107

KOOLTHERM K107

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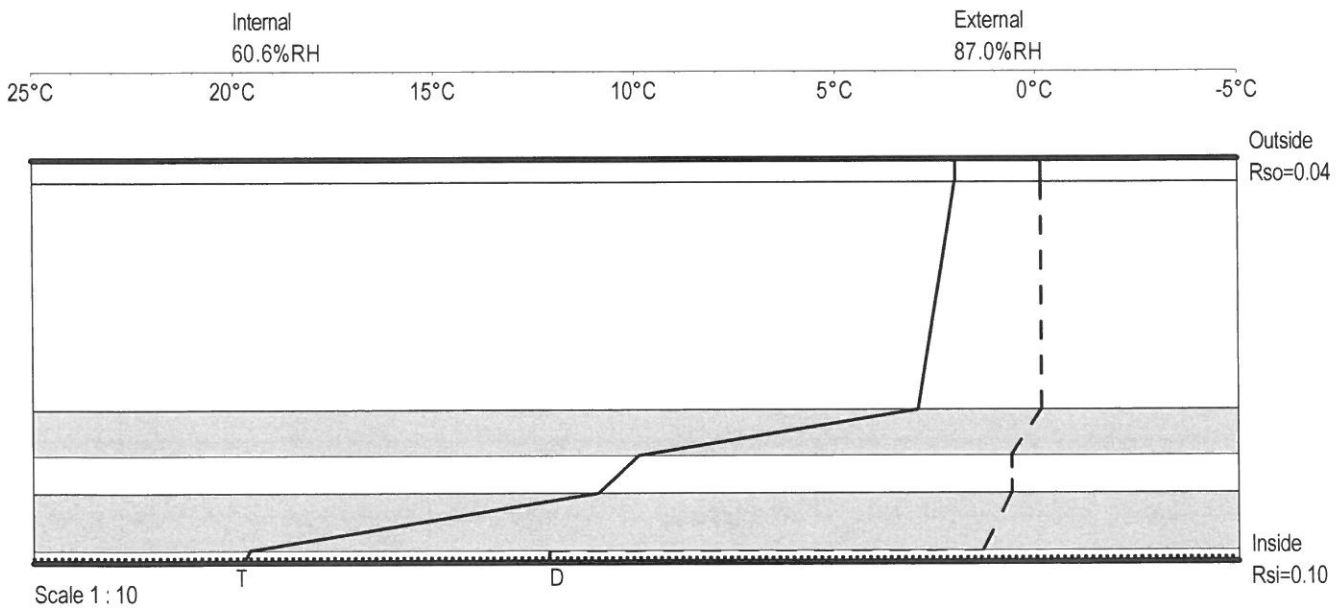
Project ID : Llangwryd Uchaf, Llwynmawr, Llangollen, LL20 7BD
Structure element : Pitched roof, horizontal ceiling, insulation at ceiling level
Description : Pitched Roof - Unvented
File reference : 1K154H51B9.FCF
Humidity Class: 3 - Dwellings with low occupancy
Location: 3 England NW & N Wales

Condensation calculations performed in accordance with BS5250: 2011

Month	Int (°C)	Int (%RH)	Ext (°C)	Ext (%RH)
Jan	20.0	60.6	1.8	87.0
Feb	20.0	60.0	1.9	85.0
Mar	20.0	58.5	3.7	80.5
Apr	20.0	57.9	5.9	78.0
May	20.0	58.2	9.3	75.5
Jun	20.0	62.0	12.2	77.5
Jul	20.0	65.5	13.8	79.5
Aug	20.0	66.0	13.7	80.5
Sep	20.0	64.1	11.5	82.5
Oct	20.0	62.4	8.6	85.0
Nov	20.0	60.7	4.3	86.5
Dec	20.0	60.7	2.5	87.5

Gc = Monthly moisture accumulation per area at an interface
Ma = Accumulated moisture content per area at an interface

Peak accumulated moisture content per area at interface (Ma) = 0.00 Kg/m²
Annual moisture accumulation (Ma) = 0.00 Kg/m²



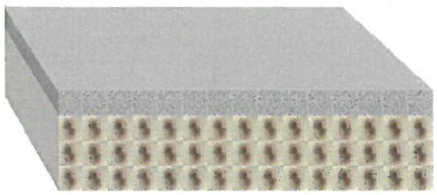
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4.0 Ty-Mawr Insulated floor thermal calculations

Documentation of the component
Thermal transmittance (U-value)
Source: **own catalogue - Ground floors**
Component: **Tim Maddock - Sublime - LL20 7BD - 20-03-2018**

INSIDE



OUTSIDE

Assignment: Ground floor

		Manufacturer	Name	Thickness [m], number	Lambda [W/(mK)]	Q	R [m²K/W]
		Rsi					0.1700
☑	1	Own catalogue	Limecrete (Recycled aggregate)	0.1000	0.450	E	0.2222
☑	2	Own catalogue	Glapor SG600	0.3000	0.078	E	3.8462
		Rse					0.0000
				0.4000			

U = 0.17 W/(m²K)

Explanation see next page

Q ..
A .. A: Data is entered and validated by the manufacturer or supplier. Data is continuously tested by 3rd party.
B .. B: Data is entered and validated by the manufacturer or supplier. Data is certified by 3rd party
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D .. D: Information is entered by BuildDesk without special agreement with the manufacturer, supplier or others.
E .. E: Information is entered by the user of the BuildDesk software without special agreement with the manufacturer, supplier or others.

U_{max} = 0.22 W/(m²K) U = 0.17 W/(m²K) R_T = 4.24 m²K/W

Source of Umax value: England and Wales Approved Document L1B 2010 Tab 1 Dwellings Existing New Thermal Elements

Slab-on-ground floor according to BS EN ISO 13370

Input data:

λ	Thermal conductivity [W/(mK)]	1.50	(Thermal conductivity of the ground)
A	Floor area [m²]	103.90	
P	Exposed perimeter [m]	56.30	
R_f	Thermal resistance [m²K/W]	4.068	(see construction layer list)
w	Thickness of walls [m]	0.60	

Kind of edge insulation:		no edge insulation
D	Depth of insulation [m]	0.00
d_n	Thickness of insulation [m]	0.00
R_n	Thermal resistance [m²K/W]	0.0

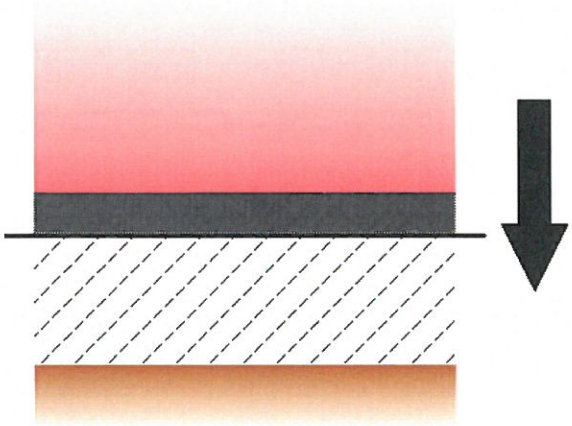
Intermediate results:

B'	Characteristic dimension [m]	3.691
d_t	Equivalent thickness [m]	7.018
U_0	Thermal transmittance [W/(m²K)]	0.172
$\Delta\Psi$	Correction term [W/(mK)]	0.000

$U = 0.17$ W/(m²K) **Thermal Transmittance**

$L_S = 17.9$ W/K **Steady-state thermal coupling coefficient**

INSIDE



OUTSIDE

The list of materials shown below may differ from those in the U-value calculation printout. Only material layers which are used in the heat capacity calculation are listed.

