Draw Dyke Road, Sutton St James

Design and Access Statement

July 2021

Client: Mr & Mrs Peace

Project: Proposed zero carbon self-build family home

Project no: 519

STUDIO11
architecture

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1.0 Introduction

1.1

This Design and Access Statement accompanies a full planning application for the erection of a new zero carbon self-build family home on land off Drawdyke, Sutton St James.

The purpose of the proposals is to make better use of family owned land to provide a new family home for Mr & Mrs Peace and their children.

Mr & Mrs Peace currently live within the South Holland District, aspire to self-build their own home and have signed up to the South Holland District Council Self-Build register.

Alongside their aspiration to self-build Mr Peace would like to use his profession to reduce the carbon footprint of their family. Mr Michael Peace is a Senior Engineer at the Institution of Engineering and Technology (IET), formerly the Institution of Electrical Engineers (IEE). The mission of the IET is to inspire, inform and influence. Michael would like to use his home to to do this and the IET have confirmed that they would be interested in following the construction of the new home in both video and written form with a view to including it within their STEM Education as well as using it to promote the institute generally.



Image Showing the Position of the Proposed Site in Relation to the Settlement of Sutton St James

1.2

The proposed site is located to the east of the Sutton St James main settlement along Drawdyke. Sutton St James is classed as a 'Minor Service Centre' within the South East Lincolnshire Local Plan.

The plot of land is approximately 0.58 hectares and is bounded by a hedge to the east, Drawdyke to the south and open fields to the north and west.

1.3

This statement forms part of a series of reports and documents submitted in support of the planning application.

2.0 The Vision

2.1

Our brief from Mr & Mrs Peace was to create an environmentally conscious ‘forever’ home for their family which could also be used to test emerging technologies for the purposes of exploring and understanding how these technologies contribute to providing a sustainable home in the family context.

The vision for these proposals is driven by an aim to respond to the Clients brief by creating a home of high architectural quality together with being a highly sustainable home which responds to the social and environmental issues surrounding Climate Change.



Plank Drove, Crowland — South Holland District Council. Approved as a Paragraph 55 house in 2015 and complete in 2021.



‘Grand Designs South Lincolnshire House’ - South Holland District Council. Approved 2018 and completed 2021. Filmed by Grand Designs.



Chapel Lane, Letty Green — East Herts Council. Within the Green Belt, approved 2017 on appeal and currently under construction. The Planning Inspector commenting:

‘ The dwelling would be of a contemporary design of an intrinsically good architectural quality that would satisfy LP Policy ENV1.’



Stringers Lane, Aston — East Herts Council. Approved 2017 and completed 2018.



Cambridge Road, Spellbrook — East Herts Council. Approved 2016 within Green Belt land and completed 2018.

3.0 Planning Policy Review & Material Planning Considerations

The proposed self-build home in relation to national and local planning policies are outlined within the separate Planning Statement document.

4.0 The Development in Context

4.1 Settlement Character Assessment

Sutton St James is a modest settlement within the District of South Holland located between Spalding to the west and Kings Lynn to the east. The Market Town of Wisbech is also in close proximity to the south-east.

The village of Sutton St James lies to the south of the county of Lincolnshire within the area known as 'The Fens'. It is not mentioned within the Doomsday book of 1086 as a settlement in its own right but as a chapelry to the parish of Long Sutton. However, in 1866 the civil parish of Sutton St James was created, named after the village church.

Buildings of note within the village are the Grade II listed church of St James, unusual because of the tower being disconnected from the Chancel. The Nave having been destroyed during the Interregnum and never re-built. The village also boasts the St Ives cross, known locally as 'The Buttercross', a schedule ancient monument which stands at the junction of Fishergate, Chapel Gate, Broad Gate and Mill Lane.

Sutton St James is generally characterised by rural farms incorporating farm houses, barns and greenhouse together with more linear domestic development along the main roads in and out of the village. Towards the centre of the village residential development forms the majority of street scenes with a mix of detached and semi-detached houses and bungalows.

The site comprises of approximately 0.59 hectares of agricultural land on the eastern edge of the parish of Sutton St James. The land is currently owned by Mr & Mrs Michael and Katie Peace formerly know as Katie Cross. Prior to their purchase of the land the land had been owned by the Cross family since 1948 and farmed for agricultural use. More recently the size of the field has made it difficult to farm for more than simple hay and it is currently used for infrequent equestrian grazing throughout the year.



