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Legal & Corporate Communications

Energy & Carbon Statement

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Application Site

11-19 Bolton Street,
Bury,
BL9 0EY

Application Details:

Second floor/roof extension to form 9 no. apartments and increase in retail space to ground floor (02955E)

This report takes into account the particular
Instructions and requirements of our client.
It is not intended for and should not be relied
Upon by any third party and no responsibility
Is undertaken to any third party.

Job number 137482-00

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1.0 INTRODUCTION

William Morris legal has prepared this Energy Strategy and Sustainability Statement in support of planning application for the development of 9 self contained flats at Bolton Street, Bury.

This Statement includes an energy demand assessment showing how selected energy efficiency, low carbon and renewable energy measures have been considered and those, which will be incorporated into the scheme.

The planning policy requirement requires a reduction of emissions of 40% compared with the 2013 Building Regulations for dwellings. This statement sets out how this will be achieved and implemented.

The fabric insulation standards and construction specification of the homes will exceed the minimum required by Building Regulations. It is proposed to install an air source heat pump into each of the 17 homes. Although not required under planning policy the doctor's surgery will be built to net zero carbon standard.

2.0 ENERGY ASSESSMENT

The development is required to make carbon emission reduction in accordance with Bury councils local plan. The expected energy performance as well as the energy efficient measures that will be employed to reduce CO₂ emissions is outlined below.

This energy statement outlines energy demand from the development together with the associated CO₂ emissions, using the present Building Regulations Part L as a baseline. It demonstrates how the emissions from energy use in the development will be reduced through a combination of energy efficiency measures and renewable energy technology.

3.0 METHODOLOGY

The methodology employed to determine the potential CO₂ savings is in accordance with the three steps of the Energy Hierarchy.

Be Lean - Improve energy efficiency of the scheme.

Be Clean - Supply as much of the remaining energy requirement with low carbon technologies such as combined heat and power (CHP).

Be Green - Offset a proportion of the remaining carbon dioxide emissions by using renewable technologies.

The government approved Standard Assessment Procedure (SAP) methodology software (2013) has been used to determine the CO₂ emissions and energy requirements. It compares CO₂ emissions from regulated energy use (DER) with those of an equivalent dwelling built to Part L1A 2013 (TER), a notional dwelling of the same size and shape. These calculations do not include emissions from cooking or appliances.

4.0 NATIONAL PLANNING POLICY

The latest Nation Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the NPPF is a presumption in favour of planning of sustainable development. The NPPF has guidance for developments to ensure they plan for climate change.

The most relevant paragraphs of the NPPF in respect of climate change are;

Paragraph 152 states

'The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimize vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.'

Paragraph 158 states

'When determining planning applications for renewable and low carbon development, local planning authorities should; a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale project provide a valuable contribution to cutting greenhouse gas emissions; and b) approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.'

5.0 LOCAL PLANNING POLICY

Adopted Places for Everyone Joint Development Plan Document (Policy JP-S1: Sustainable Development states to help tackle climate change, development should aim to maximise its economic, social and environmental benefits simultaneously, minimise its adverse impacts, utilise sustainable construction techniques and actively seek opportunities to secure net gains across each of the different objectives.

In preparing plans, authorities should make as much use as possible of suitable previously-developed (brownfield) land and vacant buildings to meet development needs.

In bringing forward previously developed sites for development, particular attention will be paid to tackling land contamination and stability issues, ensuring that appropriate mitigation and remediation is implemented to enable sites to be brought back into use effectively.

Bury local plan March 2025

Design out crime

Ensure new development is accessible to all and designed to minimise crime and anti-social behaviour, without diminishing the high quality of the overall appearance.

Incorporate active frontages to ensure spaces and buildings are overlooked to maximise natural surveillance, create defensible space and provide appropriate lighting.

Prudent use of resources

The design and construction of new development should enhance the overall environmental sustainability of the scheme, minimising the use of resources in accordance with Policy CS10 Sustainable Design and Construction.

Provide an appropriate density of development (mostly between 30 and 50 dph) that balances the efficient use of land with delivering high quality, functional design that respects distinctive local character. Higher density development will be encouraged in accessible locations, such as town and neighbourhood centres

Biodiversity and landscaping

Incorporate soft and hard landscaping, using high quality local materials, which reflects local character and increases or enhances biodiversity.

Parking

The provision of sufficient well designed space for servicing and parking should reflect the goal to shift away from car travel, taking account of local circumstances. Detailed parking requirements will be set out in a Supplementary Planning Document.

Building function and form

Individual buildings must be well designed to ensure they are neighbouring buildings in terms of height, mass and scale.

Ensure buildings and spaces are accessible and have adequate internal amenity and functionality.