Single material layers shown in the U-value calculation printout may be separated to meet the exclusion criteria:

A .. The total thickness of the layers exceed 0.1 m.
B .. The mid point in the construction is reached.

For insulation layers the following criteria applies:

C .. An insulating layer is reached (defined as lambda <= 0.08 W/(mK)).

	Name	Thickness [m]	lambda [W/(mK)]	Q	Thermal capacity [kJ/(kgK)]	Q	Density [kg/m³]	Q	Thermal mass kJ/(m²K)	Criteria Exclusion
	Start of calculation - Warm									
1	Limecrete (Recycled aggregate)	0.1000	0.450	E	1.00	E	2400.0	E	240.0	-, -, -
2	Glapor SG600	0.3000	0.078	E	1.00	E	155.0	E	~~0.0~~	A, -, C
	End of calculation - Earth									
		0.4000							**240.0**	

Heat capacity = 240.0 kJ/(m²K)

The following exclusion criteria apply:
A .. The total thickness of the layers exceed 0.1 m.
C .. An insulating layer is reached (defined as lambda <= 0.08 W/(mK)).

Q .. The physical values of the building materials has been graded by their level of quality. These 5 levels are the following
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B .. B: Data is entered and validated by the manufacturer or supplier. Data is certified by 3rd party
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5.0 Tyvec Technical Information for reflex and Sypro breathable membrane

DuPont de Nemours (Luxembourg) S.à r.l

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website: www.tyvekhome.com

BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate

08/4548

Product Sheet 8

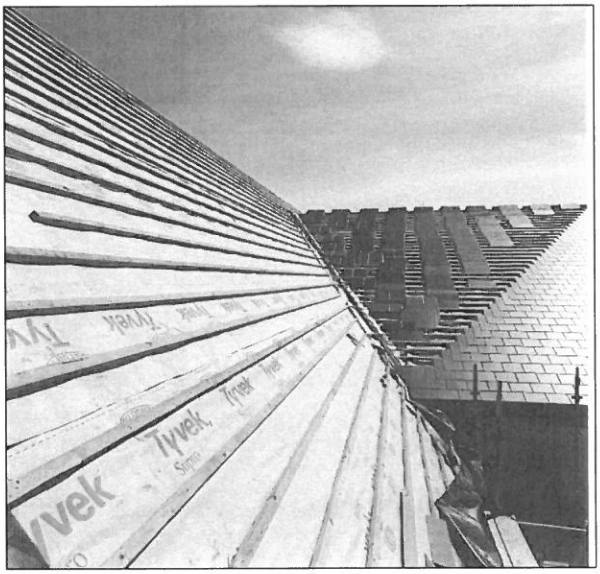
TYVEK ROOF LINING SYSTEMS

TYVEK SUPRO ROOF TILE UNDERLAY FOR USE IN COLD VENTILATED ROOFS

This Agrément Certificate Product Sheet(1) relates to TYVEK(2) Supro Roof Tile Underlay for use in cold ventilated roofs. Use of the product in warm non-ventilated roofs is covered in Product Sheet 1 and in cold non-ventilated systems in Product Sheet 2.

(1) Hereinafter referred to as 'Certificate'.

(2) TYVEK is a registered trademark of E.I duPont de Nemours & Co or its affiliates.



CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Weathertightness – as part of a complete roof, the product will resist the passage of water and wind-blown snow and dust into the interior of the building (see section 6).

Risk of condensation – the product is a low water vapour resistance (Type LR) underlay and can be used as part of a ventilated cold roof system (see section 7).

Wind loading — when installed on appropriately spaced battens and/or rafters the product's physical properties are adequate to resist the wind loads imposed on the underlay. The product will reduce the wind uplift forces acting on the roof covering (see section 8).

Strength – the product has adequate strength to resist the loads associated with the installation of the roof (see section 9).

Durability – under the normal conditions found in a roof space the product will have a service life comparable to a traditional roof tile underlay (see section 12).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 18 March 2015
Originally certificated on 8 April 2008

John Albon
Head of Approvals — Construction products

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body — Number 113.

The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

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Regulations

In the opinion of the BBA, TYVEK Supro Roof Tile Underlay, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: C2(b) **Resistance to moisture**
Comment: The product will contribute to a roof meeting this Requirement. See section 6.1 of this Certificate.

Regulation: 7 **Materials and workmanship**
Comment: The product is acceptable. See section 12 and the *Installation* part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1) **Durability, workmanship and fitness of materials**
Comment: The product can contribute to a construction satisfying this Regulation. See section 12 and the *Installation* part of this Certificate.

Regulation: 9 **Building standards applicable to construction**
Standard: 3.10 Precipitation
Comment: The product will contribute to a roof satisfying clauses 3.10.1[(1)(2)] and 3.10.8[(1)(2)] of this Standard. See section 6.1 of this Certificate.

Standard: 7.1(a) Statement of sustainability
Comment: The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.

Regulation: 12 **Building standards applicable to conversions**
Comment: Comments made in relation to the product under Regulation 9, Standards 1 to 6 also apply to this regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)].

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23(a)(i)(iii)(b)(i) **Fitness of materials and workmanship**
Comment: The product is acceptable. See section 12 and the *Installation* part of this Certificate.

Regulation: 28(b) **Resistance to moisture and weather**
Comment: The product will contribute to a roof satisfying this Regulation. See section 6.1 of this Certificate.

Construction (Design and Management) Regulations 2007
Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 1 *Description* (1.2) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of TYVEK Supro Roof Tile Underlay, provided it is installed, used and maintained in accordance with this Certificate, in relation to NHBC Standards, Chapter 7.2 *Pitched roofs*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13859-1 : 2014. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 TYVEK Supro Roof Tile Underlay is a vapour permeable, high-density polyethylene (HDPE) membrane backed with a polypropylene scrim. The product is available with or without an integral adhesive tape (the product incorporating adhesive tape is known as TYVEK Supro Plus).

1.2 The product has the following nominal characteristics:

Thickness (mm)	0.45
Mass per unit area* ($g \cdot m^{-2}$)	145
Roll length (m)	50
Roll width (m)	1.0, 1.5
Water vapour transmission – s_d* (m)	0.025
Watertightness*	
unaged	Class W1
aged(1)	Class W1
Tensile strength* ($N \cdot 50\ mm^{-1}$)	
longitudinal	300
transverse	245
Nail tear* (N)	
longitudinal	190
transverse	205
Colour	White underside, grey top side and red logo.

(1) Aged in accordance with EN 13859-1 : 2014, Annex C.

1.3 Air and Vapour Control Layers (AVCLs) are recommended for use in conjunction with this product (see Product Sheets 3 and 4 of this Certificate).

1.4 TYVEK 2060B Tape is a single-sided tape for use at joints.

2 Manufacture

2.1 The product is manufactured by spinning strands of HDPE and bonding them with heat and pressure to form a flexible sheet. A polypropylene scrim is glued to one side.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control being operated by the manufacturer are being maintained.

2.3 The management system of the Certificate holder has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by DQS GmbH (Certificate 463950 QM08).

3 Delivery and site handling

3.1 Rolls of membrane are delivered to site in packages that carry a label bearing the marketing company's name, the grade identification and the BBA logo including the number of this Certificate.

3.2 The rolls should be stored flat on their sides, on a smooth, clean, dry surface, under cover and protected from sunlight.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on TYVEK Supro Roof Tile Underlay.

Design Considerations

4 Use

The product is satisfactory for use as a fully-supported or unsupported (draped) underlay over counterbatten specifications in tiled and slated pitched roofs constructed in accordance with the relevant clauses of BS 5534 : 2003.