The Church of St James the Great, Chapel Gate, Sutton St James



St Ives Cross at the Junction of Fishergate, Chapel Gate, Broadgate and Mill Lane

4.2 Historic Core

Sutton St James' historic points of interests are St James' church located off Chapel Gate and St Ives Cross, located at the crossroads of Chapel Gate and Broad Gate. The village has historically grown in a linear pattern radiating from the church with the oldest buildings being along Chapel Gate. There also appears to be a general trend of isolated post Second World War agricultural farm holdings along the edge of the settlement and along the major roads in and out of Sutton St James.

Sutton St James displays limited buildings of architectural quality at its heart. Several dwellings adjacent to the Church and the junction of Bells Drove/ Chapel Gate are worth of note but the majority of development in Sutton St James is post Second World war, ranging from former Local Authority housing through traditional developer housing of the 1960's to the 1990's. More recently small scale development has taken the form of ribbon development on the edge of the settlement.

The majority of buildings are residential in composition with some agricultural and commercial uses.

4.3 The Wider Settlement

Moving on from the historic core of Sutton St James development becomes residential in composition in both house and bungalow form. At the extreme edges of the settlement agricultural farm holdings are apparent. These are generally post Second World War buildings, steel portal frame large span sheds and simple farm dwellings predominantly constructed between 1950 and 1990.

As you leave the built up area of Sutton St James village itself the agricultural holdings and associated buildings continue along Fishergate, Baulkins Drove, Bells Lane, Jarvis Gate and Draw Dyke.



Image of 'Village Green' at the junction of Chapel Gate and Bells Drove



Image of Convenience Store and Hairdressers Salon



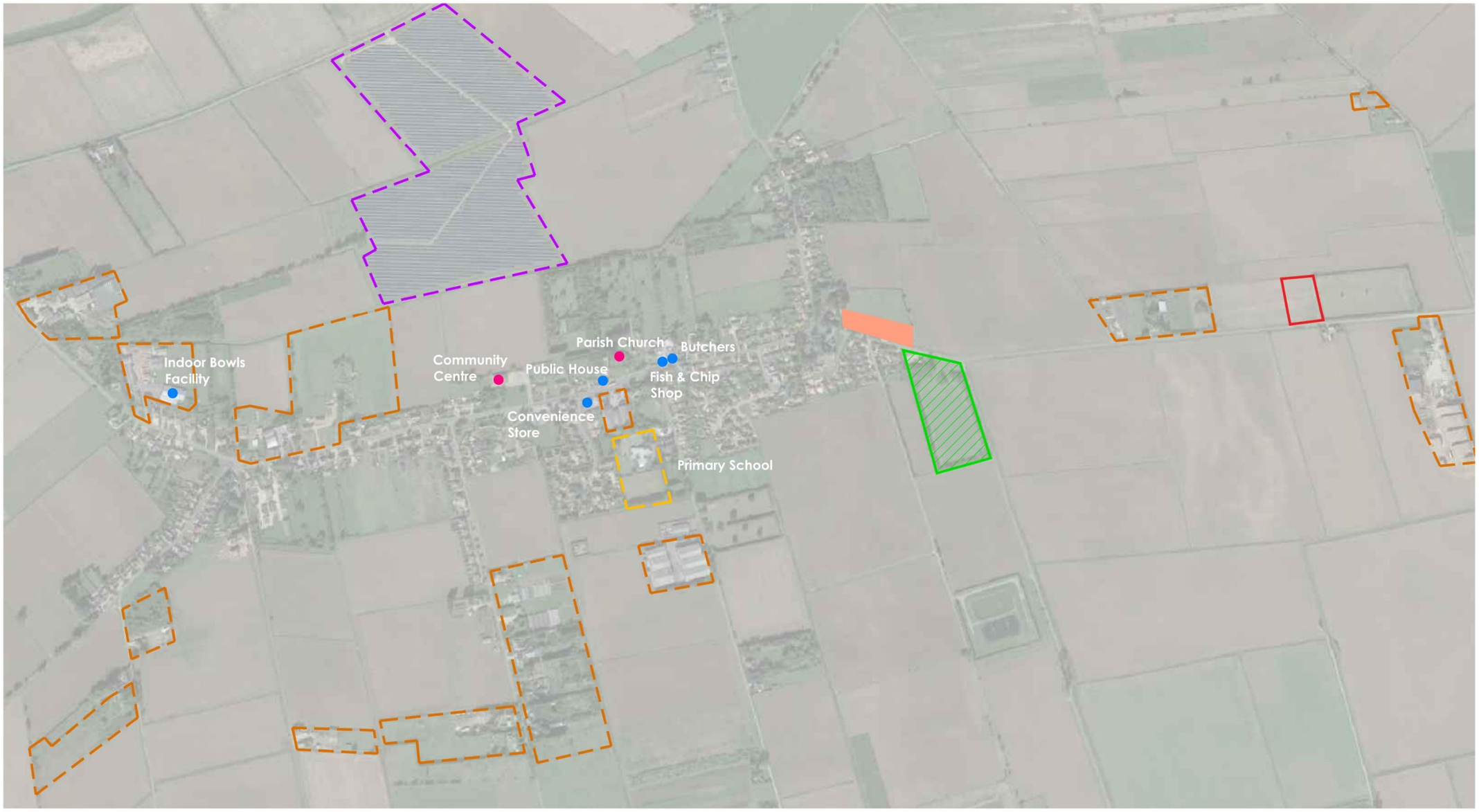
Image of Sutton St James Community Primary School