Sustainable Design and Construction

Sustainable design and construction will be integral to the new development. In delivering sustainable design and construction, development should address the following key issues:

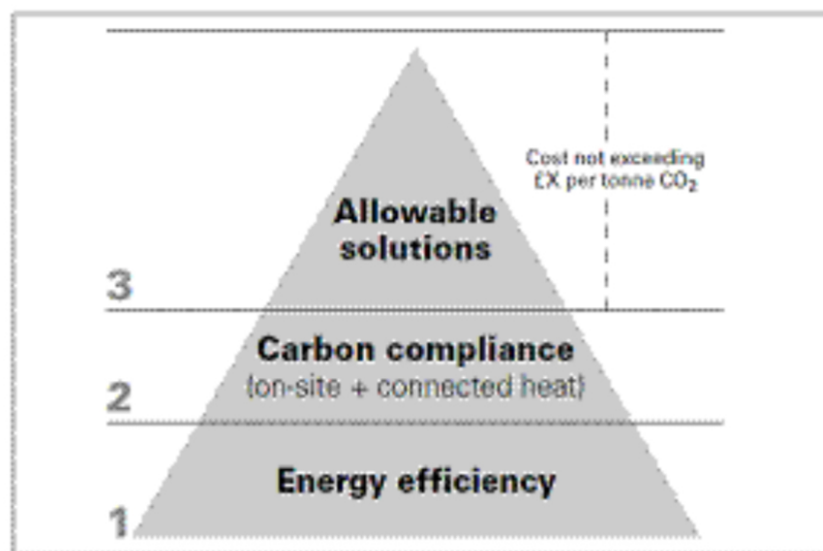
- Re-use of land and buildings;
- Conservation of water and provision for water recycling;n
- Use of sustainable drainage systems to reduce flood risk;
- Maximizing energy efficiency and incorporating renewable and/or low carbon technologies, in accordance with the energy hierarchy;

- Waste and recycling during construction and operation;
- Use of sustainable building materials and techniques;
- Opportunities to incorporate measures which enhance the biodiversity value of development, such as green roofs;
- Minimize pollution during construction and operation;
- Flexibility and adaptability of the building, allowing for future modification and retrofitting to meet higher standards of energy efficiency and connection to decentralized heating systems.

6.0 ENERGY STRATEGY

Energy strategy for the development is based on Energy Hierarchy; it adopts a set of principles to guide design and decisions regarding energy, balanced with the need to optimise environmental and economic benefits. It seeks to incorporate energy efficiency through the approach detailed in Figure

Figure 1 the Energy Hierarchy



Be 'Lean' - Demand Reduction Lean Measures reduce the demand for energy by designing efficiency into the very fabric of the building through the specification and construction of an efficient thermal cover. The focus should be on air tightness, Accredited Construction Details (ACD's), thermal bridges and solar control, as well as taking into account the thermal mass of the areas being considered.

Table 3 – Fabric Energy Efficiency Standard

Thermal Element	Part L1A 2013 Minimum Standard
Wall	0.30 W/m ² k
Roof	0.20 W/m ² k
Floor	0.25 W/m ² k
Glazing & Doors	2.00 W/m ² k

The heat loss of different building elements is dependent upon their U –value. A building with low U values provides better levels of insulation and reduced heating demand. The development will incorporate high levels of insulation and efficient glazing; thereby reduce demand for space heating. Table 5 below shows the U values for the development and the associated improvements over Building Regulations.

Table 4 below shows a summary of target u values for each thermal element.

Element	Standard	Blue Moon
Wall	0.30 W/m ² k	0.18 W/m ² k
Floor	0.20 W/m ² k	0.10 W/m ² k
Roof	0.25 W/m ² k	0.12 W/m ² k
Glazing	2.00 W/m ² k	1.2 W/m ² k
Air permeability	10 m ³ /hr/m ² at 50Pa	3.5m ³ /hr/m ² at 50Pa

7.0 ASSESSMENT METHODOLOGY

SAP calculations have been prepared for representative houses and apartments. The specification proposed in this report will exceed the requirements of the new Part L 2021.

8.0 BUILD STANDARDS PROPOSED

External Wall (u value 0.18W/m²K) 150mm cavity fully filled with Knauf Earthwool Dritherm 32 Ultimate, 100mm lightweight block (0.18W/m²K), 12.5mm plasterboard on dabs.

Roof (u value 0.17W/m²K) – tiles/slate on battens, breather membrane, 150mm rafters partially filled with 100mm Celotex GA4000 insulation, 52.5mm Celotex PL4040 insulated plasterboard.

Insulation at Ceiling Level (u value 0.10W/m²K) 300mm mineral wool (0.038W/m²K) over 100mm mineral wool between joists, 12.5mm plasterboard.

Windows and Glazed Doors (whole u value 1.2W/m²K) Windows are double glazed, low E Argon filled.

Rooflight (whole u value 1.6 W/m²K) Windows are double glazed low Argon filled.

