



The Old Brickworks, Reeds Lane,
Sayers Common, Mid Sussex

Sustainability Statement

February 2022

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1 Introduction

1.1 This Statement

- 1.1.1 This *Sustainability Statement* supports the hybrid planning application for the proposed development at the Old Brickworks, Reeds Lane, Sayers Common within Mid Sussex district. It has been commissioned by Reside Developments Ltd (the Applicant) to demonstrate how the proposals addresses sustainability, with a focus on energy and water efficiency.
- 1.1.2 The policy framework encouraging sustainable new development is comprehensive at both a national and local level. This Statement responds to existing policy, including the Mid Sussex District Plan 2014-2031, while also looking ahead to emerging policy including the imminent updates to the Building Regulations and the proposed Future Homes Standard.
- 1.1.3 In particular, the Statement demonstrates how the requirements of policy DP39 of the Mid Sussex District Plan will be met, including how the proposed site will:
- Minimise energy use through the design and layout of the scheme including through the use of natural lighting and ventilation;
 - Explore opportunities for efficient energy supply;
 - Use low carbon sources of energy;
 - Maximise the efficient use of resources, including minimising waste and maximising reuse and recycling;
 - Conserve and manage water resources;
 - Demonstrate climate resilience and adaptation.
- 1.1.4 In addition, the Statement refers to other sustainability considerations and features of the site, drawing on the work of other consultants where necessary, to gain a full picture of the sustainability credentials of the proposals.
- 1.1.5 The recommendations provided are described in as much detail as is possible at this stage in the planning process. Where specifics are not available, 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.

1.2 Site Description

1.2.1 The proposed site is located on land at Reeds Lane in Sayers Common. It currently comprises a field laid to grass and scrub with areas of woodland to the north and east of the site. It is bordered by fields to the north and west, by the Kings Business Centre, Reeds Land and agricultural land to the south and a new housing development (Sayers Meadow) to the east.

1.2.2 The hybrid planning application consists of:

- Full application for 37 one, two, three and four bedroom dwellings (including 30% affordable housing), associated infrastructure, landscaping, pedestrian and vehicular access from Reeds Lane and the demolition of Lyndon.
- Outline application for 2 three-bedroom self/custom build plots.

1.2.3 The image shows the site layout:



Figure 1: Site Layout (CMYK (Planning and Design) Ltd)

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).

National Energy Policy

- 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% by 2050 compared to 1990 levels. In June 2019, this target was replaced with achieving net zero emissions by 2050.
- 2.1.5 *Approved Document L1A: Conservation of Fuel and Power in New Dwellings* and *Approved Document F: Ventilation* of the Building Regulations set out the current standards for energy efficiency and ventilation in new build developments. Schedule 1 of Part L1A specifies the following:

<i>Requirement</i>	<i>Limits on application</i>
Schedule 1 – Part L Conservation of fuel and power	
L1. Reasonable provision shall be made for the conservation of fuel and power in buildings by:	
(a) limiting heat gains and losses–	
(i) through thermal elements and other parts of the building fabric; and	
(ii) from pipes, ducts and vessels used for space heating, space cooling and hot water services;	
(b) providing fixed building services which–	
(i) are energy efficient;	
(ii) have effective controls; and	
(iii) are commissioned by testing and adjusting as necessary to ensure they use no more fuel and power than is reasonable in the circumstances.	

Figure 2: Extract from Approved Document Part L1A Building Regulations

- 2.1.6 These documents will apply until the 15 June 2022 at which point they will be replaced with the revised *Approved Document L, Conservation of Fuel and Power, Volume 1: Dwellings* and *Approved Document F, Ventilation: Volume 1*, alongside the new *Approved Document O: Overheating* (although they will not apply to work subject to a building notice, full plans application of initial notice submitted before 15 June 2022, provided the work is started on site before 15 June 2023).
- 2.1.7 As a key change, the revised Approved Document L will require dwellings to meet primary energy targets in addition to carbon and fabric efficiency targets. Tightening of fabric energy efficiency standards, air tightness and carbon performance targets will be accompanied by updated calculation requirements within the compliance mechanism (SAP10.2).
- 2.1.8 Approved Document F places a greater emphasis on managing ventilation to ensure that increased air tightness of dwellings does not impact in internal air quality. Target air flow rates remain the same but the regulations around these have been simplified.
- 2.1.9 New Approved Document O has been put into place to limit overheating risk in new residential buildings. It expands on the provision in the current Part L and requires the use of passive methods where feasible. Compliance can be demonstrated through a prescriptive or thermal simulation compliance path.

2.1.10 These Building Regulation updates are designed to act as achievable ‘stepping stones’ to the more rigorous Future Homes Standard which will come into force in 2025. The Standard, which is currently in development, 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 75 – 80% fewer carbon emissions than one built to the current Building Regulation requirements.

National Water Policy

2.1.11 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 5 of this report.

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

Mid Sussex District Plan 2014-2031 (Adopted March 2018)

2.2.1 The Mid Sussex District Plan sets out the Council’s spatial vision, key objectives and overall principles for development in the district. ‘Protecting and enhancing the environment’ is a priority theme within the plan’s Strategic Objectives, including resource efficiency, climate adaptation, protecting green infrastructure and promoting sustainable transport networks.

