Romala Design Ltd

CONSULTING CIVIL & STRUCTURAL ENGINEERS

27 Beaumont Road, Chorlton, Manchester, M21 8BG Tel: 0161 8816196 & 01282 852561 & 01424 213923
Email: jfd@romaladesign.co.uk
Website: www.romaladesign.co.uk Additional offices in Barnoldswick, Lancashire & Bexhill on Sea, East Sussex

Date: 19 2013
Our Ref: JFD/01/1041
Your Ref:

FAO Mr John Lund
Wood Farm
Rimmington
Near Clitheroe
Lancashire
BB7 4DP

Dear John

STRUCTURAL CONVERSION ASSESSMENT
LITTLE DUDLANDS FARM, RIMINGTON LANE, RIMINGTON, BB7 4EA

Please find enclosed a structural report for the above property as discussed.

Please do not hesitate to contact myself if you have any queries.

Yours sincerely

Jason Day MEng (Hons) CEng MICE

Director

Romala Design Ltd

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Date: 19 December 2013
Our Ref: JFD/02/1041
Your Ref:

FAO Mr John Lund
Wood Farm
Rimmington
Near Clitheroe
Lancashire
BB7 4DP

STRUCTURAL CONVERSION ASSESMENT AND METHOD STATEMENT
LITTLE DUDLANDS FARM
RIMINGTON LANE, RIMINGTON, BB7 4EA

TERMS OF REFERENCE

A structural inspection of the above property was carried out on 10 December, 2013, to examine and report on the current state and safety of an existing barn for conversion purposes.

The survey comprised a visual inspection of the elements and fabric of the barn in question, but did not include the following:

1. An under floor inspection.
2. A full roof space inspection
3. A moisture or timber survey.
4. An inspection of roof coverings, rainwater goods or flashings.
5. An inspection of drainage provisions on site.
6. An inspection of areas covered, unexposed or inaccessible.
7. An inspection of the main farm buildings, any outbuildings and external areas, including gardens, paving, walls and fencing, except where stated.

The recommendations given in this report relate to matters defined by the Terms of Reference and do not address other possible defects, which may exist outside the scope of this report.

