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Design Statement
New Dwelling, Pear Tree Farm, St James Road,
Long Sutton

1185-2/DS/CS

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1. INTRODUCTION

1.1. This document sets out our approach for the design of a new dwelling pursuant to Paragraph 55 of the National Planning Policy Framework to be located at Pear Tree Farm, Long Sutton, Lincolnshire.

1.2. Our initial design was presented informally to South Holland District Council in May 2017. A more developed design was then presented at the Local Authority's Steering Group meeting held in August 2017.

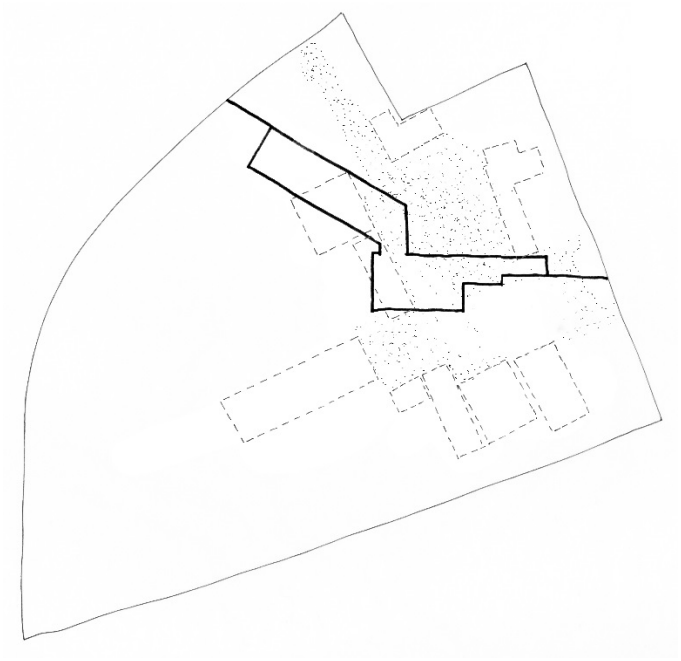
1.3. The design of the dwelling is uncompromisingly modern, as befits a country house for the twenty-first century. It does however refer to some elements of traditional domestic architecture and, through this juxtaposition, it is intended that the dwelling appears contemporary on the one hand, yet familiar on the other.

1.4. Invariably projects of this kind are judged on their external appearance or architectural style; topics which are subjective. Architecture is not just about external appearances; it encompasses for example the design of interiors, method of construction, sustainability, access to views and natural light and it is about how these different and sometimes conflicting elements relate to each other. It is also about how the users of a building experience these things.

1.5. It is our intention therefore that this document demonstrates how we have gone beyond aesthetics to design a dwelling that meets the requirements of Paragraph 55 and how, in particular, it can be considered outstanding or innovative and reflect the highest standards in architecture.

2. LAYOUT

2.1. The proposal will be positioned in the north east portion of the site where a group of redundant agricultural buildings and an area of concrete hard-standing currently exist. These buildings will be demolished in the proposals.



Above; early sketch illustrating the footprint of the proposal in relation to the existing buildings and area of hard-standing.

2.2. A new access gate will replace the existing and will be located along the existing access into the site. A new boundary wall will provide a clear distinction between public and private space.