2.2.2 Policy extracts from the District Plan which are of most relevance to this document are provided within the following table:

Policy	Extract
DP21	<p>Transport</p> <p>(...) decisions on development proposals will take account of whether:</p> <ul style="list-style-type: none"> • The scheme is sustainably located to minimise the need for travel (...); • Appropriate opportunities to facilitate and promote the increased use of alternative means of transport to the private car, such as the provision of, and access to, safe and convenient routes for walking, cycling and public transport, including suitable facilities for secure and safe cycle parking, have been fully explored and taken up; (...) <p>Where practical and viable, developments should be located and designed to incorporate facilities for charging plug-in and other ultra-low emission vehicles. (...)</p>
DP23	<p>Communication Infrastructure</p> <p>(...) The Council will encourage the incorporation of digital infrastructure including fibre to premises, in major new housing, employment and retail development. (...)</p>
DP26	<p>Character and Design</p> <p>(...) All applicants will be required to demonstrate that development: (...)</p> <ul style="list-style-type: none"> • is of high quality design and layout and includes appropriate landscaping and greenspace; • positively addresses sustainability considerations in the layout and the building design; (...)
DP39	<p>Sustainable Design and Construction</p> <p>(...) All development proposals must seek to improve the sustainability of development and should where appropriate and feasible according to the type and size of development and location, incorporate the following measures:</p> <ul style="list-style-type: none"> • Minimise energy use through the design and layout of the scheme including through the use of natural lighting and ventilation; • Explore opportunities for efficient energy supply through the use of communal heating networks where viable and feasible; • Use renewable sources of energy; • Maximise efficient use of resources, including minimising waste and maximising recycling/ re-use of materials through both construction and occupation; • Limit water use to 110 litres/person/day in accordance with Policy DP42: Water Infrastructure and the Water Environment; • Demonstrate how the risks associated with future climate change have been planned for as part of the layout of the scheme and design of its buildings to ensure its longer term resilience.
DP41	<p>Flood Risk and Drainage</p> <p>(...) Sustainable Drainage Systems (SuDS) should be implemented in all new developments of 10 dwellings or more, or equivalent non-residential or mixed development unless demonstrated to be inappropriate, to avoid any increase in flood risk and protect surface and ground water quality.</p> <p>(...). SuDS should be sensitively designed and located to promote improved biodiversity, an enhanced landscape and good quality spaces that improve public amenities in the area, where possible.</p>
DP42	<p>Water infrastructure and the Water Environment</p> <p>(...) Building Regulations – Part G applies to all new residential development in the district. Development must meet the following water consumption standards:</p> <ul style="list-style-type: none"> • Residential units should meet a water consumption standard of 110 litres per person per day (including external water use) (...)

Hurstpierpoint and Sayers Common Neighbourhood Plan (March 2015)

2.2.3 The Hurstpierpoint and Sayers Common Neighbourhood Plan establishes a vision for the development of the parish, covering the period to 2031. It has been reviewed for the purposes of completing this Statement.

Mid Sussex Design Guide Supplementary Planning Document (Adopted November 2020)

2.2.4 The Mid Sussex Design Guide is intended to inform and guide the quality of design for developments across Mid Sussex district. It has been adopted as a Supplementary Planning Document and is therefore of material consideration in the determination of planning applications.

2.2.5 A key objective of the Design Guide is to encourage sustainable design and construction and it includes the following principle of relevance to this Statement:

Principle	Extract
DG37	<p>Deliver high quality buildings that minimise their environmental impact (...)</p> <p>The Council welcomes innovative and inventive designs that respond to the sustainability agenda by minimising the use of resources and energy both through building construction and after completion. Applicants must demonstrate how this has informed their design and should consider in particular:</p> <ul style="list-style-type: none"> • Orientation and design of buildings and roofs to maximise daylight / sunlight penetration and solar gain, whilst also avoiding overheating; • The use of green roofs or walls to reduce storm water run-off, increase sound-proofing and biodiversity; • The use of materials with low embodied energy (for example, renewably sourced timber and recycled materials); • The use of sustainable materials that are locally sourced wherever possible; • Incorporating high levels of insulation (in combination with air tightness and temperature control systems) including the use of materials with a high thermal mass, such as stone or brick, which store heat and release it slowly; • Incorporating renewable energy including photovoltaics, solar thermal water heating, ground and air source heat pumps; • The use of low flow technology in water fittings, rainwater harvesting systems and grey water recycling systems to reduce water consumption to 110 litres/person/day (maximum); and • Laying out development to support identified opportunities for decentralised renewable or low carbon energy systems. Further guidance is provided by District Plan policy DP39: Sustainable Design and Construction.