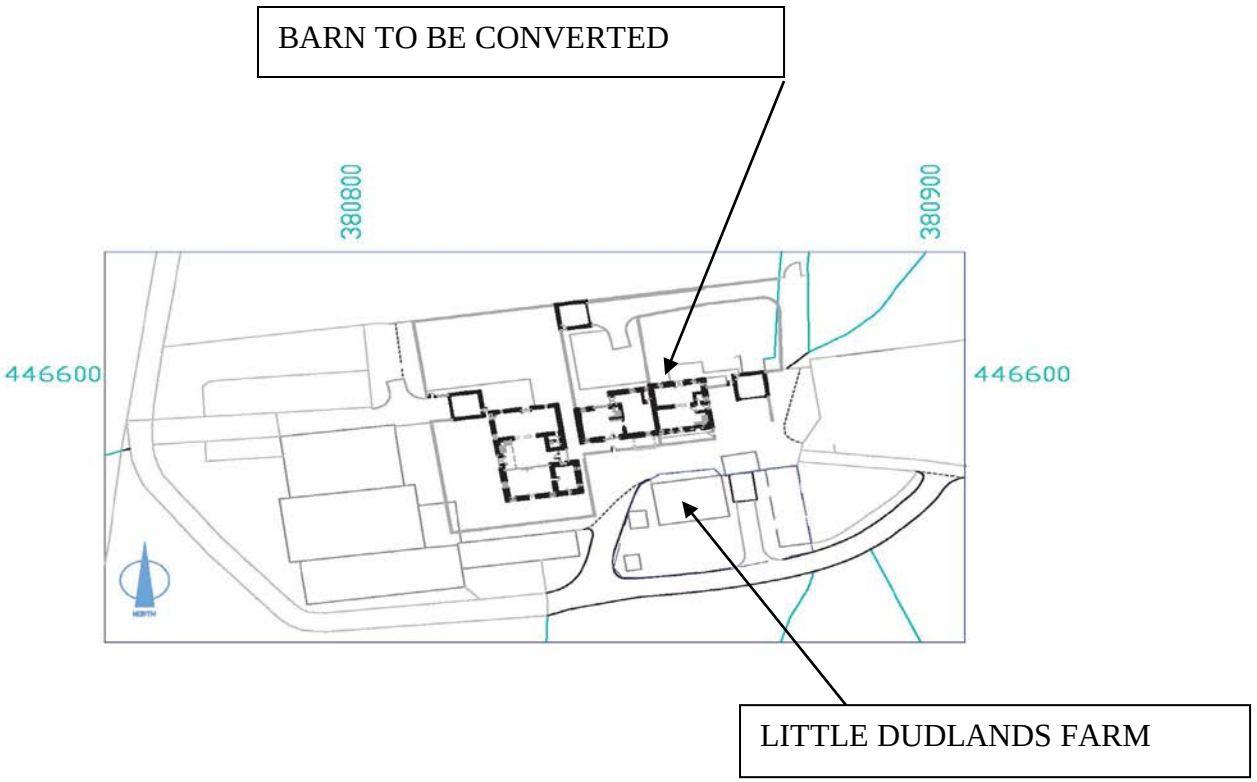
INTRODUCTION

Works should always be carried out following good practice and following an identified sequence, incorporating adequate precautions so as not to prejudice or weaken any part or whole of the existing structure.

Those responsible for carrying out conversion operations should take the responsibility to consult with the local authority where there is any doubt with regard to any part of demolition or part of the repair process or indeed when an unknown defect presents itself.

CONVERSION ASSESSMENT

Site/Location Address: Little Dudlands Farm, Rimington Lane, Rimington, BB7 4EA.
(Grid Reference: 437920:364630)



CONDITION OF EXISTING ROOF ELEMENTS

- **Conditions of Existing Roof No. 1 (see drawings in the appendix for positions)**

The roof coverings are traditional stone slate constructed over rafter construction which is supported by timber purlin and truss construction.

The timber trusses to the main barn seem to be in reasonable condition showing no real signs of rot or deflection. (These trusses will need checking at time of construction when scaffolding is in place to confirm suitability).

Areas of wood worm attack could be seen to various places and therefore a timber survey should be carried out to assess if any of the wood requires treatment or replacement due to residual strengths of the remaining timber being adequate or not. This should be carried out at the time of conversion works when scaffolding is in place as close inspection is impossible due to no access in its present state.

The slates in places are cracked and missing and therefore require attention.

The purlins generally looked in fair condition showing no real signs of rotting.
(These purlins will need checking at time of construction when scaffolding is in place to confirm suitability).

All the rafters will need to be removed and new ones installed due to inadequate depth for both strength and insulation depths.

- **Alteration/repair/removal of existing roof No. 1**

Requires a full re-roof for conversion as no insulation is present and areas of ingress of water can also be seen.

The actual sizes of timber purlins and rafters will also need to be checked at a later stage to assess whether they can take the additional loadings from the new roof coverings.

- **Conditions of Existing Roof No. 2**

The roof coverings are traditional blue slate constructed over rafter construction which is supported by timber purlin and truss construction.

The timber trusses to the main barn seem to be in reasonable condition showing no real signs of rot or deflection. (These trusses will need checking at time of construction when scaffolding is in place to confirm suitability).

Areas of wood worm attack could be seen to various places and therefore a timber survey should be carried out to assess if any of the wood requires treatment or replacement due to residual strengths of the remaining timber being adequate or not. This should be carried out at the time of conversion works when scaffolding is in place as close inspection is impossible due to no access in its present state.

The slates in places are cracked and missing and therefore require attention.

