----------By email----------

------ gnlp@norfolk.gov.uk ------

centre for sustainable energy

OFFICE St James Court
St James Parade
Bristol BS1 3LH

PHONE 0117 934 1400

EMAIL info@cse.org.uk
WEB cse.org.uk
TWITTER cse_bristol

CHARITY 298740
COMPANY 2219673
FOUNDED 1979

We help people change the way they think and act on energy

17th March 2021

Re: Representation (incorporating objection) in respect of The Greater Norwich Local Plan Regulation 19 Publication Stage– Pre-submission Draft Plan

We write to comment on the Greater Norwich Local Plan Regulation 19 Publication Stage – Pre-submission Draft Plan, looking primarily at the climate change adaptation and mitigation policies within it.

About CSE

CSE is an independent national charity that was initiated in 1979. Our vision is a world where sustainability is second nature, carbon emissions have been cut to safe levels and fuel poverty has been replaced by energy justice. Our mission is to share our knowledge and practical experience to empower people to change the way they think and act about energy. For more information, please see: www.cse.org.uk

CSE are active in supporting communities to address the climate crisis through neighbourhood[1] and local plans and in the last year have carried out reviews of 15 local plans around the country at the request of the local authority itself or the local community, building up a portfolio of best practice for a subsequent joint publication planned with the Town and Country Planning Association. We have also carried out paid work for local authorities including the creation of supporting evidence and policy drafting in respect of climate and energy policies, for the west of England authorities (Bath, Bristol, South Gloucestershire, North Somerset), the Greater Manchester Combined Authority, Horsham and Stroud District Councils.

[1] Please see our Low Carbon Neighbourhood Planning Programme

I am a chartered town planner with 20 years of experience, predominantly in the public sector.

Our comments are set out by paragraph and policy number. Our focus is to address climate change and fuel poverty alleviation, and therefore we have primarily focused our comments on this agenda. We have included suggestions as to how our objections could be rectified. Example policies that have been used by other local planning authorities are shown in shaded text boxes.

This work was commissioned by Norwich Green Party to support their work, and that of a range of other civil society groups in the Greater Norwich area, to enhance policies for climate change mitigation including sustainable energy generation within the draft Greater Norwich Local Plan.

Summary of issues and commentary

The plan is not carbon audited. It is not in line with the Climate Change Act (2008) as required by national policy and guidance, and is unsound in relation to the duties around the mitigation of climate change, descending from the Climate Change Act and the Planning Acts.

The plan does not contain adequately detailed climate adaptation policies and its mitigation policies could go much further to reduce emissions from buildings. The GNDP councils are significantly behind many leading authorities who have developed binding policies requiring new development to be net zero carbon.

Much of the housing stock is historic, with relatively low levels of energy efficiency. Planning policies should be incorporated to support the appropriate retrofitting of this housing stock whilst minimising harm to historic fabric and significance.

Renewable energy policies are reactive and passive and there is no evidence of a proactive strategy to maximise renewable energy as required in national policy. The approach to onshore wind, to leave the identification of suitable areas to neighbourhood plans, is unlikely to boost the pipeline of projects coming forward, unless communities are given proactive support to identify such areas, and there is no evidence of such support being given.

Transport policies should be more robust in requiring new development to incorporate sustainable transport infrastructure.

Overall, the approach throughout the plan appears to be largely to leave carbon emission reductions to central government. Whilst central government is doing much to reduce carbon emission reductions, the UK is not on track to achieve an 80% reduction in carbon

emissions by 2050, still less the new commitment to bring emissions down by 68% by 2030, and down to net zero by 2050. Local authorities have a vital role to play in adding to what central government is doing.

The IPPC report on global warming of 1.5°C, the Climate Change Act and the legal duties on local planning authorities around climate change mitigation and adaptation mean that climate change needs to take a more central role within Local Plans. Local Plans need to take a more rigorous approach to bringing forward development which is consistent with and moves very quickly towards a zero carbon world, with radical changes set in motion well within the lifetime of your plan. The gradualist approach set out in the plan is not equal to the scale and rate of change required.

Carbon Accounting / Auditing and soundness of plan

We note from the Agenda papers for the 7th December 2020 GNDP Board meeting that the GNDP have decided not to use local carbon targets and monitoring as suggested by some consultees to a previous consultation. Table 2 of these GNDP agenda papers, summarising substantive changes to the plan since its previous iteration, states that there would be:

> *No change to the monitoring for climate change as it is neither possible nor desirable to set up plan specific monitoring. Contributing to lowering emissions to help meet targets nationally reflects the role local plans can play among many other plans and initiatives in tackling climate change.*

We do not agree with this analysis.

The Planning and Compulsory Purchase Act (section 19) and the NPPF (Paragraph 148 and 149) require Local Plans to be carbon audited and to achieve radical carbon emission reductions in line with the Climate Change Act (upgraded to a -100% requirement by 2050). Without carbon auditing, it is not possible to demonstrate that the plan can achieve radical emissions cuts aligned to the Climate Change Act. The UK government has also recently announced a new ambitious target[2] committing to reduce the UK's emissions by at least 68% by 2030, compared to 1990 levels. This will be the UK's Nationally Determined Contribution (NDC) under the Paris Climate Agreement.

This Section 19 statutory duty has more powerful implications for decision-making than the NPPF, which is guidance, not statute. Where Local Plan policy is challenged on the grounds of viability, for example, a local authority must make clear how the plan would comply with the duty if the policy were to be removed. This legal duty on mitigation (carbon reduction) also implies compliance with the provisions of the target regime (the trajectory to net zero) of the Climate Change Act.[i]

[2] www.gov.uk/government/news/uk-sets-ambitious-new-climate-target-ahead-of-un-summit

Paragraphs 1 and 7 of the online Planning Practice Guidance (PPG) resource, published by the Ministry of Housing, Communities and Local Government provides further detailed interpretation of the NPPF requirements. Further clarification is provided in a legal briefing[3] prepared by the Royal Town Planning Association (RTPI), the Town & Country Planning Association (TCPA) and Client Earth, which states that local plans are required to demonstrate how their policies are in line with the legally binding carbon emission reduction targets in the Climate Change Act. Local Plans are to:

- Take into account baseline emissions
- Robustly evaluate future emissions, considering different emission sources, taking into account requirements set in national legislation, and a range of development scenarios
- Adopt proactive strategies to mitigate carbon emissions in line with the Climate Change Act, a 100% reduction by 2050.

The plan does not comply with these requirements, and is not legally sound in terms of its climate change mitigation policies and duties.

The evidence base should provide an overall carbon budget for the district to 2050, consistent with the updated Climate Change Act. It should show baseline emissions and the impact of development and mitigating policies on this emission curve. The policies should aim to secure radical carbon reductions in line with a trajectory for the authority area that is consistent with the UK achieving full carbon neutrality by 2050, and in the short term should test the policy options available to achieve the highest level of ambition possible to meet this goal. To the extent possible, all new development should be zero carbon given that the country's net zero target must be met in the next 30 years.

