



Conversion of Outbuilding at Moss Bank Farm, Borras Head, Wrexham

Structural Appraisal Report

February 2020

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1.0 Executive Summary

The outbuilding is T shaped in plan and generally arranged over a single storey with only the left hand end of the main leg arranged over two storeys. The roof over the outbuilding comprises slated finishes off a traditional purlin and rafter construction spanning between external and internal walls and intermediate timber trusses. External and internal walls comprise solid brickwork to full height. Segregation within the rooms comprise block walls constructed off the floor slab. Foundation type and depth were not proven, however given the age of the building, it is assumed that shallow brick spreaders are present. The ground floor generally comprises a concrete slab with falls and steps to aid drainage. First floor construction comprises boarded finishes off timber joists supported by internal walls and steel beams.

The inspection was carried out during the morning of Monday 27th January 2020.

The overall condition of the building is considered to be fair.

The building shows evidence of deterioration that is consistent with its age, its previous use and a lack of routine maintenance over recent years. The building shows evidence of historic settlement indicative of foundation movement, however this would appear to have abated. The front and rear elevations shows outwards leans and bows consistent with apparent roof spread.

The elevations show evidence of general outwards leans consistent with roof spread. Brick buttresses have been constructed externally to help restrain the elevations and these have been partially successful. Their location outside of the roof line has led to water cascading over the buttresses causing severe erosion of pointing and units in some areas. Once works to replace the roof have been carried out, the buttresses would be redundant and could be removed. The elevations have suffered from impact damage in several locations. The damage is severe and localised reconstruction will be required to maintain long term stability. Pointing to the elevations has eroded over time. The remainder of the mortar was noted as generally hard. All of the elevations will require localised repair and repointing as part of the conversion scheme. Lintels to openings, where present, comprise timber sections. The lintels appear to be in generally fair condition with evidence of distortion, isolated rot and section losses. It would be prudent to replace all of the lintels as part of the conversion scheme.

No dpc is apparent. Although there is no significant evidence of rising damp in the external or internal walls, it would be prudent to install a new dpc as part of any conversion scheme. Any new dpc should carry an insurance backed guarantee.

The ground floor to the building comprises a concrete slab in reasonably good condition. It is unlikely that the floor will have a suitable damp proof membrane and will also need to be adjusted to suit the proposed levels. Therefore, a new floor incorporating a dpm and insulation to modern standards will be required as part of the conversion scheme.

First floor construction is considered to be in fair condition. Insect infestation is apparent throughout along with isolated areas of damp staining, though no significant sections losses were apparent. The joists are supported off steel beams which are showing evidence of surface corrosion, though section losses are considered negligible. The floors are springy and replacement should be considered.

The condition of the roof over the building is generally fair, however there are areas where significant weather penetration has led to rot in structural timbers. It is apparent that the roof construction has been modified on several occasions in the past. The works have been successful in limiting further movement, but it is apparent that timber sections are undersized for the imposed loadings and spans. Considered together with the proposed

alterations to the internal layout, it would be prudent to replace the whole of the roof over the outbuilding.

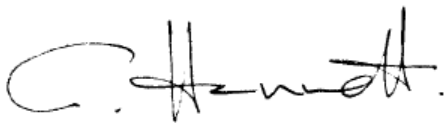
Gutters were generally intact, however all of the downpipes were missing. It was not possible to determine if a suitable drainage system is present and it would be prudent to include for a new system discharging into soakaways in any future scheme.

Blueprint Architectural Services are seeking planning permission on behalf of Mr Shaun Stocker to convert the building into a self-contained dwelling. The proposed internal layout and alterations to the elevations are shown on the planning drawings (see Appendix B). The proposals include for the removal of several internal load bearing walls and the forming of new openings in external walls.

Widespread repairs are required to the fabric of the outbuilding – refer to drawings in Appendix C for location and extent of repairs.

Notwithstanding the repairs required to ensure long term durability, the outbuilding is robustly constructed and is considered to be suitable for conversion into a self-contained dwelling.

Report Compiled by:



Andrew Hannett
BEng(Hons), CEng, MICE

2.0 Client's Brief

This report was commissioned by Blueprint Architectural Services on behalf of Mr Shaun Stocker in support of the proposed planning application to convert the barn into a self-contained dwelling. The purpose of the report is to identify whether the building is suitable for conversion and to confirm the extent of repairs required to ensure that the building is viable in the long term.

3.0 Inspection

3.1 General

The inspection was carried out during the morning of Monday 27th January 2020. The weather during the inspection was cool with occasional light showers. The inspection comprised a visual inspection of those elements of the building readily visible from ground level and from within the building. No excavations were undertaken to uncover buried elements and any notes on the condition of buried elements are made based on the visible condition of the property. Testing requiring the use of specialist equipment or training, e.g. electrical systems, gas appliances, water systems, etc., has not been undertaken. Manhole covers were not lifted and drains were not tested.

The outbuilding is T shaped in plan and generally arranged over a single storey with only the left hand end of the main leg arranged over two storeys. The roof over the outbuilding comprises slated finishes off a traditional purlin and rafter construction spanning between external and internal walls and intermediate timber trusses. External and internal walls comprise solid brickwork to full height. Segregation within the rooms comprise block walls constructed off the floor slab. Foundation type and depth were not proven, however given the age of the building, it is assumed that shallow brick spreaders are present. The ground floor generally comprises a concrete slab with falls and steps to aid drainage. First floor construction comprises boarded finishes off timber joists supported by internal walls and steel beams.

Elevations and rooms are referenced on Architect's Drawings – refer to Appendix B.

3.2 External Inspection

3.2.1 Front Elevation

The elevation comprises brickwork to full height with several window and door openings apparent (see Photos 1 and 2). The roof over is finished with slates. A series of brick buttresses are provided along the single storey elevation.

The overall condition of the elevation is considered to be fair.

Cracking was apparent to the elevation in several locations. Diagonal bed joint cracking was noted extending from the openings on the two storey section. Cracking up to 10mm wide was apparent extending to eaves level from the left hand opening (see Photo 3). The majority of the movement appeared lateral with no significant vertical movement apparent. Diagonal cracking was noted extending from the door to room six. The arch over the opening has slipped and the brickwork above has been displaced outwards (see Photo 4). The cracking has been repointed in the past and the area appeared stable at the time of inspection. Missing brickwork was apparent at low and high levels adjacent to the left hand end. No damage was apparent to the adjoining areas. Significant impact damage is apparent to the reveal of the door into room two (see Photo 5). The damage appears to be fairly recent and has probably resulted from a vehicle impact. Vegetation was noted growing from the wall plate at the right hand end. The vegetation extends into the brickwork below and several dislodged units were noted (see Photo 6). It is apparent that the buttresses are later additions to try to stabilise the external wall. This would appear to have been partially successful. Eroded brick units were apparent at low level throughout and to an area at the right hand end of the elevation. Erosion of pointing up to 10mm depth is apparent throughout with areas up to 25mm depth apparent in isolated areas. The remainder of the pointing was noted as hard. The lintels to all of the openings have suffered deterioration and should be replaced.

The roof shows evidence of distortion between load bearing walls and the timber trusses – the defect is particularly prevalent at the left and right hand ends. This defect is indicative of roof spread caused by an undersizing of timber purlins and is not uncommon in outbuildings. Cracked, slipped and missing slates were noted to isolated areas throughout. A significant area of missing slated was apparent to the valleys at the intersection of the roof over the main and short legs. The guttering was generally intact, however several sections were missing along with all of the downpipes.

The elevation shows a general slight outwards lean with a significant outwards bulge (up to 2.5%) noted in the centre of the elevation. The apex to the short leg gable has a slight outwards lean. The elevation shows slight settlement at the intersection with the main and small legs.

No dpc was apparent.

3.2.2 Left Hand Side Elevation

The elevation comprises brickwork to full height with several window and door openings apparent (see Photos 7 and 8). The roof over the short leg is finished with slates.

The overall condition of the elevation is considered to be fair.