The purlins generally looked in fair condition showing no real signs of rotting.
(These purlins will need checking at time of construction when scaffolding is in place to confirm suitability).

All the rafters will need to be removed and new ones installed due to inadequate depth for both strength and insulation depths.

- **Alteration/repair/removal of existing roof No. 2**

Requires a full re-roof for conversion as no insulation is present and areas of ingress of water can also be seen in numerous areas.

Due to areas of heavy rot to both the trusses and their purlins it is suggested that they are removed and replaced with new due to their poor condition. It is suggested that the trusses are replaced with steel beams at roof height to support the new timber purlin and rafter construction at the roof level. This will also improve the lateral stability of the existing barn wall to its full length.

- **Conditions of Existing Roof No. 3**

The roof coverings are traditional blue slate constructed over rafter construction which is supported by timber purlin and truss construction.

Assess was not possible at the time of inspection due to existing floor construction not being adequate for safe walking. It is therefore suggested that an inspection of this area will be undertaken at the time of conversion. The area in general was dry internally. No signs of slate slippage could be seen externally and therefore it is suggested that the roof coverings must be generally ok and therefore should be found to be in similar condition to the main barn area which was found to be generally in a fair condition.

- **Alteration/repair/removal of existing roof No. 3**

Requires a full re-roof for conversion as no insulation is present and areas of ingress of water can also be seen in numerous areas.

To be assessed at time of works to determine whether existing timber trusses and purlins are satisfactory.

- **Conditions of Existing Roof No. 4**

The roof coverings are traditional blue slate constructed over rafter construction which is supported by timber purlin and truss construction.

The existing timber purlins looked generally to be in a fair condition but did show signs of wood worm attack and therefore a timber survey should be carried out to assess if any of the wood requires treatment or replacement due to residual strengths of the remaining timber being adequate or not.

The slates in places are cracked and missing and therefore require attention.

The purlins generally looked in poor condition showing signs of rotting.
(These purlins will need checking at time of construction when scaffolding is in place to confirm suitability).

All the rafters will need to be removed and new ones installed due to inadequate depth for both strength and insulation depths.

- **Alteration/repair/removal of existing roof No. 4**

Requires a full re-roof for conversion as no insulation is present and areas of ingress of water can also be seen.

The actual sizes of timber purlins and rafters will also need to be checked at a later stage to assess whether they can take the additional loadings from the new roof coverings.

CONDITION OF EXISTING WALL ELEMENTS

- **Conditions of Existing South Walls**

The construction of the walls to all elevations is random solid stone with rubble infill.

The main barn wall which is shown on the plans as position number 8 (also seen as the photograph position as shown on drawing number 1041-01) of the photographs showed areas of cracking which will need to be addressed. Cracking to the walls internally could also be seen in numerous areas.

The two external walls shown on the plans as positions 3, 5 & 8 are reasonably plumb and in good condition showing no real signs of excessive movement or large cracking. All the pointing however is in poor condition. Cracking to the walls internally could also be seen in numerous areas to the plan positions 5.

An existing single storey brick built store that can be seen on photograph number 4 was generally in poor condition and was obviously not original construction as it was standard red brick construction.

No trial holes have been dug so it was not possible to ascertain if any existing foundations exist and at what depth.

Lintels to all openings are defective.

- **Alteration/repair/removal to the South Walls**

Inspections of the existing foundations are required to determine if built off suitable ground bearing capacities.

All lintels to openings to be replaced with new stone lintels to external face and Catnic lintels to internal masonry as per manufacturers' details and specifications.

All areas require the existing pointing to be removed and replaced. Any loose stonework must also be replaced as necessary once the pointing has been removed with stone work to match; this should be carried out both externally and internally

The installation of a damp proofing system will be required along with an internal lining wall to give additional restraint to the existing wall.

All internal and external cracks are to be repaired by either locally rebuilding using larger stones or using a standard stich preparatory system such as helifix bars and resin which are hidden within the wall construction.

