

Greater Cambridge Local Plan: Net Zero Carbon evidence base

Policy Recommendations

June 2021 | Rev C

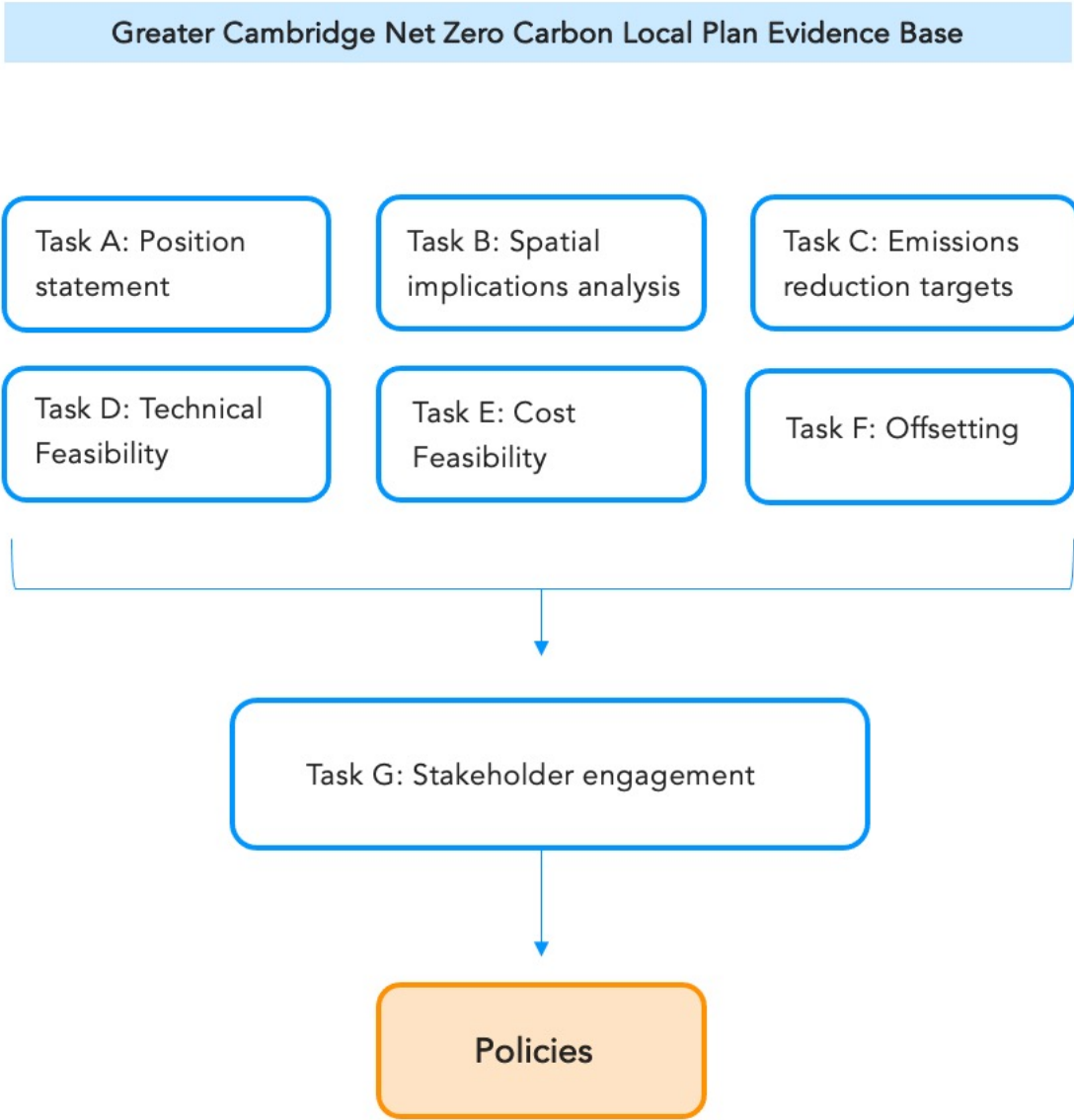


Policies



This section lists the policies that have been developed in response to the evidence base built up through the analysis, modelling and stakeholder engagement undertaken as part of this Net Zero Carbon Local Plan Evidence Base study.

Policies are listed by the primary sector they influence, and rationale and evidence of need is explained through references back to relevant sections of the wider study.



Introduction

The policies listed in this section have been formulated drawing on the evidence base created for Greater Cambridge’s new local plan. They specifically address the requirement for the new local plan to be consistent with the requirements of legislated national targets of being zero carbon by 2050 and science based targets aligned with the Paris Agreement.

Policy aims

Policies have been developed with the specific aim of reducing greenhouse gas emissions from Greater Cambridge.

We believe that in addition to reduction of greenhouse gas emissions policies should also address wider sustainability objectives where possible. We have used Bioregional’s One Planet Living framework to assess each policy. This serves to highlight co-benefits of policies, and to cross-check policies for any potential conflicts with wider sustainability objectives.

What the local plan can do

Our position statement (Task A) details the powers of the the local plan. These are summarised in the table on the right. These mechanisms are able to influence changes in different ways.

The local plan has the greatest influence over new development through policy requirements, however by bearing in mind the mechanisms listed on the right, it is possible for the the local plan to have a much wider influence. Indeed, our analysis of emissions reductions requirements carried out in Task C shows us that it is imperative that the local plan exercises its full influence across all sectors. In doing so, it can truly be considered to be consistent with overarching local, national and global zero carbon objectives.

This structure is used for each policy page as a framework for articulating the recommended policies and content of the local plan and its supporting documents.