High Performing Solid Entrance Door (u value 1.0W/m²K)

Heating Mitsubishi Electric Ecodan Air Source Heat Pump - COP2.6

Heating Controls Time and temperature zone control by suitable arrangement of plumbing; Hot Water System Hot Water Cylinder fed from main heating system, with a measured heat loss 2.09 KWh/24h

Ventilation Natural with trickle vents and extract fans to wet rooms and kitchen

Lighting 100% of lighting will be low energy at 80lumen/W or more with 5W power

Thermal Bridging

Knauf Insulation 150mm Dritherm 32 Full-fill insulation - PSI Ψ Values, Concrete Block Association (CBA) PSI Ψ Values & Full Fill Cavity Walls with Aircrete Blocks (0.18W/m²k) PSI Ψ Values to be implemented in the design and construction of the dwellings. Checklists to be completed and signed towards the end of construction.

Thermal junctions complied with as follows: -

E2 Other lintels, hi lintels

E3 CBA Cert 314

Window Sill E4 CBA

Cert 315 Jamb

Knauf E5B Beam and Block Ground Floor (normal)

E6 CBA Cert 303 Intermediate floor within a dwelling

E7 Party floor between dwellings for flats (Full Fill Cavity Walls with Aircrete Blocks PSI Ψ

Value) Knauf E10 Eaves (insulated at ceiling level)

E12 CBA Cert 310 Gable (insulated at ceiling level) E13 CBA Cert 311 Gable (insulated at rafter level)

E14 Flat roof Knauf E16 Corner (normal)

E17 CBA Cert 317 Corner (inverted)

E18 CBA Cert 305 Party Wall between dwellings E20 Exposed floor (normal)

E22 Basement floor

P1 Party wall – ground floor (Full Fill Cavity Walls with Aircrete Blocks PSI Ψ Value)

P4 Party wall – roof insulation at ceiling level (Full Fill Cavity Walls with Aircrete Blocks PSI Ψ Value) P5 Party wall – roof insulation at rafter level (Full Fill Cavity Walls with Aircrete Blocks PSI Ψ Value)

R1 – Head of roof window

R2 – Sill of roof window

R3 – Jamb of roof

R7 – Flat ceiling (inverted)

R8 – Roof to wall (rafter)

R9 – Roof to wall (flat ceiling)

Air tightness and Thermal Bridging

Air tightness of a building is important in reducing heat loss, but also in the prevention of drafts that can ultimately mean warm temperatures feels uncomfortably cold. Current Part L Building Regulations (2013) sets a maximum air permeability rate of 10h/m² at 50Pa. The units within the development will improve upon this at 3.5m³/hr/m² at 50Pa.

Fabric Energy Efficiency

The Zero Carbon Hub developed the Fabric Energy Efficiency (FEE) standard as part of their deliberations in determining the definition of “Zero Carbon”. The FEE of a building measures the amount of energy required to heat and cool its internal space. Issues such as fabric u values, solar gain, and thermal mass, thermal bridging and air permeability are assessed in the calculation.

In Approved Document L 2013 there is now a second standard called the fabric energy efficiency standard (FEES), for which a Target Energy Efficiency (TFEE) is set. This focus on energy demand of the building, and will therefore drive efficiency through measures that reduce energy use- such as “fabric first” approach, rather than mitigating CO₂ through building systems and renewable technologies.

The Target Fabric Energy Efficiency (TFEEs) of the development has been calculated and table 5 summarises the results following SAP calculations as designed and the target set by Approved Document L1A, 2013

Table 5 – Fabric Energy Efficiency

1B Hawthorn Avenue	Target FEE kWh/m ² /yr	DFEE kWh/m ² /yr	% improvement
	65.3	47.9	26.6%

High Efficacy Lighting

The development will incorporate low energy light fittings throughout. 100% of all light fittings will be specified as low energy lighting and will accommodate compact fluorescent (CFLs) or fluorescent luminaires only.

External lighting will be less than 60 luminaire per circuit watts and be automatically controlled to prevent operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.

Ventilation

The layout of a house can provide good internal air quality for all areas but not too much so as to waste heat. The use of openable windows will create horizontal airflow. By achieving a good naturally ventilated building the energy demand for air conditioning and mechanical ventilation will thereby be reduced or eliminated.

Be 'Clean' – Supply Energy Efficiently

Community heating and Combined Heat and Power (CHP system)

CHP systems are usually needed where there is a large heat demand (schemes with more than 100- 150 dwellings), usually resulting from the building(s) being in continuous use, or through specific heating requirements such as a swimming pool.

Community (or district) heating involves using a central boiler plant (or other heat sources) to heat a number of buildings through a network of well-insulated underground pipes

Be 'Green' - Renewable Energy

Once energy demand reduction measures have been applied, methods for generating low and -zero carbon energy can be assessed. The renewable technologies considered for the development are:

- Biomass
- Ground/water source heat pump
- Air source heat pump
- Wind energy
- Solar thermal panels
- Photovoltaic panels

Potential renewable technologies were assessed in conjunction with the Energy Efficiency and Carbon Compliance measures discussed in previous sections of the report. To determine the appropriate renewable technology for the site, the following factors were considered.