- **Conditions of Existing East Walls**

The construction of the walls to all elevations is random solid stone with rubble infill.

The main barn wall which is shown on the plans as position number 1 and 2 of the photographs showed excessive bulging at the top of the wall near the apex. All the pointing is in poor condition.

The external wall shown on the plans as position 7 is reasonably plumb and in good condition showing no real signs of excessive movement or large cracking. All the pointing however is in poor condition.

No trial holes have been dug so it was not possible to ascertain if any existing foundations exist and at what depth.

Lintels to all openings are defective.

- **Alteration/repair/removal to the East Walls**

Inspections of the existing foundations are required to determine if built off suitable ground bearing capacities.

The top section of the wall as shown in positions 1 & 2 must be rebuilt locally to remove the bulging and cracking with stone to match existing.

All areas require the existing pointing to be removed and replaced. Any loose stonework must also be replaced as necessary once the pointing has been removed with stone work to match; this should be carried out both externally and internally

The installation of a damp proofing system will be required along with an internal lining wall to give additional restraint to the existing wall.

All internal and external cracks are to be repaired by either locally rebuilding using larger stones or using a standard stich preparatory system such as helifix bars and resin which are hidden within the wall construction.

- **Conditions of Existing West Walls**

The construction of the walls to all elevations is random solid stone with rubble infill.

The external wall shown on the plans as position 9 is reasonably plumb and in good condition showing no real signs of excessive movement or large cracking, except to one position near the corner. All the pointing however is in poor condition.

The external wall construction that can be seen within photograph number 10 is in a poor state of condition and is only a red brick built lean too that was not built at the same time as the main barns.

No trial holes have been dug so it was not possible to ascertain if any existing foundations exist and at what depth.

Lintels to all openings are defective.

- **Alteration/repair/removal to the West Walls**

The main barn wall (red brick section) as shown as position number 10 needs to be totally re-built off a new concrete strip footing. The wall construction will consist of an outer leaf of random stone with a 100mm thick concrete back blocking. This will be tied to an internal leaf of 140mm thick concrete block with ties as per the Architects details as supplied at the time of any Building Regulation application.

The size of the foundation required will be determined at the design stage.

The above wall should only be removed once adequate support has been provided to the existing roof and floor construction. The contractor must also provide lateral support to the existing barn flank walls whilst the wall in question is being re-built.

All areas require the existing pointing to be removed and replaced. Any loose stonework must also be replaced as necessary once the pointing has been removed with stone work to match; this should be carried out both externally and internally

The installation of a damp proofing system will be required along with an internal lining wall to give additional restraint to the existing wall.

All internal and external cracks are to be repaired by either locally rebuilding using larger stones or using a standard stich preparatory system such as helifix bars and resin which are hidden within the wall construction.

Inspections of the existing foundations are required.

All lintels to openings to be replaced with new stone lintels to external face and Catnic lintels to internal masonry as per manufacturers' details and specifications.

- **Conditions of Existing North Walls**

The external walls shown on the plans as positions 12 & 13 are reasonably plumb and in good condition showing no real signs of excessive movement or large cracking. All the pointing however is in poor condition.

The external wall construction that can be seen within photograph number 11 is in a poor state of condition and is only a red brick built lean too that was not built at the same time as the main barns.

No trial holes have been dug so it was not possible to ascertain if any existing foundations exist and at what depth.

Lintels to all openings are defective.

- **Alteration/repair/removal to the North Walls**

The main barn wall (red brick section) as shown as position number 11 needs to be totally re-built off a new concrete strip footing. The wall construction will consist of an outer leaf of random stone with a 100mm thick concrete back blocking. This will be tied to an internal leaf of 140mm thick concrete block with ties as per the Architects details as supplied at the time of any Building Regulation application.

The size of the foundation required will be determined at the design stage.

