

**LAURENCE CONROY & ASSOCIATES**  
**CONSULTING ENGINEERS Ltd.**

Chartered Engineer, MIEI

Killimor, Ballinasloe, Co. Galway, Ireland

CIVIL - PLANNING - CONSTRUCTION - SURVEYING



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Planning Officer,  
Planning and Sustainable Development Section,  
Galway County Council,  
Aras an Chontae,  
Prospect Hill,  
Galway

*Our Ref. : JC/24088*

**RE: STRUCTURAL EVALUATION AND SPECIFICATION FOR**  
**REDEVELOPMENT OF EXISTING PROPERTY**

**APPLICANT: JASON COLLINS**

**SITE ADDRESS: LURGAN, LOUGHREA, CO. GALWAY**

A chara,

I wish to confirm that I have been retained by the applicant to carry out an inspection of the property described here under. I am principal of the firm of Laurence Conroy & Associates Engineers Ltd and hold professional indemnity insurance to the value of €1m. I made a visual inspection of the premises on the **13 August 2025 and 02 October 2025** and I wish to comment on the various elements of structure as follows:

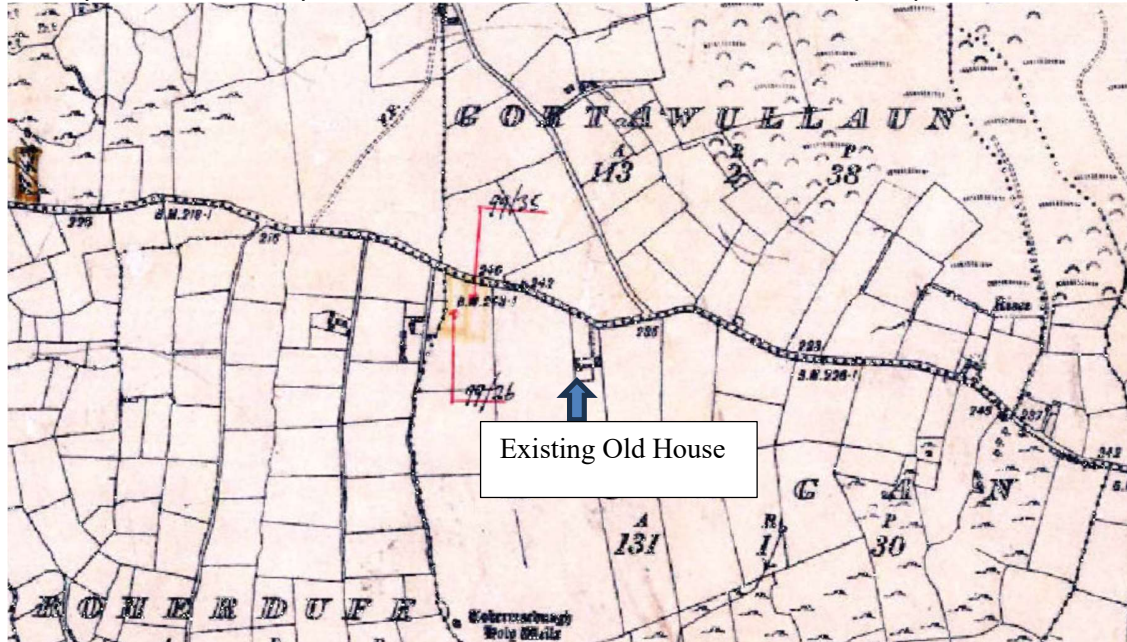
## **DESCRIPTION OF PROPERTY:**

Derelict cottage in a substantial state of disrepair. I estimate that the property was constructed in the early 1900's and was occupied at the time of the 1911 census. The site boundaries are defined. The property is uninhabitable, there has been recent damage to the West gable, and the house has been used in the recent past for the storage of farm machinery. The house was occupied until the mid-seventies.



## **STRUCTURAL CONDITION OF PROPERTY:**

The property was previously used as a thatched cottage, and there was a first floor added with slate finish and Red brick chimney at a later date. The house is a standalone farm house with driveway, as evidenced by reference to the historical ordnance survey map for the area below.