- CO₂ savings
- Their compatibility with the site and site constraints
- Installation and maintenance costs
- Any potential impacts

Biomass Heating

A biomass system designed for wood pellets, which have a high-energy content, would fuel this development. Wood pellets require less volume of storage than other biomass fuels. Pellet boilers also require less maintenance and produce considerably less ash residue. A biomass boiler could supply some of the space heating.

Ground Source Heat Pump

Ground source heat pumps use pipes, which are buried, in the garden to extract heat from the ground. This heat can then be used to heat radiators; underfloor or warm air heating systems and hot water in the development.

A ground source heat pump circulates a mixture of water and antifreeze around a loop of pipe, called a ground loop, which is buried in the garden. Heat from the ground is absorbed into the fluid and then passes through a heat exchanger into the heat pump. The ground stays at a fairly constant temperature under the surface, so the heat pump can be used throughout the year.

The use of Ground Source heat pumps for the scheme have been considered as not cost effective technology as it is more expensive to install than an air source heat pump, because of the need to install a ground heat exchanger. Problems can arise if the installation is poorly designed or not matched to the heating needs of the building. To get the full potential benefit of a well-designed system, it is necessary to be in touch with an expert installer, which will increase the cost of installation.

Air Source Heat Pump

Air source heat pumps are an efficient and environmentally-friendly way of heating using air drawn freely from the atmosphere. They operate rather like a refrigerator in reverse, absorbing heat from the air into a working fluid which is passed into a compressor where its temperature is increased before it is transferred into the heating and hot water circuits of the building. An air source heat pump can get heat from the air even when the temperature is as low as -15°C. One of the benefits of ASHP is that the system.

produces space heating and hot water through electricity, thereby negating the need for a gas connection. However, the efficiency of heat pump is very much dependent on the temperature difference between the heat source and the space required to be heated. The lower the difference between internal and external air temperature, the more efficient the system.

The use of this system has been considered appropriate and suitable for the development.

Wind turbines:

Building-integrated turbines would be most suited to this site due to the amount of roof space, as opposed to stand alone turbines. CO₂ savings from wind turbine technologies take into account their mounting height, the turbine wind curve and wind data.

To reduce the need for a high tower, vertical axis wind turbines (VAWTs) have become increasingly popular for integrated building applications. Micro VAWTs are often installed at locations with frequent windy conditions. Prior to installation of a wind turbine, it is important to collect wind data in the immediate vicinity of a building or installation site. Based on the wind data, a suitable type of wind turbine and suitable location can be determined to maximise the electricity generation.

Prior to installation of wind turbine(s) on building rooftop, it is important to ensure the roof structure is strong enough to hold the additional loads. These include the weight of wind turbine(s) and vibration from wind turbine operation. Vibration absorbent technology should be applied in order to

prevent damage to building structure and to reduce interior noise in the building. As wind turbines are usually installed on the high point of the building, prevention measure from lightning damage should be in place. Accessibility for maintenance should also be planned for. Therefore, it is not the most cost effective system for this development.

Solar thermal

Solar hot water systems (also known as Solar Thermal) harness heat from sunlight by capturing energy which is radiated by the sun within solar panels or collectors. This heat energy is then moved down pipes to the hot water cylinder within the home, reducing the need to use Gas, Oil or Electricity to heat the hot water you require; For this development solar thermal panels could be used for domestic hot water during summer periods. The system has been considered not suitable for the scheme as it will not contribute sufficiently towards the sustainability performance of the dwelling. The installation and use of a Photovoltaic system would be easier to install in the development compared to solar thermal, which requires additional plumbing.

Photovoltaic Panel

Photovoltaic panels extract the energy of the sun to generate electricity. They operate most efficiently when oriented to the south and are inclined to about 35 degrees. Several factors had to be considered to determine the amount of photovoltaic arrays that could be sited on the roof of the proposed development. This included:

- Any overshadowing from the neighbouring buildings, which is not an issue because of the location.
- The extent of available roof space.

Based on these factors, it was concluded that 9kW photovoltaic Panels could be located on the roof. In general, photovoltaics would be most suited to this development because installation is much simpler when compared to other renewable technologies. Through SAP calculations it has been determined that solar PV system mounted at a 30°- 40° angle, will provide electricity for the development.

Tesla powerwall home battery will be installed to maximize the usefulness of solar panels. It will store excess energy and make it available for use at night. Tesla powerwall unit has a 7kWh energy storage capacity. The unit is a wall mounted, rechargeable lithium ion battery with liquid thermal control.

9.0 SUSTAINABLE DESIGN AND CONSTRUCTION

All new dwellings must also be built to Code level 4 or above. However, the proposed development exceeds the council's requirement by achieving Code level 6 and nets zero carbon emissions. Climate Change Adaptation In accordance with the council's policy the development will address the causes of climate change by reducing predicted CO2 emissions through a combination of energy efficiency measures and renewable energy sources generated on site.

Conservation of Water and Provision for Water Recycling

Water efficiency becomes increasingly important in a changing climate with diminishing water resources. We consume a vast amount of potable water in non-potable situations including flushing the toilet, washing the car and irrigating our

gardens. Only a small proportion of our mains water is used for drinking, cooking and personal washing.

