ADUR DISTRICT COUNCIL

Supplementary Planning Document

Revised

Sustainable Energy

ADUR DISTRICT COUNCIL

August 2024

CONTENTS

INTRODUCTION

This Sustainable Energy Supplementary Planning Document (SPD) is intended to provide guidance to developers on meeting the sustainable energy policies set out in Adur Local Plan 2017 (ALP) and the Shoreham Harbour Joint Area Action Plan (JAAP) (2019). Once adopted it will supersede the earlier Sustainable Energy SPD (adopted in 2019).

The SPD provides further guidance on policies in the two development plan documents. It describes how developers can demonstrate that policy requirements have been met by; undertaking an assessment of energy demand; developing a strategy to reduce energy demand and to meet that demand though the provision of sustainable energy generation technologies; and developing an Energy Statement to support planning applications.

This guidance relates to:

- Major residential and non-residential developments proposed in the Adur Local Plan area.
- Major and non-major residential and non-residential development proposals (excluding household applications) within the Shoreham Harbour Regeneration Area.

These developments are required to meet energy policy requirements and submit an Energy Statement. However, this SPD encourages *all developments* to submit an Energy Statement to demonstrate how they are delivering clean, smart, sustainable, development, in the spirit of wider sustainability objectives of the development plans.

The purpose of the energy policies in the plans are to ensure that development delivers secure, affordable, low carbon growth, increases future energy resilience, and helps to deliver the strategic objectives of the government's National Planning Policy Framework (NPPF) (2021).

Adur District Council is committed to increasing renewable and low carbon decentralised energy through its development plans. The Council has committed to the UK100 Cities target of 100% clean energy by 2045. The requirement for renewable and low carbon energy in proposed development is aligned with the National Planning Policy Framework which requires all local planning authorities to deliver radical reductions in greenhouse gas emissions and support renewable and low carbon energy.

This SPD updates the previous version, adopted in 2019. The update is necessary because:

- Amendments to Building Regulations and the relevant approved documents commenced on 15 June 2022[1]. These changes have affected standards in relation to ventilation, energy and carbon emissions, electric vehicle charging infrastructure and overheating.
- The proposed Shoreham Heat Network is not currently viable, and the Council is no longer actively promoting this project.

These material changes impact the implementation of policies in the ALP and JAAP. This update clarifies the Council's policy position and how developers can demonstrate compliance.

[1]See The Building Regulations etc. (Amendment) (England) Regulations 2021

SECTION I

1 What is the policy background?

Legislation

1.1 The following legislation provides the national context for the local policies:

The **Planning and Compulsory Purchase Act 2004** sets out the legislative framework for development planning in England. The Act requires that:

Development plan documents must (...) include policies designed to secure that the development (...) contribute to the mitigation of, and adaptation to, climate change[2].

1.2 The **Climate Change Act 2008** (as amended in 2019) sets a statutory target to reach net-zero greenhouse gas emissions by 2050[3]. To meet this target the government sets a carbon budget every five years. The sixth carbon budget requires a 78% reduction in UK territorial emissions between 1990 and 2035[4]. Key recommendations include increasing the take up of low-carbon solutions and expansion of low-carbon energy supplies.

1.3 The **Planning and Energy Act 2008** allows local planning authorities to impose reasonable requirements for:

a) a proportion of energy used in development in their area to be energy from renewable sources in the locality of the development;
b) a proportion of energy used in development in their area to be low carbon energy from sources in the locality of the development;
c) development in their area to comply with energy efficiency standards that exceeds the energy requirements of building regulations.[5]

1.4 A Written Material Statement (2015) proposed the removal of Part (c) to exempt residential dwellings. However this has not been brought into force, and the provisions of the act remain in place. The government has stated that local planning authorities are not restricted in their ability to require energy efficiency standards above building regulations.[6]

[2] Section 19 (1A) of the Planning and Compulsory Purchase Act 2004, as amended by Section 182 of the Planning Act 2008.
[3] Section 1 of the Climate Change Act 2008.
[4] Sixth Carbon Budget (December 2020)
[5] Section 1 (1) of the Planning and Energy Act 2008.
[6] Government response to the draft revised National Planning Policy Framework consultation (p.48) (2018)

National policy

1.5 The **National Planning Policy Framework (NPPF) (2021)** sets out the government's planning policies for England and how these are expected to be applied. The NPPF requires plans to adopt proactive strategies to mitigate and adapt to climate change, in line with the provisions and objectives of the Climate Change Act 2008.

