



Accredited S A P / S B E M & Code for Sustainable Homes Assessors – BREEAM - Air Pressure Testing - Smoke Tests –
Acoustic Design & Testing - U Value Calculations - Acoustic Specifications – Part G Water Calculations

Energy & Sustainability Statement

For an outline planning application for “Demolition of existing buildings and residential development of up to 80 dwellings including the creation of a new vehicular and pedestrian access to Combe Hill (A357), open space, landscape planting and surface water attenuation (all matters reserved except access)”.

for

Land at Manor Farm, Templecombe

Prepared by

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Introduction

This report is an energy statement and sustainability review undertaken to accompany an outline application for up to 80 dwellings at Manor Farm, Templecombe.

It has been produced to demonstrate that the design of the proposed development can achieve high quality, sustainable, low carbon development which complies with the policies of the adopted South Somerset Local Plan, Including EQ1 (Addressing Climate Change), EQ2 (General Development), TA1 (Low Carbon Travel) and in line with National Planning Policy Framework guidance on climate change and sustainability (NPPF).

2. National Planning Policy Framework (NPPF)

Achieving sustainable development is an overarching requirement of the NPPF. Three overarching objectives are set out in pursuit of achieving sustainable development, the environmental objective being to:

“to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”

Paragraph 9 of the NPPF is clear that sustainable solutions should take local circumstances into account to reflect the character, needs and opportunities of each area.

Making efficient use of land, achieving well designed places and meeting the challenge of climate change are all themes covered in the NPPF.

Paragraph 148 is clear that the planning system should support the transition to a low carbon future in a changing climate. It should help to shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources and support renewable and low carbon energy and associated infrastructure.

New development should be planned for in ways that:

- a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
- b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government’s policy for national technical standards.



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3. South Somerset Local Plan (2015)

The adopted South Somerset Local Plan (2015) contains the following policies of relevance:

- Policy EQ1: Addressing Climate Change in South Somerset
- Policy EQ2: General Development
- Policy TA1: Low Carbon Travel

Policy EQ1: Addressing Climate Change in South Somerset

“The Council will support proposals for new development where they have demonstrated how climate change mitigation and adaptation will be delivered, through inclusion of the following measures (as appropriate).

- *New development will ensure that carbon dioxide emissions are minimised through energy efficiency measures, renewable and low carbon energy, and where necessary Allowable Solutions;*
- *The following sustainable construction standards will be required, unless it is proven not to be feasible or viable:*
 - *Code for Sustainable Homes level 4 from 2013 (or as amended by future Government policy, regulations and/or legislation);*
 - *Code for Sustainable Homes level 5 from 2016 (or as amended by future Government policy, regulations and/or legislation);*
 - *BREEAM rating of ‘excellent’ for non-domestic buildings.*
- *Development of renewable and low carbon energy generation will be encouraged and permitted, providing there are no significant adverse impacts upon residential and visual amenity, landscape character, designated heritage assets, and biodiversity. The presence of several airfields in South Somerset will mean the impacts of wind turbines upon electromagnetic interference and aviation radar will be a particular consideration;*
- *Developers must demonstrate that proposed wind turbines do not pose a risk to bat populations, and will not pose a barrier risk to migratory bird species, in particular to birds moving from key sites such as the Severn Estuary;*
- *Development will be directed away from medium and high flood risk areas through using South Somerset’s Strategic Flood Risk Assessment as the basis for applying the Sequential Test. The area of search to which the Sequential Test will apply will be South Somerset wide, unless adequately justified otherwise in relation to the circumstances of the proposal;*
- *Where appropriate, the Exception Test can be applied if this is consistent with wider sustainability objectives;*
- *Development should reduce and manage the impact of flood risk by incorporating Sustainable Drainage Systems, and through appropriate layout, design, and choice of materials;*



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- *Climate change should be considered in the design of new development, incorporating measures such as solar orientation, maximising natural shade and cooling, water efficiency and flood resilience;*
- *Susceptibility to climate change should be taken into account on all proposals to develop sites with biodiversity interest.”*