West Sussex County Council Guidance on Parking at New Developments (September 2020)

2.2.6 In accordance with policy DP21 of the District Plan this document includes details of electric vehicle charging on the proposed site. The standards set out in the Guiding Principles within the West Sussex County Council (WSCC) *Guidance on Parking at New Developments (September 2020)* are as follows:

Principle	Extract																																										
B	<p>Electric Vehicle Charging Infrastructure</p> <p>4.7 'Active' charging points for electric vehicles should be provided at a minimum of 20% of all parking spaces with ducting provided at all remaining spaces where appropriate to provide 'passive' provision for these spaces to be upgraded in future.(...)</p>																																										
E	<p>Design Considerations</p> <p>(...)</p> <p>4.14 To ensure that developments function efficiently and as intended, detailed consideration needs to be given to the following at the design stage: (...)</p> <p>d) Likely cycle ownership and storage – Although good cycle storage facilities are important, requirements should take account of dwelling size and type, and have regard to existing levels of cycle ownership. The minimum levels of cycle provision are set out in Table 1. The distinction has been made for cyclists on the basis of space requirements, availability of secure communal storage facilities, and the anticipated occupants of flats.</p>																																										
n/a	<p>Electric Vehicle Charging Overarching Guidance (...)</p> <p>4.19. In order to respond to changing needs, it is important that developers consider the likely demand for electric charging points within new developments, and how this is likely to change over time. Developers should identify ways to cater for this demand within the design of new developments as part of the overall provision of parking facilities. This could include; for example, a mix of spaces with active charging facilities and passive provision, i.e. ducting to allow facilities to be brought into use at a later stage.</p> <p>4.20. The values in Table 2 include provision of EV spaces at new residential developments. To allow for increased sales in EVs over time and an increasing proportion of the overall vehicle fleet, it is proposed that current base levels of EV car sales in West Sussex be used as an index to base levels of active provision for EVs at new developments as set out in Principle B.</p> <p>4.21. The Government's 'Road to Zero Strategy' sets out an ambition for at least 50% — and as many as 70% — of new car sales to be ultra-low emission by 2030, alongside up to 40% of new vans. Taking a starting percentage of 20% active EV provision and using a linear growth between 2018 and 2030, produces a set of yearly EV provision indexes as set out in Appendix B. These values should be used as a guide to the level of 'active' EV spaces to be provided in the year of construction.</p> <p>4.22. As the demand for electric vehicle charging points is expected to change rapidly over time, any standard for electric vehicle charging points is likely to become quickly out of date. Therefore, there is no specific standard for electric vehicle charging points but developers should consider the Guiding Principles when designing parking provision. This guidance will be subject to review in line with the development of technology and relevant legislation.</p> <p style="text-align: center;">Appendix B: Electric Vehicle Space Allocations</p> <table border="1"> <thead> <tr> <th>Year</th> <th>% Growth Index</th> <th>% Spaces for Active EV Charging Facilities</th> </tr> </thead> <tbody> <tr><td>2018</td><td>0</td><td>20</td></tr> <tr><td>2019</td><td>4</td><td>24</td></tr> <tr><td>2020</td><td>8</td><td>28</td></tr> <tr><td>2021</td><td>13</td><td>33</td></tr> <tr><td>2022</td><td>17</td><td>37</td></tr> <tr><td>2023</td><td>21</td><td>41</td></tr> <tr><td>2024</td><td>25</td><td>45</td></tr> <tr><td>2025</td><td>29</td><td>49</td></tr> <tr><td>2026</td><td>33</td><td>53</td></tr> <tr><td>2027</td><td>38</td><td>58</td></tr> <tr><td>2028</td><td>42</td><td>62</td></tr> <tr><td>2029</td><td>46</td><td>66</td></tr> <tr><td>2030</td><td>50</td><td>70</td></tr> </tbody> </table>	Year	% Growth Index	% Spaces for Active EV Charging Facilities	2018	0	20	2019	4	24	2020	8	28	2021	13	33	2022	17	37	2023	21	41	2024	25	45	2025	29	49	2026	33	53	2027	38	58	2028	42	62	2029	46	66	2030	50	70
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2.2.7 The WSCC Guidance also outlines the County Council's approach to encouraging and facilitating the use of sustainable modes of transport on new developments. These are outlined in further detail in the Transport Strategy accompanying this application.

Additional Planning Policy Documents and Commitments

2.2.8 Further guidance exists relating to transport, parking, flood risk and ecology. These are covered in more detail in the other reports accompanying this submission. This Statement does however refer to the outputs of these reports where relevant to give a rounded picture of the approach to sustainable design and construction issues.

3 Low Carbon Energy Demand and Supply

- 3.1.1 This section describes the building performance standards expected, how the development will balance solar gain against overheating risk, the approach to minimising energy demand through energy efficient buildings and how the development will take a low carbon approach to energy supply.
- 3.1.2 Detailed analysis of the property types proposed for the site has been undertaken to inform the overall 'fabric first' approach and specification, and to demonstrate compliance with both the current Building Regulations and the Part L updates coming into force in June 2022.

3.2 The Energy Hierarchy

- 3.2.1 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.