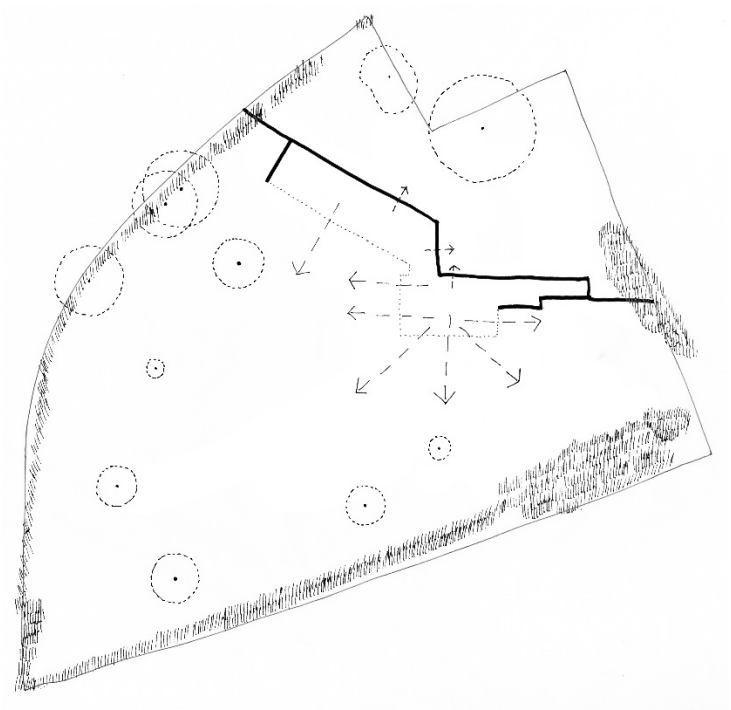
2.3. The footprint of the proposal consists of an L-shaped dwelling with a rectangular block to the east containing garages, and a rectangular block to the west accommodating a swimming pool and gym.

2.4. The main dwelling is L-shaped in plan to maximise the potential for passive solar gain from the south and west whilst also enabling views out to the large private garden.

2.5. At ground floor level, the main living spaces are located along the southern and western edges of the plan to take advantage of passive solar gain and receive good levels of natural daylight. The open-plan design of these spaces will enable views of the garden in multiple directions and between the different rooms.

2.6. Spaces such as cloak rooms and WCs, which require lower levels of natural light and would not benefit to the same extent from passive solar gain, are located on the Northern side of the plan.

2.7. At first floor level, four of the five bedrooms will overlook the garden whilst also having views to the wider landscape by virtue of their location on the southern and western edges of the plan. As with the ground floor, spaces such as utility rooms and ensuites are located on the northern side of the plan.



Above; early sketch illustrating the footprint of the proposal and its relationship to the site in terms of views and existing landscaping features.

2.8. A double-height entrance hall is located on the north side of the plan and a double-height space is positioned over the dining area on the south west corner. The location of these two spaces on opposite sides of the plan, whilst being connected spatially by virtue of the gallery landing at first floor, will assist in keep the dwelling cool in the warmer months of the year by the natural stratification of warm air, also known as the 'stack effect', and by cross-ventilation.

2.9. The overhang of the first floor and roof on the south will also assist with keeping the dwelling cool in the warmer months because the overhang

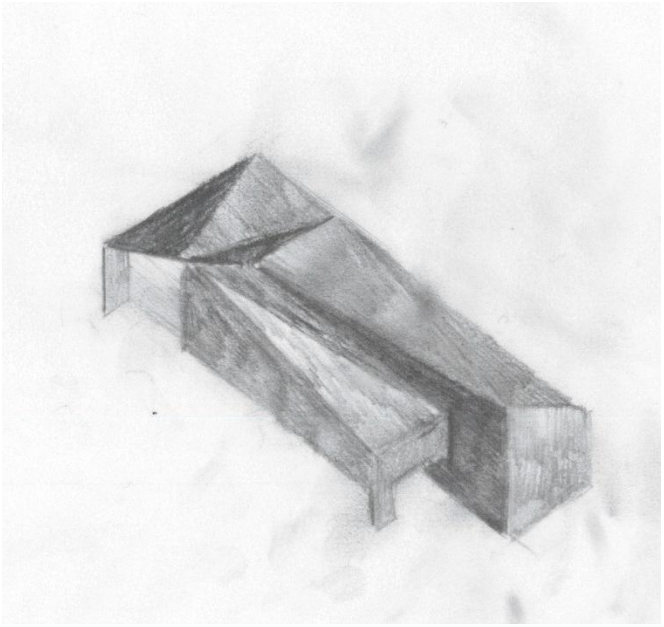
will reduce the amount of direct sunlight entering the living spaces when the sun is higher in the sky. In the cooler months when the sun is lower in the sky, sunlight will enter these spaces helping to keep them warm. At ground floor level, a thermally massive concrete floor slab will assist with this passive heating and cooling strategy.