152. The planning system should support the transition to a low carbon future in a changing climate … It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience … and support renewable and low carbon energy and associated infrastructure.

154. New development should be planned for in ways that … can help to reduce greenhouse gas emissions, such as through its location, orientation and design …

155. To help increase the use and supply of renewable and low carbon energy and heat, plans should:
    a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
    b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
    c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for colocating potential heat customers and suppliers.

156. Local planning authorities should support community led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

157. In determining planning applications, local planning authorities should expect new development to:
    a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
    b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

158. When determining planning applications for renewable and low carbon development, local planning authorities should:
    a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small scale projects provide a valuable contribution to cutting greenhouse gas emissions; and
    b) approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been

identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

1.7 **Planning Practice Guidance (PPG)** is an online resource which provides additional and detailed guidance on aspects of the NPPF. PPG highlights the importance of addressing climate change as one of the key land use planning principles.[7] Increasing the amount of energy generated from renewable and low carbon technologies is important to ensure future energy security, and to reduce greenhouse gas emissions to slow down climate change. PPG highlights the importance of enabling and encouraging decentralised energy opportunities, such as district heating and cooling[8].

Local Policy

Adur Local Plan 2017

1.10 The **Adur Local Plan** (adopted December 2017) provides a comprehensive vision and strategy for the future of Adur until 2032. Key challenges for the Plan include the need to: improve infrastructure; address climate change; work towards achieving sustainability; and to balance development and regeneration requirements against the limited physical capacity of Adur without detriment to environmental quality.

1.11 To meet its obligations under the legislation and national policy context set out above, Adur Local Plan includes the following policies:

ALP Policy 18: Sustainable Design

Residential:
All new dwellings must achieve a water efficiency standard of no more than 110 litres/person/day (lpd).

Non-residential:
Non-domestic floorspace must achieve a minimum standard of BREEAM 'Very Good' with a specific focus on water efficiency.

Developers will be expected to provide certification evidence of the levels for BREEAM at the design stage and on completion of development.

[7] Paragraphs 6-001 - 6-002 of the Planning Practice Guidance.
[8] Paragraph 6-009 of the Planning Practice Guidance.

ALP Policy 19: Decentralised Energy, Stand alone Energy Schemes and Renewable Energy

An assessment of the opportunities to use low carbon energy, renewable energy and residual heat/ cooling for both domestic and non-domestic developments must be provided with any major planning application. This must include details of:

- Any new opportunities for providing or creating new heating/cooling networks.
- The feasibility of connecting the development to existing heating / cooling / CHP networks where these already exist.
- Opportunities for expansion of any proposed networks beyond the development area over time, and to plan for potential expansion.

Where viable and feasible, commercial and residential developments in areas identified in the Shoreham Harbour Heat Network Study (2015) will be expected to connect to district heating networks where they exist.

Stand-alone energy schemes will also be supported subject to compliance with other policies in this Plan.

All new major development will be expected to incorporate renewable/low carbon energy production equipment to provide at least 10% of predicted energy requirements.

1.12 This supplementary planning document provides further detail on how to prepare an Energy Statement to accompany planning applications for major development.[9] The purpose of an Energy Statement is to demonstrate that climate change mitigation measures comply with Policy 19 of the Adur Local Plan. The Energy Statement enables developers to demonstrate the proposals contribution to reducing carbon emissions in accordance with the energy hierarchy:

1. Be lean: use less energy
2. Be clean: supply energy efficiently
3. Be green: use renewable energy

1.13 The Energy Statement ensures sustainable energy is an integral part of the development's design and evolution. Smaller developments are also encouraged to meet the standard and submit an Energy Statement.