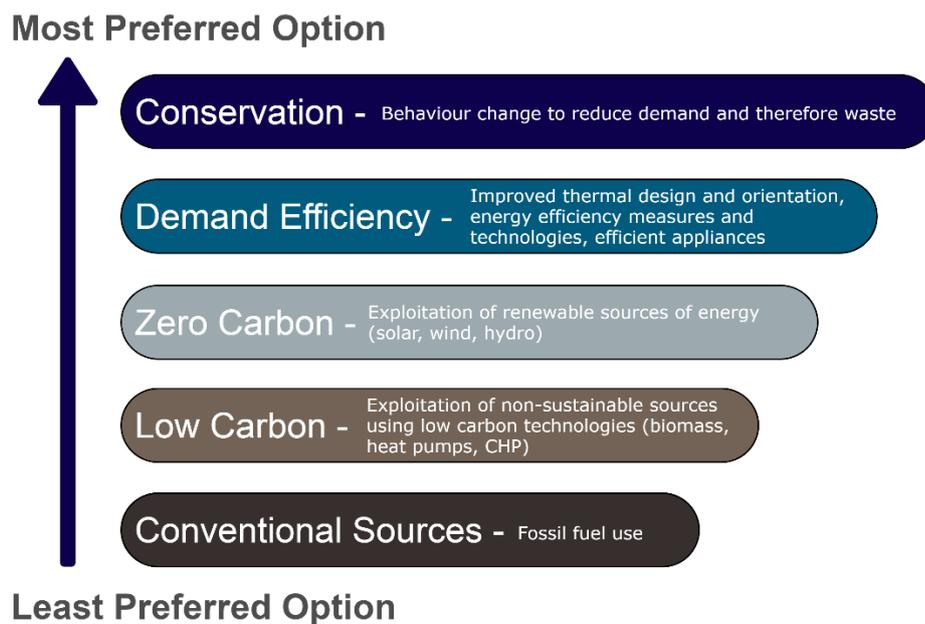


Figure 4: The Energy Hierarchy

3.3 Measuring Building Energy Performance

- 3.3.1 Part L1a of the Building Regulations (2013) sets out requirements for specific aspects of building design and construction:
 - The Target CO₂ Emission Rate (TER) sets a minimum allowable standard for the energy performance of a building and is defined by the annual carbon dioxide emissions (expressed in annual kg of CO₂ per m²) of a notional building of the same size and shape to the proposed building;

- The Dwelling Emission Rate (DER) is the actual CO₂ emission rate of dwellings based on their actual specification, including orientation, fabric efficiency, air tightness and choice of fuel. As specified in Regulation 26 of the Building Regulations, the DER for a building must not exceed the TER;
- The Target Fabric Energy Efficiency rate (TFEE) introduced in 2013 sits alongside the TER and specifies the minimum energy performance requirement for a new dwelling while the Dwelling Fabric Energy Efficiency rate (DFEE) is the actual energy performance of the new dwelling. 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. The DFEE must not exceed the TFEE.

3.3.2 The proposed performance of different construction details is provided in table 1 in section 3.8, and these have been used within the SAP 2012 calculations undertaken to inform the approach and demonstrate compliance with planning policy standards. In each case, the performance levels exceed the minimum standards required by the current Building Regulations and also meet or exceed those published in the draft SAP10 framework which will be applied under the amended Building Regulations from June 2022.

3.3.3 It should be noted that by the time these buildings are under construction, they may be subject to this new Building Regulations SAP10 regime, and the wording of any condition imposed will therefore need to take this change into account.

3.4 Site Layout - Orientation, Passive Solar Design and Daylighting

3.4.1 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.

3.4.2 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 buildings still benefit as much as possible from winter sunlight.

3.4.3 Larger areas of glazing on the southern façade with smaller areas on the northern side have the combined effect of maximising light gain and minimising heat loss.