2.10. The swimming pool and gym volume is angled to enclose the entrance courtyard to the North. It is angled within 30 degrees of south to benefit from passive solar gain whilst also making use of the existing area of landscaping that will form the new garden. A short wall extends from this volume to fully enclose the garden.

2.11. A wall is connected to the garage volume which extends to the eastern boundary to fully enclose the garden on this side.

3. FORM

3.1. The form of proposal is conceived as a sculptural monolithic object into which openings have been 'carved'.



Above; sketch illustrating the form of the dwelling from above

3.2. By employing the use of gables and pitched roofs; two architectural devices commonly associated with domestic buildings in this country, it is intended that from some angles the proposal will appear familiar and 'house-like'. Yet because these familiar architectural features have been adjusted to suit the interiors for example, from some viewpoints the proposal will appear more abstract.

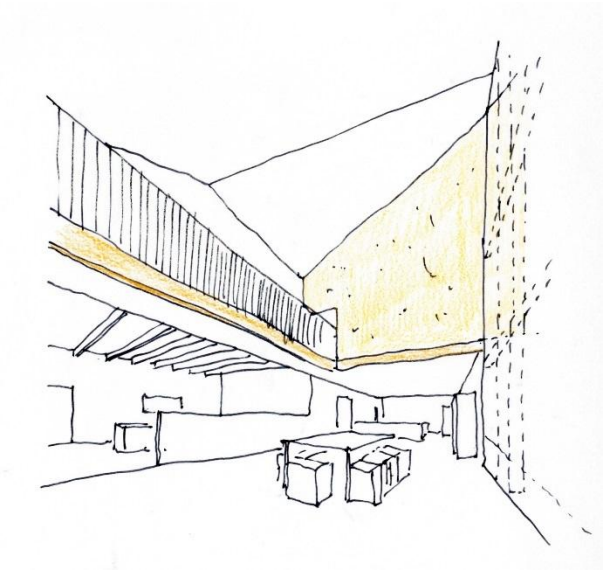
3.3. The proposal has been designed so that the main dwelling will appear as the most formally dramatic part of the scheme whilst the swimming pool, gym and boat store will be less so. To this end, the main dwelling is two-storey whilst the other volumes are single-storey.

3.4. In-keeping with the idea that the dwelling will be the most formally dramatic part of the scheme, its roofs will be pitched whilst those of the other volumes will be flat.

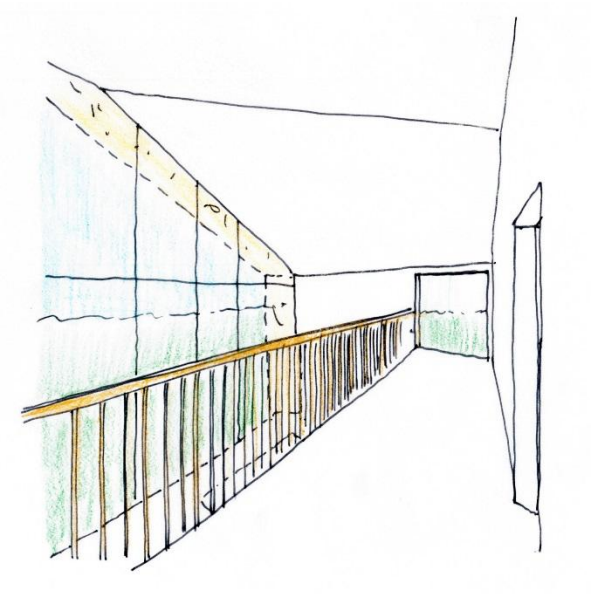
3.5. The roof is designed such that the often redundant space beneath is utilised to form dramatic interior spaces. In this way, the interior of the dwelling has a relationship with the interior. Furthermore to construct a