5 Practicability of installation

Installation must be carried out by slaters/tilers experienced with this type of product.

6 Weathertightness



6.1 The product is Class W1* in accordance with BS EN 13859-1 : 2014 and will resist the passage of water, wind-blown snow and dust into the interior of a building under all conditions to be found in a roof constructed in accordance with the relevant clauses of BS 5534 : 2014.

6.2 The product resists penetration of liquid water and consequently may be used as temporary waterproofing prior to the installation of slates or tiles. The period of such use should, however, be kept to a minimum. Further information is given in BBA Information Bulletin 2 *Permeable Roof Tile Underlay – Guide to Good Site Practice*.

7 Risk of condensation

7.1 For design purposes, the product's water vapour resistance may be taken as not more than 0.25 $MN \cdot s \cdot g^{-1}$ and for roofs designed in accordance with BS 5534 : 2014 or BS 5250 : 2011, Section H, it may be regarded as a Type LR membrane.

7.2 In common with all roofs, care must be taken in the overall design and installation to minimise the risk of water vapour coming into contact with cold parts of the construction. Factors to be considered and minimised include moisture diffusion through the ceiling, infiltration through unsealed openings/penetrations in the ceiling, and services evaporating or venting moisture into cold spaces.

7.3 The risk of condensation is highest in new-build construction during the first heating period, where there is high moisture loading owing to wet trades, such as in-situ cast concrete slabs or plaster. The risk of condensation diminishes as the building dries out. See BBA Information Bulletin No. 1 *Roof Tile Underlays in Cold Roofs during the Drying-out Period.*

Ceiling and insulation horizontal (cold ventilated roof)

7.4 Roofs designed and constructed in accordance with BS 5250 : 2011 will adequately limit the risk of interstitial condensation.

Ceiling and insulation partially inclined (warm roof and cold roof)

7.5 Where an insulated ceiling spans only part of the roof line, resulting cold roof spaces should be installed in accordance with Product Sheet 2 of this Certificate.

8 Wind loading

8.1 Project design wind speeds for the roof in which the products are installed should be determined, and wind uplift forces calculated, in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex.

Unsupported

8.2 The product is satisfactory for use in unsupported systems, in the geographical wind zones given in Table 1, where a well-sealed ceiling is present and the roof has a ridge height ≤15m, a pitch between 12.5° and 75°, and a site altitude ≤100 m, and where topography is not significant. For all other cases, the required uplift resistance should be determined using BS 5534 : 2014 and the Certificate holder's declared wind uplift resistances in Table 2.

Table 1 Zones of applicability of Tyvek Supro Roof Tile Underlay according to BS 5534 : 2014, clause A.8 with battened laps.and taped laps

Product	≤345 mm batten gauge with battened lap	≤250 mm batten gauge with battened lap	≤345 mm batten gauge with taped lap(1)	≤345 mm batten gauge with 3060B tape
Tyvek Supro	Zones 1 to 5	Zones 1 to 5	-	Zones 1 to 5
Tyvek Supro Plus(1)	Zones 1 to 5	Zones 1 to 5	Zones 1 to 5	-

(1) The laps were taped using the integrated tape.

Table 2 Declared wind uplift resistance Pa

Product	≤345 mm batten gauge with battened laps[3]	≤250 mm batten gauge with battened laps[2][3]	≤345 mm batten gauge with taped laps[3]	≤345 mm batten gauge with 3060B tape[3]
Tyvek Supro	1643	2332	-	3371
Tyvek Supro Plus	1750	-	3204	-

(1) The laps were taped using the integratedl tape.
(2) Underlays with a wind uplift resistance at a 250 mm batten gauge that meet the minimum design wind pressure of 820 Pa for Zone 1 are considered to satisfy the requirements for use at a 100 mm batten gauge in all wind zones.
(3) Mean of test results.

Supported

8.3 The products, when fully supported, have adequate resistance to wind uplift forces.

8.4 The products may be used at any batten gauge in all wind zones when laid over nominally airtight sheet sarking, for example OSB, plywood, chipboard and insulation for warm-roof design. They may also be used in applications where slates are nailed directly onto sarking boards.

8.5 Sarking boards, such as square-edged butt jointed planks, are not considered to be airtight and the underlay is treated as unsupported.

9 Strength

The product will resist the loads associated with installation of the roof.

10 Properties in relation to fire

10.1 The product will melt and shrink away from heat, but will burn in the presence of a naked flame. The product is classified in accordance with EN 13501-1 : 2007 as a Class E* material.

10.2 When the product is used unsupported, there is a risk that fire can spread if it is accidentally ignited during maintenance works, eg by a roofer's or plumber's torch. As with all types of underlay, care should be taken during building and maintenance to avoid ignition.

10.3 When the product is used in a fully-supported situation, the reaction to fire will primarily be determined by the support.

11 Maintenance

As the product is confined within a roof structure and has suitable durability (see section 12), maintenance is not required. However, any damage occurring before enclosure must repaired (see section 16).

12 Durability



The product will be virtually unaffected by the normal conditions found in a roof space and will have a life comparable with that of a traditional roof tile underlay, provided it is not exposed to sunlight for long periods (see section 13.4). Advice regarding exposure can be obtained from the Certificate holder.

Installation

13 General

13.1 TYVEK Supro Roof Tile Underlay must be installed and fixed in accordance with the Certificate holder's instructions, the provisions of this Certificate and the relevant recommendations of BS 5534 : 2014 and BS 8000-6 : 2013. Installation can be carried out under all conditions normal to roofing work.

13.2 The product is installed with the printed side uppermost and lapped to shed water out and down the slope.

13.3 Overlaps must be provided with the minimum dimensions given in Table 3. The Certificate holder's advice must be sought when using tapes for sealing overlaps.

Table 3 Minimum overlaps

Roof pitch[1]°	Horizontal lap (mm)		Vertical laps (mm)
	Not fully supported	Fully supported	
12.5 to 14	225	150	300
15 to 34	150	150	300
35+	150	150	300

(1) In all cases the minimum pitch for the slate or tile being used should be considered. Where variations occur, advice should be sought from the Certificate holder.

13.4 In closed eaves constructions, eaves guards should be used to protect the product from sunlight and to direct water into the gutter.

13.5 Hips should be covered with a 600 mm wide strip of the product.

14 Procedure

Unsupported

14.1 The product, when installed as an unsupported system, is fixed in the traditional method for roof tile underlays, ie draped between the rafters.

Fully supported

14.2 The product may be used over sarking boards of softwood.

14.3 The product is either secured to the support with counter battens at least 12 mm thick to create a drainage and vapour dispersal space(1) between the product and the tiles or, when using timber sarking, the traditional Scottish practice with the tiles or slates fixed directly into the boards.

(1) This space should be ventilated in accordance with BS 5250 : 2011 when using tight fitting roof covering.

14.4 Counterbattens, when used, are fixed with corrosion-resistant staples or galvanized clout nails as appropriate.Tiling battens are secured to the counterbattens and rafters with appropriate fixings. Alternatively, the membrane may be installed draped over counterbattens, with sufficient drape to allow drainage of liquid water under the tiling battens.

14.5 Care must be taken to minimise the risk of interstitial condensation as described in section 7.5, particularly for timber sarking which may be below the dew-point for extended periods during winter months.

15 Finishing

15.1 Detailing of abutments, verges and hips must be in accordance with the Certificate holder's instructions.

15.2 The tiling and slating must be carried out in accordance with the relevant clauses of BS 5534 : 2014, BS 8000-6 : 2013 and the tile/slate manufacturer's instruction, especially when using tightly-jointed slates or tiles.