Local Plan Mechanism	Description
Policy	Can be used to require compliance with details through the weight given the development plans in the planning process.
Material considerations	A matter that should be taken into account in deciding a planning application
Supplementary planning documents	Documents which add further detail to the policies in the local plan
Design codes	A set of illustrated design requirements that provide specific, detailed parameters.
Site allocations	Policies within the local plan can identify specific sites for development, including specific uses such as dwellings, employment, retail, infrastructure, renewable energy generation, etc, and also specific requirements.
Section 106 (S106)	A legal agreement between an applicant seeking planning permission and the local planning authority. They can be used to either mitigate the impact of a development that cannot meet a planning policy, or to deliver measures such as infrastructure that would be needed to make the development acceptable in planning terms.
Community Infrastructure Levy (CIL)	A charge which can be levied by Local Authorities on new development in their area, and usually pay for supporting infrastructure. Rates are set at a certain cost/m ² .
Local Development Orders	LDOs provide permitted development rights for specified types of development in defined locations. They are flexible and locally determined tools that LPAs can use to help accelerate the delivery of appropriate development in the right places.

Navigating this section

The contents and structure of this section is illustrated on the right. This section of the evidence base brings together the different workstreams into a set of policy recommendations.

What this section does

This “Policies Recommendations” report lists the sort of policies we feel should be implemented in Greater Cambridge’s new Local Plan.

Policies are listed in a summary table, and each is expanded upon in a “crib sheet” for each policy. Each policy page summarises the evidence of need, feasibility and links to other policies. It also summarises the available mechanisms of the plan and how they can be utilised.

Policy headlines are suggested, and references are made to the other documents within the evidence base for detail. Details can be found in the net zero carbon evidence base sections referenced throughout this section:

- Task A: Position Statement
- Task B: Spatial implications analysis
- Task C: Emissions reduction targets
- Task D: Technical Feasibility
- Task E: Cost Feasibility
- Task F: Offsetting
- Task G: Stakeholder Engagement

What this section does not do

This report does not attempt to write all policy wording as it would be seen in the local plan. It is intended that this document will be used as a starting point for the Local Authority to write relevant policies into the new local plan.

Content and structure

- 1 The local plan and beyond
- 2 The One Planet Living framework
- 3 Policies: summary table
- 4 Policy by policy: rationale and evidence of need
- 5 Impact of future changes to national policy and regulations
- 6 Monitoring implementation
- 7 Monitoring progress

The local plan and beyond

Beyond the local plan

The scope of this study is about what the local plan can do to help Greater Cambridge meet its climate obligations and targets.

However, the control and influence of Local Authorities extends beyond their local plans and the policies within them. Local authorities will need to play a large role in reducing existing emissions within their districts, for example through running initiatives, creating partnerships or implementing changes at an organisational level. Actions that are beyond local plan policy are outside the scope of this particular study.

In order to achieve the wider zero carbon ambition Cambridge City Council, South Cambridgeshire District Council, and other authorities in the area such as Cambridgeshire County Council and the Cambridgeshire & Peterborough Combined Authority should set a direction for wider action on sustainability across their areas – both within and outside of council operations.

National policy and building regulations

National policy and building regulations will play an important role in reducing emissions. Greater Cambridge should engage with the government to highlight areas of national policy and building regulations that impede progress towards its zero carbon goals

Avoid policy gaps

Local policies also need to be supported by national policy, and in the case of buildings, building regulations. A policy gap map has been created to the right. All relevant sectors and emissions sources are included, and policy intervention at local or national level is indicated. This highlights the areas the local plan can have most impact, and areas the local plan has limited ability to influence.

Feeding into the inner circle of “Local Policy” would Greater Cambridge’s Local Plan (the subject of this study), and also Cambridgeshire County Council’s Minerals and Waste plan, and Cambridgeshire and Peterborough’s Local Transport Plan.

