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**STRUCTURAL ADVICE IN
RESPECT OF A
PLANNING APPLICATION
FOR CONVERSION OF
THE BARNs TO LIVING
ACCOMMODATION
NEWGATE ESTATE
HIGHDALES
HACKNESS
YO13 0JU**



Alan Wood & Partners

**PROJECT NO.
MCB/PS/JC/43078 Rpt001**

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**STRUCTURAL ADVICE IN RESPECT OF A PLANNING APPLICATION
FOR CONVERSION OF THE BARNs TO LIVING ACCOMMODATION
NEWGATE ESTATE, HIGHDALES, HACKNESS, YO13 0JU**

Prepared by: **Paul Sedman, BEng (Hons), CEng, MStructE**

Signed:

Date: 22nd October 2019

Issue	Revision	Revised by	Approved by	Revised Date

For the avoidance of doubt, the parties confirm that these conditions of engagement shall not and the parties do not intend that these conditions of engagement shall confer on any party any rights to enforce any term of this Agreement pursuant of the Contracts (Rights of Third Parties) Act 1999.

The Appointment of Alan Wood & Partners shall be governed by and construed in all respects in accordance with the laws of England & Wales and each party submits to the exclusive jurisdiction of the Courts of England & Wales.

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1.0 INTRODUCTION

1.1 Details

Client This report has been prepared at the request of Neil, Anglea and Lewis Ramsey, in consequence of proposed works to the barns.

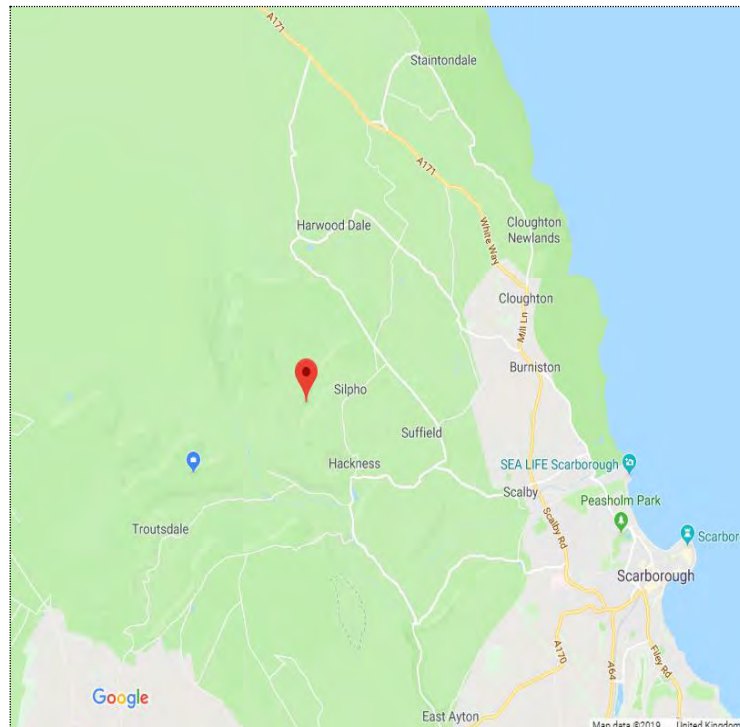
Property Newgate Estate
Highdales
Hackness
North Yorkshire
YO13 0JU



1.2 This report is intended to record the general condition of the barns and their suitability for conversion into living accommodation.

2.0 BACKGROUND

Location Plan



- 2.1 This 4 bedroom farmhouse and external barns is situated at Highdales, Hackness near Scarborough, North Yorkshire
- 2.2 It is thought that this period building was erected in the early 1800's.
- 2.3 The property is of stone construction under slate roofs.
- 2.3 No detailed information is available for the foundations but it is anticipated they comprise of shallow stone spread footings.
- 2.4 The sub-soils beneath the property are not known precisely but we anticipate that they consist of glacial till boulder clay.

