ATSPACE
DELIVERING BEYOND COMPLIANCE

ENERGY STATEMENT

501 Bursledon Road,
Southampton,
Hampshire,
SO19 8NJ

Date: 21/08/2026
Report Reference: S41898

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REVISION	DATE	PREPARED BY	REVIEWED BY	COMMENTS
1	21/08/2026	Atspace Ltd	Joshua Handley	For Comment

This statement outlines the opportunities for reducing carbon output/energy demand through optimizing fabric fit-out and using renewable energy.

It is not intended as detailed design advice, and is purely for the demonstration of the relevant reduction requirement.

As such data and information should only be treated as INDICATIVE at this stage of the process. Further investigation can be undertaken when more accurate and detailed information is required on specific measures.

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1.0 Introduction

1.1 Introduction to Developments

ATSPACE Ltd has been instructed to prepare an Energy Statement for the non-residential development of an Adult Care Home (Class C2) project at 501 Bursledon Road, Southampton.

This statement will demonstrate how the CO_2 emissions of the development have been reduced by at least 20% as per the target set by client and in line with the target energy efficiency guidance from Southampton City Council.

The project is the redevelopment of land into a 2 no. storey 7 no. bedroom care home facility with living accommodation and shared amenity spaces.

1.2 Methodology

The methodology that has been applied in this report is as follows:

1.2.1 Prepare SBEM calculations for the site based on construction specification provided by the developer.

1.2.2 From the SBEM calculations, the energy demand for the development in kWh/year and baseline CO_2 emissions (TER) in $kgCO_2/year/m^2$ for the site can be established.

1.2.3 Reduction target CO_2 emission rates based on the reduction requirements can then be calculated from the baseline values.

1.2.4 A renewable energy feasibility study to ascertain which LZC technologies would be suitable for the development is carried out.

1.2.5 Where the actual building emission rate (BER) does not meet the reduction target emission rate, feasibility of various options for improvement are discussed with the developer.

1.2.6 SBEM calculations are modified with the agreed improvements. The reduced energy demand for the development in kWh/year and the predicted CO_2 emissions for the site can be established, and shown to achieve the reduction target.

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1.3 Planning Policy (Southampton City Council)

The following CO_2 related planning conditions from the local plan and development management document apply to this Energy Statement:

Policy CS 20 – Tackling and Adapting to Climate Change

Link to City of Southampton Strategy objective(s): SO4 – An attractive, sustainable and stimulating environment	Link to Core Strategy Strategic objective(s):		
	S16	S17	S18

Southampton City Council will continue to implement the measures identified in the Council's Climate Change and Air Quality Strategy (2004) and any subsequent revisions to the strategy.

The sustainability of development proposals will be judged against the standards outlined in the 'Requirements for new developments' table below.

Requirements for New Developments

All residential development achieves at least the following level of the Code for Sustainable Homes		All non-residential developments with a floor space of over 500 m² achieve at least the following BREEAM standards.
From adoption (2010)	Level 3	BREEAM 'very good'
From 2012	Level 4	BREEAM 'excellent'
From 2016	Level 6	BREEAM 'excellent'

1. Low Carbon Development
All development must be low carbon, with a view to carbon neutrality where appropriate. Developers should demonstrate how their proposal will achieve this through adopting the following sequential approach to reducing carbon emissions;

a) Improving energy efficiency
Maximise the integration of energy efficiency measures into the design of all buildings,
b) Incorporating renewable energy
All developments, either new build or conversion, with a floorspace greater than 500 m², or one or more residential units (based on the size of the final development footprint), will be required to incorporate decentralised and renewable or low-carbon energy sources to reduce predicted CO_2 emissions by at least the percentage values for each type of development stated in the 'Requirements for reductions in CO_2 emissions' table below. Where specific opportunities exist, development will be

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required to connect to existing Combined Heat and Power (CHP) systems or make equivalent CO_2 savings through other on-site renewable or low-carbon energy measures.

Requirements for Reductions in CO_2 Emissions

Development type	Low Rise Residential	4 Storey + Residential	Schools/ Colleges	Offices	Light Industrial
Minimum CO_2 emission reduction required	20%	15%	15%	15%	12.5%

c) *Contributing to the Carbon Offset Fund*
From 2012 - once energy efficiency measures and renewable or low-carbon technology opportunities have been maximised, any remaining CO_2 emissions can be offset through contributions to a carbon offset fund, which will be invested in off-site renewable energy and energy efficiency projects throughout the city. This will be in place for 2012 when the requirements for new development increase.