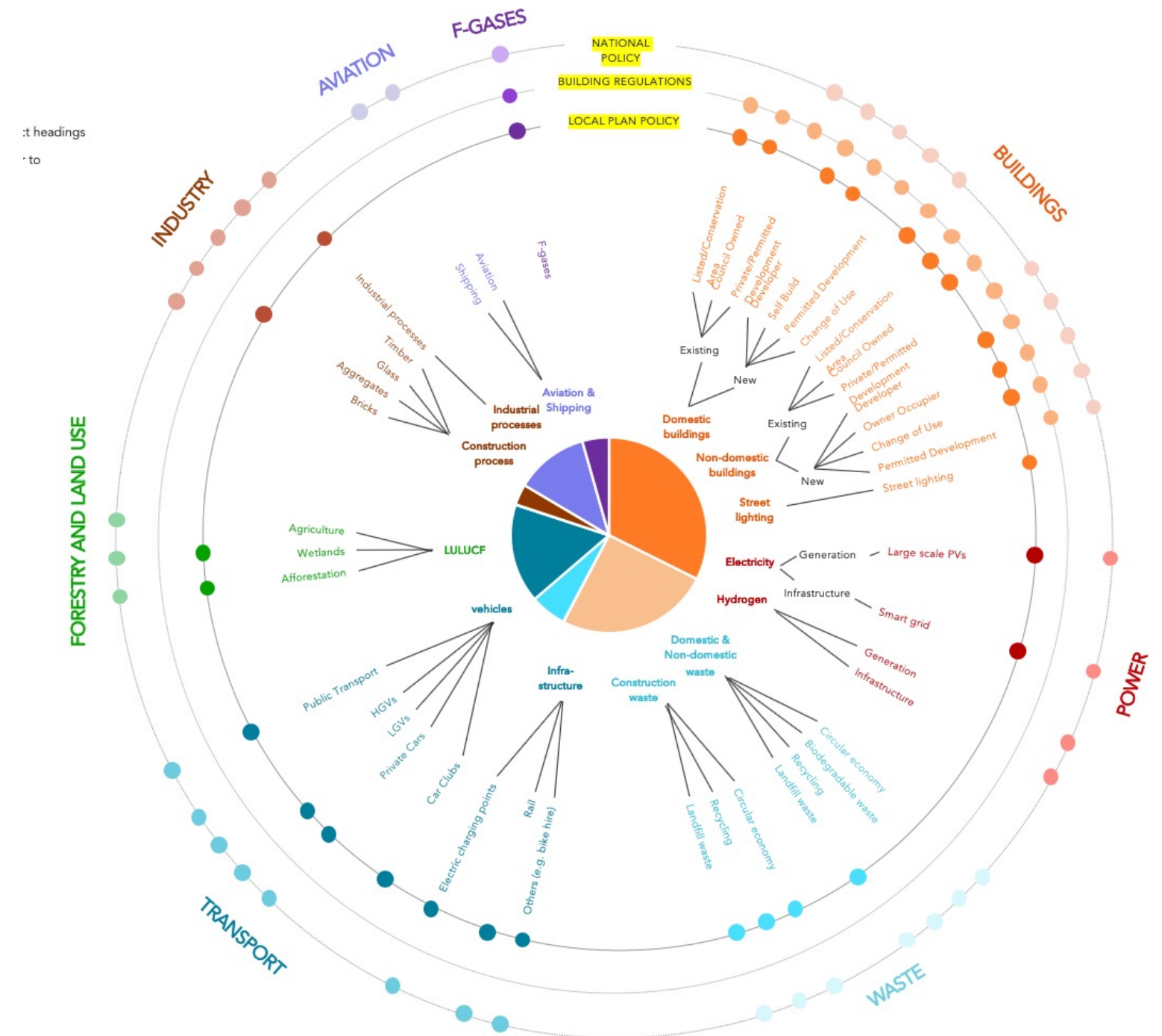


Figure 1: Diagram highlights which areas of each sector can be affected by the local plan, building regulations or national policy. This highlights the scope of the local plan is limited, and that action must also be taken outside it to realise a zero carbon Greater Cambridge.

Introduction

One Planet Living is a framework developed by Bioregional based on ten guiding principles of sustainability. They can be used by individuals, businesses, councils or regions to develop sustainability strategies that are holistic and joined-up. The framework is built on the principle that we only have one planet earth and that we should strive to live happy, healthy, equitable lives within the boundaries of this one planet (currently, as a country, we are consuming in ways that if every global citizen consumed in the same way, we would need four planets to sustain us).

Relating One Planet Living to the local plan

Each suggested policy has been considered against each of the ten guiding principles. Where we feel the policy meets some of the objectives of the principle, this has been highlighted.

Equally, we have carefully reviewed the policies to ensure they are not in conflict with any of the ten One Planet Living principles. Any potential conflicts have been highlighted.



	Health and happiness	Increase, or maintain high levels of physical, social, mental and emotional health
	Equity and local economy	Creating safe, equitable places to live and work which support local prosperity and international fair trade.
	Culture and community	Nurturing local identity and heritage, empowering communities and promoting a culture of sustainable living.
	Land and nature	Protecting and restoring land and marine systems for the benefit of people and wildlife.
	Sustainable water	Using water efficiently, protecting local water resources and reducing flooding and drought.
	Local and sustainable food	Promoting sustainable, humane farming and healthy diets high in local, seasonal organic food and vegetable protein.
	Travel and transport	Reducing the need to travel, encouraging walking, cycling and low-carbon transport
	Materials and products	Using materials from sustainable sources and promoting products that help people reduce consumption.
	Zero waste	Reducing consumption, re-using and recycling to achieve zero waste and zero pollution.
	Zero carbon energy	Making buildings energy efficient and supplying all energy with renewables.

The National Planning Policy Framework

The revised National Planning Policy Framework (NPPF) sets out government's planning policies for England and how these are expected to be applied. The NPPF must be taken into account in preparing the development plan.

The NPPF states that “The purpose of the planning system is to contribute to the achievement of sustainable development” and defines ‘sustainable’ in terms of economic, social and environmental sustainability. The environmental sustainability definition includes “...minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”. This objective is therefore required by the NPPF to be one fundamental driver of the Local Plan.

The NPPF also states “Strategic policies should look ahead over a minimum 15 year period from adoption, to anticipate and respond to long-term requirements and opportunities, such as those arising from major improvements in infrastructure.” Given the findings set out in Task C: Emissions Reduction Targets regarding carbon budgets to meet the Paris Agreement, the policies in the Local Plan are required to facilitate delivery of Greater Cambridge’s carbon reductions to achieve Net Zero in 2050.

Relevant paragraphs from the NPPF to our recommended policies include:

Para 149 - Plans should take a proactive approach to mitigating and adapting to climate change.. in line with the objectives and provisions of the Climate Change Act 2008.

Para 150 – New development be planned for in ways that reduce greenhouse gas emissions.

Para 151 – Plans should help increase the supply of renewable and low carbon energy and heat.

Para 152 – LPAs should support community-led initiatives for renewable and low carbon energy.

Para 153 – Development should minimise energy use through building design.

Para 154 – LPAs should be generally supportive of applications for renewable and low carbon development.

Para 118 – Recognise that some undeveloped land can perform many functions such as for...carbon storage.

Planning Practice Guidance

Alongside the national Planning Policy Framework, the Government have also published numerous Planning Practice Guidance (PPG) on specific key issues.

PPG on Climate Change states “...there is a statutory duty on local planning authorities to include policies in their Local Plan designed to tackle climate change and its impacts.” It specifically refers to Section 19 of the Planning and Compulsory Purchase Act 2004 which requires local planning authorities to include in their Local Plans “policies designed to secure that the development and use of land in the local planning authority’s area contribute to the mitigation of, and adaptation to, climate change”. It also highlights NPPF requirements for local authorities to adopt proactive strategies to mitigate and adapt to climate change in line with the provisions and objectives of the Climate Change Act 2008, and to co-operate to deliver strategic priorities which include climate change.

The PPG then goes on to refer to limitations on the power of Local Authorities to set specific energy performance targets that exceed Code for Sustainable Homes Level 4 which were set in a written ministerial statement in 2015.

There is clearly a conflict between legislation, policy and guidance, particularly the clearly stated government policy around the Paris Agreement and Climate Change Act legislation for a Net Zero Carbon UK by 2050. The Court of Appeal Judgement in February 2020 regarding Heathrow Airport’s third 3rd runway found that “*The issue of climate change is a matter of profound national and international importance of great concern to the public.*” which should be a material consideration when making planning decisions.