3.0 INSPECTION

General

- 3.1 An inspection of the barns only was made on Wednesday 2nd October 2019 covering both external and internal aspects and a detailed record was made of the state of the buildings. This, together with photographs, is being retained on the file for the property.
- 3.2 The barns have been identified for the report and accompanying photographs by their intended use following the proposed conversion works and are indicated as such on the plans attached in Appendix A and B.
- 3.3 The proposed accommodation consists of:-
- A) Study
 - B) Gun Room
 - C) Boot Room and WC
 - D) Store Room 1
 - E) Bedroom
 - F) Bathroom
 - G) Kitchen / Dining Area
 - H) Living Area
 - I) Store Room 2
 - J) Garage
 - K) Store Room 3

A first floor extension containing proposed additional living accommodation is to be built above rooms F, G and H.

Building A

- 3.4 The masonry has suffered erosion and has been poorly pointed in the past. There is possible asbestos sheeting to the roof. (See photo 1)
- 3.5 Drive iron corroded within masonry joint and spalled masonry evident. (See photo 2)

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- 3.6 The lintel has deflected, there are pointing failures throughout and the flashing is incorrect. (See photo 3)
 - 3.7 The wall is out of plumb and there is evidence of crack repairs and cracking is evident. No positive surface water drainage. (See photo 4)
 - 3.8 Timbers show sign of woodworm and rot. There is poor bonding to the wall and the lintel bearing is of concern. (See photo 5)
 - 3.9 There is cracking to the gable wall of Room B which is evident in a number locations. (See photo 6)

Building B

- 3.10 There is poor pointing and minor stone erosion with pattress plates evident. (See photo 7)
- 3.11 There is stone erosion and pointing issues. Existing openings have been infilled and roofing failures are evident. This also is typical for Rooms C and D. (See photo 8)
- 3.12 The chimney brickwork has spalled and the pointing and flashings are damaged. (See photo 9)
- 3.13 The lintels are in poor condition with woodworm and rot visible. Cracking is evident to the walls. (See photo 10)
- 3.14 There is cracking to the gable, fireplace and external wall. Roof spread is evident. (See photos 11 and 12)
- 3.15 Bulging to the wall is evident along with multiple cracks. (See photo 13)
- 3.16 The WC room has been decorated recently possibly covering damage. Mould spores are evident. (See photo 14)
- 3.17 The Bitumen felt roof is showing signs of degradation.

Building C (Internal only)

- 3.18 Cracking noted to gable walls. (See photo 15)
- 3.19 Cracking to walls generally. Woodworm and rot are evident to the lintels. (See photo 16)
- 3.20 The Bitumen felt roof is showing signs of degradation.

Building D (Internal only)

- 3.21 The lintel shows signs of infestation and there is cracking to the wall. (See photo 17)
- 3.22 The kingpost truss is in reasonable condition.
- 3.23 The Bitumen felt roof is showing signs of degradation. (See photo 18)
- 3.24 There is cracking to the wall and roof movement is evident. (See photo 19)
- 3.25 The wall has had previous poor repairs undertaken and the purlins have a distinct 'bow'. (See photo 20)
- 3.26 Cracking is evident to the existing gable but note previous 'repair'. Pointing and mortar joint washout is evident. (See photos 21 and 22)

Buildings E, F and G

- 3.27 There is a crack evident to the gable, note also masonry erosion. (Lintel and cill issues evident). (See photo 23)
- 3.28 There is masonry and pointing erosion along with masonry spalling and cracking generally evident. (See photo 24)
- 3.29 There is lintel failure to the window. (See photo 25)
- 3.30 Cracking of masonry joints typical to this elevation. (See photo 26)

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- 3.31 Further typical cracking is noted near the doors. (See photos 27 and 28)
 - 3.32 Pointing and render repairs are evident though spalling and cracking are still evident to the top side wall and gable. Previous lean-to roof noted. (See photo 29)
 - 3.33 The internal aspects to the ground floor have been recently refurbished. (See photo 30)
 - 3.34 The floor edge to the first floor is not supported or tied to the external wall. (See photo 31)
 - 3.35 First floor floor joists have been excessively notched. (See photo 32)
 - 3.36 Walls are typically cracked but have received some minor 'repairs'. (See photos 33 and 34)
 - 3.37 The trusses are in good order but some infestation is noted. Note gap around the floor. (See photo 35)
 - 3.38 The truss bearing location is poor and a crack is evident. (See photo 36)
 - 3.39 The Bitumen type felt to the roof shows signs of degradation.