Image of Victorian House off Chapel Gate



Image of Butchers and Fish & Chip Shop



KEY

Application Site

Agricultural Holding

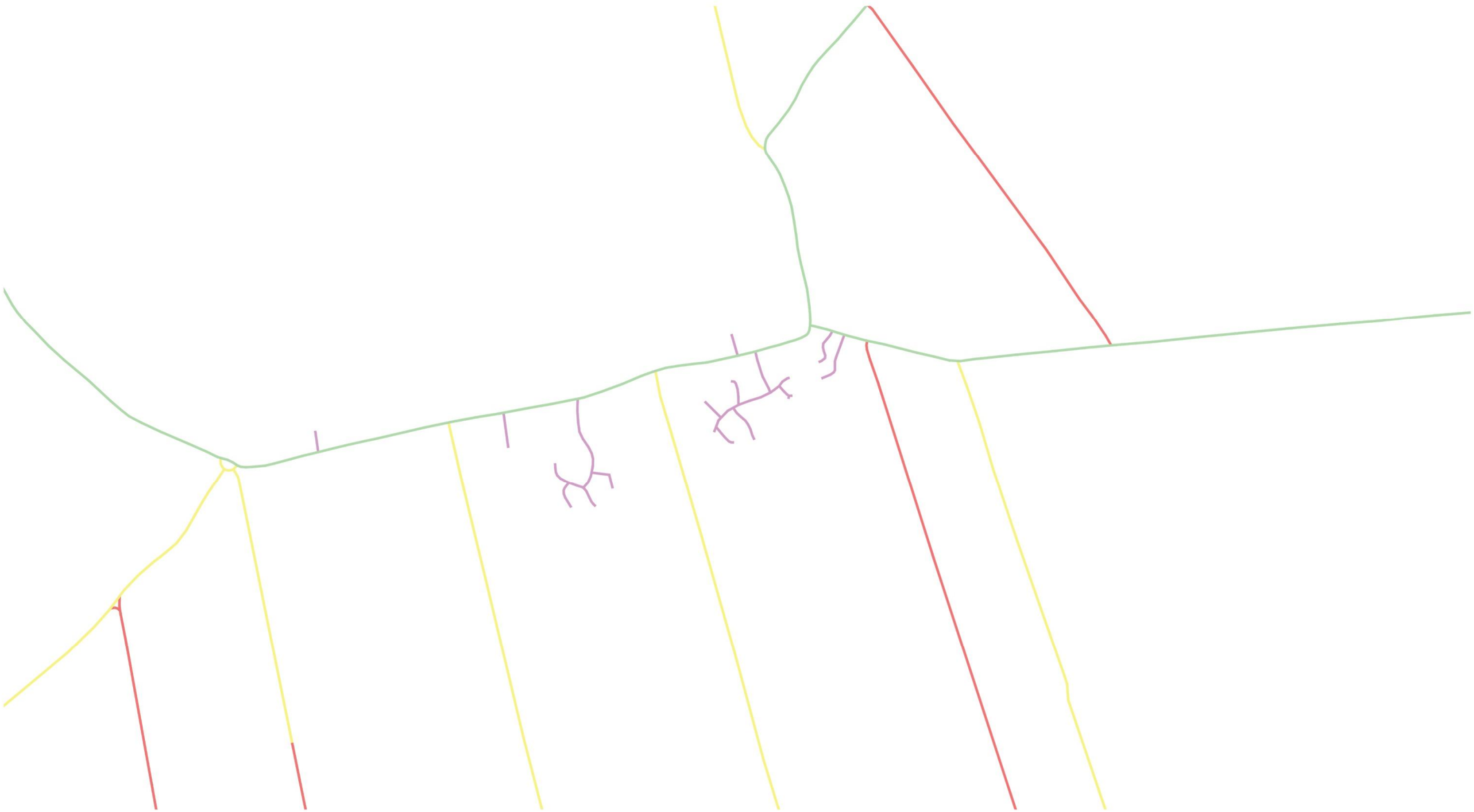
Solar Farm

Primary School

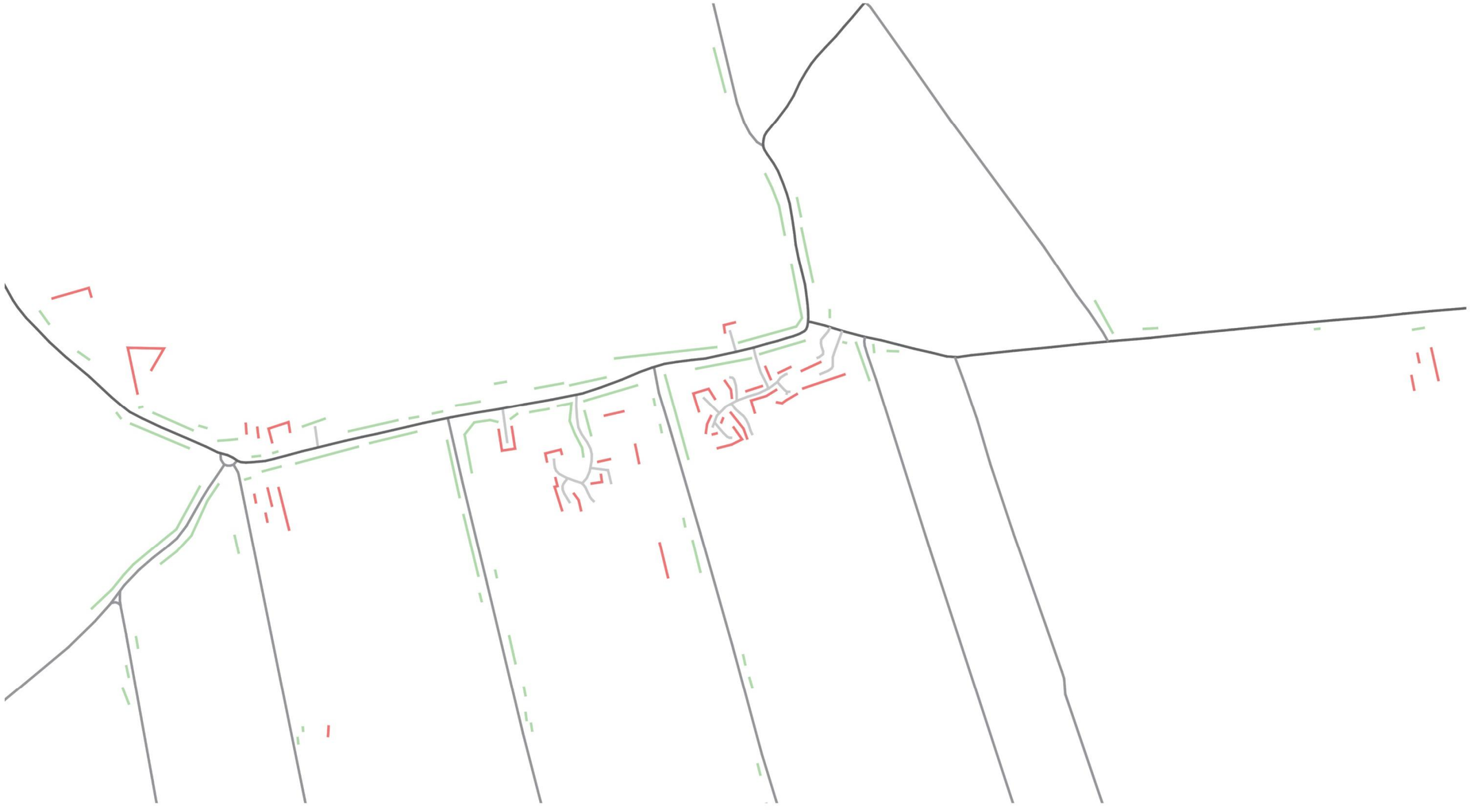
Recent Residential Development

Playing Field

Sutton St James Amenity Plan



Road Pattern Diagram



Development Pattern Diagram

4.4 Urban Form

Buildings towards the centre of Sutton St James are a mix of two storey houses and single storey bungalows. Older houses within the street scene are generally flat fronted with side gables. More modern Local Authority housing is flat fronted with fully hipped roof's. Bungalows are a mix of flat fronted with frontage gables or fully hipped.

Developer housing in cul-de-sacs are a mix of both flat fronted and gabled street scenes.

Most development is very simple in form but scale varies throughout the settlement appearing to be dictated by the type of development constructed at the time rather than having a predominant architectural grain.

4.5 Materials

The central core of Sutton St James displays a fairly uniform palette of materials.

Red multi brickwork and white/ cream render are predominantly found around the village centre. Roof materials are a mix of terracotta plain tiles and grey slate.

With younger properties towards the outskirts of the settlement materials become more generic with a mix of red, red/ orange and buff brickwork combined with concrete interlocking roof tiles. Windows and doors are a mix of white and brown in both uPVC and timber.

Chimney's are present on the oldest buildings towards the centre of Sutton St James but these become very sporadic as the buildings radiate away from the centre. Chimneys are seen as important details at roof level, and fortunately many buildings in the historic core have retained their original chimney's.