Planning expert bodies, the Town and Country Planning Authority (TCPA) and the Royal Town Planning Institute (RTPI) have together produced guidance on the powers and obligations of local planning to mitigate and adapt to climate change. This guide stresses that the Local Plan must mitigate climate change, an obligation in the Planning and Compulsory Purchase Act 2004, and particularly that the Section 19 duty of that Act, is much more powerful in decision making than the status of planning guidance.

In January 2021 the UK government released its response to the Future Homes Standard Consultation on changes to Part L and Part F of the building regulations, confirmed that local planning authorities will retain the power to set an energy standard for homes exceeding that of building regulations – at least ‘in the immediate term’, and therefore will not be repealing the requirements of the Planning and Energy Act 2008.

Proposed policies: Buildings – Net zero carbon new buildings

Recommended net zero carbon buildings policies.

*indicates policies we think are essential in achieving net zero carbon aims.

		Relevant NPPF paragraphs
	Net zero carbon new buildings	
A.1.0*	All buildings should be net zero carbon and comply with policies A.1.1, A.1.2, A.1.3 or, where A.1.3 cannot be achieved, with A.1.4.	
	Net zero carbon new buildings: Space heating	
A.1.1*		
A.1.1.a*	- All dwellings should achieve a space heating demand of 15-20 kWh/m ² /yr.	
A.1.1.b*	- All non-domestic buildings should achieved a space heating demand of 15-20 kWh/m ² /yr.	
A.1.1.c*	- All heating shall be provided through low carbon fuels (not fossil fuels).	
A.1.1.d*	- No new developments shall be connected to the gas grid.	
	Net zero carbon new buildings: Energy Use Intensity (EUI) targets	
	All dwellings should achieve an Energy Use Intensity (EUI) of no more than 35 kWh/m ² /yr (as calculated by TBC)	
	Non-domestic buildings should achieve an Energy Use Intensity (EUI) of no more than the following, by building type:	
A.1.2*	<ul style="list-style-type: none"> • Offices – 55 kWh/m²/yr • Schools – 65 kWh/m²/yr • Multi-residential (e.g. student accommodation) – 35 kWh/m²/yr. • Retail – 55 kWh/m²/yr • Leisure – 100 kWh/m²/yr • Research facility – 150 kWh/m²/yr • HE Teaching facilities – 55 kWh/m²/yr • Light industrial units – 110 kWh/m²/yr • GP surgery – 55 kWh/m²/yr • Hotel – 55 kWh/m²/yr • Student accommodation – 35 kWh/m²/yr 	149, 150, 151, 152, 153
	Net zero carbon new buildings: Renewable energy	
A.1.3*	Renewable energy should be generated on-site for all new developments. The amount of energy generated in a year should match the predicted annual energy demand of the building. I.e. Renewable energy generation (kWh/m ² /yr) = EUI (kWh/m ² /yr).	
	Net zero carbon new buildings: Offsetting	
A.1.4*	In the first instance, Requirement A.1.3 should be met. Where this is not possible, the development can be made compliant through payment into an offset fund to balance the shortfall in renewable energy provision.	
	Net zero carbon new buildings: Assured Performance	
A.1.5	All developments (domestic and non-domestic) must demonstrate use of an assured performance method in order to ensure that the buildings' operational energy performance reflects design intentions.	

Proposed policies: Buildings – Other buildings policies

Recommended buildings policies continued. For discussion and agreement with Greater Cambridge Local Authorities.

		Relevant NPPF paragraphs
	New buildings: Reducing overheating	
A.2.0	All future dwellings to be designed to achieve a Low Overheating risk using the Good Homes Alliance Overheating Risk Assessment Method	
	New buildings: Promoting sustainable materials	
	New buildings - Promoting sustainable materials: embodied carbon	
A.3.1	Embodied carbon of all new buildings to be calculated and minimised in line with latest Net Zero Carbon whole life guidance	
	New buildings - Promoting sustainable materials: disassembly and re-use	
A.3.2	All new buildings to be designed with principles of easy dis-assembly at end-of-life, in order that materials are more easily re-used or recycled, in line with the latest best-practice guidance.	149, 150, 151, 153
A.4.0	New buildings: Efficient use of water	
	Requirement A.4.1 – Water consuming fittings shall be specified with consideration to water efficiency.	
	- (preferred) Residential - Residential developments should minimise the use of mains water in line and achieve mains water consumption of 80 litres or less per head per day.	
A.4.1	(alternative) Residential – Residential developments should minimise the use of mains water in line with the Optional Requirement of the Building Regulations, achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)	
	<i>(this policy is subject to consideration as part of the Integrated Water Management Study evidence base).</i>	

Proposed policies: Renewable energy

Recommended policies for renewable energy. For discussion and agreement with Greater Cambridge Local Authorities.

	Relevant NPPF paragraphs
B.1.0 Maximising renewable energy	
B.1.1 Identify areas suitable for large scale solar photovoltaic installations.	
B.1.2 Identify areas suitable for onshore wind turbine installations.	154
B.1.3 Identify suitable areas for large scale energy storage to meet the needs of a decarbonising grid.	

Proposed policies: Transport

C.1.0 Supporting zero emissions transport	
C.1.1 Electric charging points to be included in each development: 50% active / 50% passive	105, 110
C.1.2 Cycle storage to be included on each development in line with with best practice/guidance	102
C.1.3 Preference will be given to developments which are located and designed so as to reduce the need for car travel, and support journeys made on foot, bicycle or public transport. / PTAL score based.	103
C.1.4 Applications for new developments must demonstrate that the local electrical infrastructure is able to support increased electrical demand from the new development (including car charging). Where this is not the case, new electrical charging infrastructure and capacity must be supported or provided in collaboration with the local District Network Operator.	105, 110
C.1.5 Enhanced pedestrian and cycle routes in strategic plans	104

Proposed policies: Waste

Recommended policies for waste.

	Relevant NPPF paragraphs
D.1.0 Facilitating a zero waste, circular economy	
D.1.1 Large developments above [threshold to be agreed] should show a strategic approach to waste management.	