The above wall should only be removed once adequate support has been provided to the existing roof and floor construction. The contractor must also provide lateral support to the existing barn flank walls whilst the wall in question is being re-built.

All areas require the existing pointing to be removed and replaced. Any loose stonework must also be replaced as necessary once the pointing has been removed with stone work to match; this should be carried out both externally and internally

The installation of a damp proofing system will be required along with an internal lining wall to give additional restraint to the existing wall.

All internal and external cracks are to be repaired by either locally rebuilding using larger stones or using a standard stich preparatory system such as helifix bars and resin which are hidden within the wall construction.

Inspections of the existing foundations are required.

All lintels to openings to be replaced with new stone lintels to external face and Catnic lintels to internal masonry as per manufacturers' details and specifications.

DETAILS OF DEMOLITION WORK:

Total wall area, measured externally = 519.7m^2

Total wall area to be demolished = 105.5m^2

% of walls to be demolished externally = 20.30%

PROPOSED NEW OPENINGS WITH EXTERNAL WALLS

- **South Walls**

2No. Small windows are to be introduced at first floor level within the barn wall shown as position 8 (as shown on drawing number 1041-01).

A further 3No. Small windows are to be introduced at first floor level within the barn walls shown as positions 3 & 5.

These small window openings will cause no detriment to the existing structure.

All the new openings will be supported via new Catnic lintels with stone lintels to the front to match existing openings.

All the existing openings are to be utilised.

- **East Walls**

No further openings are to be created but 1No. Existing opening at first floor level is to be increased in width slightly within the barn wall shown as position 7 (as shown on drawing number 1041-01).

This small window openings will cause no detriment to the existing structure.

All the new opening will be supported via new Catnic lintels with stone lintels to the front to match existing openings.

All the existing openings are to be utilised.

- **North Walls**

1No. Small window is to be introduced at first floor level within the barn wall shown as position 12 (as shown on drawing number 1041-01).

A further 1No. Small window is to be introduced at first floor level within the barn walls shown as position 11.

This small window openings will have cause no detriment to the existing structure.

2No. existing window openings at ground floor level are to be slightly widened to make way for new patio door openings as shown as position 11 & 13.

All the new opening will be supported via new Catnic lintels with stone lintels to the front to match existing openings.

All the existing openings are to be utilised.

- **West Walls**

2No. Small windows are to be introduced at first floor level within the barn wall shown as position 9-10 (as shown on drawing number 1041-01).

These small window openings will cause no detriment to the existing structure.

All the new opening will be supported via new Catnic lintels with stone lintels to the front to match existing openings.

All the existing openings are to be utilised.

FORMATION OF INTERNAL LINING WALLS

All the existing external walls are to be lined with 140mm thick concrete block walls to provide both additional lateral support to the walls and give support to the new first floor constructions. This proposed first floor construction will also provide additional support to the existing walls.

These walls will be constructed off the new internal ground floor slab that will be thickened at the edges to provide adequate bearing pressures to the underlying strata.

EXISTING FLOOR CONSTRUCTIONS

The existing timber floor construction as shown on the attached plans is in poor condition showing extensive areas of rot and woodworm attack. The structural sizes of the structural members are also inadequate to provide resistance to imposed live loads to meet Building Regulations approval.

Additional benefit to the existing external walls will also be created by installing new floors as this will give additional lateral restraint at mid height.

All new first floor construction will be of suspended timber construction supported of steel beam and column arrangements and the new internal load bearing lining walls.

There is no real existing ground floor construction apart from uninsulated concrete floors and compacted earth to most areas. This will require upgrading to consist of a 150mm thick hardcore base with a 150mm thick concrete slab over with 1 layer of A252 mesh to the top face. All details for damp proofing will be provided by the Architect at a later date.

Existing internal floor levels are similar to external floor levels and hence no retaining walls are required in the upgrading of the ground floor construction as this can be built directly off the existing floor level to provide a 150mm min level difference to the external levels.

