

6. CLIMATE CHANGE

OBJECTIVES	LOCAL PLAN 1	LOCAL PLAN 2
A. Adapting to Climate Change	SP14	SP17
B. Energy Efficient and Sustainable Development	SP15	SP18

SUMMARY

Now that it has been established beyond reasonable doubt that the way we live can contribute towards dangerous climatic change impacts, and that the finite supply of fossil fuels is becoming unsustainable and presents increased impacts upon our environment. It is the responsibility of all planning authorities, and indeed citizens, to aim to adopt energy-efficient measures to reduce the need for, and use of, fossil fuels. The principles of reduce, reuse and recycle to provide a sustainable future is needed.

Barnham and Eastergate parish councils will seek, within the NP, to aspire to reduce the need for car travel and improve access to public transport:- to encourage energy efficiency in existing homes and buildings as far as possible; and set conditions for any new development, domestic and commercial, that will ensure the uptake of full insulation and use of renewable energy sources.

As the impact of climate change is already being experienced in our area, particularly in increased instances of flooding, any new development must take account of this, and be carefully sited so that these climatic effects are not exacerbated.

ADC has recognised the importance of this in policies SP17 and SP18, with which the NP is in full agreement. Indeed it is perceived as a matter of urgency on account of the recent increase in planning applications within our villages, and all developers must be made aware of these restrictions. More detail will be included within the Housing Chapter of the NP.

The Local Plan also states in paragraph 13.5.3:

‘The council has a key role in promoting sustainable development and travel in order to achieve low carbon development which aims to reduce the effects of global warming.’

A. Adapting to Climate Change

In paragraphs 13.5.1 and 13.5.2, ADC states its unequivocal commitment to working with all local authorities to limit further damage to the climate and to the amelioration of the impact on the local population.

The NP is in full agreement with the principles outlined in SP17 of ADC’s second draft of the Local Plan. This states that any development must be located and appropriately designed to adapt to the effects of climate change, principally ‘tidal and fluvial flooding’; ‘water stress’ or reduced water supply during long dry spells; health impacts resulting from extreme temperatures, (particularly important with the high percentage of older people); and a decline in the quality of natural habitats and biodiversity.

Any development ‘must’ take account of:

- Location in relation to flood risk. The NP interprets this as implying that there should be no development on natural floodplain because of the impact that will have on the risk of flooding to the surrounding settlements.
- Water Efficiency.
- Shade, Cooling, Ventilation and Solar Gain.
- Connectivity to the Green Infrastructure Network. The richness of the local GI and the importance of protecting it is detailed in Sections 3 and 5, and outlined in other ADC policies.

- Layout and Massing. The Housing Chapter outlines the importance of sufficient garden space in any new development.
- Resilience of Buildings and building Materials to Extreme Weather. This also is detailed in the chapter on Housing.
- Drainage Capacity and incorporation of SuDS. This is a highly significant feature as the present infrastructure has proven to be inadequate, causing significant health risks.

Because the Flood Risk area within the villages has increased in recent years, and incidences of flood inundation, often mixed with sewage, because of inadequate separation, as detailed in the chapter on Drainage, the NP states that a condition to be met before any development is approved is that a solution is implemented to solve this problem. A Neighbourhood Plan Drainage Strategy is needed to further support this. Discussions are taking place with all the relevant agencies to provide this.

B. Energy Efficient and Sustainable Development

ADC, in their Local Plan (paragraph 13.5.6) refers to the Climate Change Act (2008) which obliges any planned development to address the Energy Hierarchy which must include measures to:

- Reduce the use of energy
- Use energy more efficiently
- Move to energy from renewable sources
- Use remaining fossil fuels cleanly.

In meeting these conditions, ADC declares its intention of applying the Code for Sustainable Homes to domestic building and meeting the standards set by this code. For non-domestic development, a high BREEAM rating will be applied.

The NP fully endorses this approach and wishes all proposals for development to meet these sustainability standards.

SP 18 also states that careful approaches to design and layout must also be utilised to achieve energy efficiency, and decentralised, renewable and low carbon energy supply systems will be incorporated in any new development. Solar panels are particularly mentioned, which the NP feels is particularly appropriate for our location. A minimum standard of 10% of the total energy requirement for any development must come from renewable or low carbon generation on site. The view of the NP is that this must be a minimum for all new development, even for retrofit energy systems.

With the addition of this tightening of the conditions, which eliminates the concept of 'allowable' exceptions, the NP supports the ADC's policies on sustainable development.

CONCLUSION

In line with a recurring theme throughout this chapter of the NP, the sensitive location of any proposed development is essential to fulfilling all the policies for reducing and mitigating the impact on climate change and the surrounding environment. Therefore brownfield site options must be considered in line with local community opinion, and any attempt to encroach into 'local green spaces', floodplain, strategic gaps, agricultural or horticultural land should be avoided.

Climate Change & British Woodland Trees and Woodland

"...Trees are also vital to protecting development from the impacts of climate change such as higher temperatures and exposure to the sun. Trees, either individually or in groups, perform many functions such as shelter from wind, shade from the sun, act as a natural barrier, absorb pollutants, and provide a

biodiversity function in terms of provision of habitat and food sources. They are important producers of oxygen and act as carbon sinks...”

Arun District Council Local Plan – Consultation Doc 19.07.12 Para 19.3.1

The effect that climate change will have on British Woodlands is important for the NP, not only for the multiple trees across the area but especially when considering the management and preservation of the 4 areas of Ancient Woodland in Barnham, the 6 Veteran Trees and over 200 trees with Tree Preservation Orders.