Policy EQ2: General Development

“Development will be designed to achieve a high quality, which promotes South Somerset’s local distinctiveness and preserves or enhances the character and appearance of the district. Development proposals, extensions and alterations to existing buildings, structures and places will be considered against:

- *Sustainable construction principles;*
- *Creation of quality places;*
- *Conserving and enhancing the landscape character of the area;*
- *Reinforcing local distinctiveness and respect local context;*
- *Creating safe environments addressing crime prevention and community safety;*
- *Having regard to South Somerset District Council’s published Development Management advice and guidance; and*
- *Making efficient use of land whilst having regard to:*
 - *Housing demand and need;*
 - *Infrastructure and service availability;*
 - *Accessibility;*
 - *Local area character;*
 - *Site specific considerations*

Innovative designs delivering low energy usage and/or wastage will be encouraged. Development must not risk the integrity of internationally, nationally or locally designated wildlife and landscape sites. Development proposals should protect the residential amenity of neighbouring properties and new dwellings should provide acceptable residential amenity space in accordance with Policy HW1.”



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Policy TA1: Low Carbon Travel

“All new residential and employment developments in South Somerset should, subject to general viability:

- i. Provide Travel Information Packs;*
- ii. Provide for the charging of electric vehicles with an external charging point of at least 16 amps adjacent to each parking space and within the curtilage of the site. Such charging points should also be provided for garages within the development;*
- iii. Provide a Green Travel Voucher for each occupier/employee valid for 1 year for use on sustainable transport;*
- iv. Provide facilities for cycle parking within the new development commensurate with the levels and standards designated in the SCC cycle parking strategy;*
- v. Include Travel Plans (commensurate with Policy TA4);*
- vi. Ensure that sustainable transport measures are in place and operational concurrent with first occupancy. Additionally, developments of all new residential dwellings should:*
- vii. Enable ease of working from home by providing a designed in specific work area with broadband connections. Where the scale of new residential development or employment sites would have an impact on existing public transport planning obligations will be sought to:*
- viii. Deliver improved public transport connections increasing accessibility through enhancements to either existing conventional bus routes or existing Demand Responsive Transport schemes or the provision of new services and new bus stops, bus timetables and bus shelters. These should be commensurate with the scale of the development that enables good on-going connections with the public transport network. The developer will be required to enter into a planning obligation in accordance with Policy SS6 to ensure provision of such facilities, which shall be provided prior to first occupation of the new development.”*

South Somerset Environment Strategy (2019)

In May 2019 South Somerset District Council formally recognised a climate and ecological emergency.

Since then, Officers have been working with stakeholder groups to identify interventions that will help to achieve a significant reduction, in the order of 80%, of their carbon emissions. Their ambition is to be carbon neutral across their own operations and land holdings by 2030 at the latest, and ideally by 2023.

The South Somerset Environment Strategy aims to make South Somerset District Council a leading Council in developing and adopting a Green Agenda to promote sustainable environment, economy and communities.

The South Somerset Environment Strategy was formally adopted and approved by Councillors of South Somerset District Council in October 2019.