Proposed policies: Land-use

Recommended policies for Land-Use.

E.1.0 Supporting land based carbon sequestration and biodiversity	
E.1.1 All developments above [threshold to be agreed] hectares will be required to provide a site soil carbon analysis and demonstrate that development with neither cause the land to release a significant amount of stored carbon, nor have significant potential as a carbon sink.	118
E.1.2 Material consideration – All developments above [threshold to be agreed] hectares should achieve Urban Greening Factor in new developments should target > 0.5, or similar.	118
E.1.3 Areas should be identified for the creation of new woodlands, in order to support an increase woodland cover by at least a factor of two by 2041.	118
E.1.4 Material consideration - Development on degraded peatlands will not be supported where those peatlands can be restored. New development on peatland sites will be required to demonstrate that there is no potential for the site to become a carbon sink.	118

Policy Requirements

- All new buildings should be designed and built to be net-zero carbon – all energy consumption must be offset by renewable energy generation. The following requirements must be met:
 - Requirement A.1.1 - Space heating targets of 15-20 kWh/m²/yr are achieved
 - Requirement A.1.2 - Total energy use intensity targets are achieved as per building type (see policy page 14 for details).
 - Requirement A.1.3 - Renewable energy generation on-site balances energy consumption (over the course of a year)
 - Requirement A.1.4 – Where there is insufficient roof space or site constraints that prevent A.1.3 being achieved, payment into an offset fund to balance the shortfall must be made.

Evidence of need

New buildings should be built to be net zero carbon with immediate effect in order to be able to stay within challenging remaining carbon budgets (Task C).

The recommendation is also in line with the recommendations of the Committee on Climate Change, the London Energy Transformation Initiative (LETI), the Royal Institute of British Architects (RIBA).

Feasibility

The technical and cost feasibility of the three pillars of this policy have been assessed and are discussed on the relevant pages for Requirements A.1.1, A.1.2 and A.1.3

Links to other policies

This overarching policy is reliant on all the following Requirements being achieved:

Requirement A.1.1 – Zero carbon new buildings: space heating targets

Requirement A.1.2 – Zero carbon new buildings: energy use intensity (EUI) targets

Requirement A.1.3 – Zero carbon new buildings: renewable energy generation

Requirement A.1.4 – Zero carbon new buildings: offsetting

Implementation and monitoring

Implementation and monitoring are discussed on the relevant Requirements pages.

Local Plan Mechanism	Description
Policy	Yes. See wording to the left and for policies A.1.1, A.1.2 and A.1.3.
Material considerations	None if using policy.
Supplementary planning documents	See policy pages for Requirements A.1.1, A.1.2 and A.1.3.
Design codes	See policy pages for Requirements A.1.1, A.1.2 and A.1.3.
Site allocations	See policy pages for Requirements A.1.1, A.1.2 and A.1.3.
Planning obligations - Section 106	See policy pages for Requirements A.1.1, A.1.2 and A.1.3.
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

Policy Requirements

- Requirement A.1.1a - All dwellings should achieve a space heating demand of 15-20 kWh/m²/yr.
- Requirement A.1.1b - All non-domestic buildings should achieved a space heating demand of 15-20 kWh/m²/yr.
- Requirement A.1.1c - All heating shall be provided through low carbon fuels (not fossil fuels).
- Requirement A.1.1d - No new developments shall be connected to the gas grid.

Evidence of need

New buildings cannot continue to burn fossil fuels for heating if we are to stay within carbon budgets (Task C).

In new buildings energy for space heating will necessarily come from renewably generated electricity (Task C). Off-site and on-site generation capacity limits dictate that energy must be used efficiently (Task C). By limiting space heating demand to this level, houses and some flats are able to generate all their own energy on-site, reducing the need for off-site renewable energy generation, which is naturally constrained by available suitable land.

The recommendation is also in line with the recommendations of the Committee on Climate Change, the London Energy Transformation Initiative (LETI), the Royal Institute of British Architects (RIBA).

Feasibility

This policy has been found to be technically feasible based on modelling analysis and case study work undertaken as part of “Task G – Technical Feasibility”. This target range achieves a balance between best practice energy efficiency and pragmatism.

A move away from gas heating will result in increased electrical demand on the grid. This policy encourages very efficient building fabric, therefore reducing electrical demand.

Links to other policies

This policy is linked to the wider zero carbon buildings policy. It supports the achievement of the Energy Use Intensity (EUI) policy.

Local Plan Mechanism	Description
Policy	Yes. See wording to the left.
Material considerations	None if using policy.
Supplementary planning documents	SPDs should give guidance on how best to achieve space heating targets.
Design codes	Design codes could be developed to support delivery and compliance.
Site allocations	N/A
Planning obligations - Section 106	N/A – we do not expect instances where this target should not be achievable through the design and construction and design of the buildings.
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

One Planet Living



Benefits:

- Homes cost less to heat, increasing affordability of heat, addressing fuel poverty and creating a healthier environment.
- Reduced chance of “cold spots”, eliminating damp and mould and associated health risks.

Considerations

- Increased embodied carbon due to larger volume of materials. However, analysis indicates that the increase in embodied carbon will be more than offset by the carbon saved over the life of the building.

Requirement A.1.2: Net zero carbon new buildings: Energy Use Intensity (EUI) target

Policy Requirement

- Requirement A.1.2a, residential - All dwellings should achieve an Energy Use Intensity (EUI) of no more than 35 kWh/m²/yr.
- Requirement A.1.2b, non-residential - Non-domestic buildings should achieved an Energy Use Intensity (EUI) of no more than the following (where technically feasible) by building type or nearest equivalent:
 - Offices – 55 kWh/m²/yr
 - Schools – 65 kWh/m²/yr
 - Multi-residential (e.g. student accommodation) – 35 kWh/m²/yr.
 - Retail – 55 kWh/m²/yr
 - Leisure – 100 kWh/m²/yr
 - Research facility – 150 kWh/m²/yr
 - HE Teaching facilities – 55 kWh/m²/yr
 - Light industrial units – 110 kWh/m²/yr
 - GP surgery – 55 kWh/m²/yr
 - Hotel – 55 kWh/m²/yr
 - Student accommodation – 35 kWh/m²/yr

Evidence of need

In future new buildings all energy will necessarily come from renewably generated electricity (Task C). Off-site and on-site generation capacity limits dictate that energy must be used efficiently (Task C). By limiting total energy demand to this level, many buildings are able to generate all their own energy on-site, reducing the need for off-site renewable energy generation, which is naturally constrained by available suitable land.