16 Repair

Damage to the product can be repaired prior to the installation of slates or tiles by replacing the damaged areas by patching and sealing correctly. Care should be taken to ensure that the watertightness of the roof is maintained.

Technical Investigations

17 Tests

17.1 An assessment was made of data to EN 13859-1 : 2014 in relation to:

- dimensions*
- mass per unit area*
- tensile strength and elongation*
- resistance to tear*
- dimensional stability*
- flexibility at low temperature*
- resistance to water penetration*
- water vapour transmission*
- resistance to air penetration*
- resistance to artificial ageing*.

17.2 Tests were carried out to determine:

- slip resistance
- Mullen burst strength
- resistance to wind loads

in order to assess:

- safety during installation
- robustness during installation
- properties when installed.

17.3 Data from previous tests on TYVEK membrane assessments were used to evaluate:

- wet strength
- low temperature flexibility
- heat ageing
- water immersion
- UV ageing.

18 Investigations

18.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of materials used.

18.2 The condensation risk in warm roof constructions incorporating the product (specifically those containing sarking boards) was examined.

18.3 An assessment of practicability of installation was made from data gathered during previous assessments of TYVEK Supro Roof Tile Underlay.

Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

BS 5534 : 2014 *Code of practice for slating and tiling (including shingles)*

BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*

BS EN 1991-1-4 : 2005 *Eurocode 1: Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 UK National Annex to *Eurocode 1: Actions on structures — General actions — Wind actions*

EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

EN 13859-1 : 2014 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for discontinuous roofing*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

Conditions of Certification

19 Conditions

19.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

19.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

19.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

19.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

19.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal.
- any claims by the manufacturer relating to CE marking.

19.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate

08/4548

Product Sheet 1

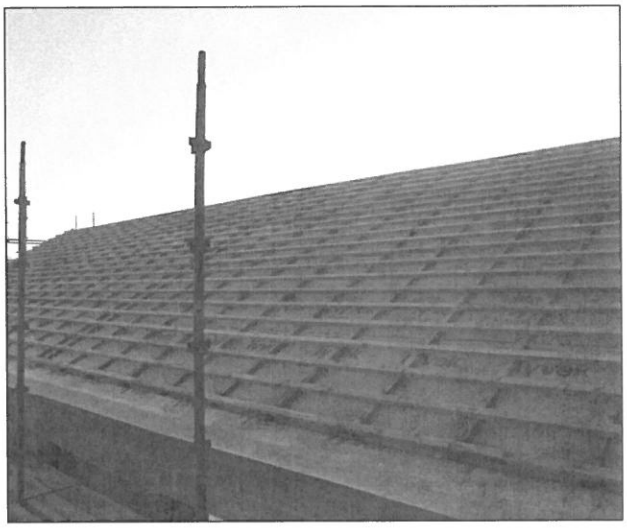
TYVEK ROOF LINING SYSTEMS

TYVEK SUPRO ROOF TILE UNDERLAY FOR USE IN WARM NON-VENTILATED ROOFS

This Agrément Certificate Product Sheet(1) relates to TYVEK(2) Supro Roof Tile Underlay for use in warm non-ventilated roofs. Use of the product in cold non-ventilated systems is covered in Product Sheet 2 and in cold ventilated systems in Product Sheet 8.

(1) Hereinafter referred to as 'Certificate'.

(2) TYVEK is a registered trademark of E.I duPont de Nemours & Co or its affiliates.



CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Weathertightness – as part of a complete roof, the product will resist the passage of water and wind-blown snow and dust into the interior of the building (see section 6).

Risk of condensation – the product is a low water vapour resistance (Type LR) underlay and can be used as part of a non-ventilated warm roof system (see section 7).

Wind loading — when installed on appropriately spaced battens and/or rafters the product's physical properties are adequate to resist the wind loads imposed on the underlay. The product will reduce the wind uplift forces acting on the roof covering (see section 8).

Strength – the product has adequate strength to resist the loads associated with the installation of the roof (see section 9).

Durability – under the normal conditions found in a roof space the product will have a service life comparable to a traditional roof tile underlay (see section 12).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Third issue: 18 March 2015
Originally certificated on 8 April 2008

John Albon
Head of Approvals — Construction products

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body — Number 113.

The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

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Regulations

In the opinion of the BBA, TYVEK Supro Roof Tile Underlay, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: C2(b) **Resistance to moisture**
Comment: The product will contribute to a roof meeting this Requirement. See section 6.1 of this Certificate.

Regulation: 7 **Materials and workmanship**
Comment: The product is acceptable. See section 12 and the *Installation* part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1) **Durability, workmanship and fitness of materials**
Comment: The product can contribute to a construction satisfying this Regulation. See section 12 and the *Installation* part of this Certificate.

Regulation: 9 **Building standards applicable to construction**
Standard: 3.10 Precipitation
Comment: The product will contribute to a roof satisfying clauses 3.10.1[(1)(2)] and 3.10.8[(1)(2)] of this Standard. See section 6.1 of this Certificate.

Standard: 7.1(a) Statement of sustainability
Comment: The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.

Regulation: 12 **Building standards applicable to conversions**
Comment: Comments made in relation to the product under Regulation 9, Standards 1 to 6 also apply to this regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)].

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23(a)(i)(iii)(b)(i) **Fitness of materials and workmanship**
Comment: The product is acceptable. See section 12 and the *Installation* part of this Certificate.

Regulation: 28(b) **Resistance to moisture and weather**
Comment: The product will contribute to a roof satisfying this Regulation. See section 6.1 of this Certificate.

Construction (Design and Management) Regulations 2007
Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 1 *Description* (1.2) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of TYVEK Supro Roof Tile Underlay, provided it is installed, used and maintained in accordance with this Certificate, in relation to NHBC Standards, Chapter 7.2 *Pitched roofs*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13859-1 : 2014. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 TYVEK Supro Roof Tile Underlay is a vapour permeable, high-density polyethylene (HDPE) membrane backed with a polypropylene scrim. The product is available with or without an integral adhesive tape (the product incorporating adhesive tape is known as TYVEK Supro Plus).

1.2 The product has the following nominal characteristics:

Thickness (mm)	0.45
Mass per unit area* ($g \cdot m^{-2}$)	145
Roll length (m)	50
Roll width (m)	1.0, 1.5
Water vapour transmission – s_d* (m)	0.025
Watertightness*	
unaged	Class W1
aged(1)	Class W1
Tensile strength* ($N \cdot 50\ mm^{-1}$)	
longitudinal	300
transverse	245
Nail tear* (N)	
longitudinal	190
transverse	205
Colour	White underside, grey top side and red logo.

(1) Aged in accordance with EN 13859-1 : 2014, Annex C.

1.3 Air and Vapour Control Layers (AVCLs) are recoemmended for use in conjunction with this product (see Product Sheets 3 and 4 of this Certificate).

1.4 Tyvek 2060B Tape is a single-sided tape for use at joints.

2 Manufacture

2.1 The product is manufactured by spinning strands of HDPE and bonding them with heat and pressure to form a flexible sheet. A polypropylene scrim is glued to one side.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control being operated by the manufacturer are being maintained.

2.3 The management system of the Certificate holder has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by DQS GmbH (Certificate 463950 QM08).

3 Delivery and site handling

3.1 Rolls of membrane are delivered to site in packages that carry a label bearing the marketing company's name, the grade identification and the BBA logo including the number of this Certificate.

3.2 The rolls should be stored flat on their sides, on a smooth, clean, dry surface, under cover and protected from sunlight.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on TYVEK Supro Roof Tile Underlay.