2. Conserving Water Resources and Surface Run-off Management

a) *Improving Water Efficiency*
All development should maximise water efficiency through the installation of high performance internal fittings, as well as rainwater harvesting and greywater recycling systems where viable. These water efficiency measures must be integrated into the design of all development to a level that allows it to achieve at least the Code for Sustainable Homes / BREEAM standards or equivalent in accordance with the 'Requirements for new development' table above.

b) *Managing Surface Run-off*
Sustainable Drainage Systems (SUDS) and measures to reduce or avoid water contamination and safeguard groundwater supply should be incorporated into all development, unless it can be demonstrated that this is not appropriate in a specific location. These surface run-off management measures should be integrated into the design of all development to a level that allows it to achieve at least the Code for Sustainable Homes / BREEAM standards or equivalent in accordance with the 'Requirements for new development table' above.

3. Identifying Opportunities to Site Decentralised Energy Supplies
Opportunities to site large-scale renewable or low-carbon energy generation centres will be identified through the City Centre Action Plan and the Sites and Policies DPD. Smaller-scale decentralised schemes will be encouraged within proposed development schemes. The potential for proposed developments to connect into existing smaller-scale schemes in nearby developments will be dealt with through individual applications.

Figure 1 - Policy and planning conditions related to the proposed development taken from the Local Plan 2015

From this policy alone taken from the Southampton City Council Local Plan 2015, the client has decided to target at minimum a 20% reduction in overall CO_2 emissions through the use of green and renewable technologies, with emphasis on a fabric first approach to ensure compliance.

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2.0 Predicted Annual Carbon Emissions

IES VE software has been used to determine the following calculations and final calculations were prepared based on the construction specification shown in **Table 1** below:

Table 1 – Specification Table

Aspect	Element
External Walls	0.15 W/m^2 K
Roofs	0.10 W/m^2 K
Ground Floors	0.15 W/m^2 K
Glazing	1.20 W/m^2 K
Solid Doors	1.40 W/m^2 K
Ventilation	Natural
Main Heating System	Gas Boiler (94% Efficiency)
Heating Controls	Time and Temperature Zone Control
Hot Water	As per main heating system
Lighting	Full LED Lighting (125 lm/w)
Renewable technologies:	Solar PV Array (133.8 kWp)

The conducted SBEM calculations have been completed using IESVE's Part L V2 Compliance Module. From this we can find a baseline emission rate for the proposed development which is considered to be the target emission rate (TER). The building emission rate (BER) is then compared against this target, with the percentage improvement calculated from this.

To satisfy the planning policies on CO_2 reduction, the developer has committed to reaching at least a 20% reduction in predicted CO_2 emissions.

This can be seen in **Table 2** below.

Table 2 – Residential CO_2 Emission Rate Breakdown

CO_2 Emission Rate Breakdown (kg CO_2/yr/m^2)			
Typology	Target Emission Rate (TER)	Building Emission Rate (BER)	Total Reduction
501 Bursledon Road	36.09	28.83	**7.26**

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3.0 Reducing Carbon Emissions through Energy Reduction

The Energy Hierarchy sets out the most effective way to reduce a building's CO_2 emissions. Firstly, by reducing energy demand, then by using energy efficiently, and lastly by incorporating LZC/Renewable technologies.