[9] Major development is defined in the **Town & Country Planning (Development Management Procedure) (England) Order 2015** as 10 or more dwellinghouses, or sites of 0.5 hectares or more where it is not known if the development will have 10 or more dwellinghouses; the provision of a building or buildings where the floorspace to be created is 1,000m^2 floorspace or more, or development on sites of 1 hectare or more.

Heating and cooling networks

1.14 Decentralised heating and cooling systems and networks can provide an extremely cost effective approach to minimising CO_2 emissions, especially where networks can be expanded to accommodate new and existing developments over time. Heating and hot water for buildings account for 40% of UK energy use and 20% of greenhouse gas emissions. The Climate Change Committee estimates that district heating can meet 20% of domestic heating and hot water needs by 2030. The Clean Growth Strategy (2017) includes policies to roll out low carbon heating, and phase out the installation of high carbon fossil fuel heating.

1.15 Although the Council is no longer progressing the Shoreham Heat Network, larger developments may provide opportunities to deliver new heating/cooling networks. **All proposals for major development must include an assessment of the opportunities for decentralised heating and cooling networks.**

Renewable and low carbon energy generation

1.16 Building related energy consumption is a significant contributor to greenhouse gas emissions. The hierarchy of reducing demand; using energy efficiently; supplying energy efficiently and then using appropriate on-site renewable/low carbon energy generation is the most cost-effective means of reducing energy consumption and greenhouse gas emissions for new developments.

1.17 **All major development is expected to incorporate renewable/low carbon generation of a minimum of 10% of predicted energy requirements. This will be calculated from total energy requirements (regulated and unregulated).**

1.19 See Section 2 for guidance on how to address low and zero carbon energy generation in the Energy Statement.

1.20 Adur District Council is working in partnership with Brighton & Hove City Council and West Sussex County Council to regenerate Shoreham Harbour and surrounding areas. Policy 8 of the Adur Local Plan makes specific requirements for development within the regeneration area.

ALP Policy 8: Shoreham Harbour Regeneration Area (excerpt)
New development at the harbour will be expected to meet high standards of environmental efficiency and a Sustainability Statement will be required as supporting information to accompany all development proposals in the parts of the Shoreham Harbour Regeneration Area within Adur. The Sustainability Statement should be set out in accordance with the Sustainability Statements Guidance Note for Shoreham Harbour Regeneration Area. Development will be expected to incorporate low and zero carbon decentralised energy generation, in particular heat networks, and required to either connect, where a suitable system is in place (or would be at the time of construction) or design systems so they are compatible with future connection to a network.

1.21 **All development proposals within the Shoreham Harbour Regeneration Area are required to submit a Sustainability Statement.** The energy assessment required by Policy 19 of the Adur Local Plan, and this SPD, should be incorporated into the Sustainability Statement.

Shoreham Harbour Joint Area Action Plan

1.22 The councils adopted the **Shoreham Harbour Joint Area Action Plan** in October 2019. Policy SH1: Climate change, energy and sustainable building requires all new development within the regeneration area to incorporate low and zero carbon decentralised energy opportunities:

JAAP Policy SH1: Climate change, energy and sustainable building (excerpt)
1. Development proposals should demonstrate how they maximise opportunities to support local sustainability objectives and commitments. 2. A completed Sustainability Checklist will be required to accompany all development proposals in the areas of the harbour within Brighton & Hove. A Sustainability Statement will be required to accompany all development proposals within Adur 3. All new commercial buildings should meet the BREEAM ‘excellent standard’. 4. Where it is feasible and viable, development should seek to achieve zero carbon status, in particular within the four site allocations. This will include the use of passive design measures. Proposals must demonstrate good thermal performance and air tightness to prevent heat loss. 5. Developers should demonstrate how they can contribute towards the regeneration partnership’s objective of becoming a hub for renewable energy generation.

6. The councils will support proposals for low and zero carbon energy generation, including solar photovoltaics.

Decentralised energy, heating and cooling networks

7. All new development will be expected to incorporate low and zero carbon decentralised energy generation, including heating and cooling. The councils will support the development of heating and cooling networks and associated infrastructure. All development proposals must demonstrate that heating and cooling systems have been selected in accordance with the heating and cooling hierarchy as set out in Table 1.