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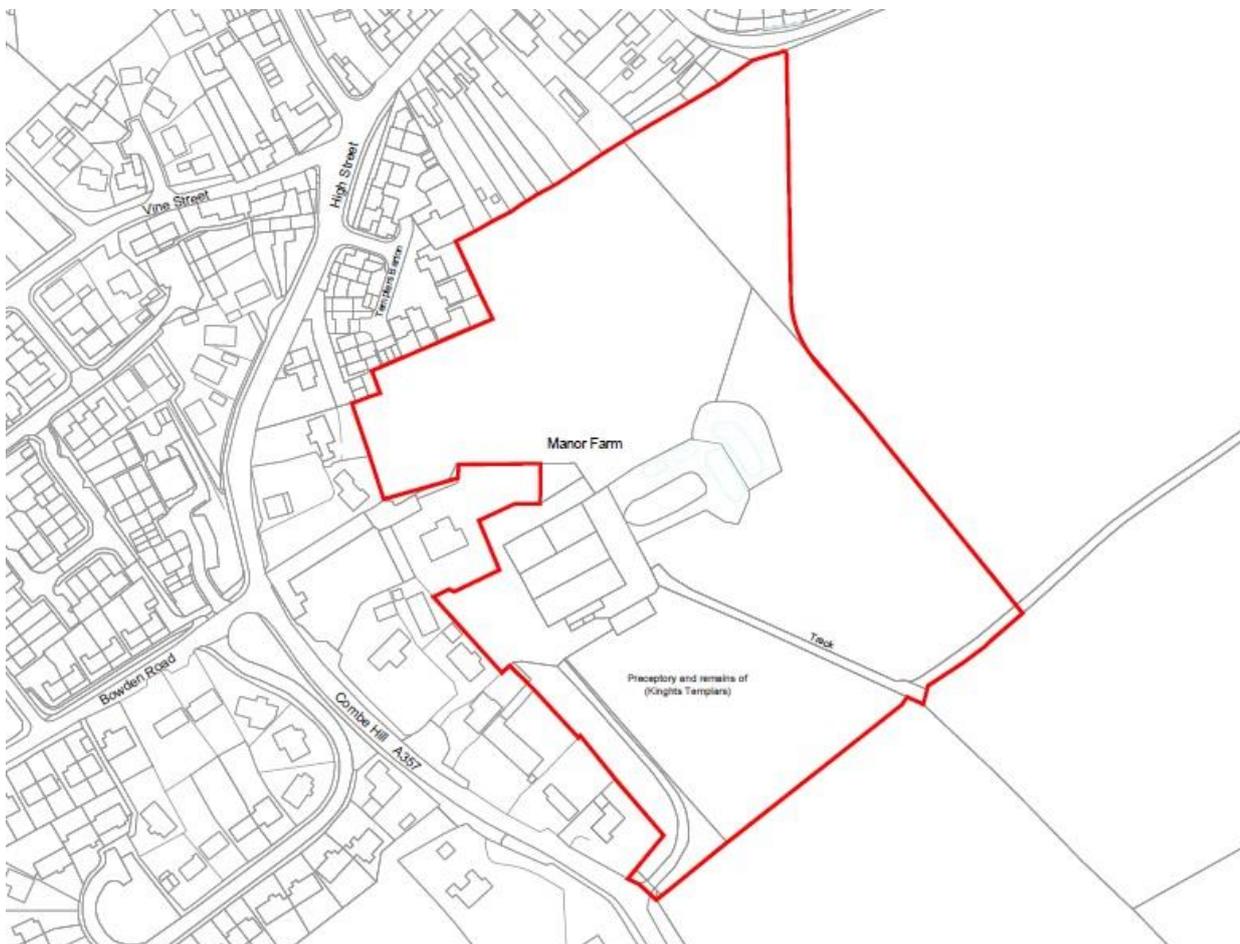
The strategy sets out both the immediate actions and long-term goals for the district achieve a significant reduction in SSDC's carbon emissions.

It promotes the development and adoption of a sustainable environment, economy and communities within South Somerset and helps to develop a strategy that will achieve a significant reduction in SSDC's carbon emissions.

Site Review

Templecombe is a Rural Settlement in South Somerset, situated on the A357 road five miles south of Wincanton, twelve miles east of Yeovil, and 30 miles west of Salisbury. The population is 1,560. Along with the hamlet of Combe Throop it forms the parish of Abbas and Templecombe.

The location of the site is identified in the site plan below and the Masterplan is also set out below.





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In line with South Somerset's Environmental Strategy and their commitment to adapt to and mitigate the effects of climate change 2019 the master plan lays out the proposed steps to address these principles.

