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'Working with Historic Farm Buildings: Thoresby Estate Perspective'

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Thoresby

Introductions

Nick Brown

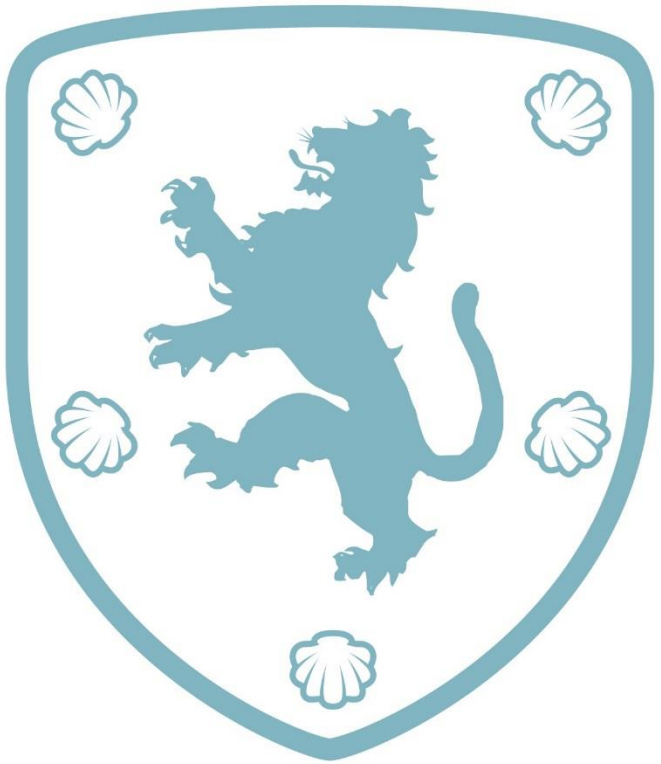
- Resident Agent with Pierrepont Estates
- Previously at Buckminster, Lydney and Castle Howard

Adam Potter

- Head of Estate Maintenance and Development with Pierrepont Estates
- Background in carpentry, joinery, electrical contracting (in the historic/rural environment) and repairs & refurbishment surveying (residential and commercial)

Understanding the Estates

- Who we are
- What we do



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We will take questions at the end but if you want to ask anything as we are going through please do- this is interactive

Determining use

Main Factors

- Location
- Existing condition of the buildings
- Availability of funding and likely returns
- Local market
- Overall Estate strategy
- Existing uses for other estate buildings
- Owners perspective
- Enquiries received from prospective tenants

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Determining use cont.

1) Location

Proximity to:

- main roads
- towns and cities
- Services
- Owners residence and other residential units

2) Local Market

- Guide as to likely returns
- Existing operators
- Risk associated with new ventures

Determining use cont.

3) Overall estate strategy

- Retention of asset for letting or sale
- Immediate income vs capital growth
- Tax implications especially IHT
- Family structure

4) Existing uses of other estate buildings

- Ensuring a spread of uses
- Complimentary uses e.g. offices and nursery school
- Potential conflicts e.g. industrial and residential
- Pierrepont Estates have 27 farmyards/groups of buildings, of which 12 have potential for development (being either redundant or containing traditional buildings)

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Practical considerations. The issues?

- Physical space and limitations of the site
- Conservation areas/Listed buildings/unlisted historic assets
- Structural
- Access and parking

Physical space and limitations of the site

- Farms and their buildings by their nature were designed to accommodate the technology and methods of their day.
- Historic farmsteads are often very nuclear in layout in that all the buildings are close together limiting vehicle access and movement.
- Buildings were designed to store materials, crop, “plant” (in the form of carts) and livestock…and sometimes all of the above in one building!

Conservation areas/Listed buildings/undesignated heritage assets

- Historic farms generally fall under at least one of the above headings, if not all three!
- In terms of development these can present both a constraint and a tangible benefit
  - Working within historic fabric requires a particular approach in terms of planning, materials and execution of works.
  - However, many businesses would prefer an address of “Home Farm, rural idyll” over “unit 1045, non-descript business park, Milton Keynes”. Likewise many people would prefer to live in “The Old Barn” over “No. 58 generic housing plot”
  - On balance historic farm buildings are still an asset!