Building H

- 3.40 The lintel to the first floor has been replaced recently. (See photo 37)
- 3.41 There is stone failure to the water table. (See photo 38)
- 3.42 The gable has been partially repointed and the door has been replaced recently. (See photo 38)
- 3.43 The timber lintel has shrunk and there is multiple cracking evident to the gable. (See photo 39)
- 3.44 The pointing has eroded or is missing and there is cracking evident. This is typical throughout. (See photo 40)

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- 3.45 Mortar fillet flashing has been used and there is a crack to the wall. (See photo 41)
- 3.46 There is cracking to the lintel jamb. (See photo 42)
- 3.47 Internally the ground floor has been refurbished although the walls have been left un-pointed and with poor mortar joints. (See photos 43 and 44)
- 3.48 The window frame has not been sealed in fully. Rot and infestation are noted to the lintels. The flooring is 'floating' and there is a membrane present. (See photo 45)
- 3.49 Previous poorly repaired cracks and other minor cracks are evident. (See photo 46)
- 3.50 The redundant window cill shows signs of infestation and rot. Mould is also noted to the furniture. There is a crack to the wall. (See photo 47)
- 3.51 The trusses appear to be in good order but the Bitumen felt is showing signs of degradation. (See photo 48)
- 3.52 The walls are lime rendered but cracking is noted over the windows. Timber infestation is noted generally. (See photos 49, 50 and 51)
- 3.53 Truss bearing failure is noted. (See photo 52)
- 3.54 Cracking to the render and wall are evident to the north gable, with a possible lack of restraint. (See photo 53)

Building I

- 3.55 Recent roof works and pointing are evident to rooms I and J. (See photo 54)
- 3.56 Erosion is noted at the base of the wall. (See photo 55)
- 3.57 The wall appears to have been re-built along with re-roofing. (See photo 56)
- 3.58 There is cracking at the lintel jamb. (See photo 57)

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- 3.59 The room has been repointed internally locally. Note purlin sag. (See photo 58)
- 3.60 The wall has been rebuilt up to the underside of the felt. Note previous crack repair at purlin to the wall. (See photo 59)
- 3.61 The truss bearing has been rebuilt but a new crack is evident. (See photo 60)
- 3.62 The walls are typically repointed/rebuilt locally but cracking and mortar wash-out is evident. (See photo 61)
- 3.63 Cracking to western gable noted. (See photo 62)
- 3.64 Timber infestation and rot noted. Localised masonry has been rebuilt. (See photo 63)
- 3.65 Cracking is noted to the new wall at truss bearing. (See photo 64)
- 3.66 The Bitumen type felt which is laid on new rafters is showing signs of degradation.

Building J

- 3.67 The pointing is poorly executed typically.
- 3.68 The lintel has bowed and shrunk. (See photo 65)
- 3.69 The wall appears to have been rebuilt along with reroofing. (See photo 66)
- 3.70 There is cracking at the lintel jamb. (See photo 67)
- 3.71 Existing trusses are generally in reasonable condition. The rafters and purlins typically have been replaced. (See photo 68)
- 3.72 The main truss shows signs of minor damp and infestation. (See photo 69)
- 3.73 There is cracking near to the lintel to the rebuilt wall. (See photo 70)

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- 3.74 Cracking is evident to the walls and the masonry has been rebuilt locally up to the felt. (See photo 71)
- 3.75 The Bitumen felt is showing signs of degradation.
- 3.76 The truss bears onto the opening and there is cracking evident. (See photo 72)
- 3.77 Cracking is noted to the concrete floor. (See photo 73)
- 3.78 There is typical cracking to the byre, through render and to the wall. (See photo 74)
- 3.79 The gable walls have cracks evident, emanating from the purlin positions. (See photo 75)