No significant cracking was apparent to the elevation. Missing brickwork was apparent at low and high levels on the two storey gable adjacent to the front elevation (see Photo 9). A small area of missing brickwork was also apparent above the window opening with several loose units noted locally. This is probably as a result of distortion to the timber lintel and is reflected internally. The lintel to room five has been dislodged along with the brickwork above. A small area of brickwork at low level adjacent to the door opening has been

dislodged as a result of vehicle impact. Eroded brick units were apparent at low level throughout and to an area at the right hand end of the elevation. Erosion of pointing up to 10mm depth is apparent throughout with areas up to 25mm depth apparent in isolated areas. The remainder of the pointing was noted as hard. The lintels to all of the openings have suffered deterioration and should be replaced.

The roof to the short leg shows evidence of distortion between load bearing walls and timber trusses. This defect is indicative of roof spread caused by an undersizing of timber purlins and is not uncommon in outbuildings. Cracked, slipped and missing slates were noted to isolated areas throughout. A significant area of missing slated was apparent to the valley at the intersection of the roof over the main and short legs. The guttering was generally intact, however all of the downpipes were missing.

The gable to the main leg shows a slight outwards lean with a slight bulge noted below the window opening. The elevation to the short leg shows a slight outwards lean throughout. The elevation to the short leg shows slight settlement at the intersection with the main leg.

No dpc was apparent.

3.2.3 Rear Elevation

The elevation comprises brickwork to full height with several window and door openings apparent (see Photo 10). The roof over is finished with slates. A series of brick buttresses are provided along the single storey elevation. The lower part of the two storey section has a render finish with the upper part obscured by a steel framed building.

The overall condition of the elevation is considered to be fair.

No significant cracking was apparent to the elevation. An area of loose brickwork was apparent at eaves level at the left hand end due to vegetation growth. The timber lintel to the adjacent window opening is severely rotted at one end due to vegetation growth and water penetration. A significant outwards lean was apparent in the centre of the elevation within the upper reaches of the elevation. This has resulted from roof spread and appeared to be a fairly longstanding defect. Debonded render finishes were apparent at the intersection of the single and two storey sections. Severe staining to the elevation is also apparent locally which has resulted from missing guttering and drainage. Vegetation and severely eroded pointing were apparent to the buttresses (see Photo 11). This is due to water cascading over the brickwork from the roof over. Eroded brick units were also apparent to the buttress closest to the two storey section. It is apparent that the buttresses are later additions to try to stabilise the external wall. This would appear to have been partially successful. Eroded brick units were apparent at low level throughout and to several of the buttresses. Erosion of pointing up to 10mm depth is apparent throughout with areas up to 50mm depth apparent in the buttresses. The remainder of the pointing was noted as hard. The lintels to all of the openings have suffered deterioration and should be replaced.

The roof shows evidence of distortion between load bearing walls and the timber trusses – the defect is particularly prevalent at the left hand end. This defect is indicative of roof spread caused by an undersizing of timber purlins and is not uncommon in outbuildings. Cracked, slipped and missing slates were noted to isolated areas and along eaves level. The guttering was missing throughout and the fascia board was rotted on several places.

The elevation shows a general slight outwards lean with a significant outwards bulge (up to 4.5%) noted in the centre of the elevation.

No dpc was apparent.

3.2.4 Right Hand Side Elevation

The elevation comprises brickwork to full height with several window and door openings apparent (see Photos 12 and 13). The elevation to the short leg has render finishes over the majority of the area. The roof over the short leg is finished with slates.

The overall condition of the elevation is considered to be fair.

No significant cracking was apparent to the elevation. The render finishes are cracked and have debonded from the elevation exposing areas of the brickwork below. A significant inwards bulge was apparent below the window opening to room five and to the rear of room four (see Photo 14). The exact cause the defect is not readily apparent, however localised reconstruction will be required. Loose and distorted brickwork is apparent at the intersection with the main leg. This would appear to have resulted from slight settlement and a complete loss of pointing to bed joints. Loose brickwork is apparent above the opening into room one resulting from vegetation growth from the wall plate. Eroded brick units were apparent at low level throughout and to an area at the right hand end of the elevation. Erosion of pointing up to 10mm depth is apparent throughout with areas up to 25mm depth apparent in isolated areas. The remainder of the pointing was noted as hard. The lintels to all of the openings have suffered deterioration and should be replaced. The fascia at the left hand end of the elevation is charred which is indicative of fire damage (see Photo 15). Some charring is also apparent to the lintel and rafters locally, however no structural damage is apparent.

The roof to the short leg shows evidence of distortion between load bearing walls and timber trusses. This defect is indicative of roof spread caused by an undersizing of timber purlins and is not uncommon in outbuildings. Cracked, slipped and missing slates were noted to isolated areas throughout. A significant area of missing slated was apparent to the valley at the intersection of the roof over the main and short legs. The majority of the guttering was missing along with all of the downpipes.

The gable to the main leg shows a slight outwards lean. The elevation to the short leg also shows a slight outwards lean throughout.

No dpc was apparent.

3.3 Internal Inspection

3.3.1 Room One

Room One is located at the right hand end of the main leg of the outbuilding. The room comprises partially rendered walls externally with low level block walls forming pens. The roof over comprises traditional purlin and rafter construction spanning between the external and internal walls over four intermediate fabricated timber trusses (see Photo 16). The floor comprises a concrete slab stepped and laid to falls.

The overall condition of the room is considered to be fair.

No evidence of cracking was apparent to the brickwork that would be considered attributable to settlement or movement in the foundations. Loose brickwork was apparent above one of the window openings as a result of distortion to the timber lintel. Staining and slight rot was apparent to the majority of the lintels, with those on the rear elevation particularly affected. This would appear to be due to blocked and missing guttering on the rear elevation.

The roof over the room appeared to be in generally fair condition. Small gaps were apparent in the slated finishes allowing weather to penetrate. This has resulted in damp staining and rot to slating battens with some staining to principal timbers evident in isolated locations. Distortion down the roof slopes is evident in the purlins between supports. The defect is slight and is attributable to undersizing of timber sections. It is apparent that the intermediate trusses have been fabricated at site with nailed joints. However, the trusses appeared to be straight with no separation to joints. Slight insect infestation was apparent to all timbers with very minor section losses apparent.

The floor was noted as cracked and breaking up in several areas. This would appear to be due to frost action rather than settlement. Otherwise the slab is considered to be in reasonably good condition.

The gable wall was noted as generally plumb, the front elevation a slight outwards lean and the rear an outwards lean at up to 25mm in 1.0m (2.5%) in the centre of the room. The floor is stepped and laid to falls and was noted as slightly uneven.

3.3.2 Room Two

Room Two is located in the centre of the main leg of the outbuilding. The room comprises partially rendered walls externally with low level block walls forming pens. The roof over comprises traditional purlin and rafter construction spanning between the external and internal walls over seven intermediate fabricated timber trusses. The floor comprises a concrete slab stepped and laid to falls.

The overall condition of the room is considered to be fair.

A severe inwards bulge is apparent adjacent to the door opening on the front elevation (see Photo 17). This would appear to have resulted from a vehicle impact – localised reconstruction will be required. Outwards bulges were apparent in centre of the front and rear elevations. This would appear to be attributable to roof spread and appeared longstanding. Cracking was noted to the front and rear elevations in the centre of the room. The cracking was noted as up to 10mm wide in both instances and all of the movement was noted as lateral (see Photo 18). This type of defect is indicative of restrained thermal movements rather than settlement of foundations. Staining and slight rot was apparent to the majority of the lintels, with those on the rear elevation particularly affected. This would appear to be due to blocked and missing guttering on the rear elevation.