This and the fact that we have diminishing water resources are reflected in the increasingly stringent requirements for water usage, hence the Code for Sustainable Homes set a target of 105litres per person per day (for Code Level 3 and 4). This is against a national average of approximately 155l/p/d. It is proposed that the development will reduce water consumption further to 80l/p/d by installing sanitary appliances with lower flow rates and rain water harvesting.

Table 6– Water Fittings Standards 80 l/pd

Appliance	Flow rate or Capacity
WC	Dual flush WC 4/2.6 litre
Basin	1.6 litres/min
Shower	6 litres/minute flow
Bath	155 litres
Sink	3 litres/min
W/machine	6.14
Dish Washer	0.67

Use of Sustainable Drainage Systems to reduce Flood Risk Surface water runoff will be managed through selection of Sustainable Urban Drainage System (SUDs). A suitably qualified Hydrologist or Water Engineer will be appointed to design the system to ensure that all the mandatory elements of Code Sur 1 will be met and 2 credits for no discharge to watercourse for rainfall of up to 5mm. The overall design will also take into consideration all the requirements and recommendations relevant to the project. The development site is in a low Flood Risk Area.

Waste Management

The development will comply with the standards set out in the council's guidance – provision of household recycling and refuse waste collection services. A minimum internal storage capacity of 30 litres per dwelling will be provided which can accommodate containers for the temporary storage of materials to be recycled. Materials will then be transferred to external containers for collection. Adequate external storage for bins with applicable disabled access will be on site; level threshold, gentle approach, a hard surface with adequate turning circle has incorporated into the design Waste and Recycling during Construction and Operation There will be measures in place that will facilitate high levels of reuse and recycling throughout the construction stage. The development Site Waste Management Plan (SWMP) will aim to divert at least 80 % by weight or by volume of non-hazardous construction waste from landfill, to score 3 Credits under the Code for Sustainable Homes.

Use of Sustainable Building Materials and Techniques Materials can have a significant impact on environmental performance, both in construction but also ongoing use. Materials used in the development will have lower environmental impacts over their lifecycle. This applies to the materials used in the external walls, roof, ground floor and upper floors and windows and extends to elements

of the materials category such as the basic building materials (staircases, internal walls, upper floors) and the finishing elements (fascias, skirting, furniture).

Opportunities to incorporate measures which Enhance Biodiversity Value of Development All existing features of ecological value on the site will be maintained and adequately protected during site clearance, preparation and construction works. The development will include ecological features that contribute towards protecting, managing and enhancing biodiversity, and compensate for any unavoidable loss in biodiversity. Over 100 new trees are proposed to be planted at the site as part of the Woodland Trust's Centenary wood project in memory of the 100 year World War 1 anniversary, with on-going management to be provided by the applicant. The package of tree planting that is proposed will include hawthorn; hazel; birch; rowan; oak and blackthorn. In addition to the woodland proposals, thousands of wild poppies are to be planted, as a complementary project supported by British Legion. As part of the wider amenity and landscaping scheme, the applicant is also proposing a chicken coop; vegetable garden; an apple and pear orchard; and a bee hive.

Air Quality

An appropriate Construction Management Plan will be prepared to address issues such as water, waste, noise and vibration, dust, emissions and odours, ground contamination etc. The project will commit to the Considerate Constructors Scheme. The Considerate Constructors Scheme is a national initiative to improve the management of construction sites and minimize nuisance caused to neighbours and the general public.

Noise and Vibration Pollution

During construction noise and disruption will be minimized through good site management, operation and the specification of techniques, such as the use of framed construction and pre-fabricated components. Construction activities will be planned to limit both the level and duration of noise, to minimize disturbance to premises and amenities in the area. An Environmental Health Officer (EHO) will be consulted at an early stage. Minimise Pollution during Construction and Operation The development will implement measures to minimise light pollution. Guidance notes for the reduction of Obstructive Light (GN01) 2005 prepared by the institution of Lighting Engineers (ILE) or equivalent will be followed.

10.0 PROPOSAL FOR CODE LEVEL 6 POLICY

The Code for Sustainable Homes (The Code) is the national standard for assessing the sustainability of new homes. It is used in the design and construction of new homes with a view to encouraging continuous improvement in sustainable home building. It was devised by the Building Research Establishment (BRE) under contract to the Department for Communities and

Scoring System

The Code utilizes a rating system of between one and six stars. A star is awarded for each level achieved and is governed by a series of thresholds both within the mandatory issues (Energy and Water) and as an overall score:

Table 7 Scoring System

Code Level	Energy Threshold	Water Threshold	Total
Level 1 ★	0% (Compliant with Part L 2010)	≤ 120 l/p/day	36 points
Level 2 ★★	0% (Compliant with Part L 2010)	≤ 120 l/p/day	48 points
Level 3 ★★★	0% (Compliant with Part L 2010)	≤ 105 l/p/day	57 points
Level 4 ★★★★	19%	≤ 105 l/p/day	68 Points
Level 5 ★★★★★	100%	≤ 80 l/p/day	84 Points
Level 6 ★★★★★★	Net Zero CO2 Emissions	≤ 80 l/p/day	90 points

11.0 PRELIMINARY ASSESSMENT

A Code for Sustainable Homes pre-assessment has been undertaken to identify the credits that could reasonably be expected to be claimed and demonstrate that Code level 6 can be achieved. A selection of the targeted credits within each of the nine Code sections is outlined under the following headings. Full details of the targets can be found in the Pre-assessment estimator (Appendix C).