Building K

- 3.80 The pointing is poorly executed. Some areas have been rebuilt. Note exposed concrete slab and eroded masonry. (See photo 76)
- 3.81 There is oil staining evident to the floor. (See photo 77)
- 3.82 Cracking to the walls is evident. (See photos 78 and 79)
- 3.83 The generator exhaust is not terminating properly. (See photo 80)
- 3.84 The water table flashing is not long enough. There is pointing missing and the masonry is cracked and eroded. (See photo 81)
- 3.85 Cracking to the wall is evident to the gable. (See photo 82)
- 3.86 There is a straight joint crack between the two buildings. (See photo 83)

4.0 CONCLUSIONS

- 4.1 The buildings are typically in a reasonable condition but do have inherent design flaws with lack of restraint, especially to the roofs. With careful consideration to the detailing, the buildings would benefit substantially with being renovated. A brief overview of the repair works are noted as follows below, however, the exact detailing should be carried out during the design detailing of the renovation works.
- 4.2 Eroded masonry should be either repaired with material match bonded reconstituted stone or the masonry block can be exchanged for a same size block of the similar make-up and then mortar bonded in using lime mortar.
- 4.3 Generally, throughout the buildings the external and internal walls shall need to be re-pointed using lime mortar.
- 4.4 In a number of locations where previous roof failures have caused localised accumulations of water, the masonry joints have washed out, these will need to be re-pointed with ramming the lime-mortar into the joints or where the wash-out is extensive, the stones will need to be re-bedded accordingly.
- 4.5 Although the roofs have generally been refurbished in the past, a bitumen based felt has been used and this has now failed. The roofs typically need to be re-felted.
- 4.6 Some rafters and purlins have suffered from infestation and rot and will need to be locally repaired, however, in some circumstances the timber members will need to be replaced.
- 4.7 Where the walls have suffered considerable crack damage, this appears to have been typically caused by the lack of restraint caused by insufficient strength to the roof purlins. These have deflected down the slope of the roof allowing the rafters to thrust on the walls and thus causing the walls to be pushed outwards. The roofs should either have lateral ties installed, increase the purlin size or strengthen them accordingly. The cracked walls should be stitch repaired using Helifix or similar and then pointed in lime mortar.

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- 4.8 The proposed conversion works should consider installing additional lateral ties within the scheme to help prevent further spread of the buildings walls and roofs. This is also specifically noted to the two storey element of the barns.
- 4.9 Some of the roofs will need the pantiles replacing as they have suffered excessive erosion/spalled/split, it is noted that this is fairly local in nature across the barns.
- 4.10 Flashings appear to have been installed with nominal embedment and should be replaced where necessary and providing the sufficient lap/cover.
- 4.11 Cracked stones should be replaced using the same stone type and finish then bedded in lime mortar and pointed accordingly.
- 4.12 Lintels and any other 'embedded timbers' should be checked for any live infestation and rot by a specialist and the timbers should then be repaired, treated or replaced accordingly.
- 4.13 Drainage from the roofs etc should be directed away from the building and dealt with accordingly.
- 4.14 Bearings from trusses will need to be re-inspected once higher level access is available, it is anticipated that bearing stones will need to be installed.
- 4.15 Mortar based flashings have typically been undertaken with cement based mortar, these should be carefully replaced with lead flashings.
- 4.16 Window and door frames need to be sealed accordingly to prevent ingress.
- 4.17 Water tables generally need some re-bedding, however, these do not appear to have been adequately flashed and this should be carried out to prevent further water ingress to the buildings.
- 4.18 The drive iron to Building A should be carefully removed along with any remanence of the iron, the local masonry shall be replaced accordingly and bedded in lime mortar and pointed.