The roof over the room appeared to be in generally fair condition with areas considered to be poor. A gap was noted between the slated finishes and the two storey wall – this is due to a missing abutment flashing and several missing slates. A significant area of missing slates was apparent close to Room One (see Photo 19). The extent and severity of damage to timbers would indicate that this is a fairly longstanding defect. It is apparent that the roof originally had a hipped end at this location before the extension to form Room One was erected. Severe rot to several timbers is apparent and extensive repairs will be required if the roof construction is retained. Distortion down the roof slopes is evident in the purlins between supports. The defect is significant in several locations and is attributable to undersizing of timber sections. In these locations the purlins have been propped off the internal pen walls. It is apparent that the intermediate trusses have been fabricated at site with nailed joints. However, the trusses appeared to be straight with no separation to joints. Slight insect infestation was apparent to all timbers with very minor section losses apparent.

The floor slab was noted as intact and in generally good condition.

The internal cross walls show slight outwards leans. The rear elevation shows an outwards lean of 1.0% with a maximum of 4.5% noted at the bulge. The front elevation shows a maximum outwards lean at 3.0% in the centre. The floor is stepped and laid to falls and was noted as slightly uneven.

3.3.3 Room Three

Room Three is located within the short leg of the outbuilding adjacent to the main leg. The room comprises partially rendered walls with a roof over comprising a traditional purlin and rafter construction spanning between the external and internal walls over one intermediate fabricated timber frame. The underside of the roof is finished with timber boarding. The floor comprises a concrete slab stepped and laid to falls.

The overall condition of the room is considered to be fair.

No evidence of cracking was apparent to the brickwork that would be considered attributable to settlement or movement in the foundations. Staining and rot was apparent to the lintel over the door opening due to weather penetration through the roof above.

The roof over the room appeared to be in generally fair condition. It was not possible to confirm the condition of the slated finishes due to the boarded finishes on the underside of the rafters. However, severe staining and rot was apparent at the front and rear elevations at the intersection with the main part of the outbuilding (see Photo 20). This is due to large areas of missing slating in the valley intersections of the roof. Given the extent of the staining, the weather penetration is considered to be longstanding. It is apparent that the intermediate timber frame has been fabricated at site with nailed joints. However, the truss appeared to be straight with no separation to joints. Slight insect infestation was apparent to all timbers with very minor section losses apparent.

The floor was noted to be in reasonably good condition.

The walls were noted as generally plumb except for the front elevation which shows an outwards lean at 1.0%. The floor is laid to falls and was noted as slightly uneven.

3.3.4 Room Four

Room Four is located in the centre of the short leg. The room comprises partially rendered walls with a roof over comprising a traditional purlin and rafter construction spanning between the external and internal walls. The floor comprises a concrete slab laid to falls. A timber mezzanine is provided over part of the area spanning between the internal walls.

The overall condition of the room is considered to be fair.

No evidence of significant cracking was apparent to the brickwork that would be considered attributable to settlement or movement in the foundations. A significant inwards bulge and loose brickwork was apparent in the rear elevation at low level (see Photo 21). The damage is consistent with an impact on the outer face of the wall. The damage is significant and localised reconstruction will be required.

The mezzanine floor over has been constructed from small timbers which are widely spaced. The joists supporting the floor show significant distortions due to long term creep in over-loaded timbers (see Photo 22).

The roof over the room appeared to be in generally fair condition. No evidence of weather penetration was apparent through finishes at the time of inspection, however staining to timbers would suggest some historical issues. The purlins show evidence of slight distortion down the front and rear slopes consistent with a slight undersizing of timbers. Slight insect infestation was apparent to timbers with very minor section losses apparent.

The floor was noted to be in reasonably good condition.

The walls were noted as generally straight and plumb except for the front wall which shows a slight outwards lean. The floor is laid to falls and was noted as slightly uneven.

3.3.5 Room Five

Room Five is located in the end of the short leg. The room comprises partially rendered walls with a roof over comprising a traditional purlin and rafter construction spanning between the external and internal walls. The underside of the roof is finished with timber boarding. The floor comprises a concrete slab laid to falls. A small store has been formed within the room out of solid brick walls extending to roof level.

The overall condition of the room is considered to be good/fair.

No evidence of significant cracking was apparent to the external walls that would be considered attributable to settlement or movement in the foundations. A significant gap was apparent between the internal store room wall and the gable elevation (see Photo 23). The gap is estimated at up to 40mm wide at roof level. This would appear to have resulted from an outwards movement in gable elevation. The defect appeared to be longstanding and no evidence of recent movement was apparent. Cracking was apparent above the lintel on the rear elevation. The defect is minor and appeared to be longstanding.

The roof over the room appeared to be in generally fair condition. No evidence of weather penetration was apparent through finishes at the time of inspection, however staining to timbers would suggest some historical issues. The purlins show evidence of slight distortion down the front and rear slopes consistent with a slight undersizing of timbers. Slight insect infestation was apparent to timbers with very minor section losses apparent.

The floor was noted to be in reasonably good condition.

The walls were noted as generally straight and plumb except for the gable elevation which shows a slight outwards lean. The floor is laid to falls and was noted as slightly uneven.

3.3.6 Room Six

Room Six is located towards the left hand end of the main leg. The room comprises partially rendered walls with a floor over comprising timber joists supported off an intermediate steel beam. The ground floor comprises a concrete slab laid to falls.

The overall condition of the room is considered to be good/fair.

Vertical bed joint cracking was noted in the centre of the wall adjoining room seven. The cracking was noted as up to 3mm wide at first floor level. The cracking appeared to be

longstanding with no evidence of recent movement apparent. The pattern of cracking is consistent with a slight settlement at the front elevation.

The first floor construction appeared to be in reasonably good condition (see Photo 24). No evidence of staining to timbers was apparent. Minor worm infestation is apparent though section losses are considered to be negligible. The steel beam shows evidence of surface corrosion, though negligible section losses were noted. The beam appears undersized for the loading imposed and the span.

The ground floor was noted to be in reasonably good condition.

The walls were noted as generally straight and plumb. The ground floor is laid to falls and was noted as slightly uneven.

3.3.7 Room Seven

Room Seven is located at the left hand end of the main leg. The room comprises painted and rendered walls with a floor over comprising timber joists supported off an intermediate steel beam. The ground floor comprises a concrete slab laid to falls.

The overall condition of the room is considered to be good/fair.

Vertical cracking was noted in the centre of the wall adjoining room six. The cracking was noted as up to 6mm wide at first floor level (see Photo 25). The cracking appeared to be longstanding with no evidence of recent movement apparent. The location is coincident with the cracking noted in room six and is indicative of a slight settlement at the front elevation.

The first floor construction appeared to be in reasonably good condition. Staining was noted to the ceiling finishes adjacent to the gable elevation (see Photo 26). The staining is located below an open window above. The steel beam shows evidence of surface corrosion, though negligible section losses were noted.

The ground floor was noted to be in reasonably good condition.

The walls were noted as generally straight and plumb. The ground floor is laid to falls and was noted as slightly uneven.

3.3.8 Room Eight

Room Eight is located at first floor level at the left hand end of the main leg. The room comprises washed solid brickwork walls to the external elevations and internal walls. The roof over comprises traditional purlin and rafter construction spanning between the external and internal walls. The floor comprises boarded finishes over joists. Access to the room is via a staircase within room six.

The overall condition of the room is considered to be fair.

Diagonal bed joint cracking was apparent to the front elevation wall. The cracking was noted as up to 3mm wide and extends from floor to wall plate level. The cracking appeared to be longstanding. The brickwork to the window reveals has been recently repointed. The lintel over the opening is slightly distorted and several loose bricks were apparent above

The roof purlins show evidence of significant distortion down the slopes of the roof. This is due to general undersizing of purlins. The purlin to the front slope of the roof has broken above both rooms six and seven (see Photo 27). Above room six, an additional purlin has been inserted and the area appeared stable. Above room seven, new ceiling ties have been installed. This would appear to have stabilised the area, however a new roof is warranted. Slight weather penetration was apparent through slated finishes particularly

around the roof light. All areas appeared dry at the time of inspection. Slight insect infestation was apparent to timbers with very minor section losses apparent.