Where local authorities have followed the process of carbon auditing their plans set out in the NPPF and Planning Practice Guidance, the conclusions are often that it would be very difficult to achieve the required carbon reduction trajectory without new development being developed to a zero-carbon standard, due to the additional emissions growth inherent in new development commitments. Thus, following the process set out in legislation, planning policy and guidance to the letter will support the need for very ambitious planning policies around building performance. Such an approach also provides evidence to support proactive and supportive renewable energy policies as essential.

Evidence base - carbon baselines and budgets

The Tyndall Centre, a leading Climate Science research institute with offices in Norwich (UEA) and Cardiff, Manchester, Newcastle and Fudan University in Shanghai, provides a free tool[4] to provide a science-based carbon budget by local authority area, based on the Paris Climate Accord commitments.

[3]RTPI, TCPA; and Client Earth "Planning for Climate Change – Law and Policy Briefing" https://www.tcpa.org.uk/Handlers/Download.ashx?IDMF=4927d472-a9f0-4281-a6af-463ddc642201

[4] https://carbonbudget.manchester.ac.uk/reports/

Some authorities have used the SCATTER tool[5] (Setting City Area Targets and Trajectories for Emission Reduction) which support local authorities and city regions to standardise their greenhouse gas reporting and set targets in line with the Paris Climate Agreement.

Approach to reducing carbon emissions

Whilst the plan does discusses tackling and adapting to climate change it should be strengthened significantly to reflect recent developments. In summer 2019 the Climate Change Act was upgraded to commit the UK to net zero emissions by 2050, but the plan makes only cursory reference to this. The 2018 IPCC (Intergovernmental Panel on Climate Change) report[6] released in October 2018 revealed the true dangers of a global temperature rise of 2°C, which are far worse than we thought. This report states:

> ***Beyond a 1.5°C rise the risks of drought, floods, extreme heat and poverty for hundreds of millions of people are predicted to significantly increase.***

The net zero commitment demands wholescale changes in how we plan our society, as summarised in the IPPC report:

> ***"The challenge of avoiding catastrophic climate breakdown requires rapid, far-reaching and unprecedented changes in all aspects of society"***

The IPPC report underlines the need for more radical and urgent carbon reductions and advises that to limit us to a 1.5°C global temperature increase, greenhouse gas emissions have to be reduced by 45% from 2010 levels by 2030, and we need to reach carbon neutrality (reduce emissions by 100%) by 2050.

The IPPC report comments:

> ***"The challenge of avoiding catastrophic climate breakdown requires rapid, far-reaching and unprecedented changes in all aspects of society"***

The approach in the local plan appears to be largely to leave carbon emission reductions to central government. Whilst central government is doing much to reduce carbon emission reductions, the UK is not on track to achieve an 80% reduction in carbon emissions by 2050, still less the new commitment to bring emissions down to net zero by 2050. As stressed in the committee on climate change report[7] "Local Authorities and the Sixth Carbon Budget", local authorities have a vital role to play in adding to what central government is doing, and local authority action plans represent the 'locally determined contributions' to the national Net Zero target.

---

[5] https://scattercities.com/

[6] Global warming of 1.5°C – Summary for Policy Makers – Intergovernmental Panel on Climate change www.ipcc.ch/site/assets/uploads/sites/2/2018/07/SR15_SPM_version_stand_alone_LR.pdf

[7] Local Authorities and the Sixth Carbon Budget – Committee on Climate Change (2020) **www.theccc.org.uk/publication/local-authorities-and-the-sixth-carbon-budget/**

The IPPC report, the Climate Change Act and the legal duties on local planning authorities around climate change mitigation and adaptation mean that climate change needs to take a more central role within Local Plans, and Local Plans need to take a more rigorous approach to bringing forward development which is consistent with and moves very quickly towards a zero carbon world, with radical changes set in motion well within the lifetime of your plan. The gradualist approach set out in the plan is not equal to the scale and rate of change required. The challenge to entirely de-carbonise our society also demands that all other policies be tested against this objective.

Section 3 - Vision and Objectives

The Vision for Greater Norwich in 2038 and the Objectives within the plan should be updated to incorporate reference to the 2050 commitment to become net zero carbon by 2050, and in particular to the interim 2030 carbon reduction commitment (-68%). It should also acknowledge the implications of these commitments for planning within your district, which are extremely significant. It should also summarise the duties around carbon auditing and budgeting early and prominently within the plan, to set the context for the policies which follow. The commitment to reduce emissions to nothing within 30 years needs to influence all policies, and all policies should be assessed for compliance against this overarching objective.

The Greater Manchester Spatial Framework approaches this well, page 76 – 78 and Policy GM-S 2, though Greater Manchester are committed to carbon neutrality ahead of the 2050 deadline, in line with their Climate Emergency Resolution. This is based on analysis carried out by the Tyndall Centre[8] which considers baseline emissions and sets a carbon budget in line with the Paris Climate Accord, and a 2038 target for carbon neutrality.

We make the following comments and suggestions about the following objectives on page 39 of the draft plan:

The economy objective should be more explicit about the objective carbon emission reductions which are required by national legislation.

Economy

To support and promote clean growth and progress towards a post-carbon economy through **reductions in carbon emissions in line with the climate change act, and** the expansion of internationally important knowledge-based industries in the Cambridge Norwich Tech Corridor as part of an entrepreneurial, enterprising, creative and broad-based economy with high productivity and a skilled workforce.

Communities

[8] www.research.manchester.ac.uk/portal/files/83000155/Tyndall_Quantifying_Paris_for_Manchester_Report_FINAL_PUBLISHED_rev1.pdf

To grow vibrant, healthy, **climate-resilient, net zero carbon** communities giving people a high quality of life in well-designed developments with good access to jobs, services and facilities **by sustainable modes of transport**, helping to close the gap between life chances in disadvantaged and other communities.

We recommend that your objective in relation to infrastructure provision is strengthened to reflect the scale of infrastructure provision required to deliver a zero carbon future, and the scale of the transport modal shift required for a net zero future, reflected in the governments decarbonising transport strategy[9] and the Prime Minister's 10 point plan for a green industrial revolution[10]:

Infrastructure

To promote the timely delivery of infrastructure to support existing communities, growth and **a significant** modal shift in transport ~~use~~ **to sustainable and active transport modes consistent with a climate adapted, zero carbon future**; and to improve connectivity to allow access to economic and social opportunities.

Policy 1 – Sustainable Growth Strategy

We are concerned about the scale of development proposed for village clusters and the additional 5000 homes, on top of existing commitments.

Paragraph 384 on village cluster sites states that "the village clusters cover the remaining areas of Broadland outside the Norwich fringe, main towns and key service centres", implying that the village clusters are not well serviced by shops, services and public transport, raising concerns that these housing developments will be highly car dependent. This aspect of the policy doesn't seem to be compatible with your objectives to significantly reduce carbon emissions and give communities good access to jobs, services and facilities.

The plan does not provide any specific measures to prevent these housing developments from being car dependent in use.