In terms of potential renewable and low carbon energy resources in South Somerset, there is good potential to develop solar photovoltaic panels as the district has relatively high levels of sunshine duration compared to the rest of the UK, with around 1,500 sunshine hours per year. There are unobstructed aspects to the site making PV a favourable option. There is the potential to change roof pitch orientations to improve solar gain. The site also has a strong southern aspect with ground levels falling towards and beyond the southern boundary. As a result, the potential effects of overshadowing by trees and proposed buildings on solar arrays is significantly reduced even over the winter months.

In terms of building design, in line with the energy hierarchy, energy efficiency measures could be prioritised to minimise the building's energy use. This approach is deemed to be the most efficient route to achieving the greatest reduction in carbon emissions. See fabric sections for options with regard to enhanced U-Values and heating and lighting.

Sustainable drainage systems (SuDS) will be incorporated into the scheme at the early stages of design to ensure the masterplan is robust. See flood risk and drainage briefing note which outlines the flood risk constraints and provides water drainage considerations to feed into the development. The Site is located in Flood Zone 1, denoting a low risk of flooding from rivers or the sea. Swales are proposed at the north side of the site towards the community woodland proposed and also to the rear South of the site. Swales Slow the movement of water through the landscape after heavy rainfall, reduce peak flows, form temporary reservoirs, direct water to storage or discharge systems and facilitate the absorption of water into the ground.

The retention and enhancement of trees and shrubs and the introduction of new tree and hedgerows, improving also the appearance and protecting the existing tree stock in the long term. The planting of a community woodland is also proposed. By managing sustainably, this can enrich the environment. Woods are proven to benefit air quality, mitigate flooding, shield noise, improve physical and mental health, and deliver a major boost to biodiversity. There are few habitats richer in wildlife.

Though the site is not subject to any statutory or non-statutory ecological designation and is made up of grassland fields and several ponds, not of any ecological value, consideration has been given to enhancing and protecting these features. Natural habitat spaces will be provided and or retained.

To the North of the site are houses served off the high street and Temple Barton. The houses proposed to this end of the site would be single storey and orientated to avoid the impact on the immediate neighbours. There are no public rights of way through the site, but a new footpath is proposed to link to East street as per master plan. There are no other areas of housing which would be impacted by the development.



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Sustainability Statement

Sustainability targets associated with this site are as follows;

- Local Plan requirements as set out in Policies EQ1, EQ2 and TA1.
- Policy requirements as set out in the NPPF which include making an efficient use of land and supporting the transition to a low carbon future.

This report considers the potential for a site of circa 80 residential units of various sizes to can achieve high quality, sustainable, low carbon development. Passive and efficiency measures will be put at the forefront of the design.

Once this is an outline planning application, at detailed design stage the following key energy efficiency measures in the design may include:

- Renewable technology
- Electric car charging points (as required by Policy TA1: Low Carbon Travel)
- Energy efficient lighting
- Improved U-Values
- Good air permeability standards
- Time and temperature controls on the heating systems

The carbon in both the construction material and the construction method needs to be balanced against the likely carbon usage of the site. As we move towards carbon neutral buildings the embedded carbon becomes a much more significant issue associated with the carbon footprint of a building.

Active energy efficiency measures are fundamental to assist the Low Zero Carbon technologies (LZCT) proposed meeting the remaining load. It is well understood that in the case of dwellings, heating and hot water are historically the most significant loads.

The intention is to reduce heat loss in the building elements by specifying and introducing enhanced U values along with improvements in the air permeability beyond the minimum targets set down in the Building Regulations.

The dwellings may have a gas supply. The use of high efficiency gas boilers could be implemented. Although other heating strategies will be looked at further in this report.

Lighting is intended to be minimised through the use of 100% energy efficient fittings. Part L1A 2013 requires 75% of all new lighting be low energy light fittings. 100% is encouraged by assessors and there will be an overhaul of the lighting energy calculation in SAP10 when it is released, and more accurate detailed information will be required.

If the building is to be truly sustainable then this has to be reflected in how it will be operated. As far



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as practically possible the systems in the building will be passive and simple requiring little user interface, thereby minimising the risk of systems not working effectively. This includes the enhanced fabric selections and optimised system efficiencies.