Design Considerations

4 Use

The product is satisfactory for use as a fully-supported or unsupported (draped) underlay over counterbatten specifications in tiled and slated pitched roofs constructed in accordance with the relevant clauses of BS 5534 : 2014.

5 Practicability of installation

Installation must be carried out by slaters/tilers experienced with this type of product.

6 Weathertightness



6.1 The product is Class W1* in accordance with BS EN 13859-1 : 2014 and will resist the passage of water, wind-blown snow and dust into the interior of a building under all conditions to be found in a roof constructed in accordance with the relevant clauses of BS 5534 : 2014.

6.2 The product resists penetration of liquid water and consequently may be used as temporary waterproofing prior to the installation of slates or tiles. The period of such use should, however, be kept to a minimum. Further information is given in BBA Information Bulletin 2 *Permeable Roof Tile Underlay – Guide to Good Site Practice.*

7 Risk of condensation

7.1 For design purposes, the product's water vapour resistance may be taken as not more than 0.25 $MN \cdot s \cdot g^{-1}$ and for roofs designed in accordance with BS 5534 : 2014 or BS 5250 : 2011, Annex H, it may be regarded as a Type LR membrane.

7.2 In common with all roofs, care must be taken in the overall design and installation to minimise the risk of water vapour coming into contact with cold parts of the construction. Factors to be considered and minimised include moisture diffusion through the ceiling, infiltration through unsealed openings/penetrations in the ceiling and services evaporating or venting moisture into cold spaces.

7.3 The risk of condensation is highest in new-build construction during the first heating period, where there is high moisture loading owing to wet trades, such as in-situ cast concrete slabs or plaster. The risk of condensation diminishes as the building dries out. See BBA Information Bulletin No. 1 *Roof Tile Underlays in Cold Roofs during the Drying-out Period.*

Ceiling and insulation inclined (warm roof)

7.4 For roofs with an insulated inclined ceiling, ventilation above or below the underlay will not be required provided that the passage of moisture by diffusion and by convection is controlled, eg by a vapour control layer (eg DuPont AVCL) or a continuous envelope of insulation with a high vapour resistance and with sealed joints.

Ceiling and insulation partially inclined (warm roof and cold roof)

7.5 Where an insulated ceiling spans only part of the roof line, resulting cold roof spaces should be installed in accordance with Product Sheet 2 of this Certificate.

8 Wind loading

8.1 Project design wind speeds for the roof in which the product is to be installed should be determined, and wind uplift forces calculated in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex.

Unsupported

8.2 The product is satisfactory for use in unsupported systems, in the geographical wind zones given in Table 1, where a well-sealed ceiling is present and the roof has a ridge height ≤15m, a pitch between 12.5° and 75°, and a site altitude ≤100 m, and where topography is not significant. For all other cases, the required uplift resistance should be determined using BS 5534 : 2014 and the Certificate holder's declared wind uplift resistances in Table 2.

Table 1 Zones of applicability of Tyvek Supro Roof Tile Underlay according to BS 5534 : 2014, clause A.8 with battened laps.and taped laps

Product	≤345 mm batten gauge with battened lap	≤250 mm batten gauge with battened lap	≤345 mm batten gauge with taped lap(1)	≤345 mm batten gauge with 2060B tape lap
Tyvek Supro	Zones 1 to 5	Zones 1 to 5	-	Zones 1 to 5
Tyvek Supro Plus(1)	Zones 1 to 5	Zones 1 to 5	Zones 1 to 5	-

(1) The laps were taped using the integrated tape.

Table 2 Declared wind uplift resistance (Pa)

Product	≤345 mm batten gauge with battened laps[3]	≤250 mm batten gauge with battened laps[2][3]	≤345 mm batten gauge with taped laps[3]	≤345 mm batten gauge with 2060B tape lap
Tyvek Supro	1643	2332	-	3371
Tyvek Supro Plus[1]	1750	-	3204	-

(1) The laps were taped using the integrated tape.
(2) Underlays with a wind uplift resistance at a 250 mm batten gauge that meet the minimum design wind pressure of 820 Pa for Zone 1 are considered to satisfy the requirements for use at a 100 mm batten gauge in all wind zones.
(3) Mean of test results.

Supported

8.3 The products, when fully supported, have adequate resistance to wind uplift forces.

8.4 The products may be used at any batten gauge in all wind zones when laid over nominally airtight sheet sarking, for example OSB, plywood, chipboard and insulation for warm-roof design. They may also be used in applications where slates are nailed directly onto sarking boards.

8.5 Sarking boards, such as square-edged butt jointed planks, are not considered to be airtight and the underlay is treated as unsupported.

9 Strength

The product will resist the loads associated with installation of the roof.

10 Properties in relation to fire

10.1 The product will melt and shrink away from heat, but will burn in the presence of a naked flame. The product is classified in accordance with EN 13501-1 : 2007 as a Class E* material.

10.2 When the product is used unsupported, there is a risk that fire can spread if it is accidentally ignited during maintenance works, eg by a roofer's or plumber's torch. As with all types of underlay, care should be taken during building and maintenance to avoid ignition.

10.3 When the product is used in a fully-supported situation, the reaction to fire will primarily be determined by the support.

11 Maintenance

As the product is confined within a roof structure and has suitable durability (see section 12), maintenance is not required. However, any damage occurring before enclosure must be repaired (see section 16).

12 Durability



The product will be virtually unaffected by the normal conditions found in a roof space and will have a life comparable with that of a traditional roof tile underlay, provided it is not exposed to sunlight for long periods (see section 13.4). Advice regarding exposure can be obtained from the Certificate holder.

Installation

13 General

13.1 TYVEK Supro Roof Tile Underlay must be installed and fixed in accordance with the Certificate holder's instructions, the provisions of this Certificate and the relevant recommendations of BS 5534 : 2014 and BS 8000-6 : 2013. Installation can be carried out under all conditions normal to roofing work.

13.2 The product is installed with the printed side uppermost and lapped to shed water out and down the slope.

13.3 Overlaps must be provided with the minimum dimensions given in Table 3. The Certificate holder's advice must be sought when using tapes for sealing overlaps.

Table 3 Minimum overlaps

Roof pitch°[1]	Horizontal lap (mm)		Vertical laps (mm)
	Not fully supported	Fully supported	
12.5 to 14	225	150	300
15 to 34	150	150	300
35+	150	150	300

(1) In all cases the minimum pitch for the slate or tile being used should be considered. Where variations occur, advice should be sought from the Certificate holder.

13.4 Where possible, eaves guards should be used to protect the product from sunlight and to direct water into the gutter.

14 Procedure

Unsupported

14.1 The product, when installed as an unsupported system, is fixed in the traditional method for roof tile underlays, ie draped between the rafters.

Fully supported

14.2 The product may be used over sarking boards of softwood either with continuous insulation or insulation placed between the rafters.

14.3 The product is either secured to the support with counterbattens at least 12 mm thick to create a drainage and vapour dispersal space(1) between the product and the tiles or, when using timber sarking, the traditional Scottish practice with the tiles or slates fixed directly into the boards.

(1) This space should be ventilated in accordance with BS 5250 : 2011 when using a tight fitting roof covering.

14.4 Counterbattens, when used, are fixed with corrosion-resistant staples or galvanized clout nails as appropriate.Tiling battens are secured to the counterbattens and rafters with appropriate fixings. Alternatively, the membrane may be installed draped over counterbattens, with sufficient drape to allow drainage of liquid water under the tiling battens.

14.5 Care must be taken to minimise the risk of interstitial condensation as described in section 7.5, particularly for timber sarking which may be below the dew-point for extended periods during winter months.