The farm buildings to the outskirts of the settlement follow very similar forms. The Farmhouse itself is generally constructed after the Second World War in facing brickwork with concrete interlocking tiles. The Farmhouse is set back from the road with modern portal frame barns to either the side or rear clad in profiled steel. Some agricultural holdings have single storey barns, likely to have been used as piggeries constructed in block and rendered with asbestos clad roof's.

Most farm buildings in these areas are of average to poor condition.

4.6 Architectural Detailing

The details of the majority of the buildings within the centre of Sutton St James are very simple with little detailing of note. Some examples Victorian dwellings at the centre have retained their architectural detailing which is in keeping with their period. However the majority of development within the core of Sutton St James is simple in form and does not incorporate detailing which is felt is worthy of note or replication.

Towards the outskirts of the farm buildings to show a very prominent architectural style. Modern portal frame barns in either a duo pitch or mono-pitch configuration, profiled steel cladding to the roof and walls. Some appear to have common brickwork to the lower levels and some have a mixture of both configurations. Many appear to have been constructed by 'Greens' a very well known local steel fabrication company that went out of business in the early 2000's.



Local Authority Housing on the Junction of Chapel Gate & Baulkins Drove



Early 1990's Cul-De-Sac development of Chapel Gate (Needham Drive)



Local Authority Housing alongside Post Second World War Development along Chapel Gate



Local Authority Housing in Linear Form along Chapel Gate



Local Authority Bungalow Cul-De-Sac development off Chapel Gate (Festival Gardens)



Recent residential development on Draw Dyke



Agricultural Farm along Draw Dyke, 200m to the south-east of the Site



Modern Steel Frame Barn with Brickwork walls along Bells Drove



Agricultural Farm on the junction of Draw Dyke and Ropers Lane, 400m to the west of the site



Modern Steel Frame Barn along Childersgate Lane



Former Johnsons Grain Stores along Bells Drove, Modern Steel Frame, Clad Barns



Series of barns of differing ages along Bells Drove



Agricultural Farm along Broadgate



Agricultural Farm complex along Fishergate



Brick and Angle Iron Barn on Old Fendike



Brick Barn adjacent to Farmhouse at the Junction of Fisher-gate and Horsemoor Drove



Former Johns Grain Stores Chapelgate

4.7 Physical Influence

Currently the site is a highly managed parcel of Grassland Open watercourses bound the site on the southern and northern boundaries. There is an existing mature hedge on the eastern boundary and the western boundary is currently open.

At an early stage it was felt that the design of the scheme should be influenced by a combination of the Landscape Assessment and the local agricultural vernacular of Sutton St James. The scheme has therefore been designed in a modern context with vernacular architecture which responds directly to the site constraints. The design principles incorporated are intended to provide a modern sustainable home that seeks to create its own sense of place. The proposal does not aim to compete with the surroundings but instead to sit modestly within them.

