1.0 Roof Structure

1.1 The existing roof structure is defective and has been a catalyst to further structural defects elsewhere on the fabric of the building due to roof spread. It is therefore proposed to remove the defective roof structure and install a replacement roof structure as part of the conversion scheme.

1.2 The roof structure will be a prefabricated fink truss system. The proposed roof structure should be engineer designed to ensure that it does not exert any horizontal thrust upon the supporting walls. An accurate measured survey will be conducted prior to the application of replacement wall plates and the design of the chosen roof method.

1.3 Slate roof coverings that have been temporarily set aside are to be reinstated, complimented with similar as required. Original salvaged slates in suitable condition will be utilised on the eastern roof slope before new slates are introduced. Felt, battens and insulation specifications will be provided during the detailed design stage for Building Control Approval.

1.4 Due to the lack of suitable rainwater guttering and discharge downpipes on the existing building, rainwater goods will be installed as part of the conversion to allow reliable discharge of rainwater and connections will be made to the site wide drainage system.

2.0 External Walls

2.1 The external walls have significant thickness and have reasonable height to thickness ratios. The walls require a degree of sympathetic attention, but the amount of loss of original fabric is likely to be low. Allowance for careful inspection, demolition and rebuild of the upper levels of the front elevation wall which has accommodated the effects of roof spread will be made and localised increases to the thickness of the wall at eaves level will ensure it coincides with the wall thickness below which will enhance the performance at this eaves level detail.

2.2 Fractures that are identified on the walls require only low-key intervention and repair, and small areas of localised brick turning / replacement will be required where individual brick units have failed.

2.3 The performance of masonry panels suffering fractures, localised cracking etc. will be improved by low key stitching using the 'Helifix' masonry repair system, which involves installing remedial 'Heli-bar' rods into the bed joint of the masonry at regular vertical centres. Allowance is made for the application of this system to localised areas of all masonry panels. This technique will be used to stitch cracks, tie any partitions that have become disconnected from flank walls and repair masonry arches. In addition, the system will also be used to provide restraint between masonry walls and timber floors where identified as detailed design stage.

2.4 Any areas of hard cement re-pointing previously carried out on the elevations will be carefully removed and replaced with a sympathetic soft lime based mortar. Other areas of weathered masonry joints will be repointed in a similar fashion where necessary.

2.5 Defective masonry arches, timber lintels and arch backing timbers will be replaced throughout. Defective timber lintels are to be replaced with precast concrete lintels. Timber wall plates that are present within the walls will be removed and replaced with remedial brickwork infill. Gable verges will be re-dressed, and loose masonry / stone kneelers at eaves levels to gable walls will be reinstated as required.

2.6 Lower sections of the walls that show localised areas of defaced units are likely to be predominantly caused by continued wetting as a result of surface water splashback off the adjacent ground level. Following a more in-depth inspection by a bricklayer / mason, general brickwork repair will be undertaken as required to lower panels, including replacing / turning decayed units.

2.7 The proposed layout retains cross walls to enhance the overall long term structural performance of the masonry panels and may be utilised to assist the support of roof structures subject to engineers design of the roof structure. Where openings are indicated within internal rooms, these openings are located away from the external elevations to ensure that the cross walls continue to provide buttressing and restraint to the outer masonry panels. In addition, it is considered necessary to install 'steel picture frames' complete with spreader beams within the floor zone to openings created within the ground floor walls in order to maintain structural integrity and ensure uniform distribution of loadings.

2.8 A number of tie bars and pattress plates are present and where possible they will remain but will be dependent on final first floor and ceiling levels in order to avoid them being located within the room space. Existing ties are to be complimented with further additional tie bars should their requirement be needed and identified during detailed design.

6.2.9 Chimney stacks will be repaired and repointed as required following closer inspection, and will be complemented with suitable flashings following re-roofing. At first floor levels, allowance will be made for the installation of steel support beams to areas of the chimney breasts / stacks that are currently unsupported. Steel beams will span between existing support walls and can be installed as part of the remedial works to first floor structures.

3.0 First Floors

3.1 The first floor joists are in the main not original, and are relatively slender. Various elements of the floor, especially those elements that are deemed original have been subjected to continued wetting and decay is prevalent. A replacement floor will reduce the degree of stresses on the existing supporting walls and is therefore proposed.