[9] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/932122/decarbonising-transport-setting-the-challenge.pdf

[10] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf

Policy 2 – sustainable Communities

POLICY 2 – SUSTAINABLE COMMUNITIES

Development must be high quality, contributing to delivering inclusive growth in mixed, resilient and sustainable communities, to enhancing the environment, and to mitigating and adapting to climate change, assisting in meeting national greenhouse gas emissions targets[76]. To achieve this, development proposals are required, as appropriate, to:

1. **Ensure safe, convenient and sustainable access to on site and local services and facilities including schools, health care, shops, recreation/ leisure/community/faith facilities and libraries;**
2. **Make provision for delivery of new and changing technologies (including broadband, fibre optic networks, telecommunications and electric vehicles);**
3. **Contribute to multi-functional green infrastructure links, including through landscaping, to make best use of site characteristics and integrate into the surroundings, having regard to relevant green infrastructure strategies and delivery plans;**
4. **Make efficient use of land with densities dependent on site characteristics, with higher densities and car free housing in the most sustainably accessible locations in Norwich. Indicative minimum net densities are 25 dwellings per hectare across the plan area and 40 in Norwich[77].**
5. **Respect, protect and enhance local character (including landscape, townscape, and the historic environment), taking account of landscape or historic character assessments or equivalent documents, and maintain strategic gaps and landscape settings, including river valleys, undeveloped approaches and the character and setting of the Broads;**
6. **Provide safe and suitable access for all users, manage travel demand and promote public transport and active travel within a clearly legible public realm including public art where appropriate, with layouts that encourage walking and cycling, whilst also integrating parking and providing a high standard of amenity;**
7. **Create inclusive, resilient and safe communities in which people of all ages have good access to services and local job opportunities, can interact socially, be independent and have the opportunity for healthy and active lifestyles;**
8. **Be resource efficient, support sustainable waste management, reduce overheating, protect air quality, minimise pollution and take account of ground conditions;**
9. **Support efficient water management. Flood risk should be minimised, including avoiding developing in areas at significant risk of flooding, reducing the causes and impacts of flooding, supporting a catchment approach to water management and using sustainable drainage. Development must protect water quality, both surface and groundwater, and be water efficient. To achieve the latter:**
    - **Housing development will meet the Building Regulations part G (amended 2016) water efficiency higher optional standard;**
    - **Non-housing development will meet the BREEAM "Very Good" water efficiency standard, or any equivalent successor;**

If the potential to set more demanding standards locally is established by the Government, the highest potential standard will be applied in Greater Norwich.

Policy 2 tries to fit too much into a single policy, with the result that detail to enforce the policy is lacking. There may be benefit from retaining as a high-level overarching policy version of policy 2 (like policy CCS1 below from Bristol City Council) and then developing more detailed policies addressing specific aspects of climate mitigation or adaptation, for instance zero carbon policies where necessary.

Draft Policy CCS1: Climate change, sustainable design and construction Bristol Local Plan Review - Draft Policies and Development Allocations
https://www.bristol.gov.uk/documents/20182/34536/Local+Plan+Review+-+Draft+Policies+and+Development+Allocations+-+Web.pdf/2077eef6-c9ae-3582-e921-b5d846762645

Development should contribute to both mitigating and adapting to climate change, and to meeting targets to reduce carbon dioxide emissions. Development should mitigate climate change, working towards zero carbon, through measures including:

- High standards of energy efficiency including optimal levels of thermal insulation, passive ventilation and cooling and passive solar design (Draft Policy CCS2 'Towards zero carbon development');
- The use of renewable and low-carbon energy supply systems and connection to low carbon heat networks (Draft Policy CCS2 'Towards zero carbon development');
- The efficient use of natural resources in new buildings (Draft Policy CCS4 'Resource efficient and low impact construction');
- Forms of development which encourage walking, cycling and the use of public transport instead of journeys by private car.

The design should be sufficiently flexible and adaptable to enable changes of use or layout, and facilitate future refurbishment. Development ~~should~~ must adapt to climate change through measures including:

- Site-level adaptations, relating to site layout, orientation, massing and the use of green infrastructure (Draft Policy CCS3 'Adaptation to a changing climate');
- Building-level adaptations to provide for the comfort of occupiers over the lifetime of the development, taking account of anticipated changes in the local climate (Draft Policy CCS3 'Adaptation to a changing climate').

These measures should be integrated into the design of new development. New development should demonstrate through Sustainability Statements how it would contribute to mitigating climate change, adapt to its impacts and contribute to meeting targets to reduce carbon dioxide emissions by means of the above measures.

Sustainable Design Standards
For major non-residential development, a BREEAM assessment will be required. A BREEAM "Excellent" rating will be expected.

For residential or mixed use development consisting of more than 200 residential units, a BREEAM for Communities assessment will be required. A BREEAM Communities "Excellent" rating will be sought.
There are a number of other sustainable design standards and methods that are available covering a range of development types, including new homes. Where relevant, the voluntary use of methods such as PassivHaus certification to support compliance with Draft Policies CCS1-CCS4 will be encouraged.

Within the context of this overarching comment, we have the following detailed comments:

Sustainable Design and Construction / Carbon emission reduction in new development

> 10. Minimise energy demand through the design and orientation of development and maximise the use of sustainable energy, local energy networks and battery storage to assist growth delivery. This will include:
>   - All new development will provide a 20% reduction against Part L of the 2013 Building Regulations (amended 2016);
>   - Appropriate non-housing development of 500 square metres or above will meet the BREEAM "Very Good" energy efficiency standard, or any equivalent successor;
>
>   except where a lower provision is justified because the requirement would make the development unviable.

Whilst paragraph 10 of policy 2 above is a good start, it could go much further to reduce carbon emissions from new development. We acknowledge that the planning White Paper proposes and Future Homes Standard proposes interim standards to be introduced in 2020 and stronger regulations which would come into force in 2025, requiring an 80% improvement over building regulations. We're concerned that these proposed regulations will be weaker than policies already in place in some local authorities, would permit development to be built with lower fabric standards than the existing 2013 building regulations. Additionally the 2025 standards will not result in new development being fully de-carbonised, assuming instead that the remaining carbon emission reduction will be delivered by the de-carbonisation of grid electricity. There is no guarantee that electricity from the national grid will be fully decarbonised, or the period over which this will happen.

We would also point out that the future Homes Consultation[11] proposes requiring interim carbon emission reductions of 31% beyond existing building regulations from 2020. This should be the baseline for policy formation.

We would encourage you to go further therefore and toughen your policy stance to require new development to be net zero carbon. The most ambitious and all-encompassing zero carbon policy of which we are aware is that from the draft London Plan, which has now gone through examination without major amendments.

[11] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/852605/Future_Homes_Standard_2019_Consultation.pdf

Example policy – Draft London Plan Policy SI2: Minimising greenhouse gas emissions
https://www.london.gov.uk/sites/default/files/draft_london_plan_-showing_minor_suggested_changes_july_2018.pdf

'A Major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation, and minimising both annual and peak energy demand in accordance with the following energy hierarchy:
1) Be lean: use less energy and manage demand during operation.
2) Be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly.
3) Be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site.
3A) be seen: monitor, verify and report on energy performance.

B Major development proposals should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy.