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- 4.19 The potential asbestos sheeting should be tested accordingly and any recommendations from the specialist should be reviewed and acted upon.
- 4.20 Where cement based pointing has been used, this should be carefully removed and a lime mortar based system should be used.
- 4.21 The door jamb to Building A will need re-building and bonding in, the precast concrete lintels should be replaced.
- 4.22 Consideration in rebuilding the out of plumb wall shall be reviewed, this will dependant on the proposed works and it is advisable to investigate the condition of the existing foundations and then carry out the associated repairs to suit.
- 4.23 The chimney to Building B will need to be re-built due to the amount of damage to the brick and flashings.
- 4.24 Further investigation to the wall bulge will be needed once higher level access is available, however, it is anticipated that remedial ties will be required.
- 4.25 The mould spores to the walls of the WC will need to be treated by a specialist and any recommendations carried out accordingly.
- 4.26 To Buildings E,F & G, the first floor floor joists have been excessively notched, this will need to be design checked and any strengthening works carrying out. The first floor should not be excessively loaded until this is undertaken.
- 4.27 To buildings I and J where the wall has been rebuilt, cracks are evident and no movement joint has been installed, the wall should have movement joints installed – this will need to be considered into the refurbishment design detail.
- 4.28 To building J, the crack to the floor will need to be investigated, however, this would be subject to the proposed renovation works.
- 4.29 To building K, the oil contamination will need to be carefully treated by a specialist.

- 4.30 The wall to Building K has not been infilled to sufficient standard and it is considered that this would be best to be rebuilt, especially in view of the cracking also evident to this small building.