The following information is taken from the Forestry Commission’s Information Note 2005, ‘Climate Change and British Woodland’ by Mark Broadmeadow and Duncan Ray of Forest Research.

Climate change is:

“... caused primarily by the increased concentration of Carbon Dioxide in the atmosphere...Predictions for the UK suggest an increase in temperature and changes in rainfall patterns, wind speed, cloud cover and humidity.”

Direct Effects of a Changing Climate on Trees

Rising CO2 Levels

- Expected to enhance growth rates.
- Lower stomatal conductance leading to reduced water use on a leaf area basis, an increase in leaf area, possible changes in timber quality and in the nutritional quality of foliage to insect herbivores.

Increased Temperature

- Budburst is likely to occur earlier in the year as a result of rising temperatures during winter months.
- Delayed or incomplete winter hardening potentially resulting in more serious winter cold damage
- Warmer winters may mean that winter chilling requirements for flowering or seed germination are not met (Vegis, 1964) which could affect the success of natural regeneration.
- Seed germination is also dependent on seed moisture content (Gosling et al., 2003).

Changing Rainfall Patterns

“In the South East of England lower summer rainfall and an increased evaporative demand are likely to lead to longer periods of drought stress on trees. This issue of water balance is complicated by effects of rising CO2 concentrations, including an increase in leaf area and a change in the functioning of the stomatal pores which regulate water loss from leaves...”

“Increased winter rainfall will lead to more frequent winter waterlogging, in some cases resulting in reduced stability (Ray and Nicholl, 1998) and fine root death extending into surface soil horizons (Coutts and Philipson, 1978). The latter effect will also limit the ability of trees to take up water and exacerbate the problems of summer droughts...Infection by various soil-borne pathogens, including species of Phytophthora, is promoted by fluctuating water tables (Lonsdale and Gibbs, 2002) and would be expected to become more prevalent.”

Wind Speed

An increase in the occurrence of storms may make woodland more vulnerable to wind damage. However, reduced water availability in southern England and potential nitrogen deficiencies, resulting from reduced nitrogen deposition in response to the implementation of emissions control policies, may enhance allocation to roots thereby increasing anchorage.

Indirect Effects Of A Changing Climate On Woodland

Implications for Pests and Pathogens of Woodland

“...Stressed trees are more susceptible to insect pests and diseases and the majority of insect pests that currently affect UK forestry are likely to benefit from climate change as a result of increased activity and reduced winter mortality (Straw, 1995).”

Damage caused by mammals (eg: grey squirrel, deer) will also increase as a result of reduced winter mortality and increased seed availability and ground vegetation.

Extended summer droughts could lead to the increased risk of woodland fires. May need to consider greater fire risk assessment and controls.

Climate Change and Woodland Ecosystems

“When interpreting the likely effects of climate change on woodland habitats it is...important to consider impacts on the function and distribution of other plants and animals that constitute the wider woodland ecosystem.”

“It is also important to maintain ecosystem robustness at a landscape level. Larger areas of woodland within a mosaic of woodland and associated natural ecosystems, through which species can move, provide an improved capacity for adaptation and facilitate migration. This is because physical obstacles (e.g. roads) or functional barriers (e.g. areas of intensive agriculture) limit both the robustness and adaptability of ecosystems by restricting dispersal and migration. Assessments of the probable impacts of climate change on woodland ecosystems, and any responses to limit these changes, should thus not be restricted to the woodland in isolation, but should consider it in the context of the wider landscape.”

Climate Change Mitigation and the Role of Woodland

“Woodland has the ability to absorb CO₂ from the atmosphere...The carbon content of woodland soil is generally higher than that associated with most other vegetation covers... When woodland is mature ..it is no longer an active carbon ‘sink’, but does represent a significant store of carbon.”

Positive Role of Woodland

“Woodland has a potential role to play in flood management through floodplain woodland attenuating downstream peak water flows, while riparian woodland has the potential to reduce water temperature in summer through its shading effect; this role of riparian woodland may become increasingly important in protecting fish populations as climate warming progresses. Woodland also has the capacity to reduce soil erosion which could become more prevalent as a result of higher rainfall in winter and drier soils in summer.

The role of trees and woodland in built-up areas will also become more important as climate change makes the environment of our towns and cities increasingly unpleasant during heat waves. Trees provide shade, limit the ‘urban heat island effect’ and remove pollutants, some of which are predicted to increase, partly as a result of climate change (NEG-TAP, 2001).”

Recommendations

- ADC to undertake regular assessments of the Woodland areas and Trees (preserved or not) considering the ongoing management to limit the damaging impacts of climate change. (Adaptation and Mitigation). These assessments to involve the Tree Warden and reports copied to the Parish Councils.
- Protect and enhance green corridors between areas of woodland, and natural open spaces in order to protect and improve the strengths of woodland habitats and ecosystems.
- Identify where natural corridors are lacking and plan to protect green land to ensure corridors are put in place.
- Avoid the development of unnecessary roads and areas of intensive agriculture which would put obstacles and barriers in the way of natural corridors and so weaken woodland areas.
- Consider the impacts of climate change on native species when considering species for new planting both in green areas and housing developments. A mixture of species will provide some insurance against damage / loss through climate change.
- To actively maintain or plant riparian woodland with regard to the protection of Brown Trout and other water species in the Rife.

References

Broadmeadow M. and Ray D. of Forestry Research, Forestry Commission. (June 2005) *Climate Change and British Woodland.*