1. *Energy and Carbon Dioxide Emissions*

Ene 1 – Dwelling Emission Rate: There is a mandatory requirement for a Code Level 6 rating to achieve net carbon emissions. Design stage SAP Assessment show 100% improvement in DER/TER for the development. This improvement will be achieved by means of high-performance building envelope and energy efficient building services and systems.

Ene 2 – Fabric Energy Efficiency: Low U values.

Ene 3 – Energy Display Devices: Energy display Device that show real time energy consumption in kW and kWh will be provided in a prominent location.

Ene 4- Drying Space: The development will have secured outside space to accommodate 6m of drying line.

Ene 5 – Energy labelled Goods: To obtain all available credits the white goods provided will be A+ rated. For example, the fridges and freezers will be A+rated and washing machine and dishwasher will be A rated under EU Energy Efficiency Labelling Scheme.

Ene 6 – External Lighting: All space lighting within the external areas will be dedicated energy efficient. Lighting will be controlled either through a time switch and/or movement detectors.

Ene 7 – Low or Zero Carbon Technology: Photovoltaic panels will be installed to generate energy from a renewable source leading to over 50% reduction in carbon emissions.

Ene 8 – Cycle Storage: Adequately sized, covered and secure cycle storage will be provided within the development.

Ene 9-Home Office: Home office facilities will be provided in a non-master bedroom to allow residents to work from home. This will include two double power sockets and two telephone points along a wall of at least 1.8m in length in a room with adequate ventilation and daylight.

2. Water

Wat 1- Internal Water Use: Indoor water use will be reduced to 80 litres per person per day. This will be achieved by specifying water efficient appliances such as WCs, taps, power shower and white goods.

Wat 2 – External Water Use: outdoor mains water consumption will be reduced by use of a rainwater harvesting system.

3. Materials

Environmental Impact of Materials: It is a mandatory requirement for any Code rating that at least three of the five key building elements achieve a D rating or better in the Green Guide Specification. This mandatory requirement will be exceeded by sourcing locally for high gradematerials. Main elements relating to this credit are

- Roof
- External walls
- Internal walls (including separating walls)
- Upper and ground floors
- Windows

Mat 2 Responsible Sourcing; Basic Element: responsibly sourced materials will be used for basic building elements and finishing elements, such as FSC timber and other materials covered by the BES 6001 sourcing standard or a certified Environmental Management System (EMS).

Mat 3 Responsible Sourcing of Materials –Finishing Elements: Materials used in finishing elements will be responsibly sourced.

4. Surface Water run-off

Sur 1- Reduction =Rainwater harvesting systems and appropriately sized soak a ways as well as the use of permeable paving would ensure that the peak rate of run -off over the development lifetime (allowing for climate change), will be no greater for the development site than the pre- development site. Volume of run-off will comply with the predicted 100 year 6 hour event. An appropriately qualified professional will confirm this. A hydrologist report will confirm run-off to watercourses and the client will comply with 5mm rainfall scenario.

Sur 2- A flood risk assessment will also confirm that the development is in a low flood risk area and that it is not at risk of flooding from other sources.

5. Waste

Was 1 Storage of non-recyclable waste and recyclable waste -It is a mandatory requirement for any Code rating that external space allocated for waste storage is at least 100 litres for a single bedroom dwelling, with a further 70 litres for each additional bedroom in accordance with BS5906. The space provided for waste storage will be sized to hold all the external containers provided. It will be enclosed and accessible to wheelchair users in accordance with Checklist Inclusive Design Principles (IDP).

The client has committed to installing a single bin of at least 30 litres for storage of recyclable waste within the kitchen area. It will be permanent and fixed to the kitchen unit. Recycling storage will comply with Welwyn Hatfield Borough Council requirements for recycling both internally and externally.

Was 2 Construction Site Waste Management-The development seeks to set targets or procedures to minimize waste as well as divert at least 85% of non-hazardous waste (by weight or volume) from landfill paying due regard to the waste hierarchy. The principal contractor will have relevant mechanisms and experience to satisfy this issue.

Was 3- Composting: The development will include composting facility.

6. Pollution

Pol 1 – Insulant Global Warming Potential: The proposed specification used in the SAP calculations has allowed for materials used having low global warming potential (GWP) less than 5 (in manufacturing installations).

Pol 2 – Air Source Heat Pump.

