



**Salisbury Square, Old Hatfield**

**Energy & Sustainability Statement**

**November 2021**

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# 1 Introduction

## 1.1 This Statement

- 1.1.1 This Energy and Sustainability Statement supports the planning application for the proposed redevelopment of Salisbury Square, Old Hatfield. It has been commissioned by Gascoyne Estates (the Applicant) to demonstrate how the development addresses sustainability, energy use and resource efficiency.
- 1.1.2 The policy framework encouraging sustainable new development is comprehensive at a national level, and although the local planning framework is now considerably out of date and seeking renewal, there remains some relevant policy in respect of sustainable design and construction. This Statement therefore responds to existing planning policy but looks forward by addressing the issue of producing a climate adapted development that mitigates emissions, by designing and planning for a zero carbon future.
- 1.1.3 This Statement therefore includes as much detail as possible at planning application stage to demonstrate the low and zero carbon energy solutions proposed.
- 1.1.4 In addition, the Statement also includes summaries of other sustainability considerations and features, drawing on the work of other consultants where necessary, to gain a full picture of the sustainability credentials of the proposals with sections including:
- Energy demand and supply
  - Conservation of water resources and water efficiency
  - Materials and waste management
  - Sustainable transport, accessibility and connectivity
  - Climate resilience and adaptation in buildings
- 1.1.5 Where specifics have not been possible, the overall approach and design standards have been laid out to ensure that the sustainable quality of construction remains high throughout the lifetime of the development. This is particularly important because the Applicant will retain long term ownership of the development as an asset, and so retains a long term interest in its commercial viability, operational affordability and therefore construction quality.

## 1.2 Site Description

- 1.2.1 This Statement supports a planning application for mixed use development comprising of 5 new terrace homes, 3 apartments and commercial/retail development including vehicular access, public open space, landscape planting, and associated infrastructure.
- 1.2.2 The proposals form the redevelopment of the existing buildings within Salisbury Square. Old Hatfield. The site is bordered to the north by Arm and Sword Lane, to the east lies Park Street and the west is the Great north Road. The images below show the application site and illustrative site layout plan:

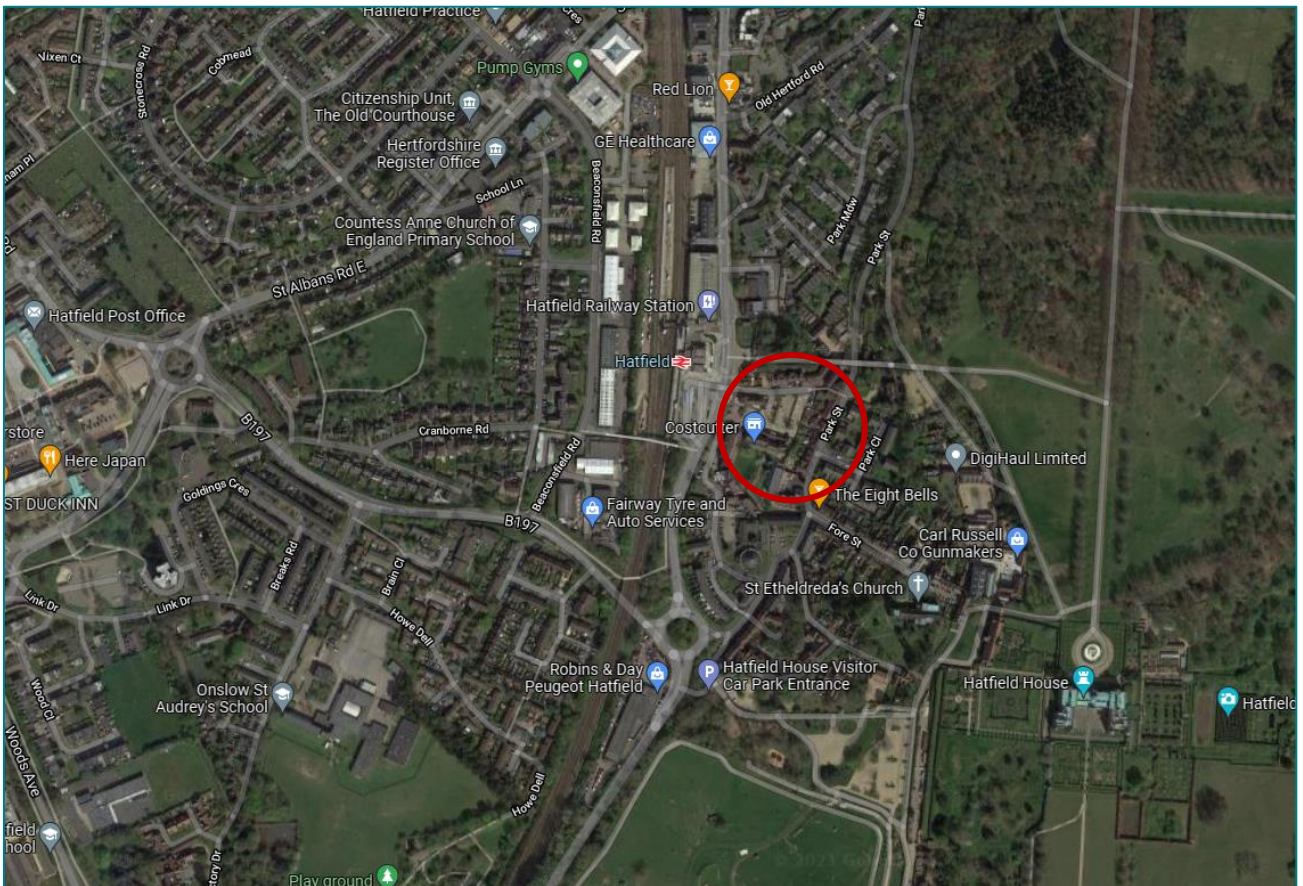


Figure 1: Site Location (courtesy Google Maps)