Structural

- Often foundations are very limited and walls quite thin making them difficult to apply additional loads to without losing valuable internal features.
- No matter the end use it is likely that some form of thermal performance upgrade will be required.
  - Farm buildings built right up to the 1920s are likely to be built of a vapour permeable construction using lime.
  - Any insulation applied needs to maintain that permeability and not alter the condensation variance of the wall which will cause interstitial condensation.
  - Full compliance with Part L is not required when retrofitting traditional buildings.

Structural composition…continued

- Damp proofing
  - Very often this will cause far more damage than it solves and may not be needed at all!
  - Treat the disease not the symptom. Identifying the cause and rectifying is a lot better choice. Some common causes
    - Failed or incorrect material used for pointing/rendering/plastering (i.e. Portland cement)
    - Ground levels. Ground has a habit of creeping up over the years, yards are relayed on top of old yards, muck is spread on grassed adjoining areas or piled up against walls
    - Neglected rain water goods (above and below ground). A gutter might be fine but is it simply disappearing into the ground and water is being soaked up into the wall
    - Let the building breathe!

Access and parking

Many farmsteads have developed over time meaning new buildings have spread out from the original farm. In this case it is worth considering

- How will people access the development?
- Where will they park?
- How do we keep them away from what may still be a working farm?
- What is the access from the main road like?

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Case study 1. Thoresby Home Farm (THF)

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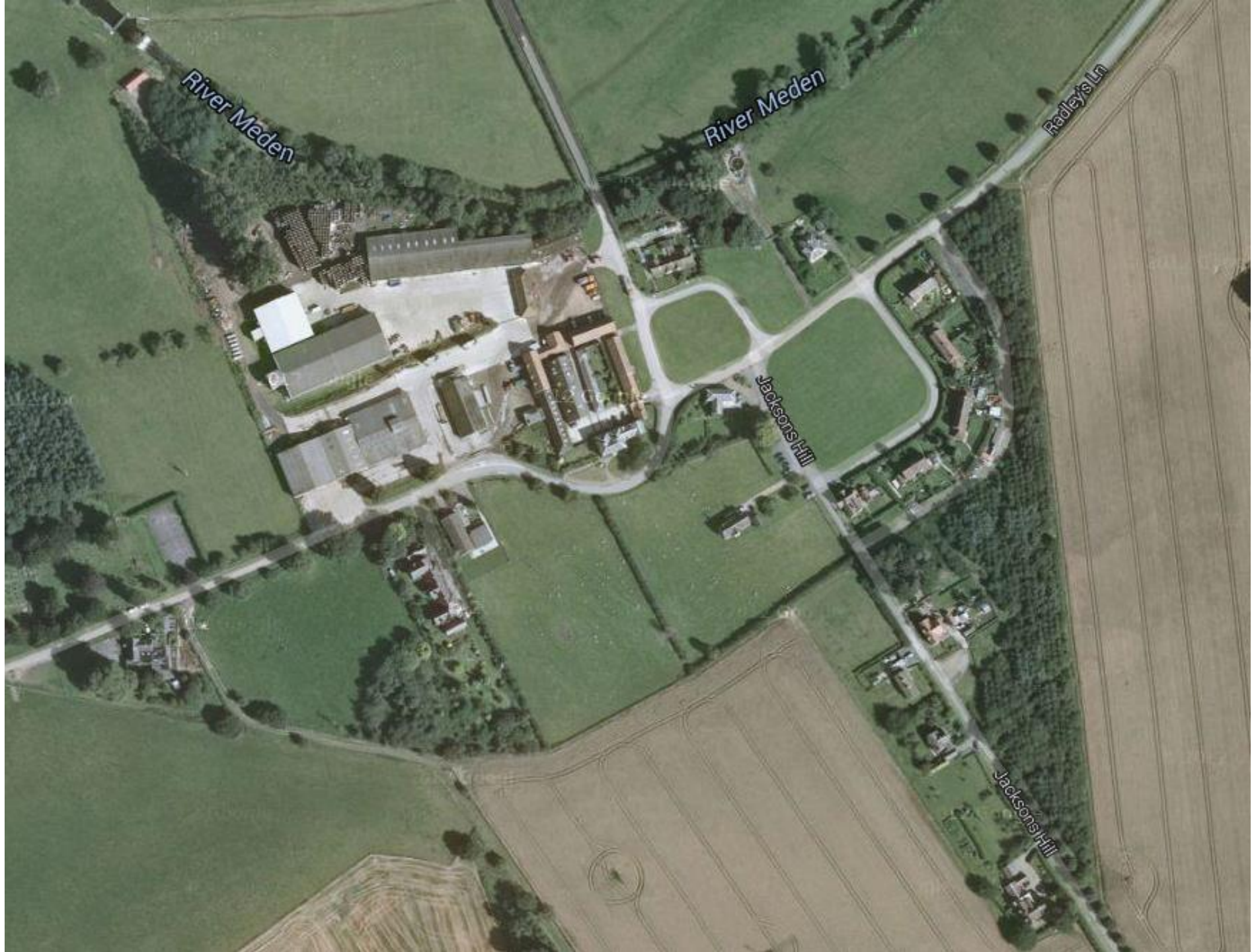
River Meden
River Meden
Jacksons Hill
Radley's Ln
Jacksons Hill