7. Health and Wellbeing

Hea 1- There are no mandatory requirements in this section. Credits are targeted for achieving the relevant minimum average daylight factors in living, dining and study areas, and average daylight factor of 2% for the kitchen.

Hea 2-Sound Insulation: The house is detached, therefore will receive full credit by default under Sound Insulation.

Hea 3- Private Space: The dwelling benefits from private outdoor space.

Hea 4- Lifetime Homes: The development has been designed to meet Lifetime Homes thereby ensuring that the development can meet the reasonable needs of residents over their lifetime.

8. Management

Man1- Home User Guide; A home user guide for the dwelling will be provided to the residents with information on how to operate their home efficiently and how to make the best use of local facilities. The guide will be available in alternative format.

Man 2- Considerate Constructors Scheme: The contractor will be required to register the site under the Considerate Constructors Scheme and achieve a score of at least 32, with a score of at least 3 in every section.

Man 3- Construction Site Impacts: The Construction site will be managed in a manner that mitigates environmental impacts by adopting best practices with regard to air (dust) pollution from site activities and water (ground and surface pollution).

Man 4- Security: An Architectural Liaison Officer or Crime Prevention Design Advisor will be consulted and the requirements of Section 2 - Physical Security from "Secure by Design - New Homes" met.

9. Ecology

Eco 1 –Ecological value of Site: The site has ecological value.

Eco 2- Ecological Enhancements: The developer is working with Woodland Trust to plant 105 trees on the land as well as other major ecological enhancement already mentioned in the previous section.

Eco 3-Protection of Ecological Features: An ecologist will be employed to assess the site and make recommendations.

12.0 EXTENSION

It is proposed to build the proposed extension to net zero carbon (use) standard. The strategy is as follows:

Mechanical Services

Air source heat pump heating and cooling incorporating heat recovery. Natural (stack effect) ventilation via openable windows.

Air Conditioning System

High level wall mounted units will be provided.

Electric overdoor heaters

Will be provided within the Lobby to keep conditioned air in and bugs out

Ventilation

Generally, the building will be naturally ventilated via openable windows, doors and rooflights except toilets, served via MVHR unit located in loft space.

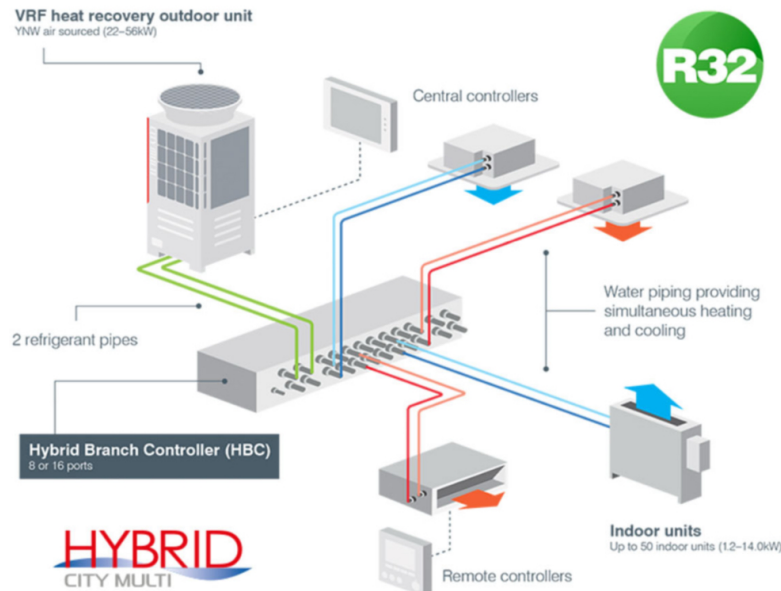
Lighting

New LED Lighting to be installed throughout the site

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.18	0.18	External Wall
Floors	0.18	0.15	0.15	Ground Floor
Pitched roofs	0.16	0.15	0.15	Roof
Flat roofs	0.18	-	-	No flat roofs in project
Windows** and roof windows	1.6	1.22	1.28	Window 1
Rooflights***	2.2	1.83	1.83	Rooflight
Personnel doors ^A	1.6	-	-	No personnel doors in project
Vehicle access & similar large doors	1.3	-	-	No vehicle access or similar large doors in project
High usage entrance doors	3	-	-	No high usage entrance doors in project
U _a -limit = Limiting area-weighted average U-values [W/(m ² K)] U _a -calc = Calculated area-weighted average U-values [W/(m ² K)] U _i -calc = Calculated maximum individual element U-values [W/(m ² K)] * Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. ** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position. ^A For fire doors, limiting U-value is 1.8 W/m ² K N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				
Air permeability	Limiting standard		This building	
m ³ /(h.m ²) at 50 Pa	8		3	

ASHP/VRF Heat Recovery System

Yes, the systems utilise the same ASHP technology (seasonal efficiencies etc) so the net zero target is not affected. Generally, the refrigerant circuit is extended to serve indoor units as opposed to being contained within the outdoor unit requiring a heat exchanger serving the LTHW heating plant. The VRF system is simpler and more familiar, R-32 is a next generation refrigerant that has a low environmental impact and Hybrid systems are available with water serving indoor units which reduce the need for leak detection (F-Gas Regulations) in occupied spaces. See illustration below, secondary pipework will be refrigerant (not water) for non-hybrid systems and require leak detection and pump down facility.