Table 1: Heating and cooling hierarchy

System
1. Connection to existing heating/cooling network
2. Site-wide heating/cooling network
3. Building-wide heating/cooling network
4. Individual heating/cooling systems
Technology
1. Renewable/waste energy sources (such as biomass, heat pumps, solar thermal)
2. Low carbon technologies
3. Conventional systems (such as gas or direct electric)

8. Where no heat network is in place, development proposals must be designed to be connection ready, and will be expected to demonstrate that all specifications below have been met:

- All buildings must use a centralised communal wet heating system rather than individual gas boilers or electric heating.
- All buildings must allow adequate plant room space to allow for connection at a later date. (the exact requirement to be agreed with the councils and their representatives).
- Plant rooms must be situated to consider potential future pipe routes. The developer must identify and safeguard a pipe route to allow connection between the building and the highway or identified network route where available.
- The developer must not in any other way compromise or prevent the potential connection.

Shoreham Heat Network

9. Development within the proposed Shoreham Heat Network area will be required to connect to district heating networks where they exist, or incorporate the necessary infrastructure for connection to future networks.

1.23 The energy statement should demonstrate that the requirements of these policies have been met. There are currently no heating/cooling networks in Adur and the Council is no longer progressing the Shoreham Heat Network project. However, there is potential for significant reductions in carbon emissions through delivering a site-wide heating/cooling that has the potential to connect to a wider network at a later date

SECTION 2

2 What are the principles for meeting planning requirements on sustainable energy?

The Energy Statement

A. The Council requires an Energy Statement to be submitted for:

- Major residential and non-residential developments[9] proposed in the Adur Local Plan area.
- Major and non-major residential and non-residential development proposals (excluding household applications) within the Shoreham Harbour Regeneration Area (as part of the Sustainability Statement) (see Map, Appendix 4)

B. The Council strongly encourages an Energy Statement to be submitted for all other development proposals demonstrating carbon emissions reductions beyond current Building Regulations compliance.

C. The Energy Statement should demonstrate the proposal's contribution to radical reductions in greenhouse gas emissions in accordance with the following energy hierarchy:

1. Reduce energy demand
2. Energy efficiency
3. Onsite renewable, low and zero-carbon technologies

D. As a minimum, the Energy Statement should include:

1. Baseline energy demand and Target Emission Rate (TER) for each proposed building.
2. A description of the measures taken to reduce energy demand.
3. A description of the measures taken to increase energy efficiency.
4. Energy demand and Dwelling Emissions Rate (DER, for residential buildings) and/or Building Emission Rate (BER, for non-residential buildings) for each proposed building, **before onsite renewable, low and zero-carbon technologies are included**.
5. A calculation of the minimum requirement for onsite renewable, low and zero-carbon energy generation (10% of total regulated energy demand at Step 4).
6. A description of the proposed onsite renewable, low and zero-carbon energy generation technologies.

[9] Major development is defined in the **Town & Country Planning (Development Management Procedure) (England) Order 2015** as 10 or more dwellinghouses, or sites of 0.5 hectares or more where it is not known if the development will have 10 or more dwellinghouses; the provision of a building or buildings where the floorspace to be created is 1,000m^2 floorspace or more, or development on sites of 1 hectare or more.

7. Energy demand and Dwelling Emissions Rate (DER, for residential buildings) and/or Building Emission Rate (BER, for non-residential buildings) for each proposed building, **after onsite renewable, low and zero-carbon technologies are included**.
8. A description of the measures proposed to avoid overheating.
9. For non-residential buildings, a BREEAM design stage assessment.

IMPORTANT:

A draft Energy Statement should be prepared during design stages. If the proposal is subject to pre-application advice, it is recommended that a draft Energy Statement is submitted for pre-application stage discussions.

A full Energy Statement should be submitted with the full planning application.

The Energy Statement must include a non-technical summary.