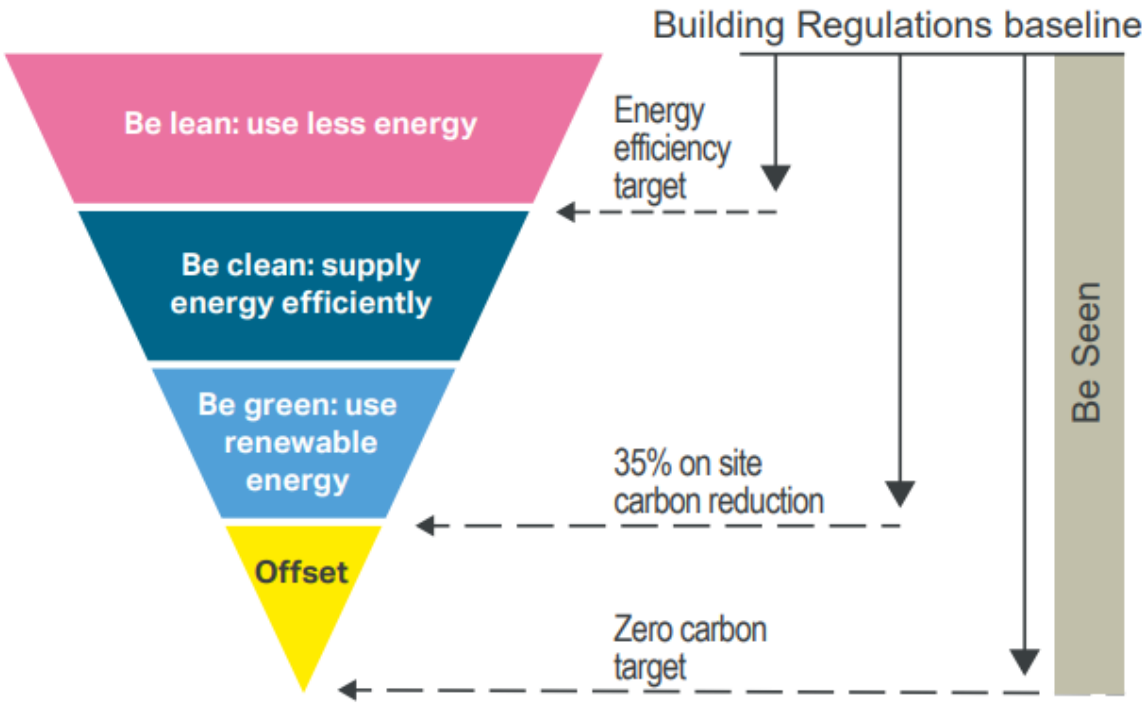

Figure 2 – The Energy Hierarchy

4.0 Lean Scenario

In the '*Be Lean'* scenario, the development focuses solely on reducing energy demand through passive design and enhanced fabric performance, without the use of low-carbon technologies. This stage demonstrates how far the building can reduce its regulated emissions through efficiency alone, prior to the introduction of any renewable or low-carbon systems.

The *'Be Lean'* model therefore reflects the impact of improved insulation, reduced air permeability, optimised glazing performance, and efficient building services that remain within the scope of energy-efficiency rather than energy-generation. These measures collectively lower the heating and cooling loads of the building and ensure that the final design begins from a robust, energy-efficient baseline. The developer is attempting to reduce the energy demand and CO_2 emissions of the development by making the following fabric and energy-efficiency improvements to their standard Part L V2 building specification:

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Energy reduction strategies include:

- U-Values aligned with Building Regulations Part L and improved upon further where possible
- Incorporating 100% energy-efficient lighting
- Natural ventilation throughout

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5.0 Clean Scenario

The development does not deliver additional carbon savings at the *'Be Clean'* stage. This is because the scheme does not incorporate any communal or district heating networks, nor does it rely on combustion-based plant that could be further optimised.

As a result, no intermediate improvement is recorded at the *'Be Clean'* stage, and all carbon savings beyond the fabric-first measures are captured within the Be Green scenario.

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6.0 Green Scenario

The *'Be Green'* scenario represents the stage at which low-carbon and renewable technologies are incorporated to minimise the development's operational emissions. In line with the energy hierarchy and Southampton's climate policies, this scheme achieves its carbon reductions primarily through the *'Be Green'* stage.

6.1 Feasibility Study of Renewable Technologies

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This section will assess the technical viability of the following renewable energy technologies for the site to rule out unfeasible options:

- Mast mounted wind turbines
- Roof-mounted wind turbines
- Solar PV (Photovoltaic) Panels
- Solar Thermal Panels
- ASHP (Air Source Heat Pump)
- GSHP (Ground Source Heat Pump)
- Biomass
- CHP

The following observations have been made concerning the technical feasibility of integrating renewable energy technologies into this development.

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Table 3 - Feasibility Study of Low Carbon Technologies

Renewable Technology	Feasible	Reasons
Mast Mounted Wind Turbine	No	- The site is situated in a suburban area. Surrounding properties are not far enough away to be unaffected by turbine noise, reflections, and shadow flicker, however, surrounding trees may create shadow flickering for the occupant or nearby residents - The site area is surrounded by trees and nearby dwellings that could cause uneven and turbulent wind patterns. Turbulent air conditions may reduce the lifespan of components. - Currently, the BWEA suggests a large wind turbine to be viable where wind speed is 7m/s or above. According to the NOABL database, the average wind speeds for the site are 5.50 m/s at 10m, 6.30 m/s at 25m, and 6.70 m/s at 45m height for the property postcode (SO19 8NJ). Therefore, the wind speeds are not sufficient for a mast-mounted wind turbine to be viable.
Roof Mounted Wind Turbine	No	- There is sufficient roof space for a roof-mounted wind turbine to be installed on-site. - The site is situated in a suburban area. Surrounding properties are not far enough away to be unaffected by turbine noise, reflections, and shadow flicker, however, surrounding trees may create shadow flickering for the occupant or nearby residents - The site area is surrounded by trees and nearby dwellings that could cause uneven and turbulent wind patterns. Turbulent air conditions may reduce the lifespan of components. - Currently, the BWEA suggests a large wind turbine to be viable where wind speed is 7m/s or above. According to the NOABL database, the average wind speeds for the site are 5.50 m/s at 10m, 6.30 m/s at 25m, and 6.70 m/s at 45m height for the property postcode (SO19 8NJ). Therefore, the wind speeds are not sufficient for a mast-mounted wind turbine to be viable.
Solar PV (Photovoltaic) Panels/Tiles	Yes	- The proposed development has a sufficient flat and pitched roof area for solar panel accommodation. - Most of the roofs will be free from overshadowing for most of the day by other buildings, structures, or trees. - The site is located in a region with a high level of global horizontal irradiation (3.29 kWh/m^2/day)