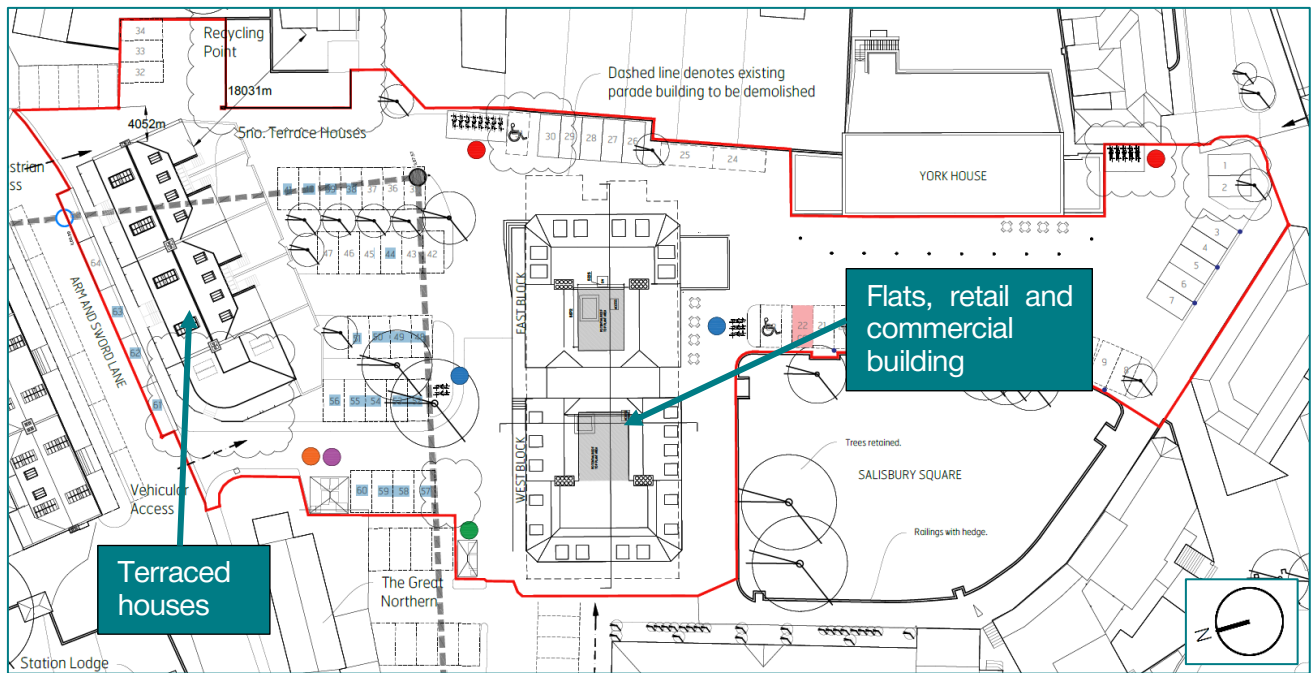


Figure 2: Illustrative Site Layout Plan (Brooks Murray Architects)

## 2 Sustainability Policy Review

### 2.1 National Planning Policy

#### The National Planning Policy Framework 2021 (NPPF)

2.1.1 The NPPF Section 2 states that the purpose of the planning system is to contribute to sustainable development, and it therefore has three overarching objectives ‘to be pursued in mutually supportive ways’:

- An economic role, contributing to a strong, responsive, competitive economy;
- A social role, supporting vibrant and healthy communities and;
- An environmental role, protecting and enhancing our natural, built and historic environment.

2.1.2 As such, the NPPF at its heart contains a 'presumption in favour of sustainable development'. Emphasising the need to achieve well designed places, the NPPF states that "Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities".

2.1.3 The NPPF sets out a number of principles which should underpin both plan-making and decision-taking, and of which many are particularly relevant to this document. In this context, planning should:

- Promote healthy and inclusive places that encourage social interaction, enhance healthy lifestyles, and which are safe and accessible;
- Seek to secure a high-quality of design and a good standard of amenity for occupants;
- Support the transition to a low carbon future, avoid increased vulnerability to climate change impacts, take account of flood risk and coastal change and seek to reduce greenhouse gas emissions. Plans should include a positive strategy for dealing with more sustainable forms of energy and, in particular, renewable sources;
- Help conserve and enhance the natural environment, achieve net gains in biodiversity and reduce the impact of all forms of pollution;
- Plan and manage development to make full use of public transport, walking and cycling; and take into account the emerging changes in, and requirements of, the transport industry around electric vehicles and other ultra low emission vehicles;
- Support the expansion of high quality communications networks which are seen as integral to economic growth and wellbeing (for example the application of full fibre connections to the building).

#### Acts of Parliament

2.1.4 The Climate Change Act 2008 is the basis for the UK’s approach for tackling and responding to climate change. It originally set a binding target to reduce the UK’s carbon emissions by at least 80% in 2050 from 1990 levels, with 15% of UK energy to come from renewable sources by 2020. In June 2019, this target was replaced with achieving net zero emissions by 2050.

2.1.5 The Energy Act, also introduced in 2008, contains provision to put in place financial incentives for small scale renewable energy installations (less than 5MW).

2.1.6 Part L (Conservation of Fuel and Power) and Part F (Ventilation) of the Building Regulations 2013 lay out the current standards for energy efficiency and ventilation in new build developments. Part

L aims to deliver reductions in CO<sub>2</sub> emissions from new development and results in a CO<sub>2</sub> saving of approximately 31% against the previous 2006 Building Regulations standards. The 2013 update also introduced a fabric energy efficiency target, related to the heating energy performance of the buildings.

- 2.1.7 Further updates to Part L and F will be coming into force in 2022, and these will include a tightening of energy and carbon performance targets alongside a new range of calculation methodologies and measures included within the compliance mechanism. At the time of writing however, full details have not been implemented, but there is expected to be a 31% reduction in emissions against the current 2013 standards on average across the housing stock. This report therefore applies Part L 2013 standards but makes some recommendations based on the tightening standards expected and seeks to considerably exceed this performance level.
- 2.1.8 When they come into force in June 2022, these Building Regulation updates will act as achievable ‘stepping stones’ to the more rigorous Future Homes Standard which should come into force in 2025. The Standard, which is currently in development, is the proposed update to Part L and Part F of the Building Regulations for new dwellings and is part of the Government’s strategy for achieving its 2050 target set under the updated Climate Change Act. Under the proposed new Standard, an average home will have c.71% fewer carbon emissions than one built to the current Building Regulation requirements. It is expected that this will be achieved through a combination of high fabric standards (for walls, floors, roofs and glazing) and low carbon heating (such as heat pumps).
- 2.1.9 The Government’s ‘Green Industrial Revolution’ announcement in November 2020 included an ambition to ‘implement the Future Homes Standard in the shortest possible timeframe’ and a target to bring forward the ban on the sale of new petrol and diesel cars from 2035 to 2030.
- 2.1.10 Water efficiency targets are driven by Part G of the Building Regulations 2015 which pertain to sanitation, hot water safety and water efficiency. This is discussed in more detail in section 7 of this report.

**Water efficiency**

**G2** Reasonable provision must be made by the installation of fittings and fixed appliances that use water efficiently for the prevention of undue consumption of water.

**Water efficiency of new dwellings**

**36.** - (1) The potential consumption of wholesome water by persons occupying a new dwelling must not exceed the requirement in paragraph (2).

(2) The requirement referred to in paragraph (1) is either -

- (a) 125 litres per person per day; or
- (b) in a case to which paragraph (3) applies, **the optional requirement of 110 litres per person per day,**

as measured in either case in accordance with a methodology approved by the Secretary of State.

(3) This paragraph applies where the planning permission under which the building work is carried out -

- (a) specifies the optional requirement in paragraph (2)(b); and
- (b) makes it a condition that that requirement must be complied with.

(4) In this Part, “new dwelling” does not include a dwelling that is formed by a material change of use of a building within the meaning of regulation 5(g).

**Figure 3: Extract from Approved Document G of the Building Regulations**



## 2.2 Local Planning Policy

### Local Level – Welwyn Hatfield District Plan

- 2.2.1 The current planning framework for Welwyn Hatfield is based on the saved policies of the 2005 District Plan. The new Local Plan has been submitted but continues to be under examination and therefore only has limited weight in the decision-making process.
- 2.2.2 As a document adopted nearly 15 years ago, the evidence, thinking and policies related to sustainable design and construction could be considered out of date, however many still have relevance and reflect the need to develop as sustainably as possible. The saved policies within the District Plan that are of most relevance include:

#### ***Policy R3 - Energy Efficiency***

The Council will expect all development to:

- (i) Include measures to maximise energy conservation through the design of buildings, site layout and provision of landscaping; and
- (ii) Incorporate the best practical environmental option (BPEO) for energy supply.