roof of such size, innovative Cross Laminated Timber (CLT) panels will be utilised to form the structure, which, in turn, will be supported by Glulam Timber ridge beams. The CLT will be specified in some places to be 'visual grade' internally so that the structure of the roof is visible inside. Expressing the grain of the CLT panels internally will imbue a 'lofty' character to the vaulted interior spaces.

3.6. The highest points of the roof are located above the interior spaces that require the most height. The roof height is also lowest on the north side but highest on the south; opening up the dwelling to the sun and garden.



Above; sketch illustrating the views from the gallery landing to the south, west and into the dining area.



Above; sketch illustrating the dramatic vaulted space between the dining area and gallery landing

4. SCALE

4.1. Modest by historic country house standards, the proposal will be a substantial family home in contemporary terms.

4.2. When viewed from St James Road, the overall scale of the proposal will appear similar to that of the group of existing agricultural buildings that currently occupy the site.

4.3. The total approximate area of the proposal is less than that of the existing buildings. The combined area of the existing buildings is 1585m2 and the proposed is 1063m2.

4.4. The highest apex of the proposal at approximately 11.3m is greater than the highest ridge of the existing buildings at approximately 6.9m. The highest eaves of the proposal at approximately 6.4m is similar to the highest ridge of the existing buildings.

4.5. The scale of the proposal will mean that from the south, the sculptural form of the roof will be visible in some instances, above the existing tree line. It is our intention that this adds interest to and enhances the characteristics of the local area, which consists of visually prominent pylons and powerlines alongside a number of isolated dwellings and farmsteads of differing scales.

4.6. By virtue of the roof pitches sloping away from the north and the fact that the two-storey element of the design will be located between approximately 30m and 40m (owing to its angled nature) from the northern boundary to the neighbouring property, overshadowing from the proposal will be minimised.



Above; illustrative view showing the proposal in context when viewed from the south.

5. MATERIALS

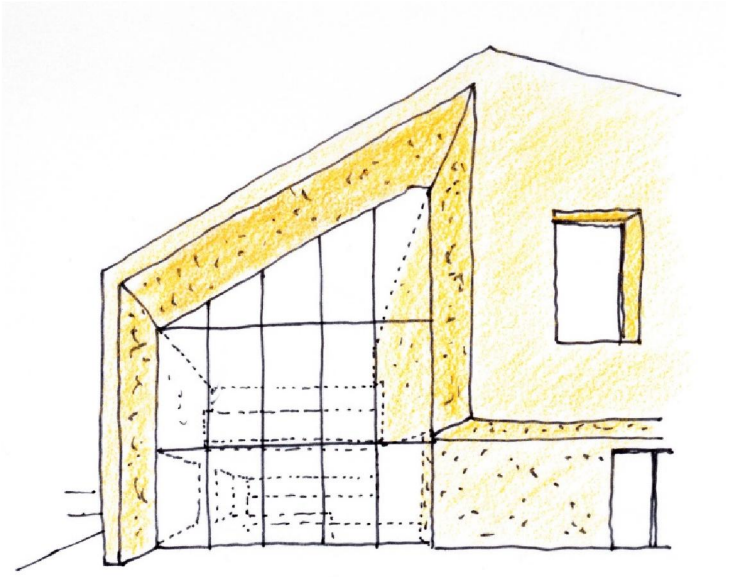
5.1. To emphasise the concept behind the form of the proposal being a sculptural monolithic object, all external walls will be in Lincolnshire Limestone. This is a very durable and natural material with a lifespan which exceeds many other materials and it can also be quarried locally within 40 miles of the application site. Furthermore, the limestone has a high thermal mass which will contribute to the passive heating and cooling strategy of the proposal.