3.2 It is proposed to slightly raise the first floor level to provide a more practical room space and to make use of the existing external wall detail, which steps out just above current first floor level and provides a suitable rebate whereby floor elements can be sensibly supported.

3.3 The structural engineer has recommended that provision is made for a replacement first floor structure as part of any conversion scheme. Floor timbers including stairwell trimmers can then be designed to accommodate imposed loadings to suit the eventual proposed building use.

NOTE:

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE FOLLOWING ARCHITECTURAL AND ENGINEERING DRAWINGS

SITE PLANS

21 - LP - 100 - LOCATION PLAN
21 - SP - 101 - SITE PLAN EXISTING
21 - SP - 102 - SITE PLAN PROPOSED
21 - CSP - 103 - SITE PLAN COLOUR

MANOR FARM HOUSE

21 - EP - 200 - EXISTING PLANS
21 - EE - 201 - EXISTING ELEVATIONS
21 - RP - 202 - EXISTING AND PROPOSED ROOF

21 - DP - 210 - DEMOLITION PLANS
21 - DE - 211 - DEMOLITION ELEVATIONS

21 - PP - 220 - PROPOSED PLANS
21 - PE - 221 - PROPOSED ELEVATIONS

BARN CONVERSION

21 - EP - 300 - EXISTING PLANS
21 - EE - 301 - EXISTING ELEVATIONS
21 - RP - 302 - EXISTING AND PROPOSED ROOF

21 - DP - 310 - DEMOLITION PLANS
21 - DE - 311 - DEMOLITION ELEVATIONS

21 - PP - 320 - PROPOSED PLANS
21 - PE - 321 - PROPOSED ELEVATIONS

ENGINEERING NOTES

21 - ENG - 400 - ENGINEERING NOTES SHEET 1
21 - ENG - 401 - ENGINEERING NOTES SHEET 2

4.0 Ground Floors

4.1 The construction of the existing ground floors varies, and floors have been subjected to continued wetting. Their long-term performance cannot be guaranteed. In addition, there is a number of change of levels and steps within the ground floor levels throughout the building. A new floor slab is envisaged throughout and therefore allowance has been made for the installation of a new ground bearing, ground floor slab, incorporating suitable insulation and screed as required. The structural engineer has not recommended that a cement based ground floor slab is utilised as this has thepossibility to trap moisture and encourage damp. We therefore propose the installation of a breathable ground floor system such as a limecrete application. Ground floor slabs will be designed to accommodate imposed loadings to suit the proposed building use, together with loadings from proposed ground floor partitions.

6.4.2 Our structural engineer has not recommended that the ground floor slab levels are raised substantially higher than those of existing levels. The existing foundations may be shallow, therefore care will need to be taken when installing ground floor slabs to ensure that the existing foundations are not undermined. Sub-base excavation underneath proposed floor slabs will be kept to a minimum depth to assist.

5.0 Foundations

5.1 Based on our structural engineers initial observations of the superstructure, there was little evidence to suggest that the foundations of the house have suffered significant failure. A small amount of settlement may have occurred in the past; however, it is envisaged at this stage that the conversion can be conducted without the need for invasive foundation repair in the form of underpinning.

5.2 The external ground levels are variable around the property, and as such they will be landscaped and prepared to ensure that they do not exert pressures on the base of the walls. No trees or vegetation will be planted in close proximity to the walls of the house. Controlling surface rainwater and introducing a gravelled apron / French drain around the external perimeter of the walls will also assist in reducing softening of the ground and subsequent foundation movement in the future.

6.6 General

It can be seen that the structure, has suffered from a significant degree of water penetration over the years and as such detailed design will include advice and any required treatment from specialists in the field of damp and decay. This work will be carried out in conjunction with the conversion, in order to ensure that damp and timber decay are not trapped within the fabric post completion.

Existing drainage within and around the property will be checked to ensure that the system is adequality discharging foul and surface water away from the property. Any excavations for new drainage should will be conducted with care due to the unknown depth of the foundations.

Rev.	Date	Description

ASHWOOD HOMES
1 Goodison Road, Lincs Gateway Business Park,
Spalding, Lincs, PE12 6FY T: 01406 490590

PROJECT:
Proposed Refurbishment to provide community facilities
Manor Farm
Holbeach

DRAWING:
Engineering Notes
Sheet 2

SCALE: 1:100@A2 DRAWN: JE

DATE: NOVEMBER.2022 REVISION: /

DRAWING No:
21 - ENG - 401