Small power is currently considered as an unregulated load and outside of a building's regulation carbon assessment and is realistically outside of the design team's control. For a building to be truly carbon effective, these loads must be considered in how the building is to be used. To this end, the design will consider the ways in which the energy used by equipment can be monitored and fed back to the users to encourage them to be efficient in the way in which they interact and work within their building and potentially save themselves money.

All energy suppliers must aim to install smart meters in every home in England, Wales and Scotland by the end of 2020.

While Ofgem and the government think that all consumers will benefit from smart meters, they aren't compulsory, and you can choose not to have one.

Choosing not to have a smart meter may mean you don't have access to all the available tariffs on the market, some of which could be cheaper.

Smart meters will give you near real-time information on your energy use. Through an in-home display, you can easily track your costs usage, and understand where you might be able to make reductions that could save you money.

POLICY EQ1: ADDRESSING CLIMATE CHANGE IN SOUTH SOMERSET

Policy EQ1 fully supports the delivery of renewable and low carbon energy, consistent with national policy.

Opportunities to Incorporate Technologies to Address Climate Change

The following technologies and construction techniques could be incorporated in the detailed scheme design, building on the Masterplan layout to satisfy planning policy and the District Council's sustainability/ low carbon emissions ambitions.

Renewable technology – A look at Low Zero Carbon Technologies

***Photovoltaics**

Photo-voltaic systems convert energy from the sun into electricity through semi-conductor cells. Systems consist of cells connected and mounted into modules. Modules are connected to an inverter to turn their direct current (DC) output into alternating current (AC) electricity for use in buildings.

PV systems require only daylight, not sunlight, to generate electricity (although more electricity is



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produced with more sunlight), so energy can still be produced in overcast or cloudy conditions.

Photovoltaics are generally blue/grey in colour and can be used successfully in all parts of the UK. There should be very little maintenance required as the technology has no moving parts. If there is a large bird population in the area, they should be discouraged from perching on or near the PV cells as quantities of bird excrement on the panels will affect their performance. Bird excrement is unlikely to be washed away by rain.

PV panel systems are vulnerable to vandalism. This may be a consideration for this project. The output of the panel should be monitored so that if the output is much lower than expected, the panels and set up can be inspected and if necessary cleaned.

Planning constraints: PV panels on a roof generally have a low impact on planning.

Land use: PV panels are typically positioned on a building's roof and so do not use any additional land over the building's footprint.

Noise: PV panels do not produce any noise when in operation.

It is expected that all the energy would be used in the buildings and on site.

There are unobstructed aspects to this site making PV a favourable option. There is the potential to change roof pitch orientations to improve solar gain.

The site has a strong southern aspect with ground levels falling towards and beyond the southern boundary. As a result, the potential effects of overshadowing by trees and proposed buildings on solar arrays is significantly reduced even over the winter months.

* Optional pending planning requirements.

As per the Planning Statement submitted in support of the outline application, the proposed development presents as opportunity to deliver a number of potential benefits for Templecombe and the local area including:

.
Delivery of circa 80 new homes including affordable homes;

.
Provision of new areas of landscapes public open space;

.
Provision of new pedestrian and cycle routes towards Templecombe and potential highways improvements along Combe Hill.

.
The development scheme will include appropriate mitigation measures to protect and enhance wildlife and biodiversity;



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The additional household spend associated with the development of 80 new homes would provide a boost for local shops, businesses and services.

Air Source Heat Pumps (ASHP)

Air source heat pumps (ASHP) absorb heat from the outside air. This heat can then be used to heat radiators, underfloor heating systems, or warm air convectors and hot water in your home. An air source heat pump extracts heat from the outside air in the same way that a fridge extracts heat from its inside. It can get heat from the air even when the temperature is as low as -15° C. Heat pumps have some impact on the environment as they need electricity to run, but the heat they extract from the ground, air, or water is constantly being renewed naturally.