Photovoltaic Panels

In summary, the Part L assessment include PV installations that displace 100% of the electricity required for heating, hot water, lighting and associated auxiliary power for pumps, fans etc. However, electricity for domestic appliances is not considered and actual performance (as opposed to design) will be affected by occupant usage, and incremental weather. Consequently, a new grid connected electricity supply will be necessary for unregulated energy including any car charging points and since PV will be less effective in winter, for example and it is important to clarify the difference between 'zero carbon' vs 'off-grid' developments.

13.0 SUMMARY

This Energy Statement has demonstrated the strategies required for the houses to meet the requirements of DES10 and the doctor's surgery to exceed the standard and reach net zero.

Policy DES10 also requires the Energy Statement to include details as to how the policy will be complied with and monitored. On completion of the development As Built SAPs will be provided to the planning authority demonstrating that the policy has been complied with.

The planning authority may wish to consider imposing the following or similar Planning Condition?

The development hereby permitted shall not be occupied until written documentary evidence has been submitted to, and approved in writing by, the local planning authority demonstrating that the dwellings and doctors surgery

building hereby permitted, as built, have achieve a minimum 40% reduction in carbon emissions compared with a code 2013 Building Regulation compliant base case. Such evidence shall be in the form of an As Built Standard Assessment Procedure, produced by an accredited energy assessor.

Reason: To ensure that the development is carried out in accordance with sustainable building standards in accordance with Policy DES10.’

14.0 ECOLOGY AND BIO-DIVERSITY NET GAIN

Policy JP-G8 states that through local planning and associated activities a net enhancement of biodiversity resources will be sought. This is supported by Policy EN6/3 that seeks to retain, protect and enhance the natural environment and seeks to retain features of ecological or wildlife value. Paragraph 180 of the NPPF states that the planning policies and decisions should contribute to and enhance the natural and local environment. It is likely that the de-minimis exemption for BNG would apply to this site as it is a conversion of an existing building, and the rear yard appears to be hard surfaced.

Carbon and Energy PfE Policy JP-S2 - Carbon and Energy sets out the steps required to achieve net zero carbon emissions. A statement will be submitted with the submission to show how this policy has been addressed within the design of the dwellings.

15.0 DIGITAL CONNECTIVITY

PfE Policy JP-C2 - Digital Connectivity - this policy requires development to have full fibre to premises connections unless infeasible or unviable, with multiple-ducting. The policy supports the provision of free, secure, high-speed public wi-fi connections, particularly in the most frequented areas. A statement will be required with any submission to show how this policy has been addressed.

16.0 DRAINAGE

In terms of drainage any proposal should include a surface water scheme that must be based on the hierarchy of drainage options in the National Planning Practice Guidance and include assessment of potential SuDS options for surface water drainage with appropriate calculations and test results to support the chosen solution. It must be designed in accordance with the Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015). Details of proposed maintenance arrangements should also be provided

17.0 PLANNING POLICY

The proposal for the self contained flats complies with the Bury UDP plan and various clauses SPD7, 13, 15 and SPG5 all contained in the UPD part 2 Housing. The flats would all be self contained with no shared communal activities. The street scene and general character would not be affected as the group of people who would occupy this residence would most likely be young workers who will walk/ cycle and use the public transport. The location means that the local amenities would be all within a walking distance and there will be no need for a vehicle/ parking spaces.

18.0 ACCESS

The building was never constructed to give access to the less abled although the stairs do comply with the ambulant access requirements. The building in its nature will not be fully accessible. Although access is limited, the requirements for electrical switches etc outlined in part M would be complied with. There is also a cycle store located in the ground floor lobby level, indicated on proposed plans.

19.0 CONCLUSION

It is clear that the site suits residential due to its prime location. The proposal accepts and welcomes the responsibility of ownership of a listed building. Indeed it is suggested that the most important factor is to preserve this building is to find an appropriate use that will ensure it is fully used. This would stop the building from deteriorating quickly. The proposal identifies wasted space and proposes an additional self contained flat within this space.

The design and sustainability measures incorporated in the proposed strategy are of an award winning standard. Welwyn and Hatfield Borough Council Energy and Sustainability Policies and appropriate measures have been incorporated at design level. After incorporating efficiency measures, air source heat pump system and photovoltaic system the development will achieve net zero carbon emission.

- Code for Sustainable Homes pre-assessment shows that the dwelling can meet Code level 6
- A truly unique design of a high standard of architecture.
- The proposed fabric specification exceeds the requirements of Part L1A 2013. and is in line with the principles of the Energy Hierarchy.



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