15 Finishing

15.1 Detailing of abutments, verges and hips must be in accordance with the Certificate holder's instructions.

15.2 The tiling and slating must be carried out in accordance with the relevant clauses of BS 5534 : 2014, BS 8000-6 : 2013 and the tile/slate manufacturer's instruction, especially when using tightly-jointed slates or tiles.

16 Repair

Damage to the product can be repaired prior to the installation of slates or tiles by replacing the damaged areas by patching and sealing correctly. Care should be taken to ensure that the watertightness of the roof is maintained.

Technical Investigations

17 Tests

17.1 An assessment was made of data to EN 13859-1 : 2014 in relation to:

- dimensions*
- mass per unit area*
- tensile strength and elongation*
- resistance to tear*
- dimensional stability*
- flexibility at low temperature*
- resistance to water penetration*
- water vapour transmission*
- resistance to air penetration*
- resistance to artificial ageing*.

17.2 Tests were carried out to determine:

- slip resistance
- Mullen burst strength
- resistance to wind loads

in order to assess:

- safety during installation
- robustness during installation
- properties when installed.

17.3 Data from previous tests on TYVEK membrane assessments were used to evaluate:

- wet strength
- low temperature flexibility
- heat ageing
- water immersion
- UV ageing.

18 Investigations

18.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of materials used.

18.2 The condensation risk in warm roof constructions incorporating the product (specifically those containing sarking boards) was examined.

18.3 An assessment of practicability of installation was made from data gathered during previous assessments of TYVEK Supro Roof Tile Underlay.

Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

BS 5534 : 2014 *Code of practice for slating and tiling (including shingles)*

BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*

BS EN 1991-1-4 : 2005 *Eurocode 1: Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 UK National Annex to *Eurocode 1: Actions on structures — General actions — Wind actions*

EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

EN 13859-1 : 2010 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for discontinuous roofing*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

Conditions of Certification

19 Conditions

19.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

19.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

19.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

19.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

19.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal.
- any claims by the manufacturer relating to CE marking.

19.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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6.0 Telling Lime Product Ltd – Lime Mortar technical Specification

A5 NBS UNILIT MORTAR SPECIFICATION

Unilit 35M.
Mortar: As section Z21.
Mix: Unilit 35M premixed natural hydraulic lime mortar.
Mix proportions: Premixed – 1.5mm maximum granulation
Manufacturer: Telling Lime Limited, Booths Hall, Booths Park, Chelford Road, Knutsford, Cheshire, England WA16 8GS Tel: 01565 756110. Fax: 01565 872999. Email: info@tellinglime.co.uk Web: www.tellinglime.co.uk
Product reference: Unilit 35M hydraulic lime mortar.
Preparation: The substrate must be clean and free of all traces of oil and grease. When the substrate has been treated with an impregnating product (silicones or similar) it is recommended to consult the supplier or manufacturer.
Application: Mix Unilit 35M with clean water - 4.5 to 5.25 litres of water to 30 kg of powder depending on the temperature and substrate. Mix manually or mechanically for 3 to 4 minutes. Apply by trowel to the desired bed depth. Avoid overworking the face of the mortar and do not steel trowel finish, or strike the face of the mortar with a pointing iron, which would close off the pore structure. Allow approximately 1-2 days before brushing the mortar down with a stiff bristle brush to reveal the aggregate and give a weathered finish.
Unilit 35M can be applied to damp but not saturated backgrounds, dampen down excessively dry backgrounds or masonry prior to application. Do not use mortar if the substrate has been saturated by rainfall, as this will affect the bond and weatherproofing of the mortar. Do not apply in temperatures below 5°C or above 40°C. The mortar remains workable for 2 hours and dries in 24-48 hours. Protect from frost for 48 to 72 hours.

UNILIT 35N - 35M (TD13 N/M)
traditional base and bedding mortar

OUTLINE SPECIFICATION
flooring
plastering
rendering
roofing
masonry and pointing

PRODUCT DESCRIPTION

UNILIT 35 is a traditional, dry premixed mineral base and bedding mortar based on natural hydraulic lime as the binder and appropriate well-graded aggregates.
UNILIT 35 is characterised by a slow but strong bonding, a high plasticity, a low content of soluble salts and an excellent water vapour permeability.
The natural hydraulic lime mortar is inherently stable and designed to reduce problems of micro cracks along with premature drying out.
The natural hydraulic lime binder, used to prepare the preblend, conforms to the European Standard EN 495-1, NHL 5 for building limes. The mortar **UNILIT 35** conforms to the European Standard UNI EN 998-1.

APPLICATION AREA

UNILIT 35 is a traditional natural hydraulic lime mortar, which has been applied for centuries in our cultural built heritage. **UNILIT 35** is, therefore, especially suited for all kinds of applications applying traditional building materials both in new construction, renovation as well as restauration. **UNILIT 35** can be applied as a base coat for both plastering and rendering, or as a bedding and/or pointing mortar in the case of traditional masonry constructions.
Thanks to its natural pore structure and low content of soluble salts, **UNILIT 35** regulates the moisture content within the masonry, eliminating practically all known problems related to humidity stains, frost, salt damage and lime bloom, providing that excessive damp and/or salt problems are not prevelant, and that the substrate is stable.

APPLICATION

Prior to application, the substrate must be cleaned and freed of all traces of oil and grease. The substrate benefits from being slightly dampened. Saturation of the substrate is not recommended, as this will influence negatively impact upon the bond of the hydraulic lime mortar to the substrate as well as the aesthetic appearence.

The mortar is mixed with clean water at a ratio of 5 to 6 litres of water to a bag of 30 kg ready mixed natural hydraulic lime powder. Mixing is undertaken with a slow speed electric paddle for a period of 3 to 4 minutes. A creamy workable mortar is obtained, which has approximately 2 hours of open time.
Depending on the application the mortar is applied either manually or by mechanical means at the required thickness. When used as a base coat and/or for (re)pointing at a nominal layer thickness or joint width of 8 to 10 mm, respectively, the finer **UNILIT 35M** is applied. Base coats and/or masonry joints with higher thicknesses or widths up to 15 to 20 mm, respectively, require the application of the coarser **UNILIT 35N**. A drying period of 1 to 2 days must be respected.

The mortars must not be applied at temperatures below +5°C nor when a risk of frost exists. They should never be applied on to a frozen surface or in the case of thick fog. In hot, windy and dry conditions measures should be taken to prevent accelerated drying out of the freshly applied mortars. Applied mortars must be protected from frost and direct sunlight for 48 to 72 hours after their application.

TECHNICAL DATA

Granular sizing	
UNILIT 35N	max. 4.0 mm
UNILIT 35M	max. 1.4 mm
Bulk density	1750 - 1850 kg/m³
Compressive strength (EN 1015-11)	
	class CS III (3.5 N/mm² ≤ f_c ≤ 7.5 N/mm²)
Adhesive strength (EN 1015-12)	> 0.2 N/mm²
Modulus of elasticity	ca. 7000 - 8000 N/mm²
Vapour diffusion resistance (μ)	12
pH	
fresh mortar paste	> 10.5
hardened mortar	~ 7
Fire resistance classification (EN 13501)	A1
Proportion water/preblend	0.18 l/kg
Mixing time	3 to 4 minutes
Consumption	15 - 18 kg/m²/cm
Maximum layer thickness	
UNILIT 35N	20 mm
UNILIT 35M	10 mm
Packing	powder in bags of 30 kg
Colour	beige

REMARKS

In case of doubt regarding the substrate (e.g. treatment with an impregnating product such as silicones or comparable), consult our technical service department.
The maximum storage time is 6 months, if stored in the original, hermetically closed packing in a suitable environment. The material must be stored dry and frost free above ground. Protect the material from heat sources.