The benefits of ASHPs

- lower fuel bills,
- potential income through the UK government’s Renewable Heat Incentive (RHI)
- lower home carbon emissions, depending on which fuel you are replacing
- no fuel deliveries needed
- can heat your home as well as your water
- minimal maintenance required
- Based on benchmark date it is estimated that circa 86% of regulated energy is associated with heating and hot water which the ASHP can be used to provide

Planning constraints: Generally, have a low impact on planning.

Land use: Require space for an external and internal unit.

Noise: Units can produce a little noise.

If implemented an ASHP delivering all the heating and DHW could deliver around 50 – 60% of the on-site renewable energy.

The technologies below have not been considered in detail for the following reasons;

Technology	Reason not to explore
Biomass heating and hot water	Not appropriate
CHP	Not appropriate



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Wind turbines	Low wind speed on site limits the viability of a turbine. There is no space for a free-standing turbine and small roof mounted turbines will not contribute significantly and there is considerable variation in performance.
Ground sourced cooling / borehole cooling/water source heat pumps	Buildings will have no significant need for mechanical cooling. Not appropriate for retrofit into flats above ground floor which are also proposed
Solar thermal	Solar thermal systems - Limited roof space for the amount that would be needed to achieve planning conditions and fights the ASHP should this be considered.
Community heating using waste heat/renewable heat sources	No known source at site
Biogas from anaerobic digestion, geothermal energy, micro hydro power, tidal/wave power	No known source at site
Fuel Cells using Hydrogen	Emerging technology

Design and construction proposals

Approved document L1A – Conservation of Fuel and Power in New Dwellings ([Part L1A 2013](#)) sets the standards for carbon emissions from new dwellings and was last revised in October 2010, to which this residential development will comply, thereby exceeding the requirements of the 2006 Edition of the Approved Document by 25%.

The properties will need to comply with the criteria set out in the document, as follows:

- 1) The predicted Dwelling Emission Rate of CO₂ emissions from dwellings (DER) is not greater than the Target Emission Rate (TER), as referred to above exceeding the requirements of the former 2006 Edition of the Approved Document by 25%.
- 2) The performance of the building fabric and fixed building services should be no worse than the design limits set out in Table 2 of the Approved Document.
- 3) The dwellings will have appropriate passive control measures to limit the effect of solar gains on indoor temperatures in summer.
- 4) That the performance of dwellings as built comply with the DER values achieved, including site testing of a representative sample of dwellings demonstrating that the 'air permeability' rate achieved is as per that specified, or better.



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5) The necessary provisions for energy efficient operation of dwellings are put in place, including operation and maintenance instructions aimed at achieving economy in the use of fuel and power in a way that householders can understand.

Enhanced Building Fabric

U-Values (W/m²K)

Element	Building Regulation	Proposed	Improvement
Walls	0.3	0.2	30%
Floor	0.25	0.12	52%
Roof	0.2	0.11 – 0.18	10 - 45%
Windows	2	0.83	58%

Air tightness – Less than 5m³/m² at 50Pa

Ventilation – Mechanical extract ventilation systems to be installed.

High Efficacy Lighting – 100% internal light fittings considered for all developments. External Lighting also considered to be low energy lighting and controlled through PIR sensors or daylight cut-off devices.

Building Fabric

Whilst an outline application, the site offers the opportunity for a developer to start with the 'fabric first' approach:

- The houses would mainly include a mix of housing types including semi-detached and terraced to limit the extent of external walls and therefore heat loss.
- Timber frame construction may be utilised as a sustainable construction method for building the houses, the benefits include: *
- Timber frame construction allows more space for insulation than traditional built buildings therefore the homes requires less energy to heat and cool.
- Sustainable timber, which is non-toxic, does not leak chemical vapour into the building and is safe to handle and touch.
- Limits waste because units are built under factory conditions.