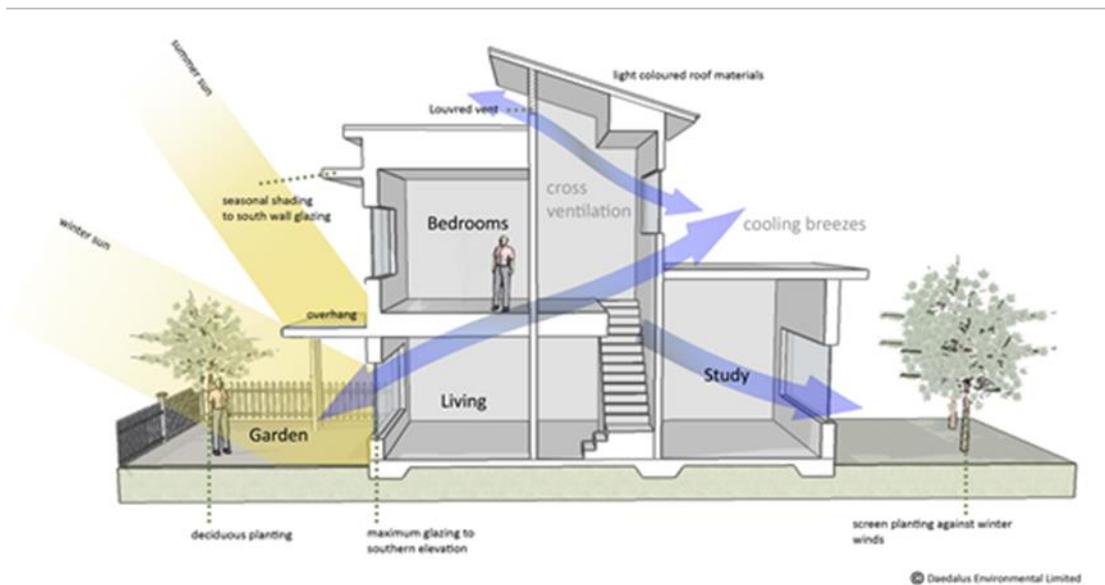


Figure 5: Principles of Building Orientation in Managing Solar Gain

- 3.4.4 In order to reduce the risk of overheating, the development will also need to adhere to the new Approved Document O which provides the basis for overheating assessment and the design and operational parameters within which new dwellings will need to demonstrably perform (see section 7.2).
- 3.4.5 The proposed layout of the site has been developed with respect to identified topological and visual constraints. Within these parameters, many of the properties will benefit from a southerly orientation. Furthermore, the low density of the development ensures appropriate spaces around dwellings, reducing the risk of overshadowing.

3.5 Energy Efficient Domestic Building Envelope

Thermal Elements

- 3.5.1 The buildings will be energy efficient structurally in order to maintain comfortable temperatures while minimising energy demand. To facilitate this, not only will the individual elements (wall, roof, and floor) be thermally efficient, but the construction will ensure that thermal bridges are minimised through the application of Accredited Construction Details (or their subsequent replacement in bespoke detailing), including insulated lintels, and by ensuring air tightness.
- 3.5.2 Proposed u-values for different thermal elements are given in Table 1 in section 3.8.

Ventilation and Air Tightness

- 3.5.3 The 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 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.

- 3.5.4 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.
- 3.5.5 It is the intention that this development will benefit from natural ventilation through cross ventilation and openable windows. This will enable rapid purges of air and good levels of internal air quality. There may also be the need to implement a high efficiency continuous mechanical extract system to ensure that ventilation does not become an issue, with particular focus on mechanical extract ventilation from bathrooms and kitchens.

3.6 Low Carbon Energy Supply

- 3.6.1 District heating is not considered viable for this site for a number of reasons, including the disproportionately high infrastructure costs for a low density development and the relatively low heat demand from a small number of high efficiency dwellings.
- 3.6.2 The Applicant has instead committed to installing low carbon air source heat pumps (ASHPs) for space and water heating in all properties on this development. The highly efficient nature of the proposed properties complements the low temperature output of heat pump technology, as does the zoned approach to controlling the heating system.
- 3.6.3 This option aligns closely with the nationwide approach to the low carbon energy transition and the country's 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.
- 3.6.4 For the purposes of the calculations, we have assumed that a Mitsubishi Ecodan air source heat pump will be installed; within Part L (2013) this has an efficiency of almost 290%.
- 3.6.5 By installing the heat pumps – a recognised low carbon technology - the Applicant has also addressed the application of low carbon / renewable technologies within the development. The Mid Sussex District Plan policy DP39 requires that renewable resources of energy are used where appropriate and feasible. The heat pump solution delivers against this requirement, and also futureproofs the dwellings, enabling them to benefit from Grid decarbonisation over time, effectively resulting in fewer emissions year on year.
- 3.6.6 At this stage therefore there are no plans to install additional renewable energy technologies on the dwellings.

3.7 Lighting, Fixtures and Fittings

- 3.7.1 Further energy savings will be made by maximising the efficiency of appliances, lighting, fixtures and fittings.
- 3.7.2 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. Moreover, where these are not installed, they will be provided to incoming residents within the list of optional extras. 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 5.
- 3.7.3 In addition to the internal lighting, all street lighting and other street furniture will use appropriate LED technologies to further minimise lifetime energy use and associated emissions.

3.8 Building Energy Performance Targets

- 3.8.1 Table 1 below summarises the proposed levels of performance for the different building elements, and it is these values that have been used in the detailed energy calculations shown in section 3.9. This has been compiled by applying the good practice specification for a dwelling built with a heat pump as described in Appendix D of the new *Approved Document L – Conservation of Fuel and Power Volume 1: Dwellings (December 2021)*.
- 3.8.2 As shown in the table, these proposed specifications for the development exceed the limiting U-values for fabric elements and air permeability in new dwellings within the current Building Regulations. Furthermore, they also meet or exceed the emerging limiting U-values in the amended Building Regulations from June 2022.
- 3.8.3 Current Building Regulations allow for flexibility in how standards are achieved, and it may be that this specification evolves as the design progresses – the overall performance standards however will be achieved.