Evidence of slight deterioration to the boarded floor finishes was apparent throughout with several small holes noted. The floor was noted as slightly springy especially over room six. Additional boards have been placed over room seven. The reason for this is unknown. Staining is apparent to boarded finishes adjacent to the open window on the gable elevation.

The walls were noted as generally straight and plumb. The floor was noted as uneven but generally level.

4.0 Conclusions and Discussion

The overall condition of the building is considered to be fair.

The building shows evidence of deterioration that is consistent with its age, its previous use and a lack of routine maintenance over recent years. The building shows evidence of historic settlement indicative of foundation movement, however this would appear to have abated. The front and rear elevations shows outwards leans and bows consistent with apparent roof spread.

The elevations show evidence of general outwards leans consistent with roof spread. Brick buttresses have been constructed externally to help restrain the elevations and these have been partially successful. Their location outside of the roof line has led to water cascading over the buttresses causing severe erosion of pointing and units in some areas. Once works to replace the roof have been carried out, the buttresses would be redundant and could be removed. The elevations have suffered from impact damage in several locations. The damage is severe and localised reconstruction will be required to maintain long term stability. Pointing to the elevations has eroded over time. The remainder of the mortar was noted as generally hard. All of the elevations will require localised repair and repointing as part of the conversion scheme. Lintels to openings, where present, comprise timber sections. The lintels appear to be in generally fair condition with evidence of distortion, isolated rot and section losses. It would be prudent to replace all of the lintels as part of the conversion scheme.

No dpc is apparent. Although there is no significant evidence of rising damp in the external or internal walls, it would be prudent to install a new dpc as part of any conversion scheme. Any new dpc should carry an insurance backed guarantee.

The ground floor to the building comprises a concrete slab in reasonably good condition. It is unlikely that the floor will have a suitable damp proof membrane and will also need to be adjusted to suit the proposed levels. Therefore, a new floor incorporating a dpm and insulation to modern standards will be required as part of the conversion scheme.

First floor construction is considered to be in fair condition. Insect infestation is apparent throughout along with isolated areas of damp staining, though no significant sections losses were apparent. The joists are supported off steel beams which are showing evidence of surface corrosion, though section losses are considered negligible. The floors are springy and replacement should be considered.

The condition of the roof over the building is generally fair, however there are areas where significant weather penetration has led to rot in structural timbers. It is apparent that the roof construction has been modified on several occasions in the past. The works have been successful in limiting further movement, but it is apparent that timber sections are undersized for the imposed loadings and spans. Considered together with the proposed alterations to the internal layout, it would be prudent to replace the whole of the roof over the outbuilding.

Gutters were generally intact, however all of the downpipes were missing. It was not possible to determine if a suitable drainage system is present and it would be prudent to include for a new system discharging into soakaways in any future scheme.

Blueprint Architectural Services are seeking planning permission on behalf of Mr Shaun Stocker to convert the building into a self-contained dwelling. The proposed internal layout and alterations to the elevations are shown on the planning drawings (see Appendix B). The proposals include for the removal of several internal load bearing walls and the forming of new openings in external walls.

Widespread repairs are required to the fabric of the outbuilding – refer to drawings in Appendix C for location and extent of repairs.

Notwithstanding the repairs required to ensure long term durability, the outbuilding is robustly constructed and is considered to be suitable for conversion into a self-contained dwelling.

5.0 Recommendations

The following items should be addressed as part of any works to the barn to ensure structural viability in the long term:

- Remove existing slated roof finishes and set aside for possible re-use. Remove all timbers and provide new roof construction to match Clients specification. Install salvaged and new slates over breathable membrane.
- Replace existing timber lintels with new precast concrete units as required.
- Locally rebuild unstable or damaged areas of external walls using salvaged units laid in 1:1:6 lime:cement:sand mortar finished flush with the face of the wall.
- Carry out repairs to loose, dislodged or missing brickwork. Repoint elevations by raking out existing pointing to a minimum depth of 40mm. New pointing shall comprise a 1:1:6 lime:cement:sand mortar packed tight into joints and finished flush with the face of the wall.
- Renew guttering and downpipes to all elevations. Install gulleys and new drainage system to direct rainwater to new soakaways located at least 5m from the building elevations.
- Install injected chemical or sheet dpc at least 150mm above ground level to external and internal walls of the original part of the building. A ten year insurance backed guarantee should be provided for all materials and installation. As an alternative, provide vertical damp proofing to internal walls lapped and sealed with floor dpm.
- Provide new concrete ground floors throughout incorporating insulation to modern standards. A dpm should also be provided which shall be lapped or tucked into any existing or new dpc or damp proofing.

6.0 Limitations and Liability

This report has been prepared for the exclusive use of the commissioning party and unless otherwise agreed in writing by Andrew Hannett Limited, no other party may use, make use of or rely on the contents of the report. No liability is accepted by Andrew Hannett Limited for any use of this report, other than for the purposes for which it was originally prepared and provided.

Opinions and information provided in the report are on the basis of Andrew Hannett Limited using due skill, care and diligence in the preparation of the same and no explicit warranty is provided as their accuracy. It should be noted and it is expressly stated that no independent verification of any of the documents or information supplied to Andrew Hannett Limited has been made.

The timber or other parts of the building which are covered, unexposed or inaccessible to the Structural Engineer without the assistance of a ladder in excess of 3m have not been inspected. The report does not cover the condition of the dpc, possible damp penetration or condensation unless specifically highlighted as part of the inspection. Where the property was furnished at the time of inspection those elements of the structure covered over have not been fully inspected. Therefore it is not possible to confirm that those elements are free from defect.

No excavations were undertaken to uncover buried elements or foundations and any notes on the condition of such elements are made based on the visible condition of the property. No intrusive testing was carried out. Manhole covers were not lifted and drains were not tested. Testing requiring the use of specialist equipment or training, e.g. electrical systems, gas appliances, water systems, etc., has not been undertaken.

This report is not intended to be an exhaustive list of all defects and only significant structural faults which could lead to instability of the structure in the present or future have been reported. Further defects may become apparent during more extensive investigation or during future refurbishment works.

Detailed calculations to determine the adequacy of structural members are outside the scope of this report and have not been undertaken. However evidence of distress as a result of overloading or deterioration will be identified so that provision for additional works can be made during any future refurbishment scheme.

The report shall be solely used by the Client to determine the extent of works to the property and liability in this respect will be limited to the instructing Client.

Nothing in the Contract confers nor purports to confer on any third party any benefit nor any right to enforce any terms of this Contract pursuant to the Contracts (Rights of Third Parties) Act 1999.

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Appendix A – Photographs



Photos 1 and 2 – Front Elevation (main leg).



Photo 3 – Cracking above door opening.



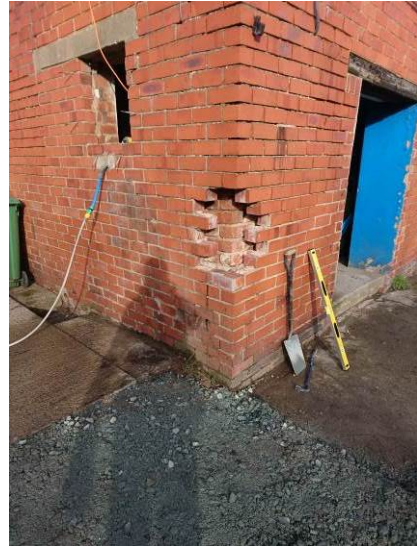
Photo 4 – Dislodged arch over opening and brickwork above.



Photo 5 – Impact damage to elevation.



Photo 6 – Vegetation growing from wall plate.



Photos 9 – Missing brickwork at low level.



Photo 7 – Left Hand Side Elevation – main leg.



Photo 10 – Rear Elevation.



Photo 8 – Left Hand Side Elevation – short leg.



Photo 11 – Severe erosion to buttress.



Photo 12 – Right Hand Side Elevation – short leg.



Photo 13 – Right Hand Side Elevation – short leg.



Photo 14 – Inwards bulge in wall.



Photo 15 – Fire damage to fascia and lintel.