5.2. A limestone block with a smooth finish such as ashlar will be the most predominant external material. It will be laid in regular courses with almost seamless joints; emphasising the monolithic character of the design. In contrast a rougher, textured stone finish will be used on the parts of the building which are set-back from the main volume; emphasising the 'carved' elements.

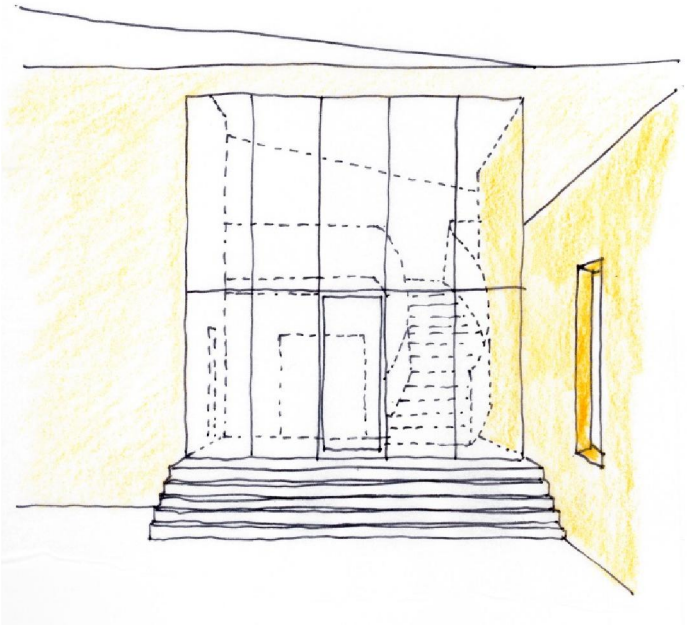
5.3. The pitched roof will be in a grey coloured natural slate, quarried within the British Isles. Like stone, slate is a very durable and natural material and its lifespan exceeds all other roofing tiles. The dark colour of the slate will provide a contrast to the light-coloured stone.



Above; photograph of material samples. Clockwise left to right; Clipsham Lincolnshire Limestone (ashlar), natural Welsh slate, Clipsham Lincolnshire Limestone (tumbled).



Above; sketch illustrating the textured stone to the parts of the building on the south elevation which are set-back from the main volume; emphasising the 'carved' elements. Note the stone which will continue into the interior and the window which will be set-back on the first floor.



Above; sketch illustrating the stone on the north elevation which will continue into the interior.

5.4. The flat roof to the swimming pool and boat store will feature 'extensive' green roofs, albeit they will be screened by parapet walls. The use of an extensive green roof will provide increased thermal insulation thus buffering extreme temperatures in winter and summer, whilst also reducing water run-off due to the process of evapotranspiration. Furthermore, this type of roof will support the efficiency of the photovoltaics on the swimming pool and the plants specified will be biodiverse.

5.5. Doors, windows frames, rainwater hoppers and downpipes will all be in a dark grey aluminium, similar in tone to the roof. Almost all aluminium used in the construction industry is recycled and the material itself can be recycled using approximately 95% less energy than the original method of production. Like the stone and slate proposed elsewhere on the project, aluminium is very low maintenance and has a very long lifespan.



Above; visualisation of the master bedroom interior, illustrating the exposed CLT finish and vaulted roof.

6. DETAIL

6.1. To enhance the sculptural monolithic quality of the dwelling its architectural detailing will be restrained. Items such as rainwater gutters, the green roof and photovoltaic panels will be hidden from view.

6.2. In specific locations, the exterior stone will continue inside the dwelling, further strengthening the relationship between the exterior and interior of the building.