The property ceased to be occupied in the late seventies. It was then decided to use the building for agricultural storage purposes as it was beside Existing hayshed. The house roof and gable was only recently damaged in the last few years and is prone to storm damage.

Following examination of the structure, it is my opinion that the original structure can be brought back into use and utilized to form a dwelling. This project will be painstaking and require a lot of manual labour to protect the structure, but same can be restored with diligence.

**Foundations:** There are no obvious structural defects attributable to a foundation defect. The property does not have concrete foundations. The foundations were formed by the placing of large stone slabs, as was common at the time of construction. There is no DPM course present. There is no evidence of any structural subsidence. The existing walls can be underpinned where there are any foundation deficiencies.

**Superstructure:** There is no evidence of structural subsidence and the main structure remains solid and intact. The aforementioned walls and roof which were added on have acted as protection for the main structure. The existing stone walls are 3.60m high at wall plate and 0.5m thick.

As already mentioned, the stone wall which formed the western gable of the house was damaged and said stone is on the ground, which also affected the roof. The walls do not have any defined cavity or insulation properties. The 0.5m thick stone wall is constructed and bedded in lime mortar. The lintels over the doors and windows were timber and will have to be replaced with concrete lintels. In general there are no significant vertical cracks in the stone walls of the old house.

**Floors:** The internal ground floors are constructed from stone slabs and are damaged beyond repair, but their replacement is a fundamental repair and not necessary in structural terms.

**First Floors:** The first floor joists are in decay and woodworm present, so their replacement is fundamental and specification to comply with Building Regulations. The existing stairs in decay will be removed and relocated into new extension design.

**Roof:** As outlined above, the original roof was replaced with a raised stone wall over existing stone, timber supports and natural slates. The roof is structurally weak due to part of the west gable wall missing. There is substantial portion of roof damage at the West gable location, but the main roof and Bangor slates are still keeping the elements out. The roof will require total replacement and safe disposal of all materials. It maybe possible to use some of the old slates to front elevation on refurbish.

**Windows & Doors:** Window and door opes are totally decayed and replacement of similar type windows in keeping with the house is planned.

**Sanitary Facilities:** Currently Non-existent, but it spears a WC might have existed in small projection to the front of the house.

## **RESTORATION OF OLD HOUSE:**

### **Works to be carried out on Old House:**

It is proposed to restore the old house and to build a separate extension onto the rear & side of same. It is my opinion that such works are structurally possible and that the existing structure can be returned to use as a habitable structure. The proposed extension will be constructed to Current Building Regulations. Restoration work is to be carried out in the following phases:

- a) Forming of entrances to site, securing the site and safety requirements.
- b) Refurbishment of structure
- c) Sub Structure & Foundations
- d) Super Structure
- e) Roofing
- f) Internal fit-out & completion
- g) Landscaping & finishes:

## **SPECIFICATION:**

### **1 . SUB-STRUCTURE (REFURBISHMENT)**

#### **EXCAVATIONS, GROUNDWORKS & FOUNDATIONS:**

*All hardcore material is to be certified to comply with SR: 21:2004 & A1:2007, to be free from Pyrite. All certs are to be emailed to [REDACTED].*

*3 No. concrete Cube Tests must be undertaken at 7/14/28 day strength until 30N strength has been achieved. Construction cannot commence until it has been demonstrated that 30N strength has been achieved. All test results are to be emailed to [REDACTED]*

*All CE/NSAI/AB certificates are to be emailed to [REDACTED] for all materials used, including radon barriers, sumps and DPC/DPM courses.*

- Deep excavations are to be timbered in the interests of safety.
- Excavations under the location of proposed foundations are to be cleared from any vegetation, topsoil, loose clay, rubble and non-compacted material.
- Large rock outcrop / soft strata is to be dealt with in accordance with the structural engineer's requirements. All rock is to be removed. All soft-pockets are to be excavated.
- Rubble from demolished concrete walls is not suitable as fill material under the foundations and must be removed.