This sheet cancel and replace all previous sheets.
Our advice and information are given in good faith and depending on the latest developments of our products. We guarantee the consistent quality of our products, but do not accept any liability concerning their application. In any case, we do recommend to consider the type of substrate and the climatic conditions before applying our products or to apply a test surface in order to analyse the suitability of the product for the given substrate.

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7.0 Planning application approval GLY/P/2013/0113 and condition discharge approval.

In pursuance of its powers under the Acts an Orders referred to below, the County Borough Council as Local Planning Authority, hereby determines your application in accordance with the particulars and plans comprising the application

wrexham
COUNTY BOROUGH COUNCIL
CYNGOR BWRDEISTREF SIROL
wrecsam

Applicant	MR & MRS STUART CUTTER	**Code Number**	GLY P/2013/0113
Agent	ADS ARCHITECTURAL DESIGN SERVICES MR ANDREW STOREY LITTLE CLOY FARM CLOY LANE OVERTON ON DEE WREXHAM LL13 0HR	**Date Received**	14/02/2013
		Decision Date	25/07/2013

Town and Country Planning Act, 1990

Location of application

LLANGWRYD UCHAF, LLWYNMAWR, LLANGOLLEN, WREXHAM, LL20 7BD

Description of application

CONVERSION OF FORMER BARN INTO DWELLING, CONSTRUCTION OF DOUBLE GARAGE AND STORE AND ASSOCIATED EXTERNAL WORKS

In reaching this decision the Council has had regard to the relevant policies in the Wrexham Unitary Development Plan which are as follows:-

EC9	Listed buildings of special architectural or historic interest
GDP1	Development objectives
H3	Residential conversion of buildings outside settlement limits
PS2	Development and the environment

Particulars of decision that permission be GRANTED
Subject to the following:-

Condition(s)

1. The development hereby permitted shall be commenced before the expiry of five years from the date of this permission.
2. Prior to their use on the development samples of all external facing materials shall be submitted to and approved in writing by the Local Planning Authority. The development shall only be carried out in strict accordance with such details as are approved.
3. The development shall be carried out in strict accordance with the

Applicant	MR & MRS STUART CUTTER	**Code Number**	GLY P/2013/0113
Agent	ADS ARCHITECTURAL DESIGN SERVICES MR ANDREW STOREY LITTLE CLOY FARM CLOY LANE OVERTON ON DEE WREXHAM LL13 0HR	**Date Received**	14/02/2013
		Decision Date	25/07/2013

recommendations contained within the Protected Species Report as carried out by Jane Atkinson and dated August 2012 approved as part of this planning application. The mitigation and compensation measures hereby approved shall be fully implemented prior to the first use of the development.

4. All works in relation to the implementation of this permission, including deliveries to and / or leaving the site, shall be undertaken only between the hours of 7.30 and 18.00 Monday to Friday, and 08.00 to 14.00 on a Saturday, and at no time on a Sunday or a Bank Holiday.

5. There shall be no gates or other means of enclosure across the vehicular access point within 5 metres of the highway boundary.

6. Prior to the first use of the development hereby approved the vehicular access shall provide visibility splays of 2.4 metres x 17 metres in both directions measured to the centreline of the adjoining highway. Within these splays there shall be no obstruction in excess of 1 metre in height above the level of the adjoining highway. The splays shall thereafter be permanently retained clear of any such obstruction to visibility.

7. No part of the development shall commence until full details of the foul and surface water drainage have been submitted to and approved by the Local Planning Authority. The development shall only be carried out in strict accordance with the approved details, unless otherwise agreed in writing with the Local Planning Authority and prior to the first occupation of the dwelling hereby approved.

8. No works shall commence until an appropriate photographic survey of the existing buildings on the site has been carried out in accordance with details to be submitted to and approved in writing by the Local Planning Authority. The resulting digital photographs should be forwarded on a CD or DVD to the Local Planning Authority, and the Development Control Archaeologist at Clwyd-Powys Archaeological Trust, 41 Broad Street, Welshpool, Powys, SY21 7RR (Tele no. 01938 553670).

9. Details of boundary means of enclosure shall be submitted to and approved, in writing, by the Local Planning Authority. Works shall only be carried out strictly in accordance with the details as approved and retained thereafter unless otherwise agreed, in writing.

Reason(s)

1. To comply with Section 91(3) of the Town and Country Planning Act, 1990.

Applicant	MR & MRS STUART CUTTER	**Code Number**	GLY P/2013/0113
Agent	ADS ARCHITECTURAL DESIGN SERVICES MR ANDREW STOREY LITTLE CLOY FARM CLOY LANE OVERTON ON DEE WREXHAM LL13 0HR	**Date Received**	14/02/2013
		Decision Date	25/07/2013

2. To ensure the works are sympathetic to the character of the building.
3. To protect named species / habitats / biodiversity which would otherwise be damaged / lost by the development hereby permitted.
4. To protect the amenities of the occupiers of nearby properties.
5. In the interest of the free and safe movement of traffic on the adjacent highway and to ensure the formation of a safe and satisfactory access.
6. To ensure that adequate visibility is provided at the proposed point of access to the highway.
7. To ensure the development does not exacerbate any flooding in the area or cause pollution to the local water environment.
8. To provide for a record of a building or buildings of local architectural or historic interest
9. To ensure the works are sympathetic to the character of the building.

Note(s) to applicant

The applicant is advised that compliance with Condition No. 4 does not provide an exemption from the statutory noise nuisance provisions of the Environmental Protection Act 1990. Any complaints received relating to noise from the development during the permitted hours may still be investigated using the Council's Standardised Procedure for Dealing with Noise Nuisance Complaints and legal action may be taken where appropriate.

The applicant is advised that the Council has the option to control construction noise by serving a Control of Pollution Act 1974, Section 60, Notice where deemed necessary, and failure to comply with such a Notice can result in prosecution. For further information and advice regarding construction noise please contact the Council's Housing and Public Protection Department on 01978 315300.

Burning of waste generated from construction activities is not considered to be an appropriate method of disposal and action may be taken as follows:
- Under the Environmental Protection Act 1990 anyone found disposing of construction site waste by burning is likely to be in breach of their duty of care with regard to waste disposal;
- Under the same Act an abatement notice may be served where smoke is judged to be causing a nuisance to neighbouring properties. Failure to comply with the requirements of the notice can result in prosecution;

Applicant	MR & MRS STUART CUTTER	**Code Number**	GLY P/2013/0113
Agent	ADS ARCHITECTURAL DESIGN SERVICES MR ANDREW STOREY LITTLE CLOY FARM CLOY LANE OVERTON ON DEE WREXHAM LL13 0HR	**Date Received**	14/02/2013
		Decision Date	25/07/2013

- Under the Clean Air Act 1993 it is an offence for a commercial activity to burn anything that gives rise to dark smoke.
To prevent offences under the above named Acts there should be no bonfires on the site, to include the prohibition of the burning of cleared vegetation. The applicant should contact the Council's Housing and Public Protection Department on 01978 315300 for further advice and information.

The Applicant is advised that under the Environmental Protection Act 1990, dust from construction and/or demolition activities can be judged to be causing a statutory nuisance to neighbouring properties. A legal notice can be served requiring that any dust nuisance is abated and failure to comply with the requirements of the notice can result in prosecution. The applicant should contact the Council's Housing and Public Protection Department on 01978 315300 for further advice and information.

If evidence of storage/spillage of agro-chemicals are found in or around the farm buildings/outbuildings/area, then it would be prudent to investigate the potential for residual contamination. The applicant is advised to contact the Housing and Public Protection Department of the Council on 01978 315733 for further guidance.