Photo 16 – General view of Room One.



Photo 17 – Impact damage to brickwork.



Photo 18 – Cracking to rear elevation.



Photo 21 – Severe inwards bulge to wall.



Photo 19 – Missing slates to roof.



Photo 22 – General view of mezzanine timbers



Photo 20 – Weather penetration below valley.



Photo 23 – Gap between internal
and external walls.



Photo 24 – General view of floor.



Photo 26 – Staining to ceiling finishes.

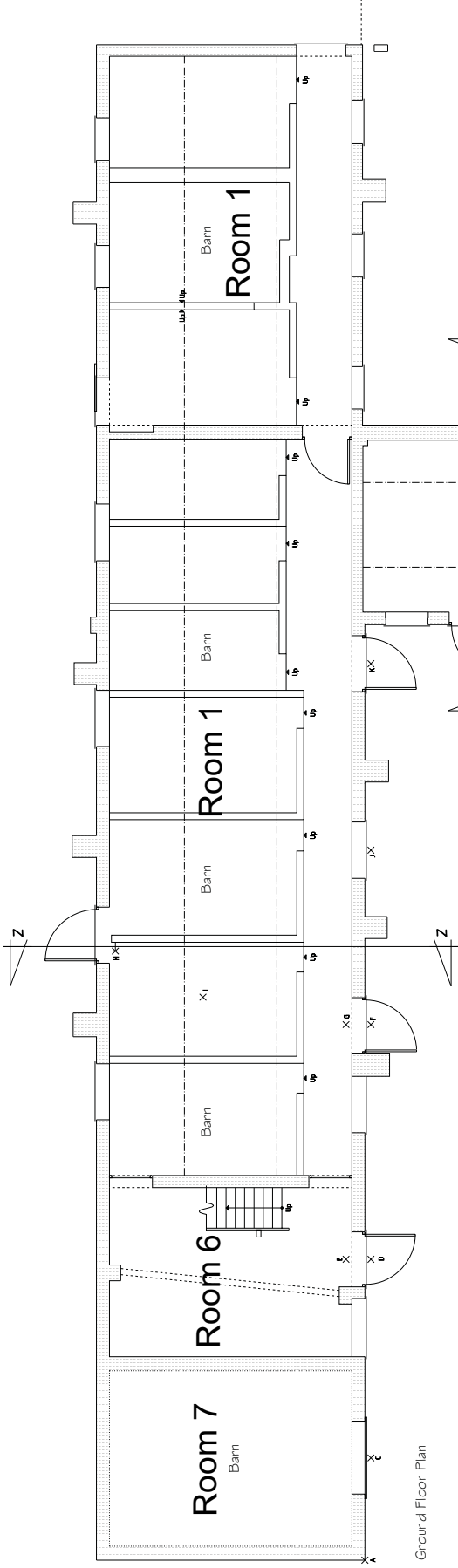


Photo 25 – Cracking to internal wall.

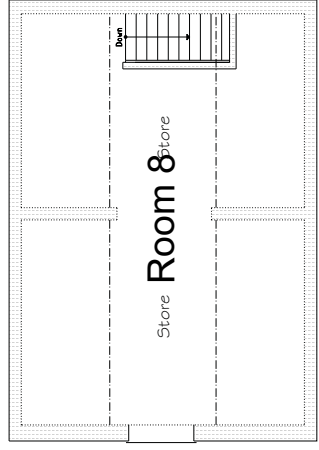


Photo 27 – Broken purlin and
additional ceiling ties.

Appendix B – Architect's Drawings



Ground Floor Plan



First Floor Plan

Rev	Date	Detail	Initial

Project Proposed alterations at Moss Bank Farm, Borras Road, Borras Head, Wrexham, LL13 9TN.	
Title: Existing: Floor Plans	Scale: (A1) 1:50
Drawn By: J Felgate	Date: Oct 2019
Drawing No: 5083/001	Sheet: 1 of 2

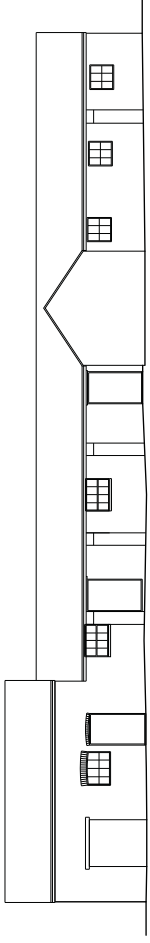




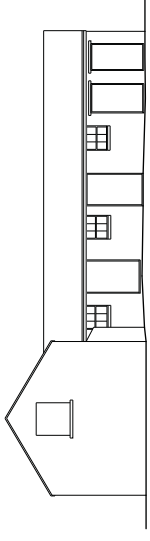
LABC
LABORATORY ASSOCIATION OF BUILDING CONTRACTORS

blueprint
architectural services

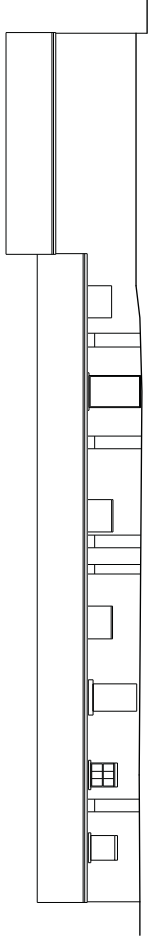
Office 304,
 Redwether Business Tower,
 Wrexham, LL13 9XT
 Tel: 01924 666666
 www.blueprintarchitectural.com