C A minimum on-site reduction of at least 35 per cent beyond Building Regulations is required for major residential development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:

1) through a cash in lieu contribution to the relevant borough's carbon offset fund, or
2) off-site provided that an alternative proposal is identified and delivery is certain.

D Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver carbon reductions. The operation of offset funds should be monitored and reported on annually.

DA Major development proposals should calculate and minimise carbon emissions from any other part of the development, including plant or equipment, that are not covered by Building Regulations, i.e. unregulated emissions.

DB Development proposals referable to the Mayor should calculate whole lifecycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.

Different policy configurations of energy efficiency standards, renewables and carbon offsetting have different implications for development viability, and local authorities will often commission a study to consider the right approach for the building typologies found

within their area and land values, such as this example from Currie Brown (other companies are available) commissioned for the West of England Authorities[12].

The conclusions of the Currie and Brown report will feed into policy choice and also plan-wide viability testing. If as we hope, you decide to pursue zero carbon policies within a revised plan submitted to the SoS, you may need to commission this type of work to support your policies. Further, the Green Building Council policy playbook[13] references viability studies commissioned by different local planning authorities which might help provide part of your evidence base.

We strongly welcome the reference to maximising the use of "local energy networks and battery storage" however the policy is not clear how this statement relates to new developments, other than standalone projects. The wording should be clarified to be clearer whether and how new developments (for example significant housing developments) are expected to incorporate these technologies. The inclusion of battery storage within significant new housing and mixed use developments would be very helpful in alleviating constraints in the electricity distribution grid and enabling greater utilisation of renewably generated electricity.

Climate Change Adaptation

Policy 2 – Sustainable Communities

Whilst policy 2 contains elements of climate adaptation (clauses 1, 8 and 9 below), no-where in the plan are these elements brought together into a coherent climate adaptation policy, and the policy is not detailed enough or assertive enough to allow development management officers to negotiate for meaningful responses or refuse planning applications which are not climate adapted. For example, the policy states that development proposals are expected to reduce overheating, but no further detail is set out detailing how practically developers are expected to address this through site or building design. It would therefore be extremely difficult for development management officers to refuse planning applications on this basis.

The NPPF (paragraph 149) advises "*plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures".* Note that whilst the building regulations are expected to be updated to address overheating, this has yet to happen.

[12] www.bathnes.gov.uk/sites/default/files/sitedocuments/Planning-and-Building-Control/Planning-Policy/LP20162036/cost_of_carbon_reduction_in_new_buildings_report_publication_version.pdf.

[13] www.ukgbc.org/wp-content/uploads/2018/09/The-Policy-Playbook-v.-June-2019-final.pdf

POLICY 2 – SUSTAINABLE COMMUNITIES

Development must be high quality, contributing to delivering inclusive growth in mixed, resilient and sustainable communities, to enhancing the environment, and to mitigating and adapting to climate change, assisting in meeting national greenhouse gas emissions targets. To achieve this, development proposals are required, as appropriate, to:

1. Contribute to multi-functional green infrastructure links, including through landscaping, to make best use of site characteristics and integrate into the surroundings, having regard to relevant green infrastructure strategies and delivery plans…

8. Be resource efficient, support sustainable waste management, reduce overheating, protect air quality, minimise pollution and take account of ground conditions;

9. Support efficient water management. Flood risk should be minimised, including avoiding developing in areas at significant risk of flooding, reducing the causes and impacts of flooding, supporting a catchment approach to water management and using sustainable drainage. Development must protect water quality, both surface and groundwater, and be water efficient. To achieve the latter:

    - Housing development will meet the Building Regulations part G (amended 2016) water efficiency higher optional standard;
    - Non-housing development will meet the BREEAM "Very Good" water efficiency standard, or any equivalent successor;

    If the potential to set more demanding standards locally is established by the Government, the highest potential standard will be applied in Greater Norwich.

The policy below from Bristol City Council is excellent, setting adaptation measures at site and building level, and in particular addressing overheating, and refers to the use of green infrastructure to address overheating.

Draft Policy CCS3: Adaptation to a changing climate - Bristol Local Plan Review - Draft Policies and Development Allocations
https://www.bristol.gov.uk/documents/20182/34536/Local+Plan+Review+-+Draft+Policies+and+Development+Allocations+-+Web.pdf/2077eef6-c9ae-3582-e921-b5d846762645
Development will be expected to include site and building-level measures to be resilient to future climate change impacts and provide for the comfort, health, and wellbeing of current and future occupiers and the surrounding environment over the lifetime of the development. These measures should be integral to the layout and design of new development and should take the vulnerability of the building occupants into account.

Site-level adaptations
Development should be designed, through its layout, form and massing and through the use of green/blue infrastructure, to:

- Minimise the overheating of buildings;
- Provide comfortable external spaces in hot weather; and
- Conserve water supplies and minimise the risk and impact of flooding.

The use of green/blue infrastructure should provide multifunctional benefits in relation to climate change adaptation. Where appropriate to its context, this should include the use of living roofs with a sufficient substrate depth to maximise cooling benefits.

Building-level adaptations
Building designs and building-integrated measures should:

- Mitigate the risk of overheating, ensuring that cooling needs are met sustainably (Draft Policy CCS2 'Towards zero carbon development');
- Conserve water supplies;
- and Avoid responses to climate impacts which lead to increases in energy use and carbon dioxide emissions.

Adaptation strategy
Proposals for development should demonstrate through an adaptation strategy how these issues will be addressed. This should include technical modelling and assessment of the risk of overheating in current and future climate change scenarios.

In considering the likely impact of climate change over the lifetime of the development (particularly in relation to overheating), reference should be made to the most recent climate change projections.

Overheating

This alternative approach from the London Plan specifically addresses overheating.

Policy SI4 Managing heat risk – Draft London Plan
https://www.london.gov.uk/sites/default/files/draft_london_plan_-showing_minor_suggested_changes_july_2018.pdf

A. Development proposals should minimise the adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure.
B. Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:

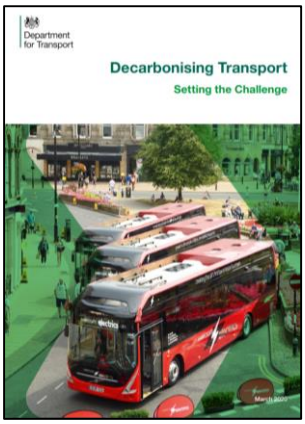
    1) reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of infrastructure
    2) minimise internal heat generation through energy efficient design
    3) manage the heat within the building through exposed internal thermal mass and high ceilings
    4) provide passive ventilation
    5) provide mechanical ventilation
    6) provide active cooling systems.

The plan then refers to Pass / fail guidance from the Chartered Institution of Building Services Engineers (CIBSE) on assessing and mitigating overheating risk in new developments: TM 59 for use with domestic developments and TM 52 for non-domestic developments. In addition, TM 49 guidance and datasets should also be used to ensure that all new development is designed for the climate it will experience over its design life.

Sustainable Transport
The supporting text of the plan states at paragraph 224:

"To support emissions reductions, it is also important to promote modal shift to active travel and clean public transport, and to support electric vehicle use in a time of rapid technological change."