Element Type	Limiting U-Values for New Fabric Elements and Air Permeability in New Dwellings		Target U-Value for Proposed Development (W/m ² K)
	Building Regulations 2013 Maximum (W/m ² K)	Building Regulations 2022 Maximum (W/m ² K)	
Roof / Sloped Roof	0.20	0.16	0.11
External walls	0.30	0.26	0.18
Party walls		0.20	0.00 (filled and sealed)
Ground floor	0.25	0.18	0.13
Glazing / doors	2.00	1.6	1.2
Factor			Detail
Thermal bridging	Y-value < 0.15	Y-value < 0.20 (default)	Bespoke construction details individually calculated
Air permeability	10m ³ /m ² /hour@50Pa	8.0m ³ /m ² /hour@50Pa	5m ³ /m ² /hour@50Pa
Heating controls	Programmer, TRVs and room stats	Time and temperature zone control + TRVs	Time and temperature zone controls, TRVs + weather compensation

Table 1: Summary of Proposed U-Values and Specifications

3.9 Baseline Energy Demands

- 3.9.1 In order to calculate the property energy demands, design stage SAP 2012 calculations have been completed for each of the different house types designed for the development, using the specifications described above, including the application of ASHPs. This establishes the regulated energy demands for space heating, domestic hot water and regulated electricity
- 3.9.2 It can be seen within the table that the properties exceed current Building Regulation requirements – the difference between the Dwelling Emission Rate (DER) and Target Emission Rate (TER) – by over 40.44% on average.

Residential Accommodation			SAP2012 results		
House Type	Internal Floor Area (m2)	DER	TER	% Reduction	
AF1	1 bed ground floor flat	58.28	17.63	30.17	41.56%
AF2	1 bed top floor flat	55.35	19.57	33.01	40.71%
A	1 bed detached chalet bungalow	105.3	14.35	25.68	44.12%
AF3 ET	2 bed end of terrace	79.84	18.42	27.48	32.97%
AF3 MT	2 bed mid terrace	79.84	17.95	25.62	29.94%
AF4	3 bed end of terrace	93.84	16.11	25.17	36.00%
B	2 bed semi detached	79.28	15.35	26.31	41.66%
C	3 bed detached house	95.28	16.02	26.89	40.42%
C	3 bed semi detached house	95.28	15.58	25	37.68%
D	3 bed detached house	102.84	14.78	27.06	45.38%
E	4 bed detached house	129.6	13.14	24.7	46.80%
F	4 bed detached house	146.35	12.23	23.52	48.00%
AVERAGE					40.44%

Table 2: Baseline Energy Demands per Housetype

4 Materials and Waste Management

4.1 The Waste Hierarchy

4.1.1 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 the Mid Sussex District Plan DP39, which requires proposals to maximise efficient use of resources, including minimising water and maximising recycling and re-use of materials through both construction and occupation:



Figure 6: The Waste Hierarchy

4.2 Waste Management

Sustainable Building Materials

4.2.1 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.

4.2.2 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

4.2.3 The Applicant recognises that waste needs to be sustainably managed and requires all contractors to adhere to strict management processes for waste on site. A Waste Management Plan will be developed to facilitate this and will:

- Identify waste streams, plan for their management and set targets for waste reduction;
- Identify a lead person responsible for the Waste Management Plan delivery and provide site induction and training to all staff;
- Identify suitable locations for the efficient separation and storage of waste prior to removal from site to encourage higher levels of recycling;
- Identify opportunities for the on-site reuse of materials and scaffolding, hoarding and other such materials to be removed from site for use on subsequent construction projects.

4.2.4 In addition to the above, it will be a contractual 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.

4.2.5 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

4.2.6 The Applicant will encourage property occupants to manage waste sustainably. For example, the houses will have a private rear garden area with direct external access which will provide sufficient space for the discreet storage of bins and composting facilities, keeping waste storage away from the public domain.

4.2.7 Internally, the dwellings will be provided with integrated bins to manage 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.

5 Water Efficiency

5.1 The Water Hierarchy

- 5.1.1 Water efficiency becomes increasingly important in a changing climate with diminishing water resources.
- 5.1.2 The domestic sector consumes 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:

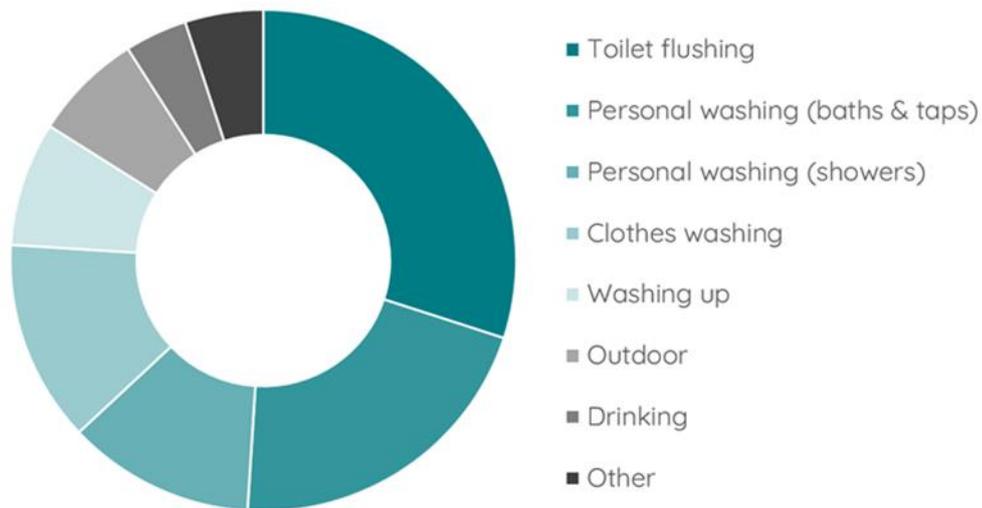


Figure 7: Domestic Water Consumption by End Use

- 5.1.3 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:



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Figure 8: The Water Hierarchy

5.2 Domestic Water Reduction Measures

- 5.2.1 The District Plan policies DP39 and DP42 include a specific target for all new residential developments to achieve a water efficiency equivalent of 110 litres or less per person per day. Water efficiency targets are also driven by the higher standards described within Part G of the Building Regulations (see section 2). The enhanced target in section 2b matches the council's target.
- 5.2.2 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
Dishwasher (l/place setting)	1.08
Rainwater recycling	Rainwater butts

Table 3: Illustrative Water Specifications

6 Sustainable Transport

6.1 Sustainable Transport Options

- 6.1.1 District Plan policy DP21 encourages well located development that can be accessed by sustainable modes of transport, and requires that alternatives to the private car are encouraged through the provision of safe and convenient walking and cycling routes, and through the promotion of public transport.
- 6.1.2 The Transport Assessment which accompanies this application demonstrates that the site is well situated to make the most of existing pedestrian and road networks, public transport provision and local amenities in the vicinity.
- 6.1.3 Secure cycle parking will be provided on site in line with the West Sussex County Council Guidance on Parking at New Developments

6.2 Provision of Electric Vehicle Charging Facilities

- 6.2.1 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.
- 6.2.2 The need for charging infrastructure to support this wholesale shift to cleaner vehicle technology therefore needs to be implemented now and this is supported by policy: the *West Sussex County Council's Guidance on Parking at New Developments* provides guidance on the minimum levels of electric vehicle charging points currently required (see section 2).
- 6.2.3 With this in mind, the Applicant has committed to designing and managing the power network to incorporate the necessary infrastructure to exceed local requirements. At least 50% of the homes will have individual charging points installed while the remaining 50% will have electrical layouts designed to ensure straightforward installation of charging points for residents as the expected increase in demand for EVs materialises over time. This will be reviewed at the time of construction to ensure the levels provided continue to exceed the WSCC Guidance.

6.3 Provision of Fibre to the Premises

- 6.3.1 The availability of Fibre-to-the-Premises (FTTP) 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.
- 6.3.2 It is likely that the proposed development will be provided with FTTP to enable access to broadband services should residents wish to connect, and this will be explored further as the development process progresses.

7 Climate Resilience and Adaptation

7.1 Adapting to the Future

- 7.1.1 The ability of the development to adapt to anticipated future changes in the climate is an important aspect of its longevity, and ultimate habitability. The principle of adaptation applies to both the built and external environment, and indeed how they interact.
- 7.1.2 District Plan policy 39 requires that development proposals demonstrate how the risks associated with future climate change have been planned for in the design of the buildings and the scheme's layout. This section details how the Applicant is addressing these requirements.

7.2 Reducing Overheating Risk Through Design

- 7.2.1 The risk of the overheating of living spaces is of concern, given our knowledge of future climate. The new *Approved Document O: Overheating* which comes into effect in June 2022 details requirements for mitigating the risk of overheating and methods for demonstrating compliance including the use of a compliance checklist or the CIBSE Guide *TM59 Design Methodology for the Assessment of Overheating Risk in Homes* (CIBSE, June 2017).
- 7.2.2 When using the CIBSE model for homes which are predominantly naturally ventilated, compliance is based on passing both of the following two criteria:

(a) For living rooms, kitchens and bedrooms: the number of hours during which ΔT is greater than or equal to one degree (K) during the period May to September inclusive shall not be more than 3 percent of occupied hours. (CIBSE TM52 Criterion 1: Hours of exceedance).

b) For bedrooms only: to guarantee comfort during the sleeping hours the operative temperature in the bedroom from 10 pm to 7 am shall not exceed 26°C for more than 1% of annual hours. (Note: 1% of the annual hours between 22:00 and 07:00 for bedrooms is 32 hours, so 33 or more hours above 26 °C will be recorded as a fail). The third criterion sets an absolute maximum daily temperature for a room, beyond which the level of overheating is unacceptable.

(CIBSE, 2017)

[ΔT is defined as the difference between the actual operative temperature in the room at any time and the limiting maximum acceptable temperature, rounded to the nearest whole degree].

- 7.2.3 As the specification is developed further, 'TM59 compliant' tests could be undertaken if necessary to ensure overheating continues to be minimised. However, current assessment via the SAP framework indicates that overheating risk is not of concern within the housetypes as currently designed.