GROUND WORKS REQUIRED

- **Existing Walls**

All existing external and internal walls require inspection to determine if any foundations exist. This should be carried out by the provision of trial holes at various positions as agreed with the Structural Engineer to determine the ground conditions and the depth of the existing foundations.

Once the assessment of the existing foundation has been carried out it will be then possible to determine the extent of any under pinning that is required. All method statements for this work if required must be supplied to the local Building Inspector before any works commence on the upgrading of the foundation if required.

- **Services**

No services are provided to the existing barn in its present state.

All new services will be required, the details of which will be provided by the Architect. All new services are to be kept away from the existing structure in order to alleviate any affect of the existing structure.

METHOD STATEMENT FOR THE DEMOLITION OF THE EXTERNAL WALL AREAS TO POSITION NUMBERS 7 & 15 ON THE ATTACHED PLANS

- **Initial Procedures**

The areas to be demolished are listed on the attached drawings.

As shown on the plan two areas of the external wall construction are to be demolished and replaced as detailed elsewhere.

- **Initial Precautions**

Only one wall should be demolished at a time and be re-built before any other demolition work is carried out. As mentioned elsewhere before any wall is demolished adequate lateral restraint should be provided for the adjoining walls to the proposed demolished wall area.

Adequate support by means of scaffolding must also be provided to any existing load bearing structures on the wall to be demolished. This will include any roof purlins, roof trusses and first floor construction.

All the above procedures must be carried out by the contractor and must be approved by the local building inspector before the demolition is started.

- **Sequence of Works**

All scaffolding should be placed first to provide support to the existing purlins that sit on the wall to be demolished.

Additional scaffolding must also be provided to support to any existing floor constructions.

Additional scaffolding should also be placed externally and tied to existing flank walls to provide lateral restraint to the full height of the adjoining walls.

The demolition of the walls should start from the roof level and work down accordingly.

HEALTH AND SAFETY CONSTRUCTION

All work is to be carried out in accordance with the above Regulations. The Client shall appoint a competent person as Planning Supervisor and a Health and Safety Plan prepared before a Contractor is appointed. Designer's Risk Assessment analysis shall be supplied to the Planning Supervisor. The project must be notified to HSE. The Contractor shall develop the Health and Safety Plan and ensure all works on site comply with Health and Safety Law.

All materials and construction works are to comply with current BSI Standards and Code of Practice, Building Regulations and Schedules and Specifications. All materials and proprietary goods shall be stored, mixed and fixed in accordance with their suppliers/manufacturers instructions or specifications. The contractor shall take account of everything necessary for the proper execution of the works to the satisfaction of the Inspector, whether or not indicated on the specified drawings.
Any variations from the drawing carried out without the Designer's written agreement shall be the responsibility of the Contractor.

Jason Day MEng (Hons) CEng MICE
Director
Romala Design Ltd

APPENDIX

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

STANDARD TERMS AND CONDITIONS

This Appendix forms part of the Inspection Report and it is assumed the Client is fully conversant with its contents.

(a) Definitions

Unless the context otherwise requires, the following terms have the meaning ascribed:-

"the Client"	means the person(s) or body from whom the instructions to prepare the Report have been received. Reference to the Client, who shall be identified on the front page of the Report, shall in all cases be interpreted to mean this person(s) or body.
"the Company"	means Romala Design Ltd whose registered office is at 27 Beaumont Rd, Chorlton, Manchester, M21 8BG
"the Property"	means all those freehold/leasehold premises which have been inspected by Romala Design Ltd and reported upon.
"date of inspection"	the date as of which the on site inspection was carried out.

(b) Purpose of Report

The Company has prepared this Report for use only by the Client to assist them in the consideration of the proposal stated within the introduction to the Report in respect of the subject premises, and for no other purposes whatever. It is confidential to the Client and, other than for information purposes, it is not for use by any other party in any way. The Company can accept no responsibility if the Report is divulged to any other persons or bodies, any of whom relies upon it entirely at their own risk.