This is good, but the text and policy aspirations could go much further, encouraged by a number of excellent policy publications from central government this year which should be referenced in the supporting text. In particular, it could be explicit on the scale of modal shift needed and reduction in car miles needed to get to net zero emissions.



Decarbonising Transport[14] sets out the government's proposals for de-carbonising travel, including absolute reductions in car trips, making public transport and active travel the first choice for daily activities and providing EV charging infrastructure.

Figure 1 - Decarbonising Transport consultation – Department for transport

CSE and other partners looked at the scale of modal shift and vehicle mileage reductions needed to achieve net zero emissions in Bristol, for Bristol City Council's one City Climate Strategy, the council's action plan to getting to net zero by 2030.

Our report, Bristol net zero by 2030[15] found that in order to achieve this objective, *"a nearly 50% reduction in car miles and 40% reduction in van and lorry miles travelled in the city is necessary, returning them to levels seen in the mid 1980s. This would be driven by a*

[14] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/932122/decarbonising-transport-setting-the-challenge.pdf

[15] Bristol net zero by 2030: The evidence base - www.cse.org.uk/downloads/reports-and-publications/policy/insulation-and-heating/energy-justice/renewables/behaviour-change/building-performance/Bristol_net_zero_by_2030_study_CSE_26_Feb_2020.pdf

significant effort to shift travel to public transport, cycling, walking (to a modal split more like Amsterdam) and to reduce demand for vehicle use through behaviour and system change, including freight consolidation and use of cargo and e-bikes, car-clubs and 'mobility as a service' initiatives."

This is the scale of change needed in how we travel in order to deliver net zero emissions, whether this is to be achieved by 2030 or 2050.

The following two Department of Transport publications detail how walking and cycling will contribute.

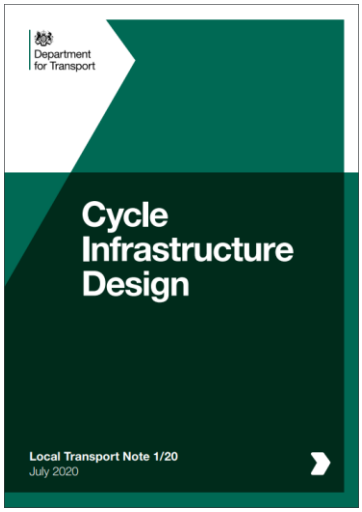


Figure 2 –- Local Transport Note 1 / 20 - Cycle Infrastructure Design

Figure 3 – Gear Change – A Bold Vision for Cycling and Walking

Gear Change[16] proposes *"A travel revolution in our streets, towns and communities will have made cycling a mass form of transit. Cycling and walking will be the natural first choice for many journeys with half of all journeys in towns and cities being cycled or walked by 2030."*

[16] Gear Change A bold vision for cycling and walking – Department for Transport https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/904146/gear-change-a-bold-vision-for-cycling-and-walking.pdf

Gear Change sets out high level principles for cycle infrastructure design. Local Transport Note 1 / 20 - Cycle Infrastructure design[17] details how these principles should influence cycle infrastructure design.

These documents aren't planning policy and have not filtered through into the planning system, but are a clear indication of the direction of government policy, and support a more ambitious approach within your plan.

In order to deliver on these objectives the planning system should:

[17] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906344/cycle-infrastructure-design-ltn-1-20.pdfhttps://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/9

- be pursuing significant reductions in vehicle miles and reallocating road space to cycling, walking and public transport
- allocate land and require new development to be designed around the principle of presumed access on foot, by bike and by public transport.
- achieve a parity of provision for vehicular + sustainable transport infrastructure. Gear Change states: "Cycling is or will become mass transit and must be treated as such."

We suggest below revised wording which would align the first part of policy 4 closer to these government policy documents. Policy 2 should also be aligned with these policy documents.

Policy 4 – Strategic Infrastructure Transport

Transport

Transport improvements will support and embrace new technologies and develop the role of Norwich as the regional capital, support strategic growth in the Cambridge Norwich Tech Corridor, improve access to market towns and rural areas and promote sustainable and active transport.

Transport infrastructure will be brought forward to support the development aims of this plan. A considerable shift towards non-car modes will be promoted in the Norwich urban area over the plan period **with half of all journeys in towns and cities being cycled or walked by 2036.**

To achieve this major development shall incorporate or fund the provision of high quality segregated cycle routes and direct and safe pedestrian infrastructure commensurate with the scale of development and trip generation and designed in accordance with Local Transport Note 1 / 20 - Cycle Infrastructure Design. **Cycling is or will become mass transit and must be treated as such.** High density growth will be focussed in locations with good access to improved sustainable transport networks and interchanges in Norwich, creating a virtuous cycle where clean transport is prioritised, less use is made of cars and space is used more efficiently and attractively. **Development is to be designed around the principle of presumed access on foot, by bike and by public transport..**

Policy 2 - Electric Vehicle Charging Infrastructure

Policy 2 (clause 2) mentions Electric Vehicle charging but only states that development proposals should make provision for the delivery of new and changing technologies (including electric vehicles).

The Government has brought forward its plan to outlaw the sale of new petrol and diesel cars and vans to 2030. Your Local Plan needs to ensure that new development comes forward with charging infrastructure to make this achievable, therefore more robust and detailed policy should be created detailing what standard of provision is needed. This draft policy from Bath and North East Somerset contains more detail which might be adapted to your situation.

DM16 Emerging policy approach for electric vehicles infrastructure – Bath and North East Somerset Local Plan 2018

Overarching principle
Require all development proposals to integrate the provision of infrastructure into the design and layout of the development to enable the charging of electric or other Ultra-Low Emission vehicles

Residential Development:

- All individual dwellings with one or more dedicated parking spaces or garage to include infrastructure for charging electric vehicles.
- Where off street parking is not provided within a development proposal, the design and layout of the development should incorporate infrastructure to enable the on street charging of electric or other vehicles.
- For residential development with communal off street parking provision, at least 20 % of spaces to have active charging facilities, and passive provision for all remaining parking spaces with the layout of the car park ensuring that all spaces can be easily activated with minimal disruption as demand increases.

Active/passive charging
Preferred approach: Require 100% active charging facilities for all residential development (subject to further work).

Alternative approach**:**
At least 20 % of dwellings to have active charging facilities, and the remaining 80% of dwellings to have passive provision.

Rapid/fast charging points
High density and/or large scale residential/mixed use developments to provide at least one rapid charging point clustered with a fast charging point (number per car to be determined) and the provision of an electric vehicle car club, and provide dedicated spaces for the car club with active charging facilities.

Non-residential development:

- In all non-residential developments providing 1 or more car parking bays, ducting to be installed to enable provision of charging facilities for electric vehicles.
- Where 10 or more car parking bays are provided, at least 20% of those bays to provide active charging facilities for electric vehicles, and passive provision for all remaining bays.
- In non-residential development where provision is made for taxis stopping, the taxi spaces are required to include active charging facilities.

Renewable Heating

We see no policy requiring the installation of renewable or low carbon heating systems.