1. Baseline energy demand and emissions

A. The Energy Statement must establish the baseline energy demand and carbon emissions for the proposed development.

B. For residential buildings, energy demand and Target Emissions Rates (TER) will be established using the most recent version of the Standard Assessment Procedure (SAP)[10].

C. For non-residential buildings, energy demand and Target Emissions Rates will be established using the National Calculation Methodology (NCM)[11]

D. Unless it is proposed that the building will be heated by gas, the modelled demand and emissions should be modelled on an electric heating system.

2. Reducing energy demand

A. The Energy Statement must set out the measures taken to reduce energy demand. This will include:

Orientation and layout

B. By ensuring passive design elements are optimised to reduce the need for artificial lighting, heating and cooling, the design of buildings can play a significant role in reducing a building's overall energy demand. It is also important to balance this

[10] SAP 10.2 (at the time of publication of this SPD).
[11] Calculations may be carried out by either dynamic simulation model (DSM) or Simplified Building Energy Model (SBEM).

approach by minimising overheating in the summer. See the guidance below on overheating.

C. **Site layout and relationship between buildings and adjacent uses** - All development should maximise the potential for passive solar gain[12]. Early in the design process the site layout, landscape and relationship between buildings should be considered in relation to the aim to maximise the capture and use of passive solar energy whilst avoiding excessive solar gain in summer. It is important to avoid the over-shadowing of the solar orientation of buildings. Site layout should also use landform and landscape to provide shelter to minimise heat losses in winter and adequate shade in summer.

D. **Building orientation and form** - To minimise heating, lighting and cooling demands, all development should use building orientation, form and the layout of rooms to ensure those spaces that require most warmth and daylight receive most passive solar gain and those spaces that need least warmth/daylight receive least. Use of a simple external building form (minimising surface area in relation to volume) can reduce heat loss. Where site constraints restrict suitable orientation or form, the Council will expect innovative techniques or approaches to be used to maximise daylight and increase solar gain, for example the use of sun pipes[13].

E. **Residential solar gain** - If possible building axis should be orientated in an east-west direction to provide optimum solar gain. This can reduce a home's heating and cooling costs by up to 85%. Where possible, habitable rooms (such as living rooms and bedrooms) should be located on the south elevation to maximise heating and light from the sun, particularly in the winter. Potential for excessive gain in the summer should however be taken into account. On sites where building are orientated on a north-south axis, they should be angled to maximise heating in the morning and evening when it's needed most. This will also help minimise overshadowing between buildings due to the shadow angle created by the sun's path. It is preferable if habitable rooms are on the west elevation to maximise light and heating later in the day.

F. **Non-residential solar gain** - Commercial properties are usually occupied during the day and often need to minimise solar gain because of heat intensive uses (such as computer use). An east-west axis is preferable with glazing on the north elevation to maximise light and prevent excessive heat gain.

G. To avoid overheating in summer months buildings should incorporate eve design to allow shading, support shading devices and use green infrastructure in surrounding spaces to increase shading (see guidance on overheating at page 16).

H. **Provide thermal mass and storage** - Thermal mass involves using the mass of the buildings to moderate the temperature. It should not be confused with insulation and u-values; it is a passive design feature, not a method of insulation. Materials

[12] Making the best use of solar energy to heat and illuminate buildings
[13] Sun pipes are a natural lighting system that channels natural daylight from roofs to indoor environments.

have a capacity to absorb and store heat and ultimately release it when it is cooler. It is of most value when there are temperature fluctuations, i.e. between day and night. Materials such as concrete and bricks have a higher thermal mass and others such as timber have a low thermal mass. However, the design and use of thermal mass will depend on context and needs to be considered in relation to the specific building. For example, in highly insulated buildings, with some mechanical ventilation (such as Passivhaus) there will be less temperature fluctuations and high thermal mass could cause potential for overheating.

I. **Provision of natural ventilation** - This is the process of supplying and removing air through an indoor space without using mechanical systems. This enables the flow of external air to an indoor space as a result of pressure or temperature differences.

J. **Planting and soft landscaping** - Vegetation, trees, green roofs and green walls are also important for reducing energy required to cool buildings. They provide shade and stabilise microsystems. Trees can also help with CO2 absorption and they trap particles so have an air quality benefit.