- Existing floors and floor screeds are to be carefully removed. The rubble stone walls that are to remain are to be protected at all times.
- Excavation adjacent to existing walls is to be undertaken in a careful manner. Internal excavation should take place first. The existing floor slab to be removed should not undermine the foundations of the rubble walls. Where no foundation is present, excavation is to be undertaken in phases in 1.0m X 0.6m areas adjacent to the walls. The excavated areas are to be immediately back-filled with lean mix concrete, compacted, in order to ensure that the stability of the structure is maintained.
- If structural cracking is noted, then the foundations are to be underpinned. The Assigned Certifier is to be contacted also for any guidance necessary during the excavation phase.
- Any new foundation is to be a structural slab with reinforcing steel in accordance with the steel schedules provided.
- **The foundations will be inspected in 2 stages, as follows:**
  - **Stage 1:** When the ground is open and before backfilling with hardcore/lean mix concrete
  - **Stage 2:** When all steel is in place, prior to the pouring of concrete
  - NB: 2 days' notice required of the intent to pour concrete.

**EXCAVATION:** The internal foundation area is to be excavated first. All soft soil or soil with organic matter is to be removed, until a clear solid strata has been achieved. However, the depth of excavation cannot undermine the existing walls.

- Hardcore fill material must be free from impurities such as pyrite, organic material or other material that is not of a consistent hardness. All fill material is to be provided in accordance with SR: 21.
- Excavation depth for fill to be in accordance with the structural drawings, layered TO, TI, T2 & T3, as follows:
  - **T1 Struc-** 100-200mm layer of certified "**T1 Struc**" **crushed rock** (0- 32mm crushed rock).
  - **T3 Blind-** 50mm layer of certified "**T3 Blind**" **blinding** (0-4mm aggregate) immediately under the DPM.

- All layers are to be compacted with a non-vibrating roller to protect the existing walls.
- Foundation formwork is to be levelled and squared by the contractor. All formwork is to be free from impurities i.e. rainwater, prior to the pouring of concrete.
- The contractor is responsible for the accuracy of all levels, measurements and workmanship. Concrete is to be vibrated with a mechanical vibrator.
- DPC & Radon courses and radon sumps are to be provided. Radon membranes are to be sealed with a radon tape and all service holes are also to be sealed. Radon sumps must ultimately be terminated at footpath level with a cap indicating that it is a Radon pipe.
- External excavation can only be undertaken when the internal foundation works are complete.
- Septic tanks, treatment units, percolation systems, pipework, civil works and all other site works are to be carried out in accordance with all applicable standards.
- Storm water must never enter a septic tank system; it should always discharge to a storm water sewer or a soak pit.

**RISING DAMP MEMBRANE:** The internal face or the perimeter of the external walls is to be lined with a proprietary rising dampness membrane, at ground floor level. The membrane is to be 1.2m over the finished floor level. The membrane is to continue to below the sub-floor and to be linked to the floor DPC, in order to provide a continuously sealed membrane.

**PREPARING THE STRUCTURE:** Window and door openings are to be temporarily braced with diagonal timber bracing, as necessary to ensure that the structure remains stable. All cracks should be photographed and surveyed.

## **2. SUPER-STRUCTURE (REFURBISHMENT)**

*All CE/NSAI/IAB certificates are to be emailed to [REDACTED] for all materials, blocks, DPC's, cavity trays & wall ties used during the construction of the building.*

### **STRUCTURE - MAKING GOOD OF STONE WALLS:**

- All permissible loose internal plaster is to be removed.
- The existing timbers that are buried in the external walls are to be raked out and removed. The gap is to be filled with stone, bedded in lime mortar.
- Any holes or perforations in the stone work coursing/pointing are to be made good with lime mortar.
- The Rising Damp Membrane at ground floor level is to be accommodated.

### **REPLACEMENT OF TIMBER LINTELS:**

- The timber lintols serving the windows and doors are to be removed and replaced with concrete lintols. Care should be taken when removing the lintols in order to ensure that the structure is adequately secured and braced.
- No other super-structural works should take place, until the vulnerable structural elements are removed/secured.
- Structural openings less than 1.5m wide are to be spanned with 100 X 75mm concrete lintels. Openings greater than 1.5m ~ 2.5m are to be provided with a 150mm double reinforced concrete lintel (with 150mm minimum bearing). Openings greater than this will be steel specified by this office. All openings are to be temporarily supported until loading is complete and the structure is set.
- The existing external stone walls are to be raised to wall plate level as shown on drawings. Infilled section (including Western gable) to be constructed from concrete block cavity wall and external stone cladding to match existing.