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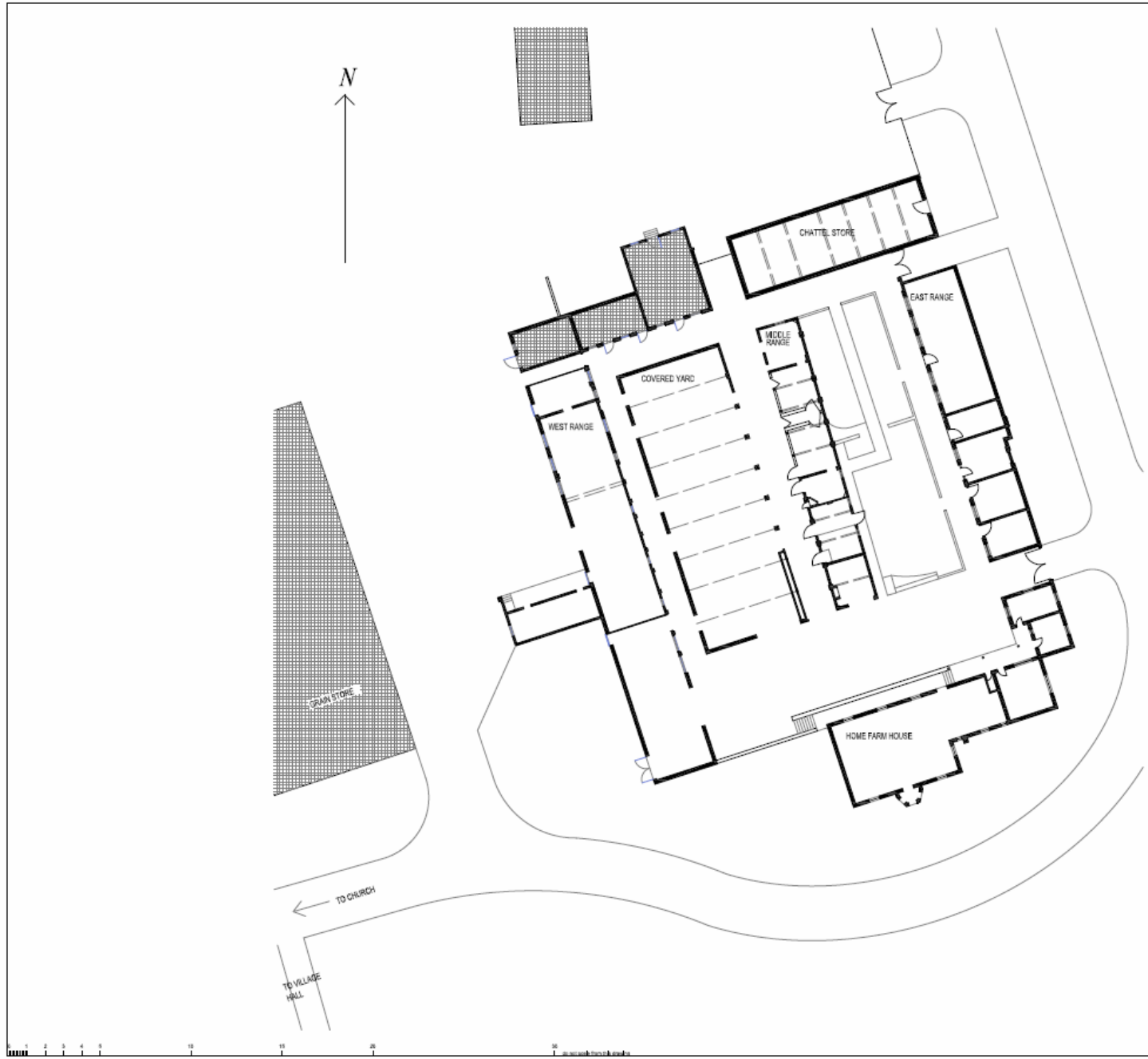