The site presents few constraints to development. The topography of the site is comparatively flat, with some mature perimeter landscape and drainage features. The main constraint to development lies in maintaining the open views from Draw Dyke whilst enhancing the site.

These constraints have shaped the proposals and demonstrate that it is possible to have a new sustainable family home on the site that integrates well within the site and its surroundings.



View from inside the Site looking West



View from Draw Dyke overlooking the fields to the South



View from inside the Site Looking East



View of bungalow to the South of the site with Agricultural Farm in the background

5.0 Proposed Development

5.1 Use

The scheme will be a self-build zero carbon two storey home with garage.

5.2 Amount

The proposals will consist of three separate buildings grouped together in the form of a farm crew yard.

5.3 Layout

The proposed layout of the site is designed to create visual excitement by enhancing the appearance of the site. The new building has been designed to reflect and reference the local agricultural vernacular. The overall form and profile of the new dwelling would resemble an agricultural shed similar to those found nearby in the surrounding landscape, though of a domestic scale.

5.4 Scale

The proposals consist of three buildings up to 2 storey's in height.

5.5 Landscaping

Where possible all existing landscape features will be retained. The existing hedge to the eastern boundary of the site will be retained and supplemented by new tree planting to the south-western corner of the site. The new home will have sufficient land to allow for the provision of a Wildflower Meadow as well as sufficient land to have home grown food production and general biodiversity improvements.

5.6 Amenity Space

The new home will be provided with a significant garden which will allow for general amenity space to the occupiers.



Extract From Site Layout

5.7 Appearance

The design philosophy underpinning the proposals aims to ensure that the development has a clear affinity with the sites location. Sutton St James and its surrounding area has a clear agricultural architectural style that relates to the creation of Post Second World War small agricultural holdings. These generally incorporate steel frame agricultural sheds.

The proposals seek to follow the general form of these agricultural sheds whilst also using materials which enhance the look of the building. This approach is very common in recent barns converted under the Class Q permitted development rights.



5.8 Access

The principle access to the site is by way of an existing culvert and field access.

Access to the principle entrance of the home and annex will be provided with a level threshold.



5.10 Waste

The property will be provided with internal bins for household refuse and recycling. Once these bins are full the occupants will empty them into external bins and place the sacks at the kerbside for collection by the Local Authority on collection day.

The property will also be provided with a home composting bin of a minimum 900 litre capacity to reduce food and garden waste that is sent to landfill.

6.0 Key Sustainability Issues

6.1 General

The following section considers how the proposals will deliver its sustainability objectives and make a lasting and positive contribution towards sustainable development. The basic framework for analysis corresponds with the three key sustainability issues set out in planning and environmental legislation, guidance and best practice.

Sustainability in relation to the location of the site, amenities and public transport links are discussed in detail earlier within this report and within the Planning Statement.

Environmental Issues

6.2 Energy

The need to reduce greenhouse gas emissions, particularly carbon dioxide (CO2), and adapt to effects of climate change is recognised as a global imperative. A key objective of the scheme has therefore been to encourage energy efficiency in all aspects of the home, including design, procurement, construction and use.

The building design includes environmental strategies throughout with the use of fabric-first detailing, heat recovery ventilation and passive solar gains. Passive solar gains will be achieved through controlled openings to the south, east and west of the dwelling.

The home will generate its own electricity through Photvoltaic Modules, storing a proportion in batteries for use by the home in 'high demand' times and selling the remainder back to the grid. The homeswill also be provided with 100% low energy lighting, mechanical ventilation heat recovery and a ground source heat pump reducing energy consumption within each home.

All walls, floors and roofs will be highly insulated and the building airtightness will be improved significantly beyond current Building Regulations to provide a home which uses less energy than it generates and is therefore a **Zero-carbon Home**.

The definition of a Zero Carbon Home taken from the *Zero Carbon Hub* is:

'There are three core requirements which must all be met for a home to qualify as zero carbon:

1. *The fabric performance must as a minimum, comply with the defined standard know as the Fabric Energy Efficiency Standard (FEES) and*
2. *Any CO2 emissions that remain after consideration of heating, cooling, fixed lighting and ventilation, must be less than or equal to the Carbon Compliance limit established for zero carbon homes, and*
3. *Any remaining CO2 emissions, from regulated energy sources (after requirements 1 and 2 have been met), must be reduced to zero*

Requirement 3 may be met by either deliberately 'over performing' on requirements 1 and 2 so that there are no remaining emissions, or by investing in Allowable Solutions.'