The recommendation is also in line with the London Energy Transformation Initiative (LETI) and Royal Institute of British Architects (RIBA).

Feasibility

This policy has been established to be technically feasible based on modelling analysis and case study work undertaken as part of “Task D – Technical Feasibility”.

Local Plan Mechanism	Description
Policy	Yes. See wording to the left.
Material considerations	None if using policy
Supplementary planning documents	SPDs should give guidance on how best to achieve EUI targets and how they relate to space heating and renewable energy targets. They should also stipulate how developers can show compliance with the policy.
Design codes	Design codes could be developed to support delivery and compliance.
Site allocations	N/A
Planning obligations - Section 106	N/A – we do not expect instances where this target should not be achievable.
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

Links to other policies

This policy is linked to the wider zero carbon buildings policy. It supports the achievement of the renewable energy policy, and is supported by the space heating policy.

One Planet Living



Benefits:

- Homes cost less to run, increasing affordability of heat, addressing fuel poverty and creating a healthier environment.

Requirement

- Requirement A.1.3a – Renewable energy should be generated on-site for all new developments. The amount of energy generated in a year should match or exceed the predicted annual energy demand of the building. I.e. Renewable energy generation (kWh/m²/yr) = EUI (kWh/m²/yr).
- Requirement A.1.3b – Where it is not practicable to generate enough renewable energy on-site, it must be demonstrated that at least 120 kWh/m²_{building footprint} per annum (measured in per square meter of building footprint) is generated.
- Requirement A.1.3c – Where a development of multiple buildings is concerned, policy requirements A.1.3a must be calculated and demonstrated across the whole development (i.e. buildings that are able to exceed A.1.3a requirements must do so in order to compensate for those buildings on the same site which aren't able to meet A.1.3a requirements).
- Where Policies A.1.3 cannot be met, Policy A.1.4 must be met.

Evidence of need

New buildings should be zero carbon in order that Greater Cambridge stays within allowable carbon budgets (Task C) and new growth does not increase rates of carbon emissions. Renewable energy generation must increase in order to support an increasingly electrified economy (Task C).

Feasibility

This policy has been established to be technically feasible on low density buildings based through modelling analysis and case study work undertaken as part of “Task D – Technical Feasibility”. Policy A.1.3c allows the developer some flexibility in achieving the policy on a site wide basis. Policy A.1.4 has been included to ensure all buildings can comply through the provision of renewable energy off-site.

The cost uplift for four different typologies has been modelled. In the specific cases analysed, cost uplifts of between 1-3% were seen, depending the the typologies. See page 44 of Task D – Technical Feasibility for a summary of the cost analysis by Currie & Brown.

Links to other policies

This policy is linked to the wider zero carbon buildings policy. It is essential in achieving “zero carbon” developments. Policy A.1.4 enables compliance with A.1.3 in cases where enough renewable energy cannot be generated onsite.

Local Plan Mechanism	Description
Policy	Yes. See wording to the left.
Material considerations	Policies should state that applications will be assessed for how well they respond to the site and solar resource, and how well building design responds to the need for maximum renewable energy generation.
Supplementary planning documents	SPDs should give guidance on how best to utilise roof space effectively for renewable energy generation. Example strategies, both poor and good, should be given to illustrate how different renewable energy generation intensities are achieved. Expected ranges should be given. SPDs should also show how developers are expected to show compliance.
Design codes	Design codes could be developed to support delivery and compliance.
Site allocations	See policy A.1.4.
Planning obligations - Section 106	Yes. Where the renewable energy provision to meet net zero carbon targets cannot be provided on site.
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

One Planet Living



Benefits:

- On-site renewable energy generation can reduce energy bills for occupants.
- New homes are zero carbon and contribute to overall renewable energy targets.

Potential conflicts:

- Embodied carbon of PV. We have assessed this issue and found the whole life carbon of PV to be negative, i.e. PV saves more carbon than is required to make it. See Task D Appendices.

Policy requirements

- Requirement A.1.4 - In the first instance, Requirement A.1.3 should be met. Where this is not possible, the development can be made compliant through payment into an offset fund to balance the shortfall in renewable energy provision.

Evidence of need

Analysis shows that while some building types can feasibly achieve net zero carbon on-site, for other building types this will not be possible (Task D). It is possible for the deficit of renewable energy to be provided off-site through payment into an offset fund.

Feasibility

Offset funds are operated by many Local Authorities in the UK today (Task F) through collection of Section 106 payments. In the event that the S106 mechanism is replaced, alternative means of funding off-site renewable energy provision will be required to ensure that all new buildings are net zero carbon.

Our recommendation is that the cost of offsetting is equivalent to the cost of installing off-site renewable energy, which should represent cost parity with providing on-site renewable energy generation. Our cost analysis has indicated these costs.

Funds collected should be spent on renewable energy projects only. Where no projects are available and there is the risk that funds will need to be repaid to the developer due to time constraints on spending, it will be acceptable to spend on carbon reduction projects.

Links to other policies

This policy is linked to the wider zero carbon buildings policy. It is essential in achieving “zero carbon” developments in the event that requirement A.1.3 is not achieved.

Implementation and monitoring

Estimates of renewable energy generation should be provided at planning stage. At pre-completion stage calculations will be required from an MCS accredited installer confirming expected output. Payments will be required on the shortfall of renewable energy generation compared with predicted energy consumption of the building.