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rev.	date	content	by

clark • birch • parkins
architects
44 The Ropewalk Nottingham NG1 5DW
t: 0115 9481144 f: 0115 9508976

Project
Home Farm Thoresby Estate

Drawing Title
East Range - Existing site layout plan

scale	1:250	date	17/02/15
drawn	-	checked	-
approved	-		

drawing Number: 4537-A-010 revision: -

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Finding a use

- Good access onto a truck road (A614) and only 5 miles from A1
- Within a village setting
- Estate already had low grade workshop space as well as retail/craft units
- 3 main options:

(i) Residential

(ii) Holiday cottages

(iii) Offices

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Specific challenges of THF

- Segregation of the working farm from the new development
- Heating the scheme
- Mining subsidence
- How to deal with the covered yard
- Thermal performance

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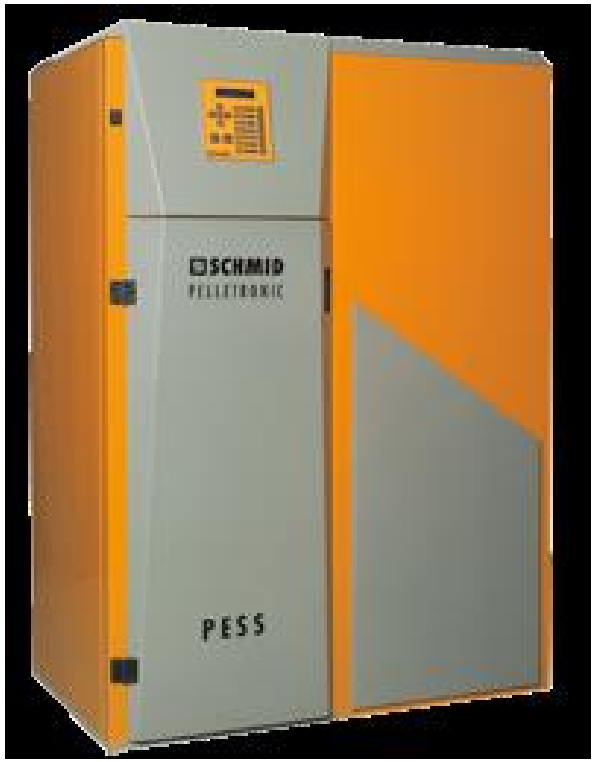
Segregation of the working farm

Heating the scheme



- As with many rural areas mains gas is not an option.
- Given the compact nature of the site district heating seemed a sound option.
- The group own and operate a wood chipper and supply commercial woodchip fuel to various local customers as well as Stobart biomass.
- As such we elected to run this scheme on woodchip biomass.