Your attention is drawn to the Standard Advice Note from the Environment Agency attached to this decision.

Officer Appointed for this purpose
Head of Community Wellbeing and Development

Refer to the Statement of Applicant's Rights and General Information enclosed or refer to the following link:-

http://www.wrexham.gov.uk/english/planning_portal/publications/info_sheets.htm

In pursuance of its powers under the Acts and Orders referred to below, the County Borough Council as Local Planning Authority, hereby determines your application in accordance with the particulars and plans comprising the application

wrexham
COUNTY BOROUGH COUNCIL
CYNGOR BWRDEISTREF SIROL
wrecsam

Applicant	MR TIMOTHY MADDOCK	**Code No**	GLY P/2018/0163
Agent	MR TIMOTHY MADDOCK ROSE COTTAGE BICKLEY MOSS NR MALPAS CHESHIRE SY13 4JG	**Date Received**	28/03/2018
		Decision Date	12/03/2018

TOWN AND COUNTRY PLANNING ACT, 1990

Location of application

LLANGWRYD UCHAF, LLWYNMAWR, LLANGOLLEN, WREXHAM, LL20 7BD

Description of application

APPLICATION FOR APPROVAL OF DETAILS RESERVED BY CONDITIONS IMPOSED UNDER PLANNING PERMISSION P/2013/0113 :-
CONDITION 7 - SUBMISSION OF DETAILS OF THE FOUL AND SURFACE WATER DRAINAGE
CONDITION 8 - SUBMISSION OF DETAILS OF AN APPROPRIATE PHOTOGRAPHIC SURVEY

DECISION

The details submitted in respect of conditions 07 and 08 are approved. Condition 08 is discharged.

Officer Appointed for this purpose
Head of Environment and Planning

Refer to Statement of Applicant's Rights and General Information on our planning web site at :-
http://www.wrexham.gov.uk/english/planning_portal/publications/info_sheets.htm

8.0 Listed Planning application approval GLY/P/2013/0114 and condition discharge approvals

In pursuance of its powers under the Acts an Orders referred to below, the County Borough Council as Local Planning Authority, hereby determines your application in accordance with the particulars and plans comprising the application

wrexham
COUNTY BOROUGH COUNCIL
CYNGOR BWRDEISTREF SIROL
wrecsam

Applicant	MR & MRS STUART CUTTER	**Code Number**	GLY P/2013/0114
Agent	ADS:ARCHITECTURAL DESIGN SERVICES MR ANDREW STOREY LITTLE CLOY FARM CLOY LANE OVERTON ON DEE WREXHAM LL13 0HR	**Date Received**	14/02/2013
		Decision Date	25/07/2013

Town and Country Planning Act, 1990

Location of application

LLANGWRYD UCHAF, LLWYNMAWR, LLANGOLLEN, WREXHAM, LL20 7BD

Description of application

LISTED BUILDING CONSENT FOR CONVERSION OF BARN TO DWELLING, CONSTRUCTION OF DOUBLE GARAGE AND STORE, ASSOCIATED EXTERNAL WORKS

In reaching this decision the Council has had regard to the relevant policies in the Wrexham Unitary Development Plan which are as follows:-

EC9	Listed buildings of special architectural or historic interest
GDP1	Development objectives
H3	Residential conversion of buildings outside settlement limits
PS2	Development and the environment

Particulars of decision that permission be GRANTED
Subject to the following:-

Condition(s)

1. The works hereby granted consent shall be commenced before the expiry of five years from the date of this consent.
2. Prior to their use on the development samples of all external facing materials shall be submitted to and approved in writing by the Local Planning Authority. The development shall only be carried out in strict accordance with such details as are approved.

Applicant	MR & MRS STUART CUTTER	**Code Number**	GLY P/2013/0114
Agent	ADS:ARCHITECTURAL DESIGN SERVICES MR ANDREW STOREY LITTLE CLOY FARM CLOY LANE OVERTON ON DEE WREXHAM LL13 0HR	**Date Received**	14/02/2013
		Decision Date	25/07/2013

3. Details and locations of all extractors, vents and flues shall be submitted to and approved in writing by the Local Planning Authority prior to their installation on the building. Works shall only be carried out in strict accordance with the details as approved.
4. All works shall be carried out in strict accordance with the Conservation Method Statement (amended 02/05/13) and Design and Access Statement (amended 02/05/13) approved as part of this application.
5. Details of the mix and finish and extent of repointing shall be submitted to and approved by the Local Planning Authority prior to works commencing on site. Works shall only be carried out in strict accordance with such details as are approved.
6. On exposure of the roof timbers, a site meeting between the Council's Conservation Officer and the contractor shall take place to determine the extent of repair and replacement of the roof timbers. The applicant / contractor shall give the Council's Conservation Officer no less than 5 working days notice in writing of this meeting. The works shall only be carried out in strict accordance with such details as are approved.
7. Prior to commencement of the works hereby approved a site meeting between the Council's Conservation Officer and the contractor shall take place in order to determine the extent and sequence for construction works. The applicant's / contractor shall give the Council's Conservation Officer no less than 5 working days notice in writing of this meeting. Works shall only be carried out in strict accordance with such details as are approved.

Reason(s)

1. To comply with Section 18 of the Planning (Listed Building and Conservation Areas) Act 1990.
2. To ensure a satisfactory standard of appearance of the development in the interests of the visual amenities of the area.
3. To ensure that the character of the building is not compromised.
4. To protect the integrity of the Listed Building.
5. To protect the integrity of the Listed Building.
6. To protect the integrity of the Listed Building.
7. To protect the integrity of the Listed Building.

Applicant	MR & MRS STUART CUTTER	**Code Number**	GLY P/2013/0114
Agent	ADS:ARCHITECTURAL DESIGN SERVICES MR ANDREW STOREY LITTLE CLOY FARM CLOY LANE OVERTON ON DEE WREXHAM LL13 0HR	**Date Received**	14/02/2013
		Decision Date	25/07/2013

Officer Appointed for this purpose
Head of Community Wellbeing and Development

Refer to the Statement of Applicant's Rights and General Information enclosed or refer to the following link:-

http://www.wrexham.gov.uk/english/planning_portal/publications/info_sheets.htm

In pursuance of its powers under the Acts and Orders referred to below, the County Borough Council as Local Planning Authority, hereby determines your application in accordance with the particulars and plans comprising the application

wrexham
COUNTY BOROUGH COUNCIL
CYNGOR BWRDEISTREF SIROL
wrecsam

Applicant	MR TIMOTHY MADDOCK	**Code No**	GLY P/2018/0164
Agent	MR TIMOTHY MADDOCK ROSE COTTAGE BICKLEY MOSS NR MALPAS CHESHIRE SY13 4JG	**Date Received**	28/02/2018
		Decision Date	04/04/2018

TOWN AND COUNTRY PLANNING ACT, 1990

Location of application

LLANGWRYD UCHAF, LLWYNMAWR, LLANGOLLEN, WREXHAM, LL20 7BD

Description of application

APPLICATION FOR APPROVAL OF DETAILS RESERVED BY CONDITIONS IMPOSED UNDER LISTED BUILDING CONSENT P/2013/0114 :-
CONDITION 5 - SUBMISSION OF DETAILS OF THE MIX AND FINISH AND EXTENT OF REPOINTING

DECISION

The details submitted in respect of condition 05 are approved.

Officer Appointed for this purpose
Head of Environment and Planning

Refer to Statement of Applicant's Rights and General Information on our planning web site at:-
http://www.wrexham.gov.uk/english/planning_portal/publications/info_sheets.htm