Local Plan Mechanism	Description
Policy	Yes. See wording to the left.
Material considerations	Policies should state that applications will be assessed for how well they respond to the site and solar resource, and how well building design responds to the need for maximum renewable energy generation.
Supplementary planning documents	SPDs should give guidance on how best to utilise roof space effectively for renewable energy generation. Example strategies, both poor and good, should be given to illustrate how different renewable energy generation intensities are achieved. Expected ranges should be given.
Design codes	Design codes could be developed to support delivery and compliance.
Site allocations	The council should identify areas that could be used for large scale renewable energy provision funded by offset payments arising from cases where implementation of this policy is necessary (i.e. where A.1.3 is not met).
Planning obligations - Section 106	Yes. Where the renewable energy provision to meet net zero carbon targets cannot be provided on site.
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

One Planet Living



Benefits:

- Off-site renewable energy generation can be managed and structured to benefit the local community.

Considerations

- Sites for renewable energy generation should be identified in advance in order that provision of offsite renewable energy can be made in a timely manner, with minimal delay between occupation and completion of install.

Policy requirements

- Requirement A.1.5 – Net zero carbon new buildings: Assured Performance - All developments (domestic and non-domestic) must demonstrate use of an assured performance method in order to ensure that the buildings' operational energy performance reflects design intentions.

Evidence of need

In order for net zero carbon buildings to be delivered, it is vital that a building’s actual energy performance matches the design and policy intent. Unfortunately, the actual energy performance of buildings often fails to meet the design standard. This difference is commonly referred to as ‘the Performance Gap’ and it is important that it is eliminated. The Zero Carbon Hub concluded in their Evidence Review Report in 2014 that a compliance process focused on design rather than as built performance is a key contributor to the Performance gap (Task D).

Pages 46-48 of the report ‘Task D – Technical Feasibility’ discussion options available for demonstrating assured performance.

Feasibility

Not applicable.

Links to other policies

This policy is linked to the wider zero carbon buildings policy.

Implementation and monitoring

The implementation and monitoring of this policy needs further consideration.

Local Plan Mechanism	Description
Policy	Yes. See wording to the left.
Material considerations	If applicable.
Supplementary planning documents	SPDs should give guidance on how best to provide assured performance, and schemes that can be used. E.g. PassivHaus, AECB, The Assured Performance Process (National Energy Foundation) or The Building Energy Performance Toolkit (Bioregional).
Design codes	N/A
Site allocations	N/A
Planning obligations - Section 106	N/A
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

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Benefits:

- Ensures theoretical energy performance is achieved in practice.

Considerations

- Additional work for either the developer or the local authority.

Policy Requirements

- Requirement A.2.1 - All future dwellings to be designed to achieve a Low Overheating risk using the Good Homes Alliance Overheating Risk Assessment Method

Evidence of need

Overheating, particularly in new residential buildings is becoming an increasing problem with climate change, with potentially serious consequences to health and life (Task C). Overheating risks can and should be mitigated through consideration of various factors at early design stages.

The recommendation is also in line with the following independent analysis:

- Zero Carbon Hub, "Impacts of Overheating in New Homes"
(<https://www.zerocarbonhub.org/sites/default/files/resources/reports/ZCH-OverheatingInHomes-TheBigPicture-01.1.pdf>)
- The Committee on Climate Change, "UK Housing: Fit for the Future" report.(<https://www.theccc.org.uk/publication/uk-housing-fit-for-the-future/>)

Feasibility

Specific aspects of technical and cost feasibility have not been assessed within this evidence base. However, with consideration at early design stages, it is expected that cost-neutral design measures can be integrated.

Links to other policies

This policy is indirectly linked to the zero carbon buildings policy, since measures to reduce cooling demand will also reduce overall energy use and result in a lower energy use intensity (EUI) (Requirement A.1.2).

Implementation and monitoring

Results of the overheating risk assessment using the Good Homes Alliance Overheating Tool and guidance methodology should be required at design stage, and pre-completion stage.

Precedent – examples of best practice

The London Plan

The Edinburgh Design Guide

Local Plan Mechanism	Description
Policy	Yes. See wording to the left.
Material considerations	N/A
Supplementary planning documents	SPDs should give guidance on how to mitigate overheating risk and excessive solar gain in both residential and non-residential buildings.
Design codes	Design codes should promote the use of architecturally integrated approaches to overheating.
Site allocations	N/A
Planning obligations - Section 106	N/A
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

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Benefits:

- Dwellings are optimised for health and wellbeing.
- Demand for active cooling is minimised.
- Dwellings are future proofed from needing to install cooling systems which use more energy and cost more to run.

Considerations

- None.

Policy Requirements

- Requirement A.3.1 – Reducing embodied carbon: The embodied carbon of all new developments [threshold to be considered] to submit a statement detailing how embodied carbon has been minimised in line with latest Net Zero Carbon whole life guidance.

Evidence of need

At a global level our remaining carbon budget for staying within 1.5-2C temperature rise is limited (Task C). Different building materials have varying amounts of energy required to make them, from cradle to grave, and depending on the source of that energy different levels of embodied carbon. By encouraging the design and delivery of buildings with lower embodied carbon, we contribute to reducing carbon emissions at a global scale.

Current best practice guidance includes RIBA Embodied and Whole Life Carbon Assessment for Architects, RICS Whole Life Carbon Assessment for the Built Environment and LETI Embodied Carbon Primer. However, industry knowledge and experience around embodied carbon is growing and therefore applicants should also consider emerging and new guidance that is issued throughout the life of the local plan.

If, at the end of a building’s life, it can be disassembled in a way that its constituent parts are easily reusable and retain maximum value, the life of the material can be significantly extended. In some cases indefinitely. This reduces energy demand for the extraction of raw materials and the manufacture of new building components, facilitating the global aspiration of limited carbon emissions to advised carbon budgets (Task C).

Feasibility

Technical and cost feasibility of the policy has not been specifically addressed as part of this evidence base.

Links to other policies

None.