The NPPF states (paragraph 151) to help increase the use and supply of renewable and low carbon energy and heat plans should identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems. The challenge of decarbonising heat generation is as significant as decarbonising our electricity supply.

The Future Homes standard proposed that no new homes be connected to the gas grid from 2025, however this is still 5 years away. The task of retrofitting our homes to achieve net zero emissions by 2050 is likely to see public funding directed at replacing existing gas central heating with renewable heating alternatives in the next 10 to 15 years. Consequently the incorporation of individual gas central heating systems within new development represents very poor value for money for homeowners and/ or the taxpayer, in that they are likely to need to be replaced with renewable heating systems before the end of their design life at public cost.

We therefore encourage the development of renewable heating systems, only allowing individual gas boilers to be fitted in exceptional circumstances where it has been demonstrated that there is no other option, for instance on minor schemes in areas where district heating networks are absent and heat pumps and other renewable or low carbon heating systems have been demonstrated to be technically unfeasible.

Policy CP4 from Bath and North East Somerset below is very strong, in that it requires developers to integrate energy planning into master-planning processes, so that the use mix and density of development required to make district heating work influences the form of development proposals coming through at an early stage. As discussed above, the potential for district heating should also be considered when initially allocating sites for housing and we are developing a bid for a tool which might help with this.

POLICY CP4: District Heating -
https://www.bathnes.gov.uk/sites/default/files/sitedocuments/Planning-and-Building-Control/Planning-Policy/Placemaking-Plan/cs_pmp_vol_1_district-wide.pdf
The use of combined heat and power (CHP), and/or combined cooling, heat and power (CCHP) and district heating will be encouraged.

Within the three "district heating priority areas", indicated on Diagram 19 (Bath Central, Bath Riverside and Keynsham High Street), and shown in detail in the associated evidence base, development will be expected to incorporate infrastructure for district heating, and will be expected to connect to existing systems where and when this is available, unless demonstrated that this would render development unviable.

Within the remaining 12 "district heating opportunity areas" shown on Diagram 19…. development will be encouraged to incorporate infrastructure for district heating, and will be expected to connect to any existing suitable systems (including systems that will be in place at the time of construction), unless it is demonstrated that this would render development unviable.

Masterplanning and major development in the District should demonstrate a thermal masterplanning approach considering efficiency/opportunity issues such as mix of uses, anchor loads, density and heat load profiles to maximise opportunities for the use of district heating.

Where a district heating scheme is proposed as part of a major development the Council will expect the scheme to demonstrate that the proposed heating and cooling systems (CHP/CCHP) have been selected considering the heat hierarchy in line with the following order of preference:

1. Connection with existing CHP/CCHP distribution networks
2. Site wide CHP/CCHP fed by renewables
3. Communal CHP/CCHP fuelled by renewable energy sources
4. Gas fired CHP/CCHP

Delivery

1. This policy will provide a basis for Development Management to support the principle of CHP, CCHP and District Heating included in planning applications
2. Planning Applications within the DHPAs will need to demonstrate how they are incorporating district heating and to justify any alternative approach.
3. Planning Obligations or a Community Infrastructure Levy (CIL) may be able to be used to contribute towards the delivery of the delivery of strategic district heating infrastructure.
4. Further opportunities for interventions that will increase commercial viability of district heating are identified in the B&NES District Heating Feasibility Study and will include actions that the Council and the Private Sector can initiate.

As an alternative, this example from the London Plan is very comprehensive

Example policy - London Plan Policy SI3 – Energy Infrastructure
www.london.gov.uk/sites/default/files/draft_london_plan_-showing_minor_suggested_changes_july_2018.pdf

…..

B. Energy masterplans should be developed for large-scale development locations which establish the most effective energy supply options. Energy masterplans should identify:

1. major heat loads (including anchor heat loads, with particular reference to sites such as universities, hospitals and social housing)
2. heat loads from existing buildings that can be connected to future phases of a heat network
3. major heat supply plant including opportunities to utilise heat from energy from waste plants
5. secondary heat sources
6. opportunities for low temperature heat networks
7. possible land for energy centres and/or energy storage
8. possible heating and cooling network routes
9. opportunities for futureproofing utility infrastructure networks to minimise the impact from road works
10. infrastructure and land requirements for electricity and gas supplies
11. implementation options for delivering feasible projects, considering issues of procurement, funding and risk, and the role of the public sector.

11A opportunities to maximise renewable electricity generation and incorporate demand-side response measures.

C. Development Plans should:

1) identify the need for, and suitable sites for, any necessary energy infrastructure requirements including upgrades to existing infrastructure
2) identify existing heating and cooling networks and opportunities for expanding existing networks and establishing new networks.

D. Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system

1) the heat source for the communal heating system should be selected in accordance with the following heating hierarchy:
    a. *connect to local existing or planned heat networks*
    b. *use zero-emission or local secondary heat sources (in conjunction with heat pump, if required)*
    c. *use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network)*
    d. *use ultra-low NOx gas boilers.*

We agree that once the feasibility of district heating is demonstrated for your Strategic Allocations, these requirements should be set out explicitly in respect of each site.

Renewable energy Generation

Standalone renewable energy is promoted via the second paragraph of clause 10 of policy 2, below.

> Proposals for free standing decentralised, renewable and/or low carbon energy networks, except for wind energy schemes, will be supported subject the acceptability of wider impacts. Wind energy schemes will be supported where the proposal is in a suitable area as identified in a neighbourhood plan or other local plan documents or has been demonstrated to have the support of the local community.

The policy does little more than paraphrase national planning policy as regards renewable energy and could go much further. The Climate Change Act means that we must entirely phase out fossil fuel energy entirely within the next 30 years if not sooner. As a result of this and the need to also decarbonise (and therefore electrify) heat and transport, renewable electricity generation must quadruple from current levels to meet these demands. The policy as currently worded does very little to bring about this increase in deployment.

The NPPF (para 151) encourages plans to take a more proactive role, with local plans to:

a. provide a positive strategy for energy from renewable and low carbon energy, that maximises the potential for suitable development..;
b. consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development

Your policy appears entirely reactive and no overall strategy for maximising renewable energy is evident. We would encourage further work to be done to map and identify the deployable renewable energy resources across the region and develop more nuanced policies identifying these, with clear criteria for the assessment of planning applications.

Policy text should also be included giving specific encouragement to community energy projects. Once again, the NPPF (para 152) advises that Local planning authorities should support community-led initiatives for renewable and low carbon energy.

We would also encourage the incorporation of wording which included specific reference to the contribution of renewable energy to meeting our carbon reduction commitments. Please see the proposed draft policy below from Stroud Local Plan, which takes such an approach.

Policy ES2 - Renewable or low carbon energy generation - Stroud District Local Plan Review - Draft Plan for Consultation - www.stroud.gov.uk/info/Draft_Plan_2019.pdf

Decentralised renewable and low carbon energy schemes will be supported and encouraged, and will be approved where their impact is, or can be made, acceptable. In determining applications for renewable and low carbon energy, and associated infrastructure, the following issues will be considered:

a. the contribution of the proposals, in the light of the Council's pledge to be carbon neutral by 2030, to cutting greenhouse gas emissions and decarbonising our energy system.
b. the impact of the scheme, together with any cumulative issues, on landscape character, visual amenity, water quality and flood risk, heritage significance, recreation, biodiversity and, where appropriate, agricultural land use, aviation and telecommunications.
c. the impact on users and residents of the local area, including where relevant, shadow flicker, air quality, vibration and noise.
d. the direct benefits to the area and local community.