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The economics of biomass

- THF will be fitted with a 110kW woodchip biomass boiler
- All units will be fitted with heat meters
- Heating can be supplied as a fixed figure apportioned to rent or on a per unit basis
- As the group produce woodchip from its own sustainably managed woodland which is stored less than 1 mile from site this is a truly low carbon fuel.
- RHI

The subsidence problem

- THF is located in an area of active and historic mining subsidence.
- The extensive damage will require the installation of helifix type stainless steel ties within the fabric to stabilise and secure the areas of movement.

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The covered yard

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- Initially the covered yard was to be demolished and landscaped.
- On further review it was identified that the space could be developed to provide additional office space.
- While not listed the structure does contain some nice examples of architectural cast ironwork.

- Structural inspections revealed evidence of roof spread and failure of the cast iron columns. As such any inserted building will have to be largely self supporting on the eastern elevation and reinforced on all others.

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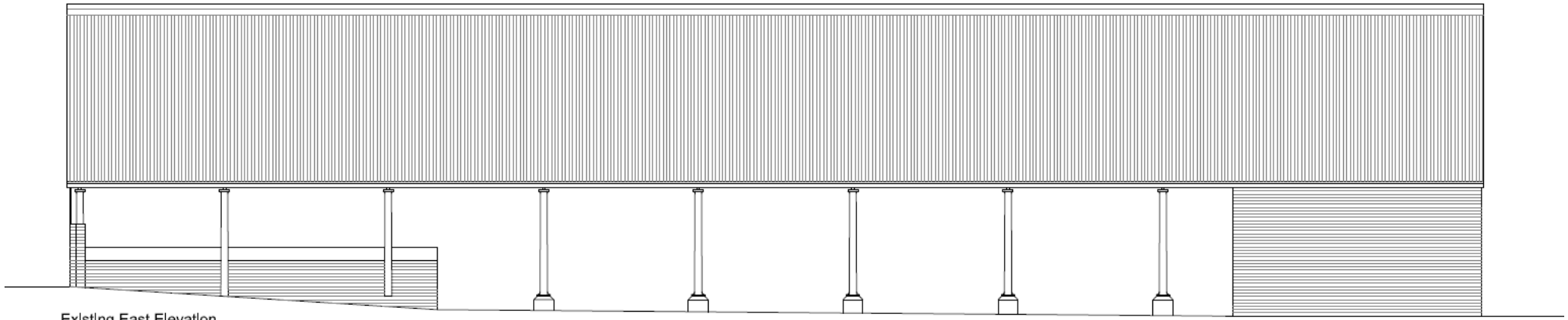
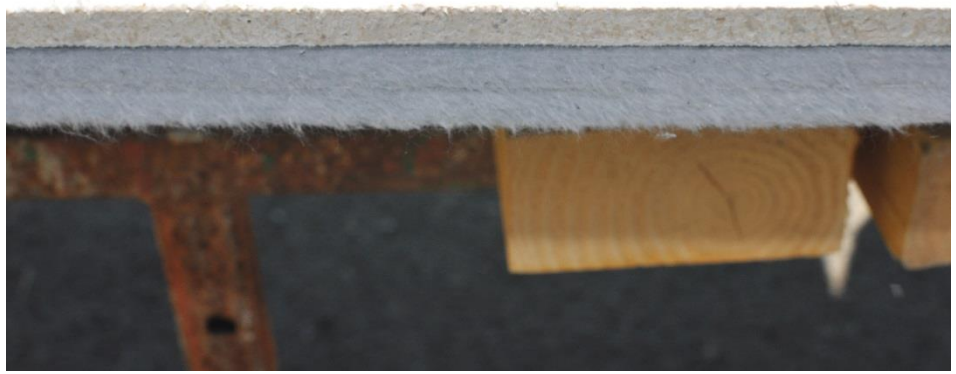