#### ***Policy R4 - Renewable Energy Sources***

Planning permission will be granted for proposals for the development of renewable energy sources subject to all of the following criteria:

- (i) It would not have a significant visual impact;
- (ii) It would not generate an unacceptable level of traffic;
- (iii) It would not result in an unacceptably high level of atmospheric emissions;
- (iv) It would not have a significant adverse impact upon features or areas of ecological, architectural, landscape or conservation importance;
- (v) It would not have a detrimental impact upon adjoining properties and land holdings; and
- (vi) It would not generate an unacceptable level of noise.

#### ***Policy R5 - Waste Management***

The Council will require applications for larger schemes to include details of the measures to be taken in the design, construction, operation, occupation and demolition of existing buildings on site to:

- (i) Minimise the amount of waste generated;
- (ii) Re-use or re-cycle suitable waste materials generated;  
Welwyn Hatfield District Plan – to be adopted 2005
- (iii) Minimise the pollution potential of unavoidable waste;
- (iv) Treat and dispose of the remaining waste in an environmentally acceptable manner; and
- (v) To maximise utilisation of appropriate secondary construction materials, including recycled aggregates.

#### ***Policy R9 - Water Supply and Disposal***

Permission will not be granted for proposals that:

- (i) Would be detrimental to existing water abstractions, fisheries, amenity and nature conservation;
- (ii) Would cause adverse change in flows or levels in the groundwater, or any rivers, streams, ditches, springs, lakes or ponds in the vicinity.

Proposals should be consistent with the long term management of, and co-ordinated with, the provision of new water supply and disposal infrastructure.

#### ***Policy R10 - Water Conservation Measures***

New development will be expected to incorporate water conservation measures wherever applicable, including sustainable drainage systems, water storage systems, soft landscaping and permeable surfaces to help reduce surface water run-off.

#### ***Policy R11- Biodiversity and Development***

All new development will be required to demonstrate how it would contribute positively to the biodiversity of the site by;

- (i) The retention and enhancement of the natural features of the site;
- (ii) The promotion of natural areas and wildlife corridors where appropriate as part of the design;
- (iii) The translocation of habitats where necessary, where it can be demonstrated that the habitat or species concerned cannot be successfully accommodated within the development;

- (iv) The use of locally native species in planting in accordance with Policy D8 Landscaping;
- (v) Helping meet priorities/targets set out in the Local Biodiversity Action Plan.

### **Policy M1 - Integrating Transport And Land Use**

Through the development process the Council will take every opportunity to integrate different modes of travel. Development proposals, except for those which are necessary in rural areas, will be permitted only in locations with accessibility to pedestrian and cycle routes and passenger transport services, or where this can be created, and where the environment and infrastructure can accommodate the amount and type of transport movement likely to be generated. In considering development proposals, the Council will give priority to walking and more sustainable modes of travel.

Internal layouts in development schemes must demonstrate priority to non-car users. They must include safe and effective routes for pedestrians and cyclists, with appropriate facilities, as well as catering for people with mobility difficulties and making provision for passenger transport and where appropriate the needs of horse riders.

### **Discussion**

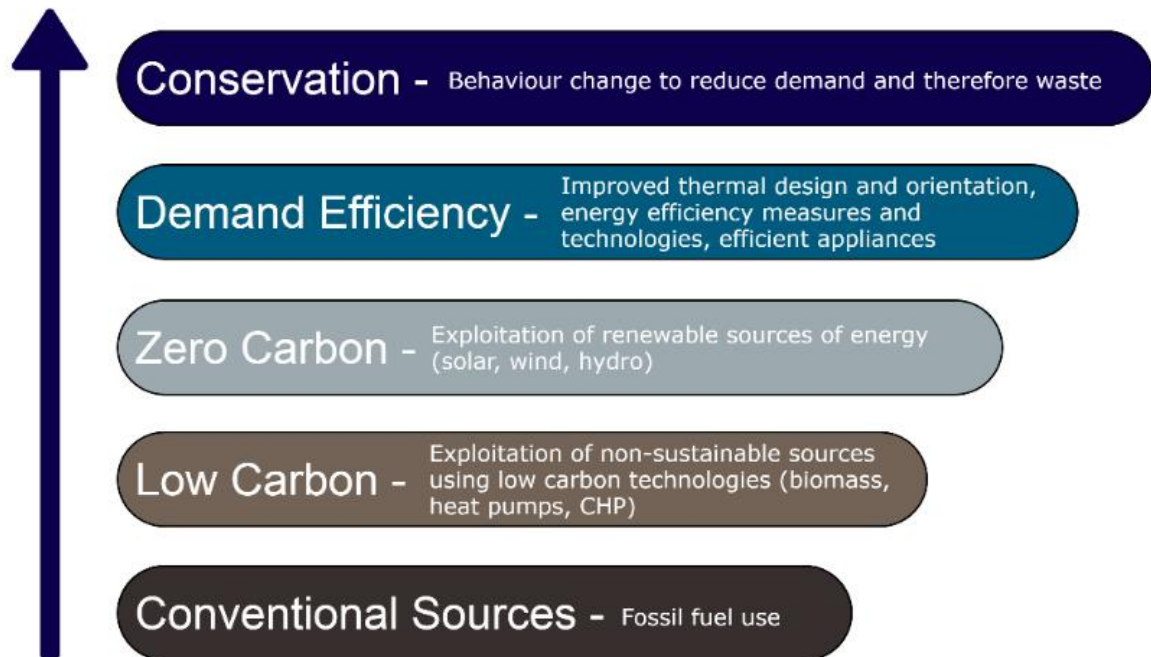
- 2.2.3 This statement responds to the policy requirements, explaining how the proposals address energy efficiency and supply of energy. There is no specific target within the policy – and therefore national planning policy relating to ensuring development meets the latest Building Regulations performance requirements will be the focus for these proposals. It is likely that to achieve these standards, low and/or zero carbon technology will be needed, and this is discussed in detail in the energy and emissions section, below.
- 2.2.4 Part G of the Building Regulations will form the basis of how water efficiency will be addressed, and much more recent wider national guidance on drainage, and in particular the use of SUDS, will inform the overall sustainable approach to management of rainwater.
- 2.2.5 Further consideration of the future requirements of the transport sector – and in particular the shift towards electric vehicles, forms the basis of the discussion on transport, alongside maximising the benefits of sustainable transport modes in and out of the development.
- 2.2.6 This Statement also covers the use of sustainable materials and addresses waste management issues through both construction and operation.
- 2.2.7 Of more recent concern is the general requirement to ensure the delivery of high-speed broadband – something which did not feature in the District Wide Policies of 2005, but which is high on list of both residential and commercial requirements for incoming occupiers.

### 3 Energy Demand and Supply

#### 3.1 The Energy Hierarchy

3.1.1 The Energy Hierarchy underpins the entire approach to building performance for this development, thus prioritising a reduction in the demand for energy as far as possible through thermally efficient, easily controlled, well designed and oriented buildings.