3. Improving Energy efficiency

A. The Energy Statement must set out the measures taken to increase energy efficiency. This will include:

Fabric First approach

B. Once the demand for energy has been reduced, measures to make the best use or most efficient use of energy should be considered. The energy efficiency of a building is influenced by the use of space, insulation and materials within a building. Making the building fabric perform more efficiently tends to be those measures which fall within building regulation process. This means that proposed buildings should have external walls, roofs, floors, windows and doors that are super insulated, airtight and wind tight. Window and doors should incorporate high performance glazing.

C. **Insulation** - Thermal insulation is an important way of improving energy efficiency by reducing the heat losses through the fabric of the building. The thermal insulating properties of building structures are compared using U-values[14]. The U-value is a measure of how readily heat will flow through the structure and describes how much energy in watts (W) can pass through material from inside to outside. The lower the U-value, the less heat is transferred through it, so the more efficient it is. The most efficient buildings have a continuous insulation around the building envelope.

D. **Air-tightness** - An airtight building envelope is draught-free, so ensures high energy efficiency and internal comfort. To enable a continuous air tight barrier, gaps

[14] The U-value is a measure of how readily heat will flow through the structure, and describes how much energy (Watts) can pass through 1mg of material from inside to outside at a temperature differential of I Kelvin (K).

in the fabric should be minimised. Measures include sealing joints and gaps around windows and door frames. Reducing the air permeability of the fabric requires controlled ventilation to minimise build-up of moisture, CO2 and other internal pollutants. For low energy homes an air permeability of 3m3/h.m2 @50pa or below should be targeted to enable efficient heat recovery ventilation.

E. **Thermal bridging** - This is where heat is lost through a material that is more conductive than the surrounding materials, such as a metal fastener or concrete bean, or where a wall meets an external wall. Significant thermal bridges should be designed out.

Other energy efficiency measures

F. In addition to changes to the fabric of the building the Council will expect internal lighting, services and appliances to be energy efficient.

4. Energy demand and emissions before onsite energy generation is included.

A. The Energy Statement must include a calculation of the energy demand and carbon emissions for the proposed development **before onsite renewable, low and zero-carbon generation is included.**

B. For residential buildings, energy demand and Dwelling Emission Rates (DER) will be established using the most recent version of the Standard Assessment Procedure (SAP).

C. For non-residential buildings, energy demand and Building Emission Rates (BER) will be established using the National Calculation Methodology (NCM)

5. The minimum onsite energy generation requirement

A. The Energy Statement must establish the minimum requirement for onsite renewable, low and zero-carbon energy generation. This will be equal to 10% total energy demand, as calculates at Step 4 (above).

6. Onsite renewable, low and zero-carbon energy technologies

A. For buildings to maximise carbon reduction and move beyond building regulations towards net zero carbon, the residual energy requirements (once the design and fabric of new development has minimised the energy needed for heating, cooling and powering) should be supplied as efficiently as possible using renewable, low and zero-carbon energy.

B. Zero carbon technologies are those that harness renewable non fossil fuel energy to create heat or generate electricity. They are called zero carbon because they produce no carbon dioxide (CO^2) emissions when producing heat or power. These technologies are sometimes referred to as micro generation, producing heat or energy locally on a small scale. Low carbon technologies are those that use fossil fuels in a highly efficient way.

Using low carbon heating and cooling systems

C. Heating is the most essential component of the UK's current residential energy consumption. Gas boilers make a large contribution to the greenhouse gas emissions from homes. Alternative heating systems are therefore encouraged, such as heat pumps. Heat pumps are generally more energy efficient than standard panel heating, particularly if used on a communal scale (small number of dwellings or a block of flats)[15]. The siting of air source heat pumps on buildings should be carefully considered to take account of potential noise impacts.