### **NEW INTERNAL TIMBER FRAME:**

*All CE/NSAI/IAB certificates are to be emailed to [REDACTED] for all materials used during the construction of the building.*

- A new skeletal timber frame structure is to be provided inside the external stone walls.
- The starting course of blockwork over the foundation slab is to be a 225mm B7, 7N 'Quinn-lite' / 'Thermalite' or 'Thermoblocks' structural thermal block, in the interests of preventing cold-bridge. A continuous DPC is to be provided on the internal leaf, both

over and under the thermal block. The contractor must ensure that the DPC is at the correct level relative to the finished path level. In so far as reasonably practicable, 150mm should be provided.

- A skeletal timber frame structure should be built on site. The structure is to be comprised as follows:
  - 100 X 75mm treated timber studs, constructed as a loadbearing stud wall, with a double header and double sole plate and 2 rows of supporting noggin pieces. The studs are to be at 400mm centres.
  - The internal face is to be a single coat plaster skim, on 10-12.5mm plasterboard over 12.5mm plywood boarding.
  - The cavity face of the stud is also to be lined with 10-12.5mm plywood boarding and a 'breathing' paper applied over same.
  - A 40mm cavity gap is to be maintained between the timber frame and stone work.
  - The cavity is to be internally ventilated to the inner rooms.
  - Breathing membranes and damp proof courses are essential in these structures and must be placed in accordance with the manufacturers requirements.
  - Fire stopping is to be provided in accordance with the manufacturer's instructions. Insulation to be provided (refer to energy conservation section)
- DPCs are to be provided at all windows, doors and junctions and are to be configured to prevent the passage of moisture inwards. All cills, door thresholds etc. are to be provided with a wrapped DPC. Horizontal DPC's are to be bedded on both sides.
- Window reveals (internal) are to be lined with 10mm asphalt on the stone face (top, bottom and 2 sides) to prevent moisture ingress and also to place a logical "stop" for the window frame. The asphalt is to be linked to the internal timber frame.

#### **CONCRETE BAND BEAM:**

- At wall plate level, along the rear and front wall, are to be provided with a concrete band beam. This beam will tie the structure and strengthen the roof.

- Poured concrete beams are to be a grade 40N concrete and cube tests will be required for 7/14/28 day strength until it is demonstrated that 40N has been achieved.
- All beams are to be reinforced in accordance with details and steel schedules provided.
- Band beams are to be set in a wrapped DPC and surrounded with 25mm of rigid insulation to prevent cold-bridge.
- Stonework on the external face of the dwelling including the new Northern Gable is to be made good with a like-for-like stone facing, set on lime mortar and pointed accordingly to match the remainder of the building.

#### **EXTERNAL FINISHES (AS APPROPRIATE TO PLANS):**

- The external finish is to be: **Existing dressed stone, pointing to be made good lime mortar**
- The material is to be: **Stone to match existing**
- The finish is to be: **Exposed, pointing to be made good with lime.**

#### **FLOOR SCREEDS**

*All CE/NSAI/IAB certificates are to be emailed to [REDACTED] for all materials used during the construction of the building. In particular where proprietary/self-levelling screeds are used, they must be certified.*

- Ground floor screeds are to be a 75mm thick floating screed laid over ridged insulation over a 1200 gauge DPM. Screeds should have expansion joints at all doors and mid-way on long hallways or long rooms.
- Insulation under floor screeds is to be provided with a continuous up-stand insulation around the perimeter of the property, width to match the dry lining board (where used), or to be a minimum of 25mm. Refer to insulation section regarding type of floor insulation required.
- Screeds are to be 1:3 cement: dry sand.