The best way to determine if the proposed new home meets the Zero Carbon Home criteria is to produce a Standard Assessment Procedure Calculation.

The Standard Assessment Procedure (SAP) is adopted by Government as the UK methodology for calculating the energy performance of dwellings. The calculation is based on the energy balance taking into account a range of factors that contribute to energy efficiency:

- Materials used for construction of the dwelling
- Thermal insulation of the building fabric
- Ventilation characteristics of the dwelling and ventilation equipment
- Efficiency and control of the heating system(s)
- Solar gains through openings of the dwelling
- The fuel used to provide space and water heating, ventilation and lighting
- Energy for space cooling, if applicable
- Renewable energy technologies

The calculation is independent of factors related to the individual characteristics of the household occupying the dwelling when the rating is calculated.

A Design Stage Standard Assessment Procedure Calculation for the home has been produced and a copy of the full calculation has been submitted with this application.

The key highlights of the calculation in relation to the Zero Carbon Home criteria is as follows:

1. Dwelling Fabric Energy Efficiency 46kWh/m2/year — **Dwelling Fabric Energy Efficiency 44.7kWh/m2 PASS**
2. CO2 Emission Target 23.01kgCO2/m2/year—**Dwelling CO2 Emission Rate (DER) -2.19kg CO2/m2/year PASS**
3. Over provision of items 1 & 2 above mean that requirement 3 is passed. **PASS**

Based on the SAP calculation and the above information the proposals can be classified as a **Zero Carbon Home.**

According to Government Energy Performance Data an average home in the UK produces **6 tonnes** of CO2 per annum. This proposed Zero Carbon Home produces **-2.19 tonnes** per annum, actually reducing the production of CO2 offsite.

6.3 Water and Flood Risk

It is understood that there are no major water courses flowing through the site and therefore the risk of water pollution is very low. There is however drains to the southern and northern boundaries of the site which will be fully protected during construction.

The use of water at the site will be regulated by fitting low consumption technology. The home will have its water restricted to 80 litres/person/day, the equivalent of the former Code for Sustainable Homes Level 6 rating. The home will also incorporate rainwater harvesting and grey-water recycling for use as irrigation within the garden and for washing cars. As well as flushing toilets.

The site lies within Flood Zone 3a and a site specific Flood Risk Statement accompanies this statement confirming that the application site is not at risk of flooding.

The surface water generated on site by the proposed development will discharged through a Sustainable Drainage System, attenuated to Greenfield run-off via a pond with final discharge to the drain on the northern boundary of the site.







6.4 Transport

Paragraph 103 of the NPPF 2019 states:

' Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.'

The focus of paragraph 103 is on a choice of sustainable transport modes with the aim of reducing congestion, emissions and improving air quality. It also recognises that the opportunities for sustainable transport solutions will vary between urban and rural areas and this should be taken into account in decision making.

The Department of Transport *National Travel Survey 2017 f*indings outlines the mode of transport and their relevant percentage of trips as follows;

- Car 61% of all trips;
- Walking 26% of all trips;
- Bus 6% of all trips;
- Train 2% of all trips;
- Cycling 2% of all trips;
- Other 3% of all trips.

These figures suggest that peoples choice of travel mode is predominantly the conventional car with walking being their second choice. In rural areas the figures show an increase in the choice of car use up to 76% with only 4% of trips taken on public transport.

The main difference in travel patterns between urban and rural areas lies in the use of the car and this is reinforced by data which suggests that almost 60% of rural homes have two or more cars. It therefore can be generally accepted that living in rural areas creates a need for the use of a car and the NPPF 2019 recognises this in allowing a clear change in decision making between urban and rural areas. It also clearly states that occupants should be offered the choice of transport modes and this proposal seeks to offer that choice to the occupants of the new home.

Conventional Car

It is the applicants intention that they replace their current conventional motor vehicles with electric vehicles. However, it should also be noted that based on 2018 Government statistics that for a car of average emissions (124.5g/km) and average mileage (7,400 miles or 11,909 kilometres) the annual CO2 emissions would be 1.48 tonnes. That is significantly less than the CO2 saving produced by the proposed new dwelling when compared to an average house.