D. On a larger scale, a heat network or district heating distributes heat generated at a central location to a number of residential and non-residential buildings. The Climate Change Committee estimates that if the UK is to meet its carbon targets cost effectively, around 18% of UK heat will need to come from heat networks[16]. Various sources of heat can be used. A district heating scheme provides heat from a central source and distributes it to multiple buildings. Electric heat pumps and/or renewable energy are heat sources that are becoming increasingly popular in heating networks and are key in the move towards net zero carbon buildings.

E. It is essential that heat networks are installed and operated appropriately. Design of heat networks should achieve the best practice standards of the ADE & CIBSE Code of Practice for Heat Networks. Impact on air quality must also be taken into account.

F. In Adur there are currently no existing district heating networks, so connecting to existing networks is not possible. However, the Council recommend that large-scale development seeks to establish district heating networks and if this is not feasible, applicants should at least consider installing heating and cooling equipment that is capable of connection at a later date. Large-scale mixed use development is most suitable because it enables good anchor load and diversity of heat demand. To facilitate the consideration of district heating potential all major new development should assess the feasibility of providing new district heating network. The Council recognises that low temperature, fossil free district heating is the most sustainable option.

Incorporating renewable energy

G. The use of onsite renewable technologies is encouraged to increase CO^2 emissions, particularly for those developments seeking to achieve net zero carbon developments. The table below sets out a list of renewable energy technologies and their suitability in Adur. It is acknowledged that new technologies may also be developed so the Council will also consider alternative proposals if relevant.

[15] Useful information about the efficiency of different heat pumps from the British Research Establishment (BRE): http://www.bregroup.com/heatpumpefficiency/index.jsp
[16] Heat Networks www.gov.uk/guidance/heat-networks-overview.

Overview of renewable technologies and suitability in Adur:	
Renewable Technology	**Suitability**
Solar PV	Yes
Micro Wind	No, unlikely to be economic because of poor energy yields experienced in practice.
Large scale wind	Yes, if in a suitable location and allocated in a local plan.
Biomass boilers	Unlikely to be supported within an Air Quality Management Area or where it may impact on residents unless it can be clearly demonstrated that there will be no adverse impact on air quality.
Solar thermal	Yes
Air source heat pumps	Yes, where communal solutions are not possible
Ground source heat pumps	Yes, where communal solutions are not possible
Water source heat pumps	Yes, best suited to large scale communal heating solutions

H. The feasibility of the renewable energy proposal should be considered in relation to the site context. Where relevant, appropriate licenses should be sought from the regulation body. For example water and ground source heat pumps may require licenses from the Environment Agency in some instances. It is recommended that early discussions take place with the relevant organisation to ensure the appropriate technology is selected in the appropriate location.

Feasibility and viability

I. If an applicant does not consider it feasible to meet the minimum requirement for onsite renewable, low and zero-carbon technologies, the Energy Statement must demonstrate that all options have been explored and appraised.

J. If an applicant does not consider it viable feasible to meet the minimum requirement for onsite renewable, low and zero-carbon technologies, the Energy Statement must be accompanied by a full open-book viability appraisal clearly demonstrating that this is the case.

K. The Council may seek independent advice to review the feasibility and/or viability evidence submitted. The cost of this review will be borne by the applicant.

L. The Council will consider the potential benefits of a development by weighing these against the resulting harm from non-compliant development.

M. The Council will expect applicants to identify and install those measures that are feasible and/or viable.

N. Where development is phased, the Council may require a review of viability and/or feasibility evidence.

7. Energy demand and emissions before onsite energy generation is included.

A. The Energy Statement must include a calculation of the energy demand and carbon emissions for the proposed development **after onsite renewable, low and zero-carbon technologies included.**

B. For residential buildings, energy demand and Dwelling Emission Rates (DER) will be established using the most recent version of the Standard Assessment Procedure (SAP).

C. For non-residential buildings, energy demand and Building Emission Rates (BER) will be established using the National Calculation Methodology (NCM).

D. The Energy Statement should clearly state the proportion of energy demand which is met from onsite renewable, low and zero-carbon technologies, and reductions in greenhouse gas emissions beyond building control requirements.