#### Most Preferred Option



#### Least Preferred Option

Figure 4: The Energy Hierarchy

3.1.2 Analysis of property and building types has been undertaken using SAP and SBEM software for residential and non-residential development respectively. This section instead provides initial details in this regard, outlining the building performance standards proposed, the approach to reducing energy demand, how the development will be supplied with energy and how it will balance solar gain against overheating risk.

#### 3.2 Site Layout - Orientation, Sunlight and Daylighting

3.2.1 The orientation of properties, along with the size and location of the properties' glazing and the extent of overshadowing, plays an important part in energy performance. Improving a building's orientation so that the main living spaces can benefit from the heat and light of the Sun, can reduce the requirement to use fossil fuels to perform the same function. This reduces costs, energy use and associated carbon emissions.

3.2.2 Ideally, buildings should have a southerly orientation, so they benefit from the Sun during the middle portion of the day without suffering from potential overheating later in the afternoon. This also helps to ensure that during the winter, when the Sun's path is shortened, the building and its living spaces still benefit as much as possible from winter sunlight.

- 3.2.3 The site, given its location, is highly constrained both spatially and in respect of the need to maintain the highest quality visual aesthetic, given its proximity to Hatfield House and associated views across Old Hatfield. These spatial constraints to an extent limit the opportunities for creativity and variability in respect of orientation, however the terraced houses will benefit from a southerly orientation to the main rear elevations.
- 3.2.4 The east-west orientation of the proposed central block also offers opportunities for solar gain, which will need to be balanced against the risk of overheating. The work undertaken to date on the spaces as part of the Building Regulations calculations indicates, however, that this balance is acceptable, provided measures are taken to minimise this risk.
- 3.2.5 In order to reduce the risk of overheating, a simple and cost-effective enhancement where visual and elevational design restricts the opportunities for external treatment, is to reduce the 'g-value' of the glazing. The 'g-value' is a measure of how much infrared radiation, or solar heat, is able to pass through the glass.
- 3.2.6 By reducing the g-value, less heat enters the building thus reducing overheating risk. This does mean however that the building will not benefit from so much 'free-heat' by way of solar gain. It is therefore a balance between the two. For the purposes of this site, we have assumed that overheating will be an increased risk in an energy efficient property over time, so we are therefore recommending that a g-value of 0.45 should be implemented (where typical glazing is supplied with a g-value of 0.65-0.7).

### 3.3 Energy Efficient Building Envelope

#### Thermal Elements

- 3.3.1 The buildings will need to be energy efficient structurally. To facilitate this, not only will the individual elements (wall, roof, and floor) be thermally efficient, but the construction will need to ensure that thermal bridges are minimised through the application of Accredited Construction Details, insulated lintels and by ensuring air tightness.
- 3.3.2 Part L1a of the Building Regulations (2013) has two core targets. The first relates to a maximum level of annual CO<sub>2</sub> emissions per m<sup>2</sup> of the building (the Target Emission Rate or TER) and the second relates to a Target Fabric Energy Efficiency level (TFEE). The TER is calculated taking account of the geometry of the building, the construction details, and the mechanical and electrical specification for the property. The TFEE establishes a maximum level of energy permitted to meet the space heating demands of the property (measured in kWh/m<sup>2</sup> on an annual basis). As such it is primarily affected by the construction details (thermal envelope) of the property, including how airtight the building will be, as well as its geometry.
- 3.3.3 The integration of energy efficiency measures and improved thermal specifications will increase the thermal performance of a building. They are also a key consideration at design stage because they should last for the whole life of the building.
- 3.3.4 As this is a detailed application, we have completed detailed Building Regulations calculations to accurately identify the thermal specifications for the property types and provide data in relation to performance. We have modelled the performance targets for different building elements provided below. These indicative standards considerably exceed the minimum performance standards of the current Building Regulations. We would note however that by the time these buildings are under construction, they may be subject to the new Building Regulations regime (which uses SAP10) and therefore a calculation against Part L (2013) will no longer be relevant. Therefore, the wording of any condition imposed would need to take this change into account.

## Ventilation and Air Tightness

- 3.3.5 Air tightness of a building is important in reducing heat loss and in the prevention of draughts. The target for the development will be to ensure domestic properties are built with an air permeability level of  $5\text{m}^3/\text{m}^2@50\text{Pa}$  or less. This will help reduce the size of the required heating system thus reducing energy use and associated carbon emissions. Other benefits include the reduction in the risk of interstitial condensation, improving the building's lifespan and reducing sound transmission through the structure.
- 3.3.6 The drive for air tightness will need to be matched by correctly designed ventilation. This is vital for healthy, comfortable buildings as it removes or dilutes pollutants that can accumulate in a closed space. Excessive moisture can otherwise be a significant problem.
- 3.3.7 It is the intention that the residential development will benefit from natural ventilation through the use of cross ventilation and openable windows wherever possible. This will enable rapid purges of air and good levels of internal air quality.

## Lighting, Fixtures and Fittings

- 3.3.8 Further energy savings will be made by maximising the efficiency of appliances, lighting, fixtures and fittings. All electric lighting will be energy efficient, and any spot lighting (for example within kitchens and bathrooms) will be provided using dedicated LED fittings. All appliances where installed will be high efficiency, further minimising the use of both electricity and hot water. Taps and shower fixtures and fittings that reduce hot water consumption with low and/or aerated flows will be specified; more detail in relation to potable water management is provided in Section 4.
- 3.3.9 In addition to the internal lighting, all street lighting and other street furniture will use LED technologies to further minimise lifetime energy use and associated emissions.

## Building Element Targets

- 3.3.10 The table below provides the modelled energy performance specification for the buildings. It must be noted that these are indicative values which can be confirmed on completion of the buildings.

Element	Building Regulations Maximum ( $\text{W}/\text{m}^2\text{K}$ )	Target U-value ( $\text{W}/\text{m}^2\text{K}$ )
Roof / Sloped Roof	0.20	0.10
External walls	0.30	0.20
Party walls		0.00 (filled and sealed)
Ground floor	0.25	0.1
Glazing / doors	2.00	1.1
Factor		Detail
Thermal bridging	Y-value < 0.15	Accredited Construction Details (or replacement as per emerging Building Regulations) target 0.08
Air permeability	$10\text{m}^3/\text{m}^2/\text{hour}@50\text{Pa}$	$5\text{m}^3/\text{m}^2/\text{hour}@50\text{Pa}$
Heating controls (residential)	Programmer, TRVs and room stats	Time and temperature zone controls
Glazing emissivity	N/A	0.45

**Table 1: Summary of U-values and specifications (indicative)**

### 3.4 Low Carbon Energy Supply

3.4.1 The Applicant is proposing the following strategy for the development, which abandons the use of fossil fuels and sets the building on a trajectory towards zero emissions.

#### Terrace of houses

3.4.2 These homes will be connected to the existing ground source heating system currently serving the other properties on Arm and Sword Lane. Additional boreholes will be dug to provide additional heating capacity, and the small energy centre updated to accommodate these additional 5 homes. These bore fields are shown illustratively below but could be located in other locations (for example in the car park if necessary) and will be subject to detailed design.