Ground-mounted solar energy developments are more likely to be supported in areas identified as suitable in principle as set out on the Policies Map. Outside these areas, applicants will need to provide a clear justification for the suitability of the chosen development site for solar development at the relevant scale.

Proposals for renewable energy proposals within the AONB will be encouraged, however, where development proposals will affect the AONB, the benefits of development must demonstrably outweigh any harm to the designated area or its setting.
Additionally, proposals for wind energy development:

- should be located within a suitable area as indicated on the Policies Map;
- are more likely to be supported if they fall within Landscape Character Areas of lower sensitivity to the relevant development scale;
- may also be suitable in principle if they are located in large new development sites, existing industrial estates or if they are proposed in neighbourhood plans or through community energy schemes; and it can be clearly demonstrated that the scale of the development is appropriate to the site, the benefits of the development outweigh any harm to the local community, and that the development complies with the relevant criteria in Policy ES2.

Where appropriate, provision should be made for the removal of the facilities and reinstatement of the site should it cease to be operational.

Particular support will be given to renewable and low carbon energy generation developments that are led by, or meet the needs of local communities.

Picking up on the specific issue of planning for onshore wind, which is technically feasible within the Greater Norwich area, table 8 within the local plan comments:

> No suitable sites for onshore wind energy development have been submitted to the GNLP. The best ways to display local support, as required by the NPPF, for onshore wind energy are through a neighbourhood plan which requires a local referendum or through any other future local plan documents which may consider suitable sites;
> • The LEP strategy identifies energy as one of five high impact sectors with the potential for growth;
> • Policy 2 makes necessary updates to existing development management policies to address the above.

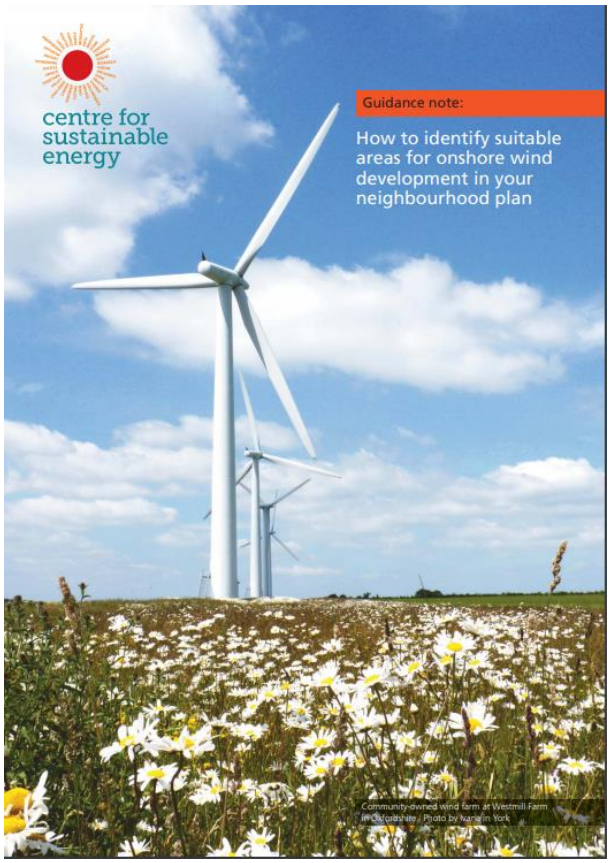


Figure 4 How to identify suitable areas for onshore wind development in your neighbourhood plan -

CSE have significant experience of supporting neighbourhood planning groups to incorporate renewable energy policies into their plans, have published guidance to help groups to identify suitable areas for onshore wind[18] and have given specific assistance to groups seeking to progress onshore wind projects, including to a community energy group near Bristol which has now secured planning permission for a 150 metre high community owned turbine[19].

Whilst it is possible for NDP groups to identify suitable areas for wind, this is far from the best way of bringing forward onshore wind development. Identifying suitable areas for wind is a technical process, and many NDP groups lack the necessary knowledge or resources to undertake these assessments on their own. Additionally identifying suitable areas for wind is often seen to be a controversial area that without support, neighbourhood planning groups won't wish to step into.

[18] www.cse.org.uk/downloads/reports-and-publications/community-energy/planning/neighbourhood-planning-wind-guidance.pdf

[19] https://www.bbc.co.uk/news/uk-england-bristol-54736218

Therefore unless the GNDP have a specific programme of support to inform neighbourhood planning groups that they could bring forward onshore wind development through their plans, and offer support, evidence and and technical mapping to develop policies, this approach is highly unlikely to increase the rollout of onshore wind in your area.

If GNDP is concerned about communities perceiving that they are being pressured into accept onshore wind developments, one option would be to commission a technical evidence base to identify technically suitable areas for wind, and then open up a dialogue with neighbourhood planning groups as to whether they would be interested in identifying suitable areas in their neighbourhood plans, using your evidence base and technical mapping to support them in this. Evidence shows that the majority (72%) of the population support onshore wind[20], and our work[21] suggests that given a genuine say over where and how renewable development takes place, normal people are highly supportive of hosting renewable energy within their own communities, including commercial scale wind turbines.

Retrofitting of Traditional and Heritage buildings to increase energy efficiency

The Greater Norwich area is likely to contain significant areas of traditional buildings of solid walled construction, which in the coming decades all need to be retrofitted to reduce their energy use. We see no policy giving encouragement for traditional and listed buildings to be retrofitted, or setting out principles for what would be appropriate. The retrofitting of historic and traditional buildings would benefit from being given a more detailed policy all of its own. This policy from Bath sets out criteria for support and refers to SPD which define responsible approaches to retrofitting historic and traditional buildings.

POLICY CP1: Retrofitting Existing Buildings – Bath and North East Somerset[22]

Retrofitting measures to existing buildings to improve their energy efficiency and adaptability to climate change and the appropriate incorporation of micro-renewables will be encouraged.
Priority will be given to facilitating carbon reduction through retrofitting at whole street or neighbourhood scales to reduce costs, improve viability and support coordinated programmes of improvement. Masterplanning and 'major development' (as defined in the Town & Country Planning (Development Management Procedure (England) Order 2010) in the District should demonstrate that opportunities for the retention and retrofitting of existing buildings within the site have been included within the scheme. All schemes should

[20]BEIS Public Attitudes Tracker (September 2020, Wave 35, UK) - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/934647/BEIS_PAT_W35_-_Key_findings.pdf
[21] Future Energy Landscapes workshop: A new approach to local energy planning - www.cse.org.uk/downloads/file/future-energy-landscapes-design-and-rationale.pdf
[22] https://www.bathnes.gov.uk/sites/default/files/sitedocuments/Planning-and-Building-Control/Planning-Policy/Core-Strategy/core_strategy_-_adopted_interactive_version.pdf

consider retrofitting opportunities as part of their design brief and measures to support this will be introduced.