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- Excellent thermal efficiency as timber is a natural insulator and therefore aids reduced heating and cooling costs.
- Lowest embodied energy of all common building materials.
- Timber is made from carbon drawn from the atmosphere.
- Glazing – Triple glazed ‘Passive House’ standard windows and doors will be used to improve thermal efficiency. Proposed U-Value 0.83 w/m²K (Building regulations require U-Value 2 w/m²K, therefore the proposed represents circa 58% improvement)
- Large windows and roof-lights may be incorporated into the house designs to maximise the amount of natural daylight.
- Bricks may be chosen from Forterra’s Eco stock range as they require up to 50% less energy to produce compared to other fired clay bricks.
- Dwellings could benefit from installation of electric car charging infrastructure. As per **POLICY TA1: LOW CARBON TRAVEL** – (Provide for the charging of electric vehicles with an external charging point of at least 16 amps adjacent to each parking space and within the curtilage of the site. Such charging points should also be provided for garages within the development.)
- Internal luminaire fittings will only accept low energy lamps. Externally all luminaires will be limited to a maximum of 150 Watts and fitted with photocell and time clocks.
- All white goods specified shall be Energy Saving Recommended.
- Each individual home will be provided with a combination gas-fired condensing boiler with thermostatically controlled radiators.
- Low water usage fittings will be utilised throughout the residential dwellings to minimise water consumption, these will include; flow restrictor on wash hand basin taps and dual flush WCs. Measures to achieve 105 litres per person per day (Building regulations require 125 litres per person per day).
- Each individual home will be provided with mechanical ventilation. It is a low energy, continuous mechanical extract ventilation system designed with multiple extract points to simultaneously draw moisture laden air out of the wet rooms (bathrooms and kitchen) providing a quieter and more efficient system compared to separate fans.

*See also Building Fabric U-Value chart in enhanced building fabric below.

*Timber frame is one option and traditional build will also be looked into.

Construction (Main Contractor)

- Waste will be segregated on site into relevant waste streams and recycled and reprocessed accordingly.
- Materials will be sourced locally where possible to minimise the carbon footprint of transportation.



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- Any asbestos or hazardous waste will be removed by certified contractors. Duty of care notes will be maintained on site and available for inspection.
- No fires on site will be allowed.
- Site welfare cabins will include LED Lighting and a good level of insulation to conserve energy.
- Temporary external lighting will be controlled with either PIR or time clock system to minimise usage.
- WC cabins will be fitted with percussion taps and cistern misers to reduce water consumption.
- Site cabins will be powered by mains electric instead of generators to limit noise and air pollution.
- Crushed concrete from the demolition of the warehouse will be reused on site.
- Contractors will be asked to car share where possible to limited number of vehicle trips to site.
- Any plant on site will be turned off when not in use.
- The use of battery power tools is promoted to avoid the use of generators.

Summary and Conclusion

This statement is intended to demonstrate that the proposed development at Manor Farm, Templecombe has the potential to be constructed in accordance with the Local Plan Policies and address the climate change emergency plans and South Somerset's Environmental strategy with their "Vision for South Somerset".

Already at outline stage with regard to the master plan and the location of the site we have discussed how the site will provide 80 new homes in keeping with the area which will not impede on any neighbouring homes or landscapes. The proposed master plan shows a retention of trees and shrubs and the introduction of new planting and hedges to increase and enhance the biodiversity of the site. The SuDS and Swales will be implemented into the design at early stages to ensure the scheme is robust as they move forwards.

The proposed design has the potential to exceed the fabric efficiency required by Building Regulations Part L1A 2013 by looking at higher efficient insulations, high efficiency windows and air tightness of the builds could be significantly improved, This will help reduce the heat loss through the building fabric and therefore reduce energy consumption. Lighting will be low energy lighting to exceed building regulations requirements and water usage to exceed Building regulations requirements of 125 litres per person per day. High efficiency heating systems and the implementation of renewable technologies will provide energy demand and reduce fuel emissions on site. The possibility of including electric car charging points has also been implemented at outline stage to comply with policy TA1 for low carbon travel.



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The proposed development should deliver significant economic and social benefits and the implementation of community woodland, public areas, play areas and natural habitats will increase health and wellbeing of not only its residents but the surrounding neighbourhood and its wildlife.