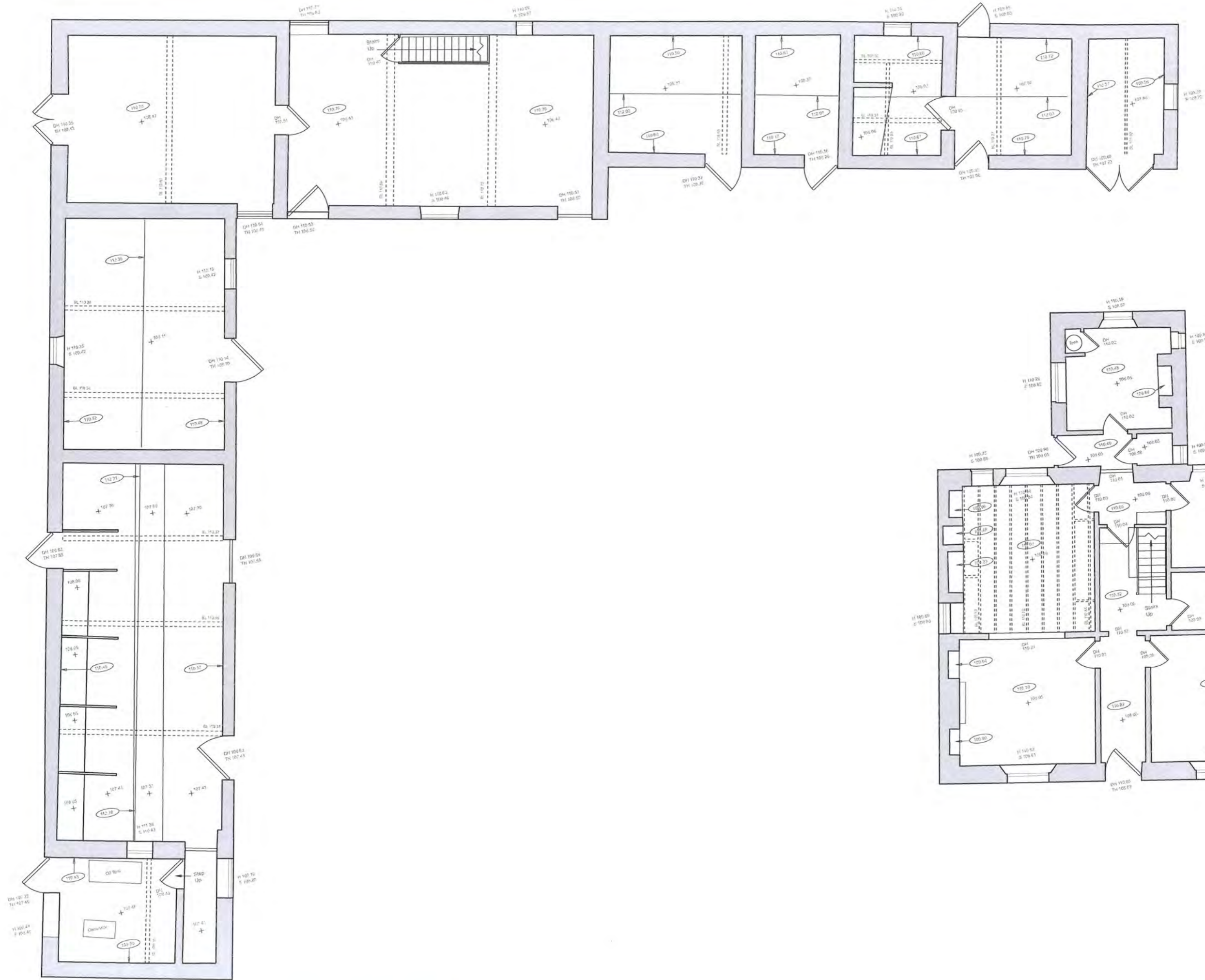
5.0 LIMITATIONS

- 5.1 Our inspection and report are concerned with the structural aspects of the buildings, such as foundations, walls, floors and roof but we have not concerned ourselves with details of other elements such as doors, windows and other fittings. Similarly we have not commented on dampness or timber infestation or services such as electricity, plumbing, heating or drainage.
- 5.2 We have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.
- 5.3 No comment is made in the report as to the presence of new or old mine workings or tunnelling, heavy metals, chemical, biological, electromagnetic or radioactive contamination or pollution, or radon methane or other gases, underground services or structures, springs and water courses, sink holes or the like, noise or vibratory pollution, mould, asbestos and asbestos products.
- 5.4 Similarly, we make no comment on flood risk or previous flood events, invasive species of vegetation such as Japanese Knotweed, vermin or protected species, boundary conditions or materials, landscaping or any non-permanent structure.
- 5.5 The space under the ground floor has not been examined and therefore we cannot give any opinion on the condition of materials under the floor.
- 5.6 For the avoidance of doubt, the Contracts (Rights of Third Parties) Act 1999 shall not apply to this contract.

APPENDIX A

Plan Showing Existing Buildings





GROUND FLOOR PLAN (1:100)