Retrofitting Historic Buildings

The Council will seek to encourage and enable the sensitive retrofitting of energy efficiency measures and the appropriate use of micro-renewables in historic buildings (including listed buildings and buildings of solid wall or traditional construction) and in conservation areas, whilst safeguarding the special characteristics of these heritage assets for the future. Proposals will be considered against national planning policy. The policy will be supported by the Council's Sustainable Construction and Retrofitting Supplementary Planning Document.

Figure 5 - www.bathnes.gov.uk/sites/default/files/sitedocuments/Planning-and-Building-Control/Planning-Policy/Sustainable-and-Retrofitting/scrf_adoption_draft_spd.pdf

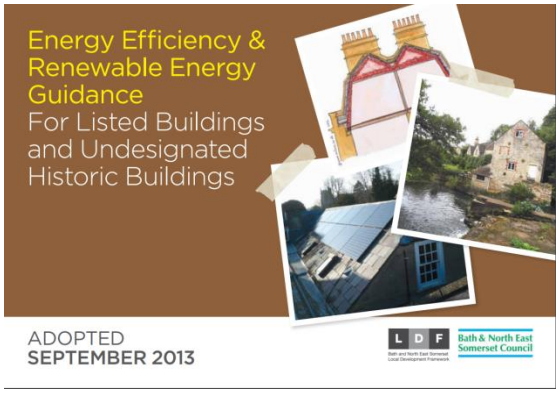
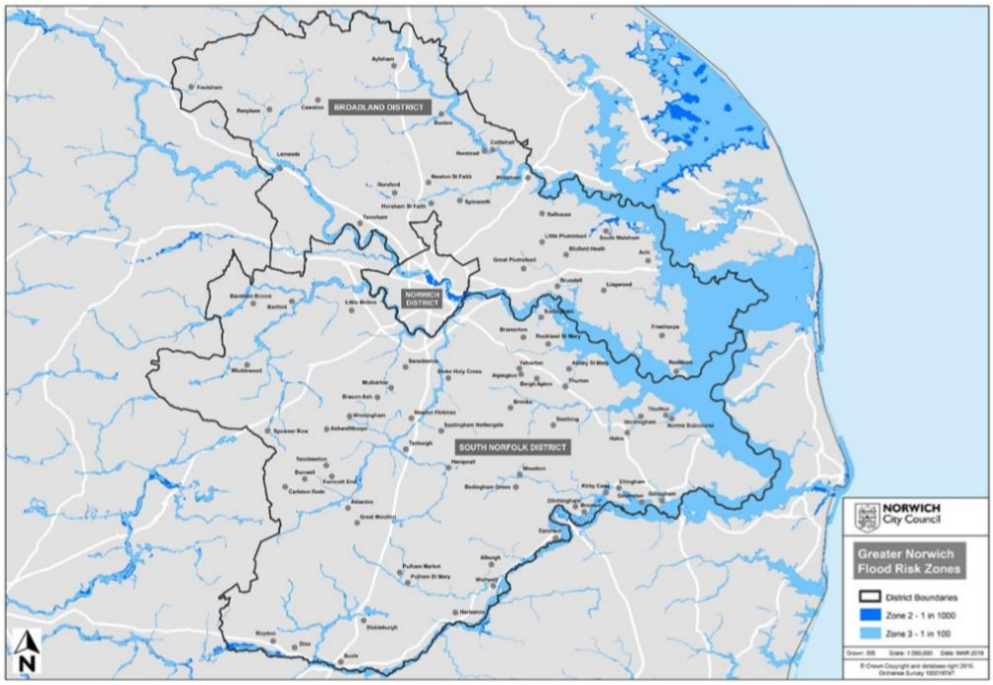


Figure 6 - www.bathnes.gov.uk/sites/default/files/sitedocuments/Planning-and-Building-Control/Planning-Policy/Sustainable-and-Retrofitting/listed_building_guidance_-_energy.pdf

Flooding

Whilst the area is not coastal, the extent of the 5 districts that lie within flood zones 2 and 3, the low lying nature of the coastal authorities to the east and the rivers running through the area to the sea mean that flooding and sea level rise is a significant risk.

Map 3 Fluvial and Tidal Flood Zones



We note that the Strategic Flood Risk Assessment takes into account the impact of climate change, however the SFRA dates from 2017 and references Environment Agency guidance[23].

The allowance for sea level rise doesn't appear to align with the Environment Agency's recommended approach. Figure 1 from your Strategic Flood Risk Assessment (figure 5 below) shows a single scenario with a cumulative sea level rise of 1.21m to 2115, where-as the Environment Agency advise (figure 6 below) is to plan for 2 scenarios, a cumulative sea level rise of 1.20 and 1.60.

4.6 Sea level allowances

Climate change is predicted to cause sea level rise and increase the rate of coastal risk erosion. The table below shows anticipated sea level rise for each time-period (termed 'epoch'), with cumulative sea level rise in brackets. Guidance on how to calculate the sea level rise (i.e. the cumulative total sea level rise expected over the lifetime of a development), is provided on the government's **website**.

Table 4-3: Sea level allowance for each epoch in millimetres (mm) per year, with cumulative sea level rise for each epoch in brackets (use 1990 baseline)

Area of England	1990 to 2025	2026 to 2055	2056 to 2085	2086 to 2115	Cumulative rise 1990 to 2115 / metres (m)
East	4 (140mm)	8.5 (255mm)	12 (360mm)	15 (450mm)	1.21m

Figure 7 - Climate Change Sea Level Allowances - Strategic Flood Risk Assessment - https://gnlp.oc2.uk/docfiles/46/2017s5962_greater_norwich_area_sfra_final_v2.0.pdf

[23] www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#table-3

Table 3: sea level allowances by river basin district for each epoch in mm per year (based on a 1981 to 2000 baseline) – the total sea level rise for each epoch is in brackets

Area of England	Allowance	2000 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2000 to 2125 (metres)
Anglian	Higher central	5.8 (203)	8.7 (261)	11.6 (348)	13 (390)	1.20
Anglian	Upper end	7 (245)	11.3 (339)	15.8 (474)	18.1 (543)	1.60

Figure 8 – table 3 - Environment Agency Sea level allowances - 22 July 2020- www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#table-3

The EA guidance goes on to explain:

The:

- *higher central allowance is based on the 70th percentile*
- *upper end allowance is based on the 95th percentile*

An allowance based on the 70th percentile is exceeded by 30% of the projections in the range. At the 95th percentile it is exceeded by 5% of the projections in the range.
For these allowances it is important you do not use a single percentile out of context. For example, while the 70th percentile is the higher central estimate, it does not represent the full range of likely futures. Using this percentile on its own may cause you to under-adapt to climate change.

For flood risk assessments and strategic flood risk assessments, assess both the higher central and upper end allowances to understand the range of impact.

We hope these comments are taken constructively as they are intended, and would welcome you to contact me to discuss them further if this would be useful.

Yours sincerely

Daniel Stone
MRTPI

Project Manager
Centre for Sustainable Energy
Dan.stone@cse.org.uk