Local Plan Mechanism	Description
Policy	Yes. See wording to the left.
Material considerations	Policies should state that applications will be assessed with consideration to embodied carbon. Policies should state that applications will be assessed with consideration to disassembly and re-use.
Supplementary planning documents	SPDs should give guidance on how to calculate embodied carbon, and strategies for minimising it, including reference to best practice guidance (see left).
Design codes	Disassembly and re-use: Design codes could give guidance on how new buildings can be designed with principles of easy dis-assembly at end-of-life, in order that materials are more easily re-used or recycled.
Site allocations	N/A
Planning obligations - Section 106	N/A
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

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Benefits:

- The local economy and local jobs can benefit from the growth of a circular economy based on re-use and retention of building components.
- Consideration of these policies can reduce transport miles.
- Re-used materials have inherently lower embodied carbon, as some recycled materials also do.
- A market preference for materials with low embodied energy encourages the move to zero carbon manufacturing in the industrial sector.
- Materials re-use and recycling reduces consumption and reliance on virgin materials, and reduces energy demand thereby being consistent with a zero carbon future.

Policy Requirements

- Requirement A.4.1 – Water consuming fittings shall be specified with consideration to water efficiency.
 - (preferred) Residential - Residential developments should minimise the use of mains water in line and achieve mains water consumption of 80 litres or less per head per day.
 - (alternative) Residential – Residential developments should minimise the use of mains water in line with the Optional Requirement of the Building Regulations, achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)

Evidence of need

Of carbon emissions associated with water, 89% are from heating water in the home. Through efficient use of hot water in the home, energy used for heating water can be reduced.

11% of carbon emissions associated with water are related to water treatment and supply. Emissions can be reasonably reduced through a reduction in total water used in buildings. See Task C – Emissions Reductions Targets for more details and evidence sources.

The Greater Cambridge Integrated Water Management Strategy has explored water supply and demand in the area, and provides evidence of the importance of water efficiency from the perspective of sustainable water use. additionally it notes “all stakeholders support aspirations for ambitious water efficiency targets for new developments, seeking to go beyond the Building Regulations optional requirement of 110 l/p/d.

Feasibility

The Greater Cambridge Integrated Water Management Strategy, November 2020 states that the feasibility of this level of water efficiency will be explored further in the Outline and Detailed Water Cycle Strategy reports.

Links to other policies

None.

Local Plan Mechanism	Description
Policy	Yes. See wording to the left.
Material considerations	None if using policy
Supplementary planning documents	SPDs should give guidance on how to reduce water consumption, including use of water recycling systems.
Design codes	N/A
Site allocations	N/A
Planning obligations - Section 106	N/A
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

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Benefits:

- Energy bills can be minimised through efficient use of water.
- Water stress can be mitigated.

Considerations:

- None

Site Allocation Requirements

- Requirement B.1.1 – Identify areas suitable for large scale solar photovoltaic installations.
- Requirement B.1.2 – Identify areas suitable for onshore wind turbine installations.
- Requirement B.1.4 – Identify areas suitable for supporting infrastructure required for a zero carbon electricity grid.

Evidence of need

The National Grid publishes annual projections for anticipated future electricity generation sources and the relative proportion of each in 2050. The scenarios reflect the UK’s legal targets to be zero carbon by 2050. Each year, they project a growing demand for electricity and a significant change in how electricity is generated. Electricity generation will necessarily rely on only low and zero carbon sources of electricity. The national grid has made good progress to date with decarbonising electricity. This progress must continue, and each local authority has its part to play by making sites available for the installation of large scale renewables.

The recommendation is also in line with the following independent analysis:

- National Grid’s Future Energy Scenarios 2020.
- The Committee on Climate Change, “Net Zero” report.

Feasibility

A feasibility study for large scale renewables in the region does not form part of the scope of this evidence base. However, many precedents exist in the region or nearby (Task C).

Links to other policies

A call for sites would assist the council in allocating land for large scale renewables that will be funded by new developments that cannot meet policy requirement A.1.3.

Implementation and monitoring

See relevant requirements pages.

Local Plan Mechanism	Description
Policy	See individual policy pages.
Material considerations	N/A
Supplementary planning documents	See individual policy pages.
Design codes	N/A
Site allocations	Yes. Sites are required for large scale solar photovoltaics and onshore wind turbines.
Planning obligations - Section 106	Some installations may be funded by S106 collections from new developments that have not been able to meet on-site renewable energy targets.
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

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Benefits:

- Large scale renewable energy installations can benefit the local region. They can generate income and funding for certain causes, and provide energy at preferential rates to the community.
- By being proactive about finding sites for large scale renewables local authorities play a vital contribution to grid decarbonisation and retain some control over where they are located.

Considerations

- Level of local support
- Landscape and heritage impacts.

Requirements

- B.1.1 – Identify areas suitable for large scale solar photovoltaic installations.
- B.1.2 – Identify areas suitable for large scale onshore wind installations.

Evidence of need

As per B.1.0.

The recommendation is also in line with the following independent analysis:

- National Grid Future Energy Scenarios
- Committee on Climate Change

Feasibility

Technical or cost feasibility of this particular requirement has not been assessed at the time of writing.

Links to other policies

This policy is linked to the wider zero carbon buildings policy where there is a need for providing additional renewable energy capacity off-site, to compensate for developments that are not able to generate enough renewable energy off-site. By having sites identified and ready, an energy offsetting is not delayed.

Local Plan Mechanism	Description
Policy	See wording on the left.
Material considerations	N/A
Supplementary planning documents	GCC to produce relevant SPDs if appropriate.
Design codes	N/A
Site allocations	Yes. Sites are required for large scale solar photovoltaics and onshore wind turbines.
Planning obligations - Section 106	Some installations may be funded by S106 collections from new developments that have not been able to meet on-site renewable energy targets.
Community Infrastructure Levy (CIL)	N/A
Local Development Orders	N/A

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Benefits:

- Through being proactive about allocating sites, local authorities can have more control over the siting of large scale renewables, and ensure delivery in a timely manner.
- Allocation of sites can be done in conjunction with community energy organisations.