Existing East Elevation

Proposed East Elevation

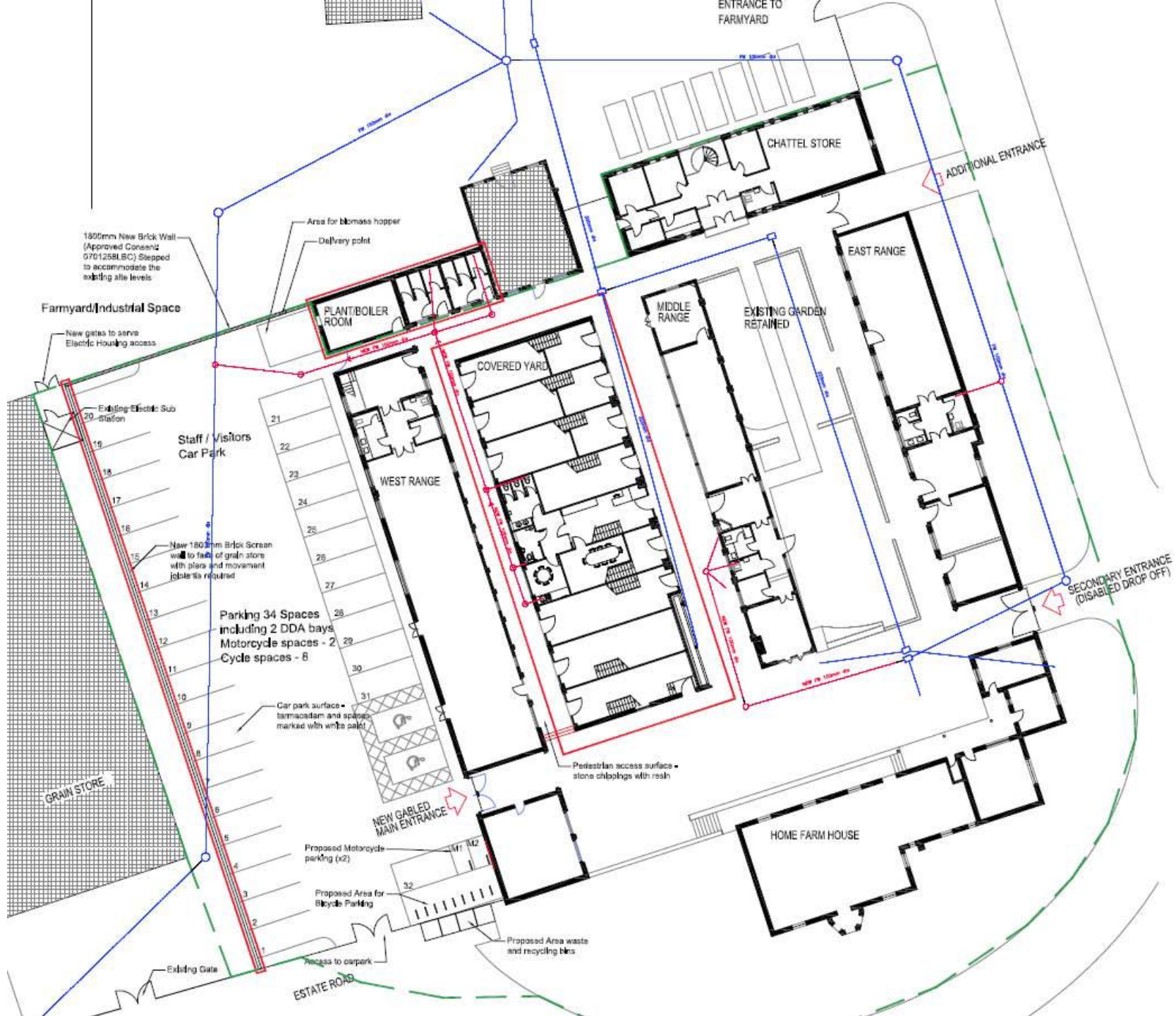
Thermal performance

In order to maximise thermal performance without compromising breathability or moving the dew point of the external wall we elected to install Thermablok aerogel/magnesium silicate IWI to the building.