- Proprietary poured screed systems or self-levelling screed systems (if used) are to be laid by specialist. All of these systems should be unbonded and laid over a DPM or as per the manufacturer specification and minimum thickness of 50mm is required.
- Screeds are not permitted over timber joists.
- Screeds should dry out slowly and where under-floor heating is provided, a gradual application of even heat at a very low temperature (12-14 degrees) should be employed at the outset.
- Floors taking a timber floating floor should be dried out to within an acceptable tolerance and all timber floor surfaces should be left within the building to acclimatise to the working environment. All such floors should have suitable expansion to the perimeter of same.

#### **USE OF RSJ'S AND OTHER STRUCTURAL MEMBERS:**

All steel is to be galvanised. Fire coating is to be provided to all accessible steel or is specified on the assembly drawings. Provision should be made for the following general assumptions:

- Spans between 1.5-2.5m: 203X102X23 UB
- Spans between 2.5-4.0m: 203 X 203 X 46 UC
- Large span roof purlin loads 2.5-5.0m: 203 X 102 X 23 UB

#### **ROOF CUT TYPE**

*The manufacturer of timber members used are to provide All CE/NSA/LAB certificates which are to be emailed to [REDACTED]*

- Prior to commencement on site, it is required that the contractor will consult with the structural engineer regarding the specific details of the roof. Structural drawings will be provided in this regard also.
- Unless specified on the structural drawings, the following is the minimum specification required for general members:
  - **Rafters:** C16-C18 graded 175 X 44mm timbers at 400 centres.

- **Purlin:** C20 graded 225 X 75mm. Gable ended dwellings, with simple roofs, may be spanned with a 203 X 102 X 23 UB or equivalent at purlin level on both sides of the roof. Timber purlins will not be permitted to span greater than 2.5m without mid-span support or RSJ's.
  - **First Floor Joists:** C18 graded 225 X 44mm and bridged at 1200mm intervals. Ends to be treated, Joist hangers used where necessary.
  - **Ceiling Joists:** C18 graded 225 X 44mm where attic storage is provided or 150 X 44mm in other circumstances.
  - **Ridge board:** 44 X 225mm.
  - **Wall plate:** 100 X 75mm and is to be positioned over the inner leaf and strapped at 2.0m centers to the wall below.
  - All timbers are to be treated with preservative and braced where necessary.
  - Restraining provision to be included, dragon ties and other specialist members must be provided for the specific roof assembly.
- Insulation to be provided (refer to energy conservation section).

## ROOF – FINISHES

The roof surface is to be:

**Natural Slate (Blue-Bangor type),** All roof materials need to be provided with a manufacturer's certificate which is to be furnished to this office via email to

████████████████████. The following will apply:

**Additional treated battens to be provided for the use of natural slates. Copper fastenings and slate nails are to be used for all courses. Difference in slate width for non- uniform slates is to be accounted for in the laying methodology. All slates are to be graded accordingly prior to laying. Natural slates are not to be used for pitches lower than 30degrees.**

The roof color is to be:	<b>Blue/black, in accordance with planning permission.</b>
The surface will be laid on:	44 X 35mm treated battens on bituminous based roofing felt. Laid at an appropriate spacing to facilitate the use of Natural Slate. Sarking felt to be provided in accordance with the building regulations minimum type 1F to IS 36 or BS 747, CE Marked as appropriate. Double batten systems to be provided if specified by the manufacturer.
The fascia and soffit will be:	<b>Aluminum, with ventilation grilles at 1.2m centers or, where a flush fascia detail is specified, a continuous eaves vent is to be used.</b>
The colour of the fascia will be:	<b>Dark in colour to match roof</b>
The colour of the soffit will be:	<b>Dark in colour to match roof</b>
The gutters and downpipes will be:	<b>Aluminum "half-round" conservation grade, powder coated.</b>
The colour of the gutters and downpipes will:	<b>Match the roof, in accordance with planning permission</b>

### **3. WINDOWS/DOORS & ROOFLIGHTS**

#### **WINDOWS:**

*The manufacturer is required to provide mandatory U-Value calculations for all windows and certify that the values are correct. Please email all certificates to [REDACTED]*

The windows are to be:	<b>Timber windows in accordance with the drawings. Each window is to be certified individually. PVC type alternatives will NOT BE CONSIDERED as suitable and should not be priced for.</b>
The window colour will be:	<b>Cream/Black/Grey/Brown to be selected by client to accord with planning permission. Internal colour to match outside or to be White/Cream, to be agreed with client.</b>