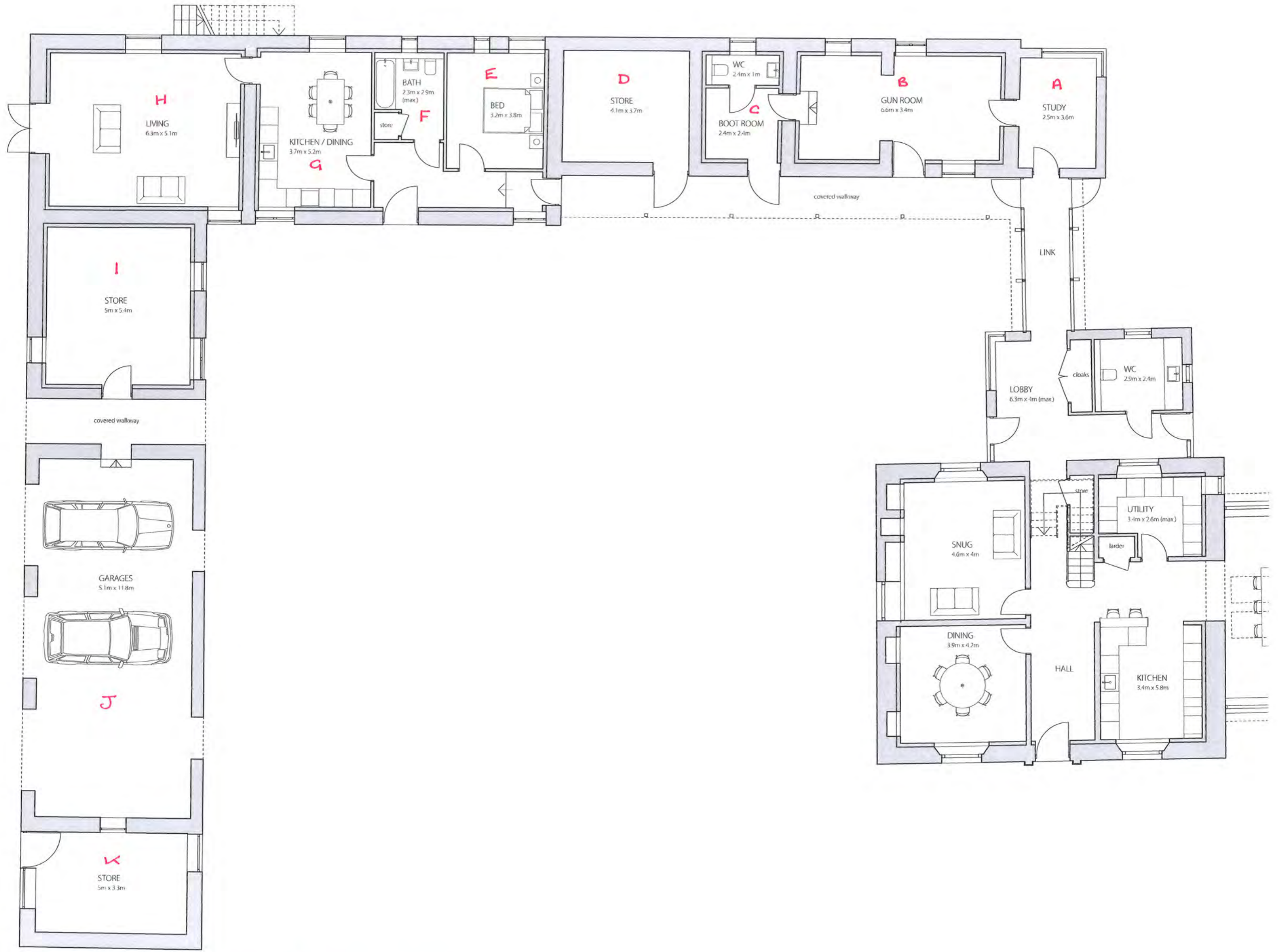


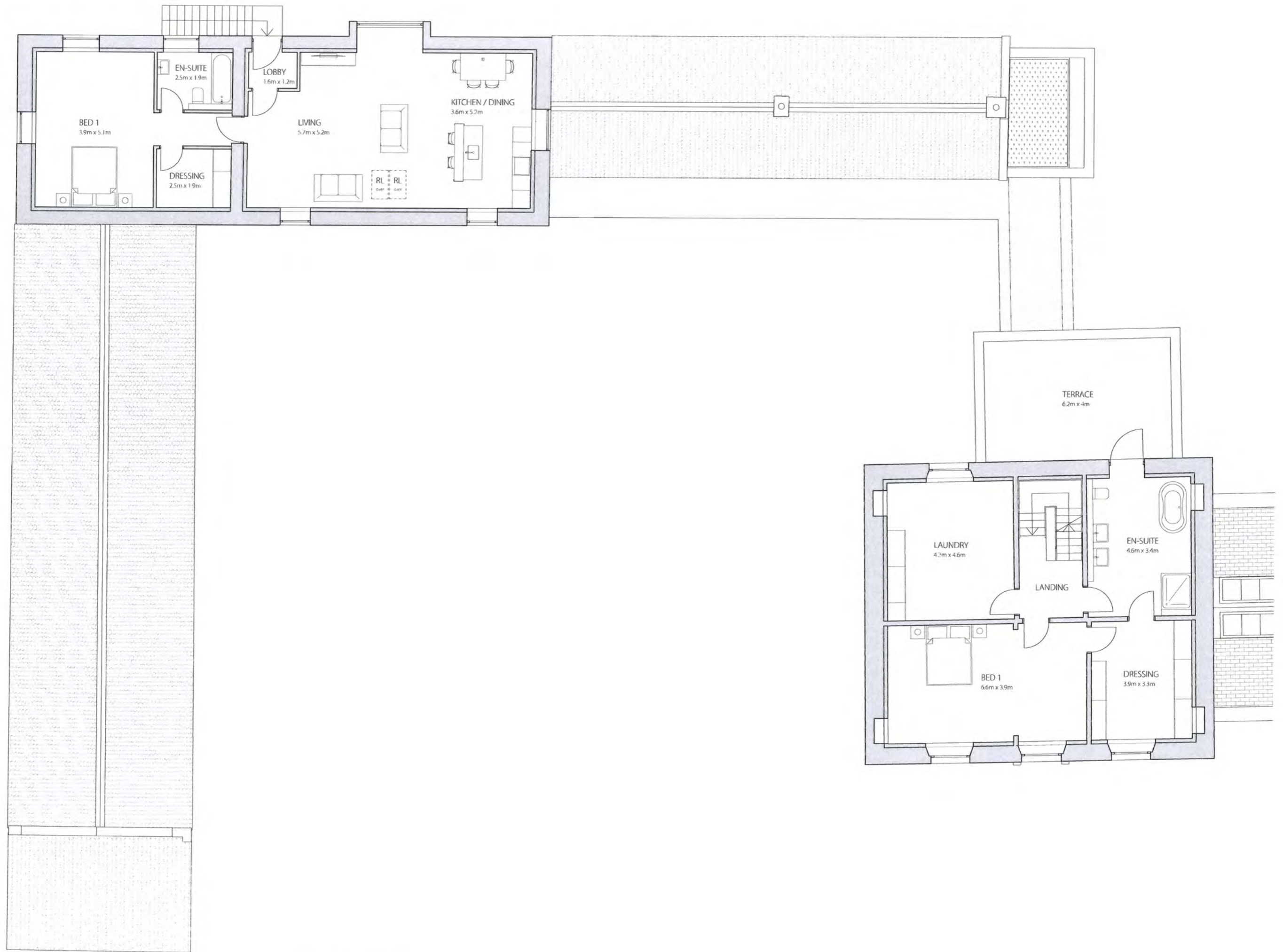
Existing Ground Floor

APPENDIX B

Plans Showing Proposed Buildings







APPENDIX C

Photographs





Photograph No. 1



Photograph No. 2



Photograph No. 3



Photograph No. 4



Photograph No. 5



Photograph No. 6



Photograph No. 7



Photograph No. 8



Photograph No. 9



Photograph No. 10



Photograph No. 11



Photograph No. 12



Photograph No. 13



Photograph No. 14



Photograph No. 15



Photograph No. 16



Photograph No. 17



Photograph No. 18



Photograph No. 19



Photograph No. 20



Photograph No. 21



Photograph No. 22



Photograph No. 23



Photograph No. 24



Photograph No. 25



Photograph No. 26



Photograph No. 27



Photograph No. 28



Photograph No. 29



Photograph No. 30



Photograph No. 31



Photograph No. 32



Photograph No. 33



Photograph No. 34



Photograph No. 35



Photograph No. 36



Photograph No. 37



Photograph No. 38



Photograph No. 39



Photograph No. 40



Photograph No. 41



Photograph No. 42



Photograph No. 43



Photograph No. 44



Photograph No. 45



Photograph No. 46



Photograph No. 47



Photograph No. 48



Photograph No. 49



Photograph No. 50



Photograph No. 51



Photograph No. 52



Photograph No. 53



Photograph No. 54



Photograph No. 55



Photograph No. 56



Photograph No. 57



Photograph No. 58



Photograph No. 59



Photograph No. 60



Photograph No. 61



Photograph No. 62



Photograph No. 63



Photograph No. 64



Photograph No. 65



Photograph No. 66



Photograph No. 67



Photograph No. 68



Photograph No. 69



Photograph No. 70



Photograph No. 71



Photograph No. 72



Photograph No. 73



Photograph No. 74



Photograph No. 75



Photograph No. 76



Photograph No. 77



Photograph No. 78



Photograph No. 79



Photograph No. 80



Photograph No. 81



Photograph No. 82



Photograph No. 83

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