The reasons for choosing Thermablok

- A rigid and hydroscopic insulation board (9mm) laminated to Thermablok Aerogel hydrophobic insulation membrane (10mm) with an R-value of 0.82 (m2K/W).
- A fully breathable system that ensures a healthy, durable working building with a natural ability to absorb, control and release moisture.
- Thermablok Aerogel **does not** rely on a vacuum or heavy molecular gases to insulate.
- Thermablok Aerogel is hydrophobic and is therefore not affected by moisture or age and is a hostile environment, offering no bacterial platform for mould growth.
- Unlike paper faced/wood based products, Magnesium Board also provides a hostile environment, offering no bacterial platform for mould growth.
- Direct, mechanical fix to the existing masonry substrate without the need for any framing system or ventilation cavity, which means even further space saving.


ENTRANCE TO FARMYARD
CHATTEL STORE
ADDITIONAL ENTRANCE
1800mm New Brick Wall (Approved Consent: 07/01258/LBC) Stepped to accommodate the existing site levels
Area for biomass hopper
Delivery point
Farmyard/Industrial Space
PLANT/BOILER ROOM
EAST RANGE
MIDDLE RANGE
EXISTING GARDEN RETAINED
New gates to serve Electric Housing access
COVERED YARD
Existing Electric Sub Station
Staff / Visitors Car Park
WEST RANGE
New 1803mm Brick Screen wall to face of grain store with piers and movement joints as required
Parking 34 Spaces including 2 DDA bays Motorcycle spaces - 2 Cycle spaces - 8
SECONDARY ENTRANCE (DISABLED DROP OFF)
Car park surface - tarmacadam and spaces marked with white paint
Pedestrian access surface - stone chippings with resin
GRAIN STORE
NEW GABLED MAIN ENTRANCE
HOME FARM HOUSE
Proposed Motorcycle parking (x2)
Proposed Area for Bicycle Parking
Proposed Area waste and recycling bins
Access to carpark
Existing Gate
ESTATE ROAD

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Case Study 2: Poplars barn

The Site

- Located in Budby village. Budby was laid out between 1803-1807 by Earl Manvers as an estate village.
- Every dwelling in the village is listed as well as a number of other features (post box, a number of boundary walls etc.).
- The “barn” is an undesignated heritage asset but falls within the curtilage of two listed houses.
- Access is by a narrow stone road which is unsuitable for tractors or lorries.
- The structure has fallen into a very poor state of repair as it provides no useful purpose at present.

Finding a use

- No use for agricultural purposes given the location
- The residential nature of the surroundings the site did not lend itself to light industrial or commercial use
- Given the residential nature of the surrounding site a dwelling seemed the best option.
- On inspection it became apparent that a two storey dwelling would be difficult to incorporate and cause significant harm to the heritage asset.
- It was therefore decided that providing a single floor accessibility dwelling would be the best fit for the building

Specific Challenges

- Structural stability
- Heating the development
- Limiting external impact on the building aesthetics

Structural stability

- Historically the wall dividing the barn from the neighbouring property has been lowered. It is also suspected that an archway between the house and barn has been removed reducing structural support to the gable end.
- The building has, as is common, only very limited foundation.
- The walls of the building are only a single brick thickness (approx. 220mm).

Heating the scheme

- Given the proposed use as an accessible dwelling we were hesitant to install any system which required significant user input (e.g. solid fuel).

- Given the historic nature of the site we needed to keep impact to a minimum so we were keen to avoid flues if at all possible and solar heating would not be possible due to visual impact and the level of reinforcing which would be required.

- As such we plan to install a bore hole GSHP system to the dwelling.

Limiting visual impact and harm

- Given the nature of the site we have sought to limit the external changes to the structure to those required to make the building structural sound and weather tight.

- Where we are installing new windows these will be hopper sash type in keeping with the agricultural nature of the building.