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Solar Thermal Collectors	No	- The proposed development has a sufficient flat and pitched roof area that can accommodate solar thermal panels. - Most of the roofs will be free from overshadowing for most of the day by other buildings, structures, or trees. - The site is located in a region with a high level of global horizontal irradiation (3.29 kWh/m^2/day) - Solar thermal collectors would be compatible with the planned heating system. - There will be a year-round hot water demand.
ASHP (Air Source Heat Pump)	Yes	- The proposed development could accommodate the space for a hot water cylinder and associated pipework. - The buildings are suitable for a low-grade heat distribution system (e.g. underfloor water system, oversized radiators). - Condenser units can be noisy and also blow out colder air to the immediate environment causing a nuisance to the residents. However logistically there is availability on the site to position the systems away from neighboring residents.
GSHP (Ground Source Heat Pump)	No	- It would not be possible to drill vertical boreholes or horizontal loops for a GSHP on the site. - The development can accommodate a low-grade heat distribution system (e.g. underfloor water system, oversized radiators). - The site and neighborhood contain mature trees. Drilling boreholes on the site creates the risk of damaging their roots. - There is insufficient space inside the proposed building for the ground source heat pump equipment.
Biomass Boiler	No	- The proposed development does not have the fuel on-site necessary to reuse or burn. - There is not sufficient space in the proposed buildings for a wood-fuel boiler and associated auxiliary equipment. - There is not sufficient space for fuel storage to allow a reasonable number of deliveries if necessary. - Biomass systems are management intensive (fuel sourcing, transport, storage) and require adequate expertise from users.

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CHP	No	- Given the proposed building use there won't be a high demand for heat for most of the year, therefore CHP won't be suitable. - A CHP unit only generates economic and environmental savings when it is running at least 4,500 hours per year. This equates to an average heat demand of about 17 hours a day for five days a week throughout the year. The proposed development energy and heat demand profile do not match this requirement due to low energy requirements because of fabric optimization. - CHP is typically utilized on buildings with high electricity and heating demand for most of the year such as local authority buildings, leisure centers, universities, hotels, and district heating schemes where CHP is used to provide electricity, space, and water heating. - CHP should be considered wherever there is a demand for electricity and an appropriate demand for heat in the near vicinity.

Based on the feasibility study in **Table 3** above, the following technologies have been identified as being feasible for the proposed development.

- Solar P.V.
- ASHP

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6.2 Options to Provide CO_2 Reduction

The proposed development intends to make use of the following technologies to reach the required target:

- Solar P.V.

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7.0 Conclusion

The proposed development has been designed in accordance with the energy hierarchy and the requirements of Policy CS 20, with priority given to reducing energy demand, avoiding fossil-fuel use where possible and incorporating on-site renewable energy generation.

A fabric-first approach has been adopted through improved thermal performance, energy-efficient lighting and natural ventilation. These measures reduce the development's operational energy demand before the application of low-carbon and renewable technologies.

The development will make use of a highly efficient gas boiler to reduce fossil fuel usage, with space heating and domestic hot water provided by this boiler. To offset any additional emissions as a result of this, the proposed development intends to make use of a large solar PV array to cover the majority of the developments roof with an array up to 133.8 kWp.

In combination with the energy-efficiency measures, solar P.V. and highly efficient gas boiler, the SBEM results demonstrate that the proposed development achieves a BER no greater than its respective TER, meeting and exceeding the 20% target in place. Overall, the proposed development attains a **20.12%** reduction in CO_2 emissions.

The scheme can be regarded as an exemplar of how a non-domestic development can successfully apply the principles of CS 20 through a fabric-first approach to achieve a sustainable build.

The strategy therefore responds positively to the principal requirements of CS 20 by:

- reducing operational energy demand through high-performance building fabric and efficient building services;
- incorporating low-carbon heating through highly efficient boilers;

Overall, the proposed measures provide a robust and future-ready low-carbon development that aligns with the objectives of Southampton City Council's Core Policies and demonstrates a practical and deliverable pathway to achieving a sustainable build.

The proposed installations generate the following CO_2 reductions in **Table 4** below:

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Table 4 - Associated CO_2 reductions

CO_2 Emission Rate Breakdown (kg CO_2/yr/m^2)				
No.	Improvement	Target emission rate (TER)	Building emission rate (BER)	Total Reduction (%)
501 Bursledon Road	**PV**	**36.09**	**28.83**	**20.11**

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