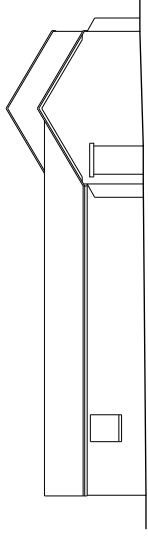
Front Elevation 1 : 100



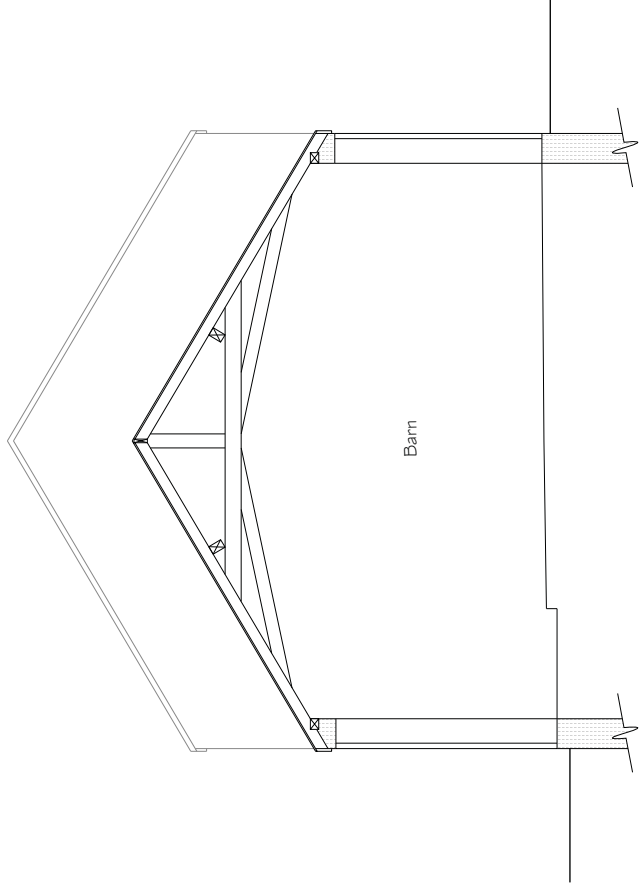
Side Elevation 1:100



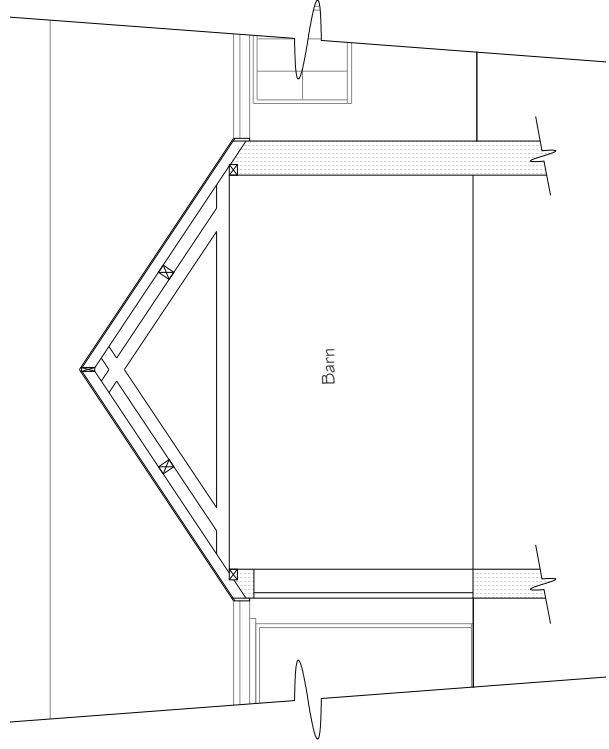
Rear Elevation 1:100



Side Elevation 1:100

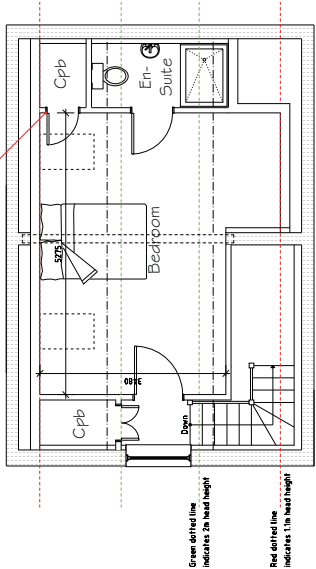


Section X-X 1:25

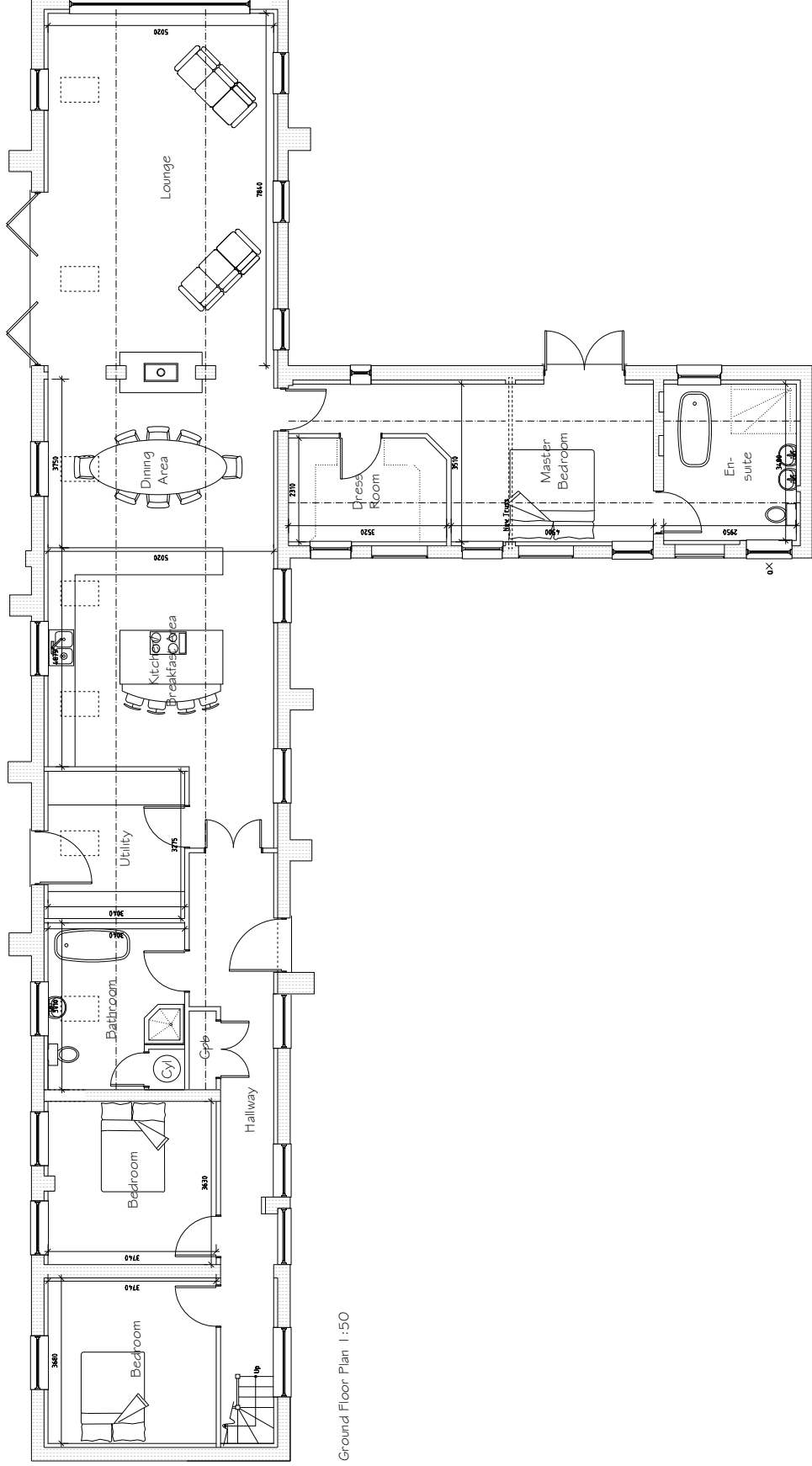


Section Y-Y 1:25

[illegible]



First Floor Plan 1:50



Ground Floor Plan 1:50

X9

NH

Rev	Date	Detail	Initial
B	12/19	Revised roof light	DJE
A	12/19	Design changes	DJE

Project
Proposed alterations at
Moss Bank Farm,
Borras Road, Borras Head,
Wrexham, LL13 9TN.

Title: Proposed:
Floor Plans
Scale: (A1)
1:50

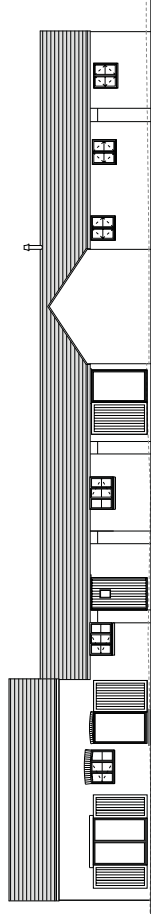
Drawn By:
D.J. Edwards
Date:
Oct 2019

Drawing No:
5083/004
Sheet
1 of 1

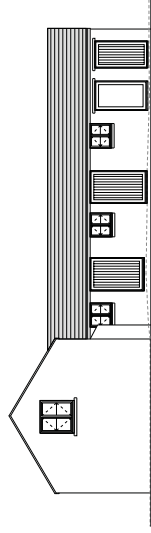
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Wrexham, LL13 9XT
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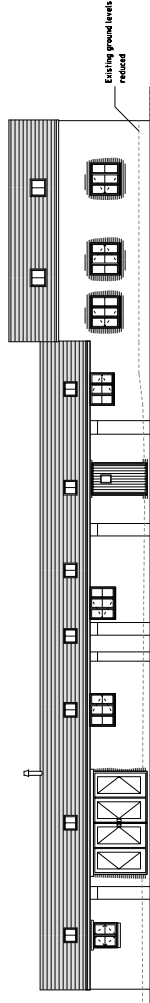
LABC
Redwether Business Tower,
Wrexham, LL13 9XT
Tel: 01924 666666
www.labc.co.uk