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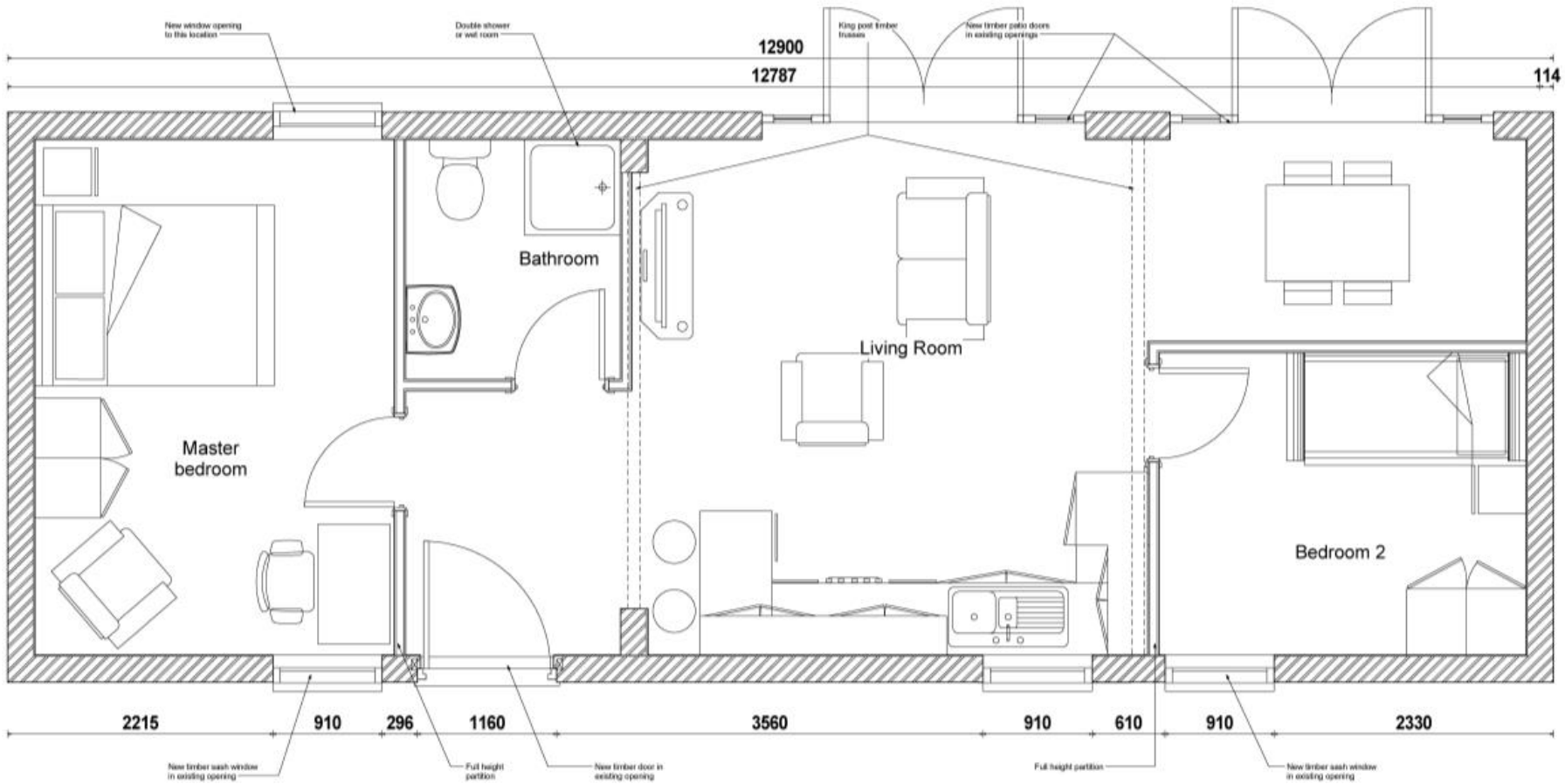
New window opening to this location
Double shower or wet room
King post timber trusses
New timber patio doors in existing openings
12900
12787
114
Bathroom
Living Room
Master bedroom
Bedroom 2
2215
910
296
1160
3560
910
610
910
2330
New timber sash window in existing opening
Full height partition
New timber door in existing opening
Full height partition
New timber sash window in existing opening

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The future

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Questions?