6.3. To maximise the amount of natural light entering the windows on the north elevation, these will be flush with the stone externally. To provide a degree of solar shading, the windows on the east, west and south elevations will be set-back from the stone. As these three elevations will receive direct sunlight, locating the windows in this way will allow shadows to form in the reveals thus emphasising the monolithic nature of the design.

6.4. The size of windows to single rooms are 20% of their total floor area to provide good levels of natural light, which has been proven to have a positive impact on the mental health of building users, whilst also reducing the need for electrical lighting. These windows will also be 'picture windows'; a single outer frame which frames a view and with no additional glazing bars within the glazed area.

6.5. The green roof to the swimming pool and boat store will be hidden behind a parapet wall as will the photovoltaic panels to the swimming pool.

7. INNOVATION

7.1. Our approach to innovation on this project is to utilise several techniques, technologies and systems that have been demonstrated to work and to combine their use in an innovative way.

7.2. The proposal will be zero-carbon; equivalent to the former Code for Sustainable Homes CODE 5 standard. How this will be achieved is explained in further detail in the Energy Strategy & Sustainability Statement which accompanies this application.

7.3. The first floor and roof structure of the dwelling will be in Cross Laminated Timber (CLT). This will be supported by steel and glulam beams and columns; the latter will be used where it is possible to express the structure internally, adding further character to the interior spaces. CLT is a common building material in other parts of Europe but relatively new to the British Isles. To the best of our knowledge, this will be the first building to be constructed using CLT in Lincolnshire.



Above; photograph of a CLT panel. © Stora Enso.

7.4. CLT has been selected for use in this project because its inherent structural ability will allow the vaulted and sculptural form of the roof to be constructed with very little supporting structure. The fact that the internal face of a CLT panel can be specified to be the final internal finish (thus removing the need for wet trades such as plasterboard, paint etc) is another reason why we have selected this material. Expressing the grain of the CLT panels internally will imbue a 'lofty' character to the

vaulted interior spaces. Furthermore because the CLT panels will be manufactured off-site, waste will be dramatically reduced. This combined with the fact that CLT panels have a high amount of locked-in carbon (approximately 240-250kg per cubic meter) due to their solid construction and that they will remove approximately 0.8 tonnes of C02 per cubic metre from the atmosphere, all mean that material is very sustainable. Whilst the CLT will need to be imported from Austria, its environmental credentials will outweigh the carbon used to transport it.

7.5. The swimming pool has been designed to act as a 'heat sink' via a considerable amount of south-facing glazing and the use of a heat pump dehumidifier. Residual heat will be delivered into the main heating system to provide heat and hot water to the dwelling.

7.6. Whilst the pitched roof has been designed to be sculptural externally and to provide a vaulted and dramatic character internally, its scale has been carefully considered. To this end the longest pitch of each roof is set at 12 degrees. Traditionally slate can only be installed on roofs of at least 22.5 degrees. The use of an innovative product such as the 'Permavent Easy Slate' system will allow the slates to be installed at 12 degrees and with the additional benefit of improved weather resistance and a better performing roof overall. The system works by sealing the perp join on the slates which prevents water from entering. This has the effect of extending the 'laps' between each slate and because the slates will be raised (when compared to traditional fixing methods), this allows for free movement of air below the slates which in turn releases air pressure and vastly reduces the capillary action which in turn reduces wind rattle.

7.7. Whilst other features of the design when considered on their own merits such as the Photovoltaics, green roof and natural external materials for example, might not be deemed innovative, when considered together with the above points they contribute overall to an innovative design approach.

8. CONCLUSION

8.1. Architecture is not just about external appearances; it encompasses for example the design of interiors, method of construction, sustainability, access to views and natural light and it is about how these different and sometimes conflicting elements relate to each other. It is also about how the users of a building experience these things.

8.2. We hope that this document demonstrates how we have gone beyond aesthetics to design a dwelling that meets the requirements of Paragraph 55 and how, in particular, it can be considered outstanding or innovative and reflect the highest standards in architecture.

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