Electric Car

The proposed new home will be provided with two electric car charging points powered by electricity generated using on site photovoltaic modules. This creates a genuinely low carbon alternative to the conventional car, whereby vehicles can be powered through energy generated on site. This meets the NPPF's goals of reducing emissions and improving air quality. It also complies with the definition of sustainable transport set out within the Glossary to the NPPF, which defines 'sustainable transport modes, as follows:

'Any efficient, safe and accessible means of transport with overall low impact on the environment, including walking and cycling, low and ultra emission vehicles, car sharing and public transport.'







The proposed home will be provided with at least one electric vehicle with MOT, fully taxed, insured for use by the occupants of the new home at all times. The electric vehicle will be a fixture of the property and secured through a Section 106 agreement.

As such it is entirely likely that vehicular trips from the site will themselves be a sustainable mode of transport.

Walking

It is accepted that should the occupants of the new home wish to walk into the village centre there is no public footpath available for them to walk on. However, this is not unusual and there are in fact some 14 dwellings in a similar situation between the villages of Sutton St James and Tydd St Mary.

It should also be noted as outlined previously that 76% of people in rural areas will choose to travel by car. If this car is an electric vehicle powered by electricity generated on site through renewable technologies then this must be seen as having a low environmental impact.

Cycling

The roads surrounding the site are suitable for cycling and provide access to the nearby towns of Holbeach and Wisbech with their associated services as well as further public transport links.

Public Transport

The site lies on bus route for local schools in Holbeach, Long Sutton and Wisbech. Pupils are picked up from directly

outside their homes. Unfortunately as in many rural areas bus routes have been reduced. However, Lincolnshire does operate a CallCollect on demand bus service in key areas. Sutton St James is covered by the Holbeach CallCollect bus and offers a pick up from outside your house into Holbeach Town Centre and then on to either Spalding or Kings Lynn via the 505 bus route. Both Spalding and Kings Lynn have national rail lincs to Peterborough (East Coast Mainline) and London.

6.5 Waste During Use

Sustainable development demands a fundamental change in the way we design, produce, use and dispose of the products we consume. Every effort has been made to design out the production of on-site waste.

The home will be provided with dedicated internal bins within the Kitchen to allow the separation of recyclable and kitchen waste from landfill waste. These bins in-turn can be emptied into external bins and brought out to the kerbside of the road for collection by the Local Authority on the appropriate day.

The home will also be provided with compost bins of a minimum 900 litre capacity, reducing garden and food waste going to landfill.

The occupiers of the home will be encouraged to grow their own food and therefore reduce waste. The proposed home has sufficient space for a Kitchen garden which allows occupiers to cultivate fruit and vegetables as they wish.

6.6 Waste During Construction

Where possible materials have been chosen to minimise on-site waste. Where this is not possible waste will be segregated on site to allow recycling where possible and to reduce waste going to landfill.

6.7 Materials

Materials within the proposals have been carefully chosen to suit the architectural style, use materials with low embodied energy or materials that are either recyclable or can be recycled and materials that reduce waste to landfill.

It is intended that the home will be constructed in the following materials:

Concrete Foundation—High embodied energy but acceptable for Flood Risk reasons in small quantities.

Frame—Steel frame, high embodied energy but recyclable.

Brickwork— Facing brickwork, long life and can be re-used

Wall/ Roof Cladding—Zinc, long life and can be re-used and timber cladding sourced from an FSC source.

Internal Partitions, Floors and Roof Structure— Timber sourced from an FSC source.

Windows & Doors—Aluminium, can be recycled.

Plaster/ Plasterboard—British Gypsum made from recycled gypsum.

6.8 Biodiversity

A key element of the proposals is to improve biodiversity within the site and the scheme includes the provision of bird boxes, bat boxes and insect hotel, log pile habitats as well as a new wild flower meadow and general planting.

The provision of all of the above will significantly improve biodiversity within the site.

7.0 Conclusions

This proposal for a self-build zero carbon home addresses a clear need within the District for housing and in particular self -build housing. This combined with the home being zero carbon which directly responds to Climate Change makes this proposal aspirational within the South Holland District.

On that basis it is felt that the proposals meet the aspirations of the NPPF in delivering a home which responds to local need and the current and future requirements of Climate Change.

The architecture within the proposals is of a high level responding directly to the site, its proposed occupants and their need to have a modern energy efficient building.

Given all of the above and the Councils current lack of self-build home plot provision, it is felt that the application should be approved without delay.

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