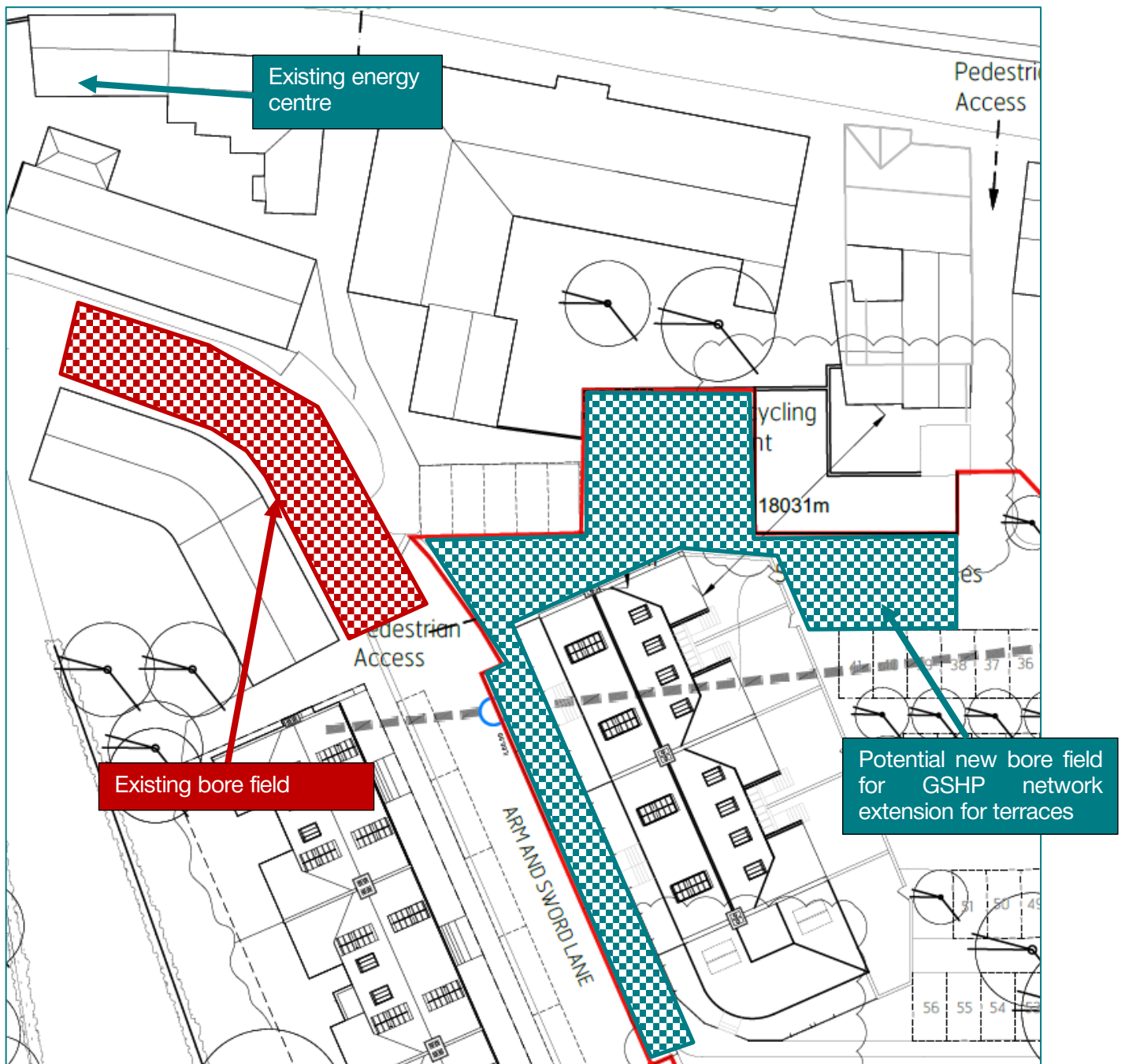


Figure 5: Ground source heating / borehole field for new

## Apartments

3.4.3 The three apartments in the main building will have air source heat pumps installed. There are currently two options being pursued which will be confirmed once the detailed mechanical and electrical design is commenced, on granting of planning permission.

- Option A: Standard air source heat pump (for example a Mitsubishi Ecodan Monobloc type unit) to be located on the roof space supplying heat to each individual home
- Option B: Exhaust air heat pump (for example the NIBE F730 unit) that would combine ventilation and heat generation in a single system, located within the property

3.4.4 Each apartment has space allocated within to accommodate the internal units of Option B - within a utility / storage room. The external plant under Option A would be accommodated on the roof within the area Y shown on Figure 6 below. Heating would be provided via low temperature underfloor distribution and zone controlled, ideally suited to a thermally efficient building.

## Retail and commercial units

3.4.5 Each unit will have a VRV/VRF heat pump system installed upon the roof space, supplying heating and cooling (where required) to the units. Each will have its own system, and each would be individually metered for power use. There is limited space on the roof and a detailed design for this approach will be undertaken as soon as possible to ensure that the systems are screened from sensitive views using the new roof line and form.