The window glass is to be:

**Double or Triple glazed 'K' glass with an elemental u-value of 0.85 W/m<sup>2</sup>K, overall rating including frame and glass (Note: 'center pane' U-Values are not acceptable)**

- Window openings are to be in accordance with fire regulations i.e. bedroom windows to have an opening area of 0.33sqm with a minimum opening dimension of 450mm. Ventilation openings are to be provided in windows.
- Locking devices (push or key) are not permitted on bedroom windows. Handles are to be a simple type.
- Low level glazing is to be in accordance with T.G.D.-K. i.e. all glass lower than 800mm is to be toughened type.
- For window cill type refer to finishes section. Bedroom window cill heights are to be between 800mm and 1100mm (600mm for roof lights).
- If the property is to be provided with a HRV system, trickle vents should not be provided in any windows or openings.
- All windows are to be mounted and restrained on all sides, top and bottom with suitable restraining straps, galvanised and fixed in accordance with the manufacturer's requirements.
- The windows are to be sealed with a specialist expanding foam around the perimeter. All windows are to be sealed with a specialist 'Airstop' sealing tape or other approved equivalent. The tape is to be fixed to the window and blockwork reveal.

#### **ROOF-LIGHTS (WHERE SPECIFIED):**

*The manufacturer is required to provide mandatory U-Value calculations for all windows and certify that the values are correct. Please email all certificates to [REDACTED]*

- The roof lights are to have a u-value of 0.8-1.0 W/m<sup>2</sup>K or equivalent.

#### **EXTERNAL DOORS**

*The manufacturer is required to provide mandatory U-Value calculations for all doors and certify that the values are correct. Please email all certificates to [REDACTED]*

The doors are to be:	<b>Energy certified hardwood doors, with no letterbox</b>
The door colour will be:	<b>Colour to be chosen by client</b>
The door glass is to be:	<b>Same specification as the windows.</b>
The ironmongery is to be:	<b>Chosen by client</b>
The energy specification to be:	<b>An elemental u-value of 0.85-1.0 W/m<sup>2</sup>K, overall rating including frame and glass. (Note: 'centre pane' U-Values are not acceptable)</b>

- External Door openings to satisfy TGD-M, access for the disabled. There is to be a level clear area of 1.2m X 1.2m immediately outside the entry door and a sloped ramp to same. Minimum clear opening width to be 775mm. Threshold must not exceed 15mm. A proprietary concrete drainage channel to be placed immediately adjacent to the threshold. A vertical DPC must be in place between the ramp and dwelling.
- 'Thumb twist' locking devices are to be provided on all external doors.
- Low level glazing is to be in accordance with T.G.D.-K i.e. all glass lower than 800mm is to be toughened type.
- A letter box opening is not permissible in any external door owing to air tightness regulations. Provide a separate post box externally mounted to the building.

## **4. ENERGY CONSERVATION**

*This section refers to energy conservation measures, these are the minimum requirements and will be used to inform the Part L/BER compliance report. Any deviation from the thermal conductivity rates and material thicknesses specified are generally not permissible, unless the contractor has verified that the resulting overall U-Value can be maintained. Alterations to specification and costs associated with BER/XML file adjustments are to be borne by the contractor, where the contractor instigates the changes, or client, where the client instigates the changes*

*Note: Loose fibre/quilt insulations are not permitted to be compacted into spaces smaller than their minimum specified thickness. The specified thickness of any insulation is to be fully considered in the assembly of a construction detail.*

*The contractor will be required to complete and return the "Confirmation of Construction Insulations Used" form which is available on [REDACTED]*