7.3 The Multiple Benefits of Open Space and Vegetation

- 7.3.1 The proposals for the site include areas of open space and the retention of the pond in the north-eastern corner. Many of the existing mature trees and hedgerows within the site and on its boundaries will be retained, and new habitats will be created with additional native species planting.
- 7.3.2 This landscape led approach will provide multiple benefits in a changing climate. From a microclimate perspective these will help provide a comfortable external environment in hot periods whilst reducing heat gain in buildings, therefore decreasing the need for mechanical cooling.
- 7.3.3 Trees also contribute to the reduction of wind speeds, improving comfort levels and reducing air infiltration into buildings on windier days. Trees sequester CO₂ and improve air quality through dry deposition of gases (including NO_x, SO_x, PM10 and O₃) whilst also helping reduce levels of ambient noise.

7.4 Managing Water in a Changing Climate

- 7.4.1 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. Furthermore, 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.
- 7.4.2 The integration of different SuDs features into the landscape layout will therefore be pivotal in its development, in order to enable the necessary storage volumes associated with a 1 in 100 year storm event, plus a 40% allowance for the impacts of climate change.
- 7.4.3 District Plan policy DP41 details the authority's requirements for water management in new developments. These requirements are reflected in the accompanying Flood Risk Assessment (FRA), including Surface Water Drainage Strategy. This provides further detail in relation to the level of flood risk and management of surface water flows on the site and should be referred to for full details in this regard.

8 Conclusion

- 8.1.1 This *Sustainability Statement* has been commissioned by Reside Developments Ltd to present the planned approach to sustainability for the proposed development on land at Reeds Lane, Sayers Common within Mid Sussex district.
- 8.1.2 Throughout the document, national and local planning policy objectives and standards have been addressed to demonstrate the Applicant's commitment to these issues.
- 8.1.3 In particular, the Statement provides as much detail as is possible at this planning stage to demonstrate compliance with policy DP39 of the Mid Sussex District Plan and the current and emerging Building Regulations:
- Homes will be highly energy efficient, adopting a fabric first approach and with specifications above current Building Regulations for insulation detailing. They will be orientated to maximise solar gain where possible;
 - There will be no burning of fossil fuels on site, with no natural gas supplied. Heating will be via highly efficient air source heat pumps;
 - Fixtures, fittings and appliances which reduce energy and water use will be specified throughout;
 - Construction and operational waste will be managed according to the principles of the Waste Hierarchy with a focus on waste prevention, re-use and recycling, and materials will be sourced locally from sustainable sources where feasible;
 - At least 50% of the homes will have individual EV charging points installed while the remaining 50% will have electrical layouts designed to ensure straightforward installation at a later date;
 - Secure and weatherproof cycle storage will be provided for residents;
 - The existing features of ecological value will be retained and enhanced with native planting to increase levels of biodiversity;
 - Buildings will be designed and specified to adapt to a changed climate and overheating will be managed through good design;
 - The retention of trees and hedgerows and additional tree planting will provide more comfortable microclimates in warmer weather;
 - The landscape design will provide multi-functional benefits supporting increased biodiversity, promoting opportunities for improved health / wellbeing and enhancing the overall aesthetic.
- 8.1.4 A summary of the recommendations made in order to achieve relevant policy requirements is provided in Appendix A.
- 8.1.5 It can be concluded that the proposals for the development maximise the site's assets and layout in relation to sustainable design, creating an attractive, environmentally sound development.

9 Appendix A – Key Recommendations

Section		Policies Addressed	Key Recommendations
3	Low Carbon Energy Demand and Supply	District Plan DP26 District Plan DP39 Design Guide DG37	<ul style="list-style-type: none"> - Follow the priorities of the Energy Hierarchy - Ensure building orientation is such that dwellings maximise solar gain - Minimise energy consumption to achieve a substantial improvement in the DER over the TER, calculated according to Building Regs 2013 - Air permeability levels should be 5m³/m²@50Pa or less - Install energy efficient lighting and appliances - Install a high efficiency air source heat pump in each dwelling
4	Materials and Waste Management	District Plan DP39 Design Guide DG37	<ul style="list-style-type: none"> - Follow the priorities of the waste hierarchy - Source materials from suppliers with environmental accreditations, using local suppliers where possible - Ensure contractors implement strict waste management processes and commit to Considerate Constructor Scheme - Consider opportunistic on-site reuse of materials where feasible - Provide sufficient and accessible bin storage to facilitate waste management and recycling
5	Water Efficiency	District Plan DP39 District Plan DP41 District Plan DP42 Design Guide DG37	<ul style="list-style-type: none"> - Specify fixtures, appliances and fittings that reduce potable water use including aerated taps, low/dual flush WCs, low capacity baths - Provide opportunities for rainwater recycling i.e. rainwater butts - Closely follow the FRA recommendations including those for SuDs.
6	Sustainable Transport	District Plan DP21 District Plan DP23 WSCC Guidance on Parking	<ul style="list-style-type: none"> - Provide individual EV charging points to 50% of dwellings and cabling to the remaining 50% to exceed WSCC policy guidelines - Investigate providing Fibre-to-the-Property to enable ultra-high speed broadband - Implement recommendations of the Transport Assessment
7	Climate Resilience and Adaptation	District Plan DP39	<ul style="list-style-type: none"> - Control overheating risk by applying requirements of the new Approved Document O: Overheating. - Include street trees, shrubbery and open spaces throughout the site.