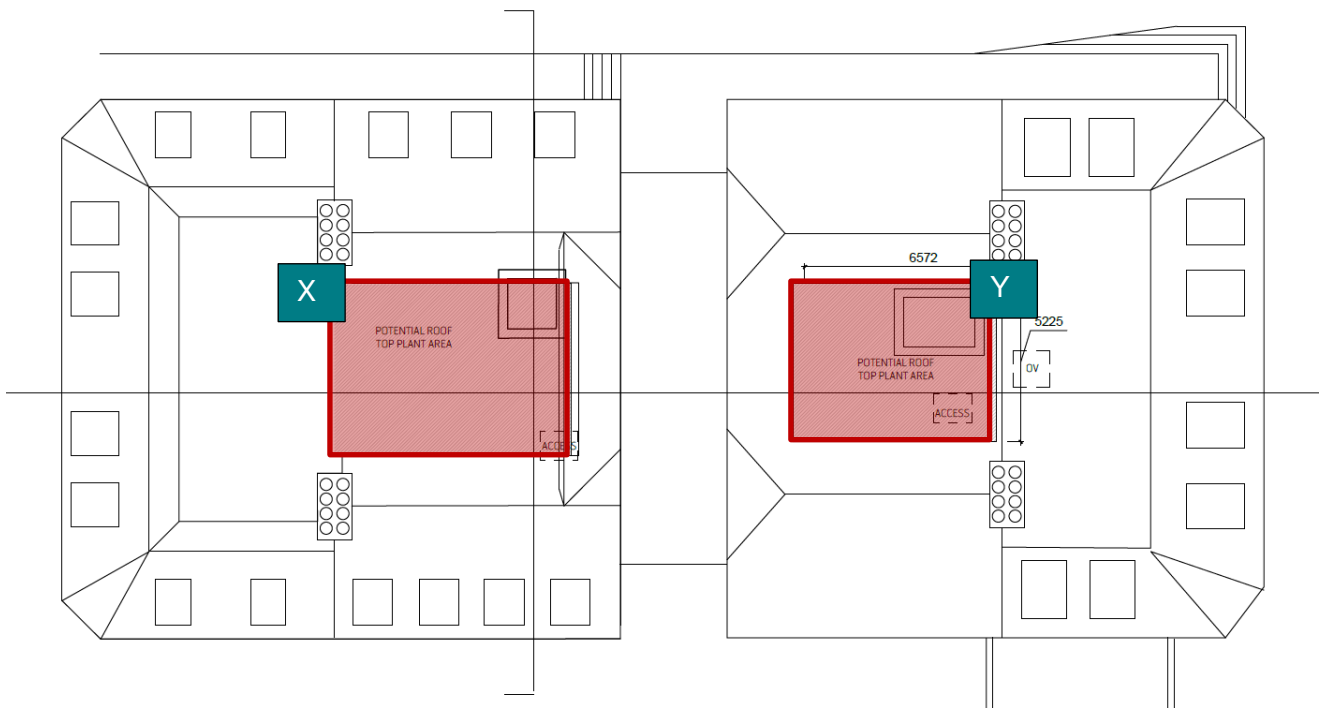


Figure 6: Location of roof top plant

## Discussion

- 3.4.6 These options also align closely with the nationwide approach to the low carbon energy transition and the country's 2050 climate change targets: the rapid expansion in renewable and low carbon energy supply within the Grid in recent years means that even direct electric heating now emits less carbon per kWh than natural gas.
- 3.4.7 There will therefore be no gas installed on the development. By installing low carbon heat pumps, the Applicant will also be addressing the application of low carbon / renewable technologies setting the development on a trajectory towards zero emissions over time.
- 3.4.8 The highly efficient nature of the proposed properties on this development complements the low temperature output of heat pump technology, as does the zoned approach to controlling the heating systems in each space. The age of gas is now coming to an end and the government has made it clear that no replacement gas boilers will be available after 2035, which renders this heating solution redundant.
- 3.4.9 As the planning and development process progresses, and as the wider regulatory environment in respect of energy and carbon performance develops, the approach proposed will be kept under review to take account of new or alternative solutions that may deliver an equivalent performance standard. The final design solution and associated detail can be provided by condition if necessary.



### 3.5 Energy Assessment – Results

- 3.5.1 The tables below provide the results of the SAP and SBEM analysis, showing the compliance with Building Regulations and the reduction in emissions resulting from the strategies described above.
- 3.5.2 The average carbon reduction for non-residential development is around 14%.
- 3.5.3 The average reduction for the residential development is 44%.

#### Non-residential Development

Unit	Building Regulations (L2a) performance			Energy consumption by end use (kWh/m <sup>2</sup> )						
	TER (kgCO <sub>2</sub> /m <sup>2</sup> .annum)	DER (kgCO <sub>2</sub> /m <sup>2</sup> .annum)	Improvement (%)	Heating	Cooling	Auxiliary	Lighting	Hot Water	Equipment	Total
Retail Unit	36.2	30.8	14.92%	1.99	18.15	7.07	32.05	1.65	20.23	81.14
Commercial 1	21.7	17.5	19.35%	4.77	6.64	5.98	14.41	2.7	40.5	75.00
Commercial 2	21.2	17.5	17.45%	4.29	8.46	5.98	13.24	2.7	40.48	75.15
Commercial 3	21.6	17.8	17.59%	3.65	7.96	5.98	14.84	2.7	40.44	75.57
Commercial 4	22.9	18.2	20.52%	5.62	9.96	5.95	11.73	2.76	40.98	77.00
Commercial 5	16.6	16.1	3.01%	0.11	12.39	5.96	10.65	2.74	40.82	72.67
Commercial 6	18.1	16.0	11.60%	0.56	10.55	5.96	11.9	2.75	40.93	72.65
Commercial 7	19.0	17.6	7.37%	0.21	13.61	5.96	12.2	2.74	40.88	75.60
Commercial 8	19.0	16.5	13.16%	0.99	9.39	6.08	13.76	2.47	38.29	70.98
Commercial 9	18.6	16.5	11.29%	0.8	9.95	5.96	13.25	2.74	40.79	73.49
Commercial 10	19.3	16.9	12.44%	0.83	11.59	5.96	12.2	2.74	40.88	74.20
Commercial 11	18.7	15.8	15.51%	1.6	9.02	5.96	11.9	2.75	40.93	72.16

**Table 2: Non-residential energy demands and Building Regulations Performance**

## Residential Development

PROPERTY DETAILS		BUILDING REGULATIONS PERFORMANCE			ENERGY (kWh)					
HOUSETYPE	FLOOR AREA (m2)	TER	DER	% IMP	SPACE HEATING	HOT WATER	REGULATED ELECTRICITY	COOKING	UNREGULATED ELECTRICITY	TOTAL
Flat 1	68	32.93	18.54	43.70%	1,379	696	341	331	2,201	4,948
Flat 2	77	34.17	19.48	42.99%	1,793	727	380	340	2,435	5,675
Flat 3	94	21.54	12.93	39.97%	1,100	763	480	353	2,814	5,510
HOUSETYPE	FLOOR AREA (m2)	TER	DER	% IMP	HEAT	DISTRIBUTION	REGULATED ELECTRICITY	COOKING	UNREGULATED ELECTRICITY	TOTAL
House type 1 - ET1 (Plot 1)	155	21.21	11.3	46.72%	2,675	86	618	365	3,724	7,469
House type 2 - MT (Plots 2-4)	135	21.34	11.33	46.91%	2,272	73	592	364	3,470	6,771
House type 3 - ET2 (Plot 5)	135	22.02	11.74	46.68%	2,375	76	592	364	3,470	6,877
<b>AVERAGE SAP SCORE</b>		<b>25.54</b>	<b>14.22</b>	<b>44.5%</b>						

Table 3: Non-residential energy demands and Building Regulations Performance

## 4 Conservation of Water Resources

### 4.1 The Water Hierarchy

4.1.1 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 potable mains water is used for drinking, cooking and personal washing:

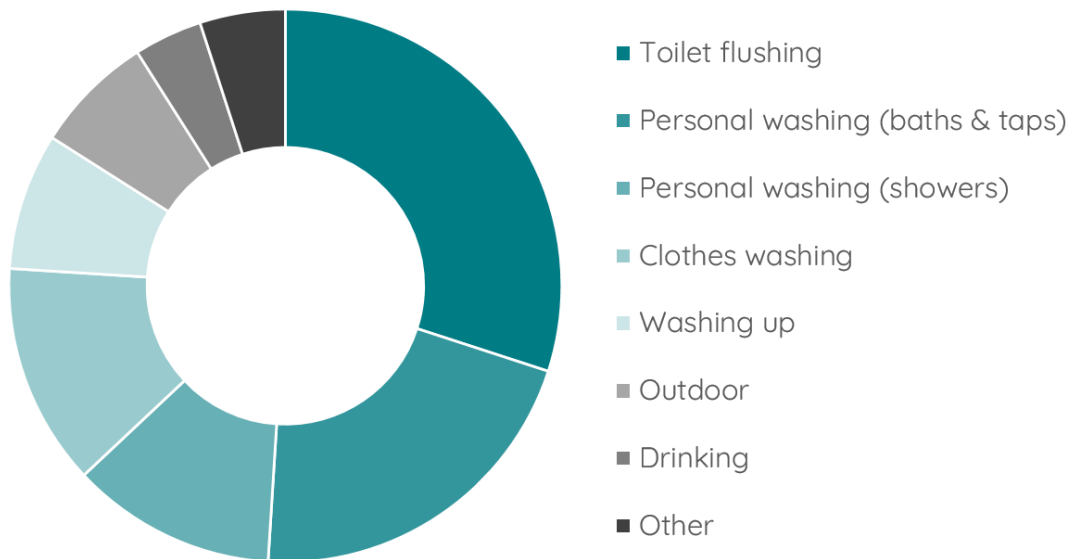


Figure 7: Domestic water consumption by end use in the UK

4.1.2 The national average for water consumption is around 143l per person per day. In order to reduce this figure, the management of water in the proposed development will follow the principles of the water hierarchy, shown in Figure 8:

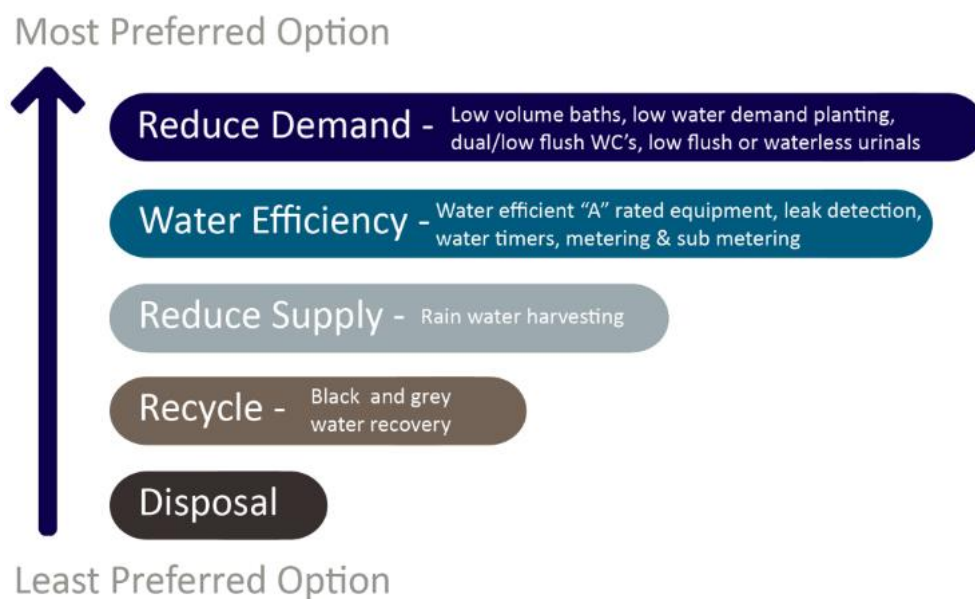


Figure 8: The Water Hierarchy

## 4.2 Water Reduction Measures

4.2.1 The Local Plan policy 41 which refers to The Code for Sustainable Homes has been replaced by Part G of the Building Regulations (see section 2). The enhanced target in section 2b requires a target water use of 110 litres per person per day. Fixtures, appliances, and fittings plus rainwater recycling measures will be specified in the development which considerably reduce potable water use so that the daily potable/wholesome water use will be calculated to not exceed 110 litres per person per day. The following table is an illustrative list of water specifications which typically achieve this standard:

Measure	Water Use
Showers (l/min)	10
Aerated taps (l/min)	4
Kitchen sink taps (l/min)	3
Bath (l capacity)	140
Low / dual flush WC (l)	4/2.6
Washing machine (l/kg dry load)	7-8
Dishwasher (l/place setting)	1..25
Rainwater recycling	Rainwater butts

**Table 4: Illustrative water specifications**

## 4.3 Managing Water in a Changing Climate

- 4.3.1 Any new development on a previously undeveloped site will inevitably increase the amount of hard standing (roofs, roads, pavements) and therefore the amount of surface water run-off. However, this development is a brownfield site and so it not expected that the proposals will increase run off or flood risk. However, rainfall levels in 20-30 years' time are expected to be very different to current levels, not necessarily in annual total volume, but with respect to the rainfall distribution throughout the year and the number of heavy downpours and storm events.
- 4.3.2 The integration of different SuDs features into the landscape layout, described within the accompanying drainage strategy for the site, will therefore be pivotal in its development. This will help deal with the changing pattern of rainfall, with the ability to deal with the storage volumes associated with a 1 in 100-year storm event, plus a 40% allowance for the impacts of climate change. The drainage strategy provides further details in relation to the level of flood risk and management of surface water flows and should be referred to for full details in this regard.

## 5 Materials and Waste Management

### 5.1 The Waste Hierarchy

- 5.1.1 Waste generation, storage, treatment and disposal before, during and after construction will be managed in accordance with the Waste Hierarchy. This is in line with Policy R5 of the current local planning policy framework which requires developers to demonstrate that the most sustainable option for waste management has been promoted.



Figure 9: The Waste Hierarchy

### 5.2 Waste Management

#### Sustainable Building Materials

- 5.2.1 It is too early in the process to carry out a supply chain analysis for the construction phase, however we can establish the principles behind the sourcing of materials. Materials will be sourced using suppliers that have environmentally focused accreditations and management systems such as ISO:14001, and all timber will be 100% FSC accredited.
- 5.2.2 The approach to materials is to use local suppliers where viable – using a palette of materials that is both appropriate and in keeping with the local architectural vernacular. As such the form of construction will not require the use of unusual materials, those with significant environmental impact or those that require significant off-site processing and development before use on site.

## Construction Waste

5.2.3 The Applicant recognises that waste needs to be sustainably managed and appoints licensed waste management contractors with a proven record of delivering high levels of recycling as a matter of course. In addition, the Applicant requires contractors to implement strict management processes for waste on site, including:

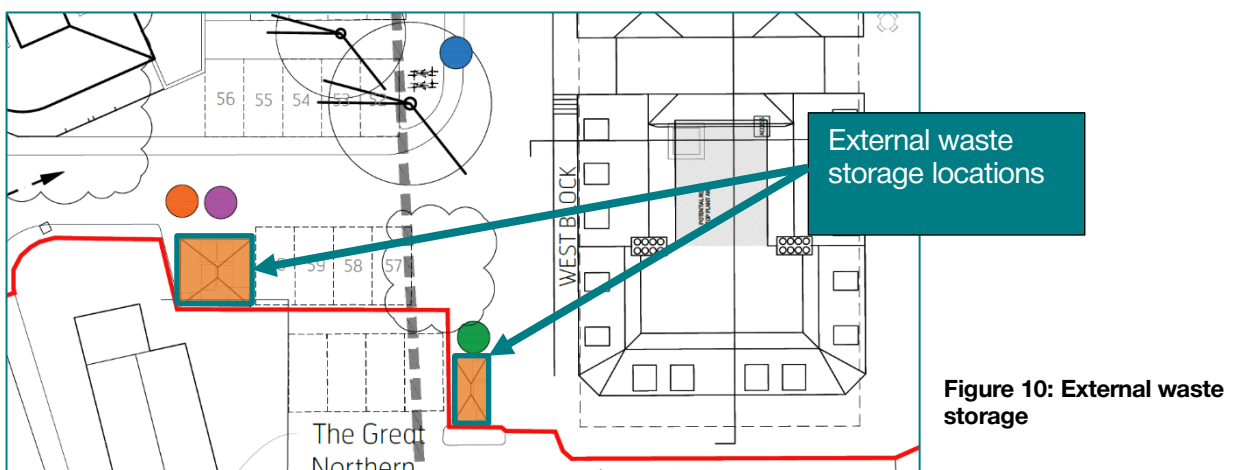
- Identifying suitable locations for the separation and storage of waste prior to removal from site to encourage higher levels of recycling
- Strict management of waste by site operatives through site induction and ongoing training / site talks
- Proactively identifying opportunities for the on-site reuse of materials and identifying a key individual responsible for doing so. The individual will also be responsible for delivering the overall Waste Management Strategy for the development
- Scaffolding, hoarding and other such materials to be removed from site for use on subsequent construction projects.