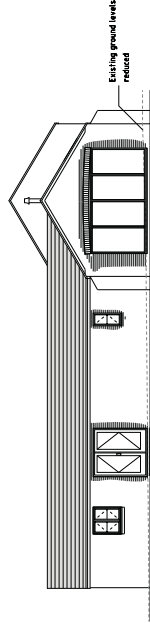
Front Elevation 1 : 100



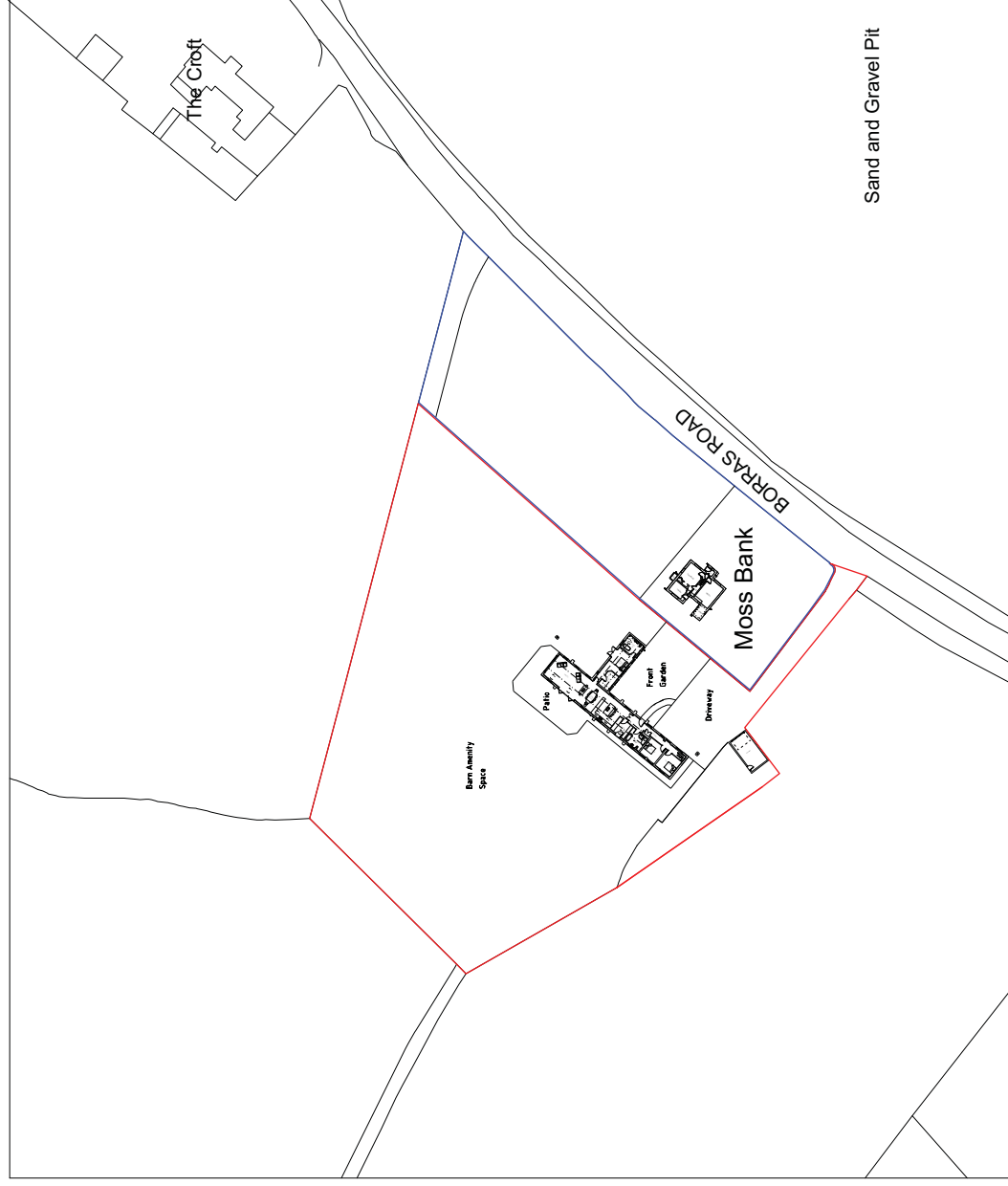
Side Elevation 1:100



Rear Elevation 1:100



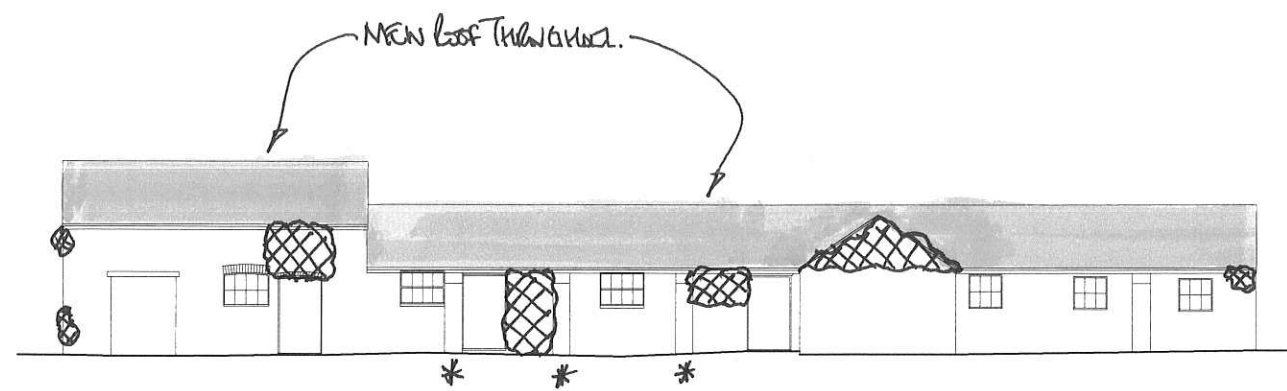
Side Elevation 1 : 100



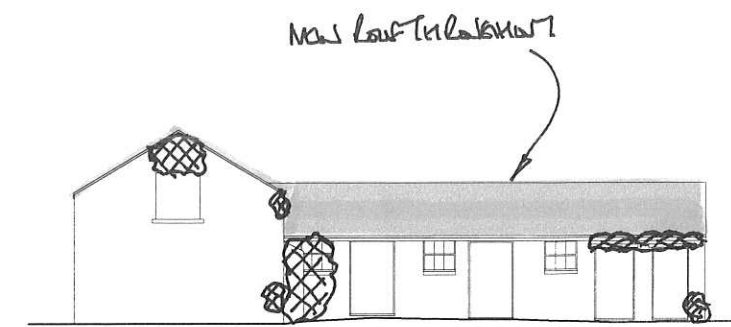
Site Plan 1:500

[illegible]