Ground Floors (Underfloor):	150mm (Kingspan K3' or equiv. -Thermal Conductivity 0.020 W/mK), to be provided with a continuous up-stand insulation around the perimeter of the property, width to match the dry lining board (where used), or to be a minimum of 25mm.
Attic & Ceiling:	300mm 'Kanuf Loft Roll 40' (Thermal Conductivity 0.040W/mK) between and over ceiling joists. 62.5mm 'Kingspan K18 Dry-lining Board to underside (Thermal Conductivity 0.020 W/mK) or other approved equivalent products.
Air Tightness:	Windows, doors, hollowcore, first floor ceiling, sockets, switches and fabric penetrations are all to be air sealed with the appropriate certified sealing tape and membranes. Air changes in the range below 3m <sup>3</sup> /h/m <sup>2</sup> @ 50Pa will be required to be achieved, tested and certified. <i>Test results to be forwarded to this office.</i>

## 5. INTERNAL FINISHES

### PLASTERING

The internal plastering is to be: **Single coat skim over insulated plasterboard, all joints are to be scrim taped, all nail 'pops' are to be made good.**

The internal plaster material is: **Gypsum plaster**

### CEILINGS:

The ceiling finish is to be: **Single coat skim over insulated plasterboard, all joints are to be scrim taped, all nail 'pops' are to be made good.**

The plaster material is: **Gypsum plaster**

## **PAINTING:**

Painting: **Refer to PC/OPTIONAL items section.**

## **JOINERY:**

- Skirting and architraves are to be **Red Deal, Painted or Varnished**
- Internal window cills are to be: **Red Deal, Painted or Varnished**
  
- Hardwood types, if specified, will be verified by the client prior to purchase.
- All nail holes are to be punched and filled. All timber is to be clean and well sanded.
- Skirting height to be 150mm.
- Architraves to be 100 - 125mm.

## **INTERNAL DOORS:**

The internal doors are to be: **Pre-finished veneer doors - Walnut, Oak etc.**

The door colour will be: **Varnished/painted/pre-finished**

The ironmongery is to be: **Chosen by client, either chrome or brass**

- Fire doors to be provided if specified on the plans.
- Doors to have a minimum clear width of 750mm, maximum threshold height of 10mm internally.
- Ironmongery is to be a combined lever handle and key-operated door lock. Handles to be between 900mm 1200mm.
- Doors are to have 3 hinges, finishes to match the ironmongery specification. All items are to be agreed on site.
- All doors are to be provided with skirting mounted door stops

## • **6. LANDSCAPING & FINISHES**

### **BOUNDARY WALLS:**

- All existing stone walls to be retained. Existing stone wall and pedestrian access at front of house to be restored and made good.

**PATHS & DRIVEWAY:**

- Property to be provided with 1.2m wide concrete path.
- Disabled access to be in accordance with the building regulations. A 1.2m X 1.2m clear space to be provided adjacent to entry door. A drainage channel is to be provided immediately outside the door. Threshold height is to be no greater than 15mm. The ramp is to be wrapped in DPC when it is adjacent to the building. Steps are to be no greater than 150mm on the sides of the ramp. There is to be no unprotected level platform on any side of the ramp, hence the provision of steps is warranted to connect the ramp.
- Driveway to be levelled with Clause 804, kerbed at a minimum and surfaced with loose chippings

**PLANTING:**

- Lawns to be levelled and seeded. All mature trees and hedgerows to be retained where possible.

**TREATMENT SYSTEM:**

- Supply and fit treatment system and associated percolation area / polishing filter in accordance with the drawings. Include for all connections, pipes (110mm), and external civil works, sewers, AJ's at every corner and change. Provide ventilation pipes and access to tanks and include all necessary power supplies, electrical connections and all armored cable. The system is to be commissioned by the manufacturer, and a certificate is required for same.
- Provide an external grease trap.
- Rainwater from all roofs and external surface water to be disposed of via a standard soak pit. Include for all pipes (110mm-150mm), gullies, traps and Aj's as necessary.
- Min. soak pit size to be 1.5x1.5x1.5m

**CONCLUSION:**

Prior to commencement of existing house refurbishment, all works in relation to relocation of bats will be carried out strictly in accordance with recommendations made in the AASR by Ecologist and any planning conditions associated with same.

The refurbishment of existing house can be achieved, once works are completed in an orderly manner and in accordance with the guidance set out in this report and full construction drawings. It will be time consuming, but the client is aware of this and will be engaging an experienced contractor in house refurbishment to restore existing house to its rural elegance.

Yours sincerely,  
Laurence Conroy CEng