The Company accepts responsibility to the Client alone that the Report will be prepared with the skill, care and professionalism to be expected of a Chartered Structural Engineer, but accepts no responsibility whatsoever to any other person other than the Client. No person or body other than the Client may rely on the Report and neither the whole, nor any part of the Report, nor any reference thereto, is to be included in any published document, circular or statement, nor published in any way without the approval of the Company as to the form and context in which it may appear.

(c) The Inspection

In accordance with the Company's standard practice and the requirements of its insurers, set out below is the extent of the inspection and its limitations.

The degree to which parts of the property can be opened up to reveal concealed areas, is limited to those places where it can successfully be achieved without causing damage, requiring specialist equipment or is a risk to the health and safety of the surveyor. Lifting fitted floor coverings, moving heavy furniture or delicate artefacts will not be carried out. Should it be felt that investigative or exploratory works are necessary or advisable, the Client will be informed, and if confirmed to be actioned, then arrangements can be made to access such areas.

In the normal course of an inspection, excavations (to reveal foundations etc.) or detailed analysis/research into engineering design would not be carried out. However should there be any visual evidence of possible shortcomings in these areas the Report will bring them to the Clients attention.

Notwithstanding the foregoing the inspection will make every effort to inspect as much of the property as practically possible and report on same. In so far as hidden, built-in, covered up or otherwise inaccessible parts are concerned these would not be able to be inspected and so no confirmation could be given as to them being free of defects.

Enquiries to local and statutory authorities would not be included unless specifically requested in our instructions.

A detailed description of the locality or amenities is not include in the report unless these have a direct bearing on the structure of the property(s) in question or if our instructions specifically request such.

Service installations would be inspected for visual condition and defects. Tests would not normally be carried out but arrangements could be made with appropriate independent specialists if considered necessary subject to the Clients agreement and further instruction.

The Company's understanding of the boundaries is noted, but the Company has no knowledge (expressed or implied) of the responsibilities for fencing/walling and legal advice should be sought in this respect, if required.

(d) Environmental Matters

The Company has not carried out, nor has it commissioned, a site investigation, geographical or geophysical survey and therefore can give no opinion or assurance or guarantee that the ground has sufficient load bearing strength to support the existing constructions or any other constructions that may be erected upon it in the future. The Company cannot give any opinion or assurance or guarantee that there are no underground mineral or other workings beneath the site or in the vicinity nor that there is any fault or disability underground. It is not possible for the Company, therefore, to certify that the land is capable of further development, or redevelopment, at a cost for the use for which there is permission.

Unless otherwise stated, we are not aware of the content of any environmental audit or any other environmental investigation or soil survey which may have been carried out on the property and which may draw any attention to contamination or the possibility of any subsequent contamination. In our undertaking we will assume that no contaminate or potentially contaminate uses have ever been carried out at the property. We have not carried out an investigation into past or present uses, either of the property or of any neighbouring land, to establish whether there is any potential for contamination to the subject property from these uses or sites, and have therefore assumed that none exist.

(e) Defamation

This Report has been prepared in good faith on the basis of enquiries made and information supplied to us. We reserve the right to claim qualified privilege in respect of any part of this Report should the contents be subsequently challenged by a party claiming to be aggrieved at anything stated herein.

(f) Generally

Sections 12 to 16 of the Supply of Goods and Services Act 1982 (or statutory enactment thereof for the time being in force) are hereby excluded.

Notwithstanding what we have said above, this Report must be treated at all times as confidential to the body or person to whom it is addressed. Neither the Company nor its servants or agents can accept any responsibility whatever for loss or damage of whatsoever nature arising in the event of the contents of this Report being copied, disclosed, distributed or published in any manner to any other person, without prior reference to us.