5.2.4 In addition to the above, it will be a requirement that any contractor operating on the site commits to the Considerate Constructors Scheme and aims to achieve best practice under assessment. This will help further minimise the impact on the surrounding area and neighbours to the site. Where earth moving activity is needed, all excavated materials will be retained on site and any necessary storage will follow best practice guidelines so that none is lost to the weather and/or erosion.

## Operational Waste

5.2.5 Refuse collection arrangements will be considered in full at reserved matters stage. However, the Applicant will encourage property occupants to manage waste sustainably, in line with the long-term management of the development, which will be operated by the Applicant in the long term. Specialist, accredited waste management will be contracted to optimise the opportunity for waste recycling and the safe disposal of any residual waste. and this has been considered during the design of the development. Space has been allocated to the external storage of waste arising from the development, shown below.

5.2.6 The houses will also have sensitively designed external storage in a single dedicated location for the different waste streams collected by the local council. Internally, the dwellings and commercial spaces will be provided with integrated bins to split the different recycling streams prior to storage outside. Facilities will be easy to access and will be designed in line with the collection regime of the council.



**Figure 10: External waste storage**

## **6 Accessibility, Sustainable Transport and Connectivity**

### **6.1 Accessibility**

- 6.1.1 Accessibility is a key aspect of sustainability and is described as such in the NPPF. Any new development needs to have easy to use, safe and obvious links into the surrounding community to prevent isolation and disconnection, to encourage the use of existing facilities and to facilitate commuting.
- 6.1.2 The proposed site is in an extremely accessible location, with a range of local facilities within a comfortable and safe walking/cycling distance: a host of shops and community facilities are available within a few minutes' walk of the site. The site is also well located for access to Hatfield Railway Station and access to the wider area. It is difficult to imagine a better connected and well serviced location than the redevelopment of Salisbury Square.

### **6.2 Sustainable Transport Options**

- 6.2.1 New development proposals must encourage the use of sustainable transport alternatives, in an era where the transformation of personal transport in technological terms is particularly rapid. We have mentioned the proximity of the railway station to the site, which enables commuter journeys to other major locations including London, Stevenage, and Cambridge.
- 6.2.2 Increasingly, energy and transport systems are becoming interlinked as the nation transitions from the use of petrol and diesel vehicles to zero emission solutions based around electric charging and cleaner, hydrogen-based fuels. In November 2020 the government announced that there will be a ban on the sale of petrol and diesel cars by 2030 and hybrid cars by 2035.
- 6.2.3 The Applicant has therefore committed to designing and managing the power network to provide charging infrastructure that supports this vital transition away from petrol and diesel. However, the layout facilitates the acceleration and adoption of other solutions, with extensive (weatherproof and secure) cycle storage provision within the development. Dedicated electric vehicle car charging facilities will also be included within the development too, with further consideration to enable infrastructure to support later installations where there is demand.
- 6.2.4 A parking space has also been allocated to a car club, which can operate from this site not just for incoming residents (and commercial users, potentially) but will also include opportunities for membership from existing residents in the area. The WSP Transport Assessment which accompanies this application demonstrates that the site is well situated to make the most of existing road networks, public transport provision and public rights of way.

### **6.3 Provision of Fibre-to-the-Premises**

- 6.3.1 The availability of Fibre-to-the-Premises is increasingly viewed as essential in ensuring that people remain informed and connected and are able to access a range of services effectively. Moreover, it also facilitates greater home working which can help minimise transport issues. For the commercial development – it is an absolute necessity.
- 6.3.2 All dwellings and all commercial spaces will therefore be provided with FTTP, and the highest possible broadband speeds available.

## 7 Conclusions and Recommendations

- 7.1.1 This Energy and Sustainability Statement has been commissioned by Gascoyne Estates to detail how environmental sustainability is being addressed in the plans for the proposed redevelopment of the buildings in Salisbury Square, Old Hatfield.
- 7.1.2 Throughout the document we have sought to actively address national and local planning policy objectives and standards to demonstrate the Applicant's commitment to these issues, and to do so within a highly constrained area from a conservation and visual impact perspective. We have shown within this statement that the need to develop buildings which are sympathetic to the historic nature of the square and comprehensively address the issues of sustainable construction and climate change do not need to conflicting considerations.
- 7.1.3 In 2019, the government set the country on a path to a net zero society by 2050, and these buildings will exist well into the next century and beyond, so this development has sought to actively respond to this by creating highly energy efficient dwellings and setting a trajectory to zero carbon emissions, adopting heat pump technology, and abandoning the use of fossil fuels completely.
- 7.1.4 We have provided solutions to achieving targets relating to energy demand and supply, carbon emissions and water efficiency. A summary of the proposed solutions and approach are provided in Appendix A.
- 7.1.5 Further work will be necessary to ensure continued compliance throughout the latter planning phases and as construction progresses, particularly in terms of the detailed design of the mechanical and electrical systems to ensure there is no lasting visual impact from their installation. However, and in conclusion, the proposals for the development maximise the site's assets, address the physical and visual constraints and layout in relation to sustainable design, creating an attractive, sustainable new development.



## 8 Appendix A – Key Recommendations

Section		Key Approaches and Solutions
3	Low Carbon and Renewable Energy Demand and Supply	<ul style="list-style-type: none"> <li>- No fossil fuels are to be used on site</li> <li>- Follow the priorities of the Energy Hierarchy</li> <li>- Ensure building orientation is such that dwellings maximise solar gain</li> <li>- Control overheating risk by using glazing with g-value of 0.45 as standard</li> <li>- Exceed Building Regulations with respect to TER and TFEF for each property</li> <li>- Air permeability levels to be 5m<sup>3</sup>/m<sup>2</sup>@50Pa or less</li> <li>- Install energy efficient lighting and appliances</li> <li>- Use of Air Source Heat Pumps to provide heat (and where relevant cooling) into buildings</li> </ul>
4	Conservation of Water Resources	<ul style="list-style-type: none"> <li>- Specify fixtures, appliances and fittings that reduce potable water use including aerated taps, low/dual flush WCs, low capacity baths</li> <li>- Achieve a maximum water use of 110l/person/day in residential properties</li> <li>- Include rainwater butts for rainwater harvesting in houses</li> </ul>
5	Materials and Waste Management	<ul style="list-style-type: none"> <li>- Source materials from suppliers with environmental accreditations, using local suppliers where possible</li> <li>- Ensure contractors implement strict waste management processes and commit to Considerate Constructor Scheme</li> <li>- Consider opportunistic on-site reuse of materials where feasible</li> <li>- Provide sufficient and accessible bin storage to facilitate waste management and recycling</li> </ul>
6	Accessibility, Sustainable Transport and Connectivity	<ul style="list-style-type: none"> <li>- Provide electric vehicle charging within the development</li> <li>- Provision of Fibre-to-the-Premises</li> <li>- Implement recommendations of the Transport Assessment</li> </ul>