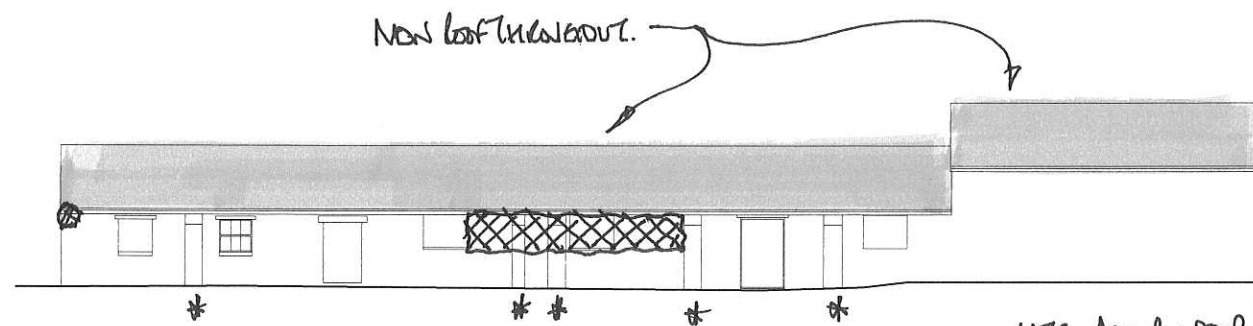
Appendix C – Repair Drawing



Front Elevation 1:100



Left Side Elevation 1:100



Rear Elevation 1:100

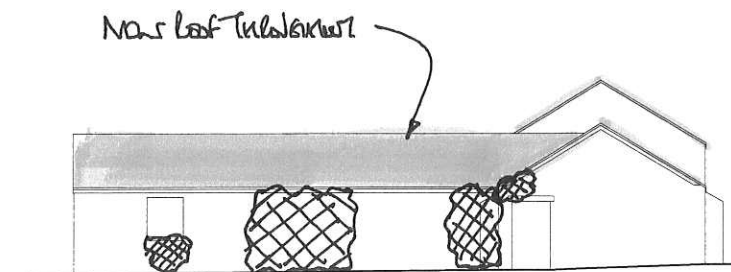
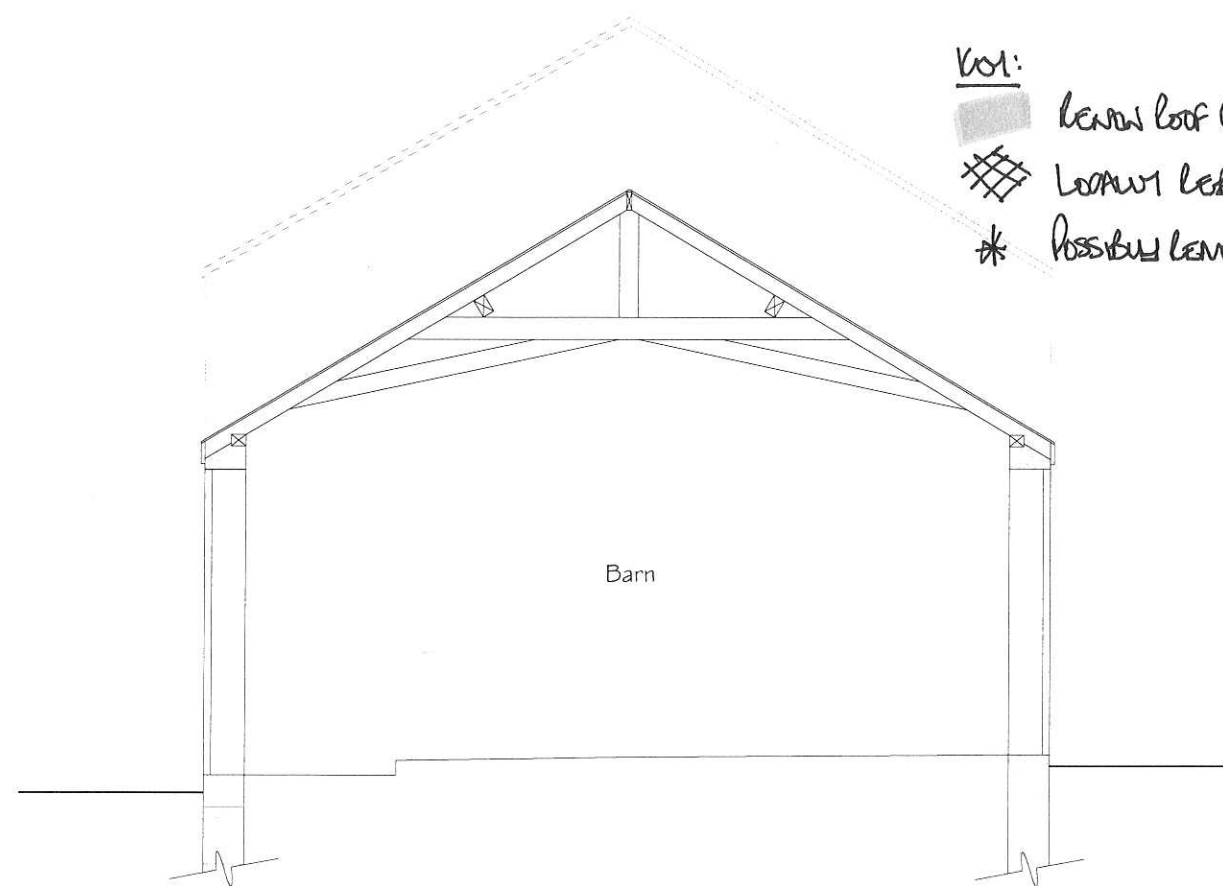


Figure Side Elevation 1:100

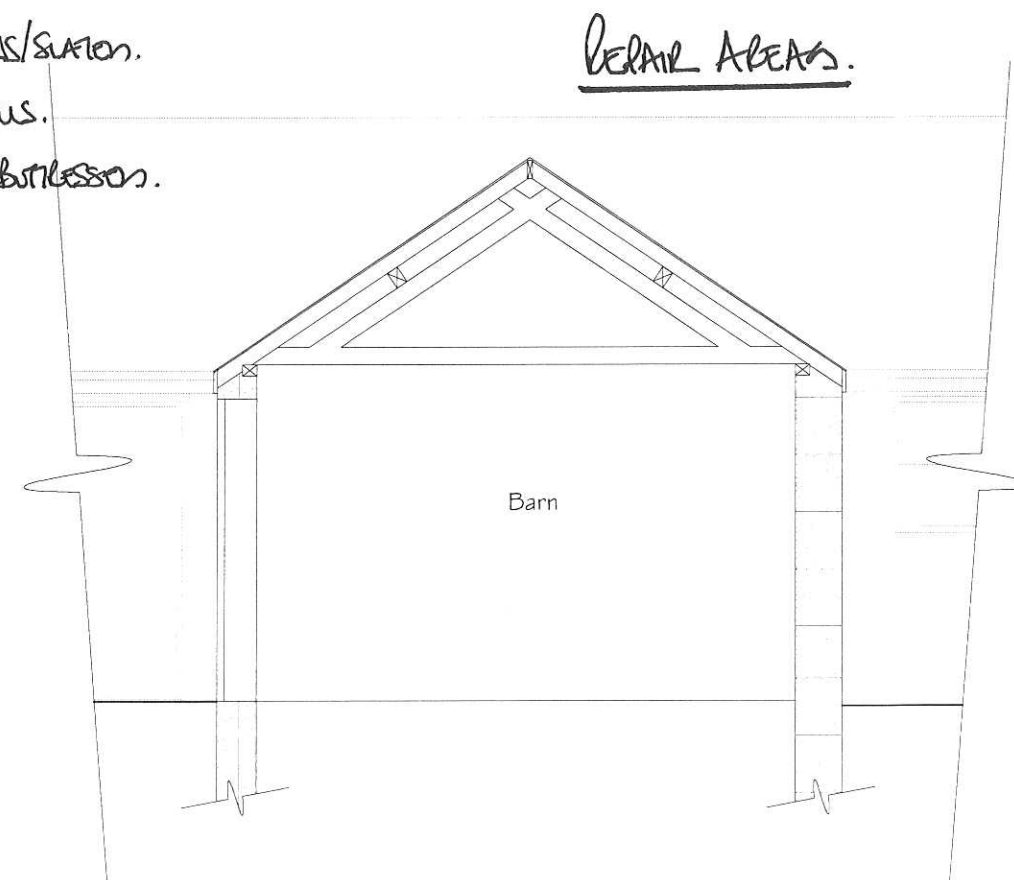
NOTE: All board finishes removed
AND ALL ELEVATIONS REPAINTED.



Section X-X 1:25

Vol:

-  LEANED ROOF CONSTRUCTIONS/SYSTEM.
-  LOADS REBUILT WALLS.
-  POSSIBLY LEANING BACK BUTTRESSES.



Section Y-Y 1:25

Rev	Date	Detail	Initial

Project:
Proposed alterations at
Moss Bank Farm,
Borras Road, Borras Head,
Wrexham, LL13 9TN.

Title: Existing:	Scale: (A1)
Sections &	1:25 &
Elevations	1:100

Drawn By:	Date:
J Felgate	Oct 2019

Drawing No: 5083/001	Sheet: 2 of 2
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