8. Overheating

A. Overheating is an increasingly significant issue and is expected to worsen significantly with climate change. When applicants address the guidance in the energy reduction section of this SPD to maximise solar gain and improve the fabric performance of buildings, it is essential this is considered alongside measures to reduce overheating. High indoor temperatures can have a detrimental impact on quality of life and excessive or prolonged high temperatures significantly affect the health and well-being of occupants. There are approximately 2,000 heat related deaths each year in the UK. In urban areas summer temperatures are predicted to rise by between 2 and 4 degrees by 2050[17].

B. The 'urban heat island effect' is a phenomenon whereby urban temperatures are higher than the surrounding rural areas due to heat being stored and 'trapped' within building structures. The result is urban centres that can be a lot warmer than the surrounding countryside, especially at night. According to the South East Climate Change Partnership the urban heat island currently adds up to a further 5-6°C to summer night temperatures and will intensify in the future. Consequently, overheating of the external environment needs also to be addressed and developers must have regard to the heat island effect on any urban development.

[17] UKGBC (2020) Policy play book: https://www.ukgbc.org/wp-content/uploads/2020/03/The-Policy-Playbook-v.1.5-March-2020.pdf

C. Air conditioning is often used to cool buildings, particularly offices. However, this increases carbon emissions and is costly for consumers to purchase and maintain. Therefore other mitigation measures should be prioritised.

Cooling Hierarchy

D. To minimise overheating, applicants are encouraged to follow the cooling hierarchy set out below:

The cooling hierarchy:

E. It is recommended that thermal modelling is used to understand the performance of a proposed new development, with buildings designed and built to meet CIBSE's (Chartered Institute of Building Service Engineers) latest overheating standards. As part of this, consideration should also be given to future climate scenarios, for example using CIBSE future weather data. Where officers have concerns about the potential for overheating, a planning condition may be used to secure overheating analysis, for example for a sample of units on a site.

Passive design

F. Whilst solar gain helps minimise energy use (see energy reduction above) it is important it is controlled to prevent overheating. Different measures of solar control include considering the size, type and location of window openings and glazing, the use of shading devices (such as brise soleil[18]) and the use of green roofs and shading for shaping and evaporative cooling.

G. Roof design and planting of vegetation can reduce solar glare, whilst still allowing in daylight and warmth from the sun. Building fabric measures (as detailed in the energy efficiency section of this SPD) also help cooling. A well-insulated, airtight building prevents heat penetrating and minimises uncontrolled air permeability. Using materials with high thermal mass, stores heat in the day and dissipate it at night, usually via a ventilation system.

Passive/natural cooling

H. The next stage in the hierarchy is using natural ventilation to circulate natural air around a building, without the use of a mechanical cooling system. It should be noted that there may be circumstances (such as proximity to noise or air pollution sources) where this is not suitable so the local context is important. Some of the different techniques that can be used include:

[18] A device, such as a perforated screen or louvres, for shutting out direct or excessive sunlight.

- Cross ventilation- Simple passive cooling with openable windows.
- Passive stack ventilation- Uses ducts to circulate air around the building. Brings cool air in and expels warm air from the top of the building.

I. Single aspect dwellings should be avoided for all schemes as effective passive ventilation can be difficult or impossible to achieve. Windows and/or ventilation panels should be designed to allow effective and secure ventilation. In winter when passive ventilation is not required vents can be closed.

Mixed mode cooling

J. The third stage of the hierarchy encourages the use of local mechanical ventilation/cooling where required to supplement the above measures using (in order of preference): firstly low energy mechanical cooling (e.g. fan powered ventilation with/without evaporative cooling or ground coupled cooling); Secondly, air conditioning, which is not a preferred approach as these systems are energy intensive. This approach provides more control over the internal temperature.

Mechanical ventilation/cooling system

K. This approach involves using a whole building mechanical ventilation/ cooling system, such as using air conditioning throughout an office building. This approach should be the last resort and the lowest carbon systems should be used.

9. BREEAM assessment

A. For non-residential buildings, a BREEAM design stage assessment must be submitted. The minimum standards are:

- **Excellent** for non-residential development in the Shoreham Harbour Regeneration Area
- **Very good** for development elsewhere in the Adur Local Plan area.