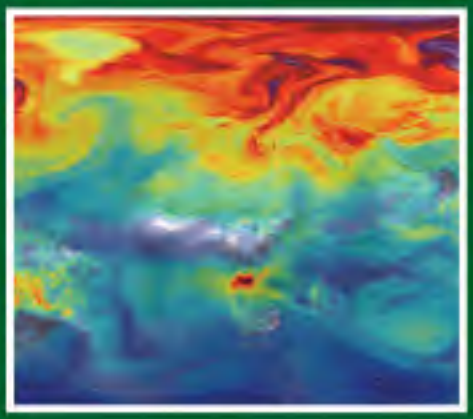
Rother
District Council

Development and Site Allocations Local Plan






Renewable and Low Carbon Energy

Background Paper

November 2016

www.rother.gov.uk

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1 INTRODUCTION

1.1 The Government's National Planning Policy Framework (NPPF) expects local planning authorities to have a positive strategy to promote energy from renewable and low carbon sources. The Planning Practice Guidance (PPG) contains extensive guidance regarding considerations for renewable technologies.

1.2 In 2010, a 'Low Carbon & Renewable Potential Study' was produced for Rother District Council. It included a carbon footprint analysis of Rother District, estimated to be 623,000 tonnes of carbon per annum which is 0.13% of the UK total (432,727,000 tonnes). Rother's emissions emanate from three broadly comparable sources - Domestic 38%, Road 31% and Industry 29%, with agriculture contributing the remaining 2%. The Study also included an assessment of opportunities for technologies and has helped inform local planning, including the Core Strategy.

1.3 The Council's Core Strategy Policy SRM1 'Towards a Low Carbon Future' established support in principle for stand-alone, renewable and low carbon energy generation schemes, particularly those utilising solar, biomass and wind energy technologies, that: (a) do not have a significant adverse impact on local amenities, ecological and heritage assets or landscape character, and (b) in respect of locations in or adjacent to the High Weald AONB and other sensitive landscapes, are generally small in scale.

1.4 There remains a role for the Development & Site Allocations Plan (DASA) for a more spatially-specific policy framework addressing the appropriate scale, locations and criteria to guide development decision making.

1.5 Government guidance notes that the UK has legal commitments to cut greenhouse gases and meet increased energy demand from renewable sources, but whilst local authorities should design their policies to maximise renewable and low carbon energy development, there is no quota which the Local Plan has to deliver.

1.6 In line with the guidance as set out in the PPG, this 'Background Paper to the DASA will further consider:

- The potential for different technologies to be developed locally;
- The impacts of different technologies and how these may vary by place;
- Potential policy directions

1.7 The following sections seek to address these questions for each technology.

2 GENERAL CONSIDERATIONS APPLICABLE TO ALL TECHNOLOGIES

Context

2.1 Whilst individual renewable and low carbon technologies have their own locational requirements, there are general principles applicable to them all. This section looks at these overarching considerations.

2.2 Local planning authorities are responsible for renewable and low carbon energy development.

2.3 Proposals over 50 megawatts capacity are currently considered by the Secretary of State for Energy under the Planning Act 2008, and the local planning authority is a statutory consultee.

2.4 At the smaller end of the scale, Microgeneration is often permitted development and may not require an application for planning permission.

Overall Potential for Renewable and Low Carbon Technologies

2.5 The Council's earlier 'Low Carbon & Renewable Potential Study' (2010) noted that, overall; the District has good opportunities for low carbon and renewable technologies, particularly wind and biomass. Other technologies such as solar technologies and ground source heating are also suitable, but will need to be subject to more detailed analysis on a site by site basis. These individual technologies are the subjects of subsequent sections.

2.6 Rother is a District of considerable environmental assets, not least the 83% coverage within the High Weald AONB. However, positive support for renewable and low carbon energy is consistent with the aims of AONB designation. The High Weald AONB Unit states 'It is clear that there is a significant potential for the generation of renewable energy as electricity and heat within the High Weald AONB.'[1] It also considers that the landscape only allows for small-scale renewable energy schemes.

[1] High Weald Area of Outstanding Natural Beauty 'Energy Use & Generation Audit' January 2011

Locations and Impacts of Renewable and Low Carbon Technologies

2.7 The Core Strategy policy acknowledges that in practice any implemented technologies will, in sensitive landscapes, generally be small in scale and sensitive towards the landscape, environment and heritage.

2.8 The Planning Advisory Service (PAS) advise there are 'No hard and fast rules' for local planning authorities identifying suitable areas for renewable and low carbon energy. However, technical and environmental considerations must be factored in and community involvement should be encouraged.[2]

Pattern of Residential and Commercial Development and its Implications

2.9 Reducing the District's carbon footprint is about more than the introduction of new technologies. As Rother's 2010 study indicated, 31% of the District's carbon footprint is from road emissions.

2.10 Paragraph 95 of the NPPF states that *'To support the move to a low carbon future, local planning authorities should: plan for new development in locations and ways which reduce greenhouse gas emissions'.*

2.11 Royal Town Planning Institute (RTPI) research[3] shows dispersed settlements typically result in higher levels of greenhouse gas emissions and resource consumption than compact settlements. This is attributable to increased car-dependency and energy consumption associated with low-density housing, coupled with the increased embodied energy during infrastructure provision.

Network Capacity

2.12 Network capacity is an important factor in consideration of renewable energy schemes. There is a methodology available from the Department of Energy and Climate Change's website on assessing the network capacity for renewable energy development. In addition, UK Power Networks have maps on their web-site showing network capacity in individual areas[4].

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[2] http://www.pas.gov.uk/documents/332612/6141880/PAS_RE_Presentation_final_2015-03-02_2perpage.pdf/c73827b5-f334-4bdb-a99a-e0036cb4b998

3 RTPI research briefing on urban form and sustainability

[4] https://www.ukpowernetworks.co.uk/internet/asset/91b08912-f6c3-4885-9b0d-4e8fe16f5bfE/HQ-2000-4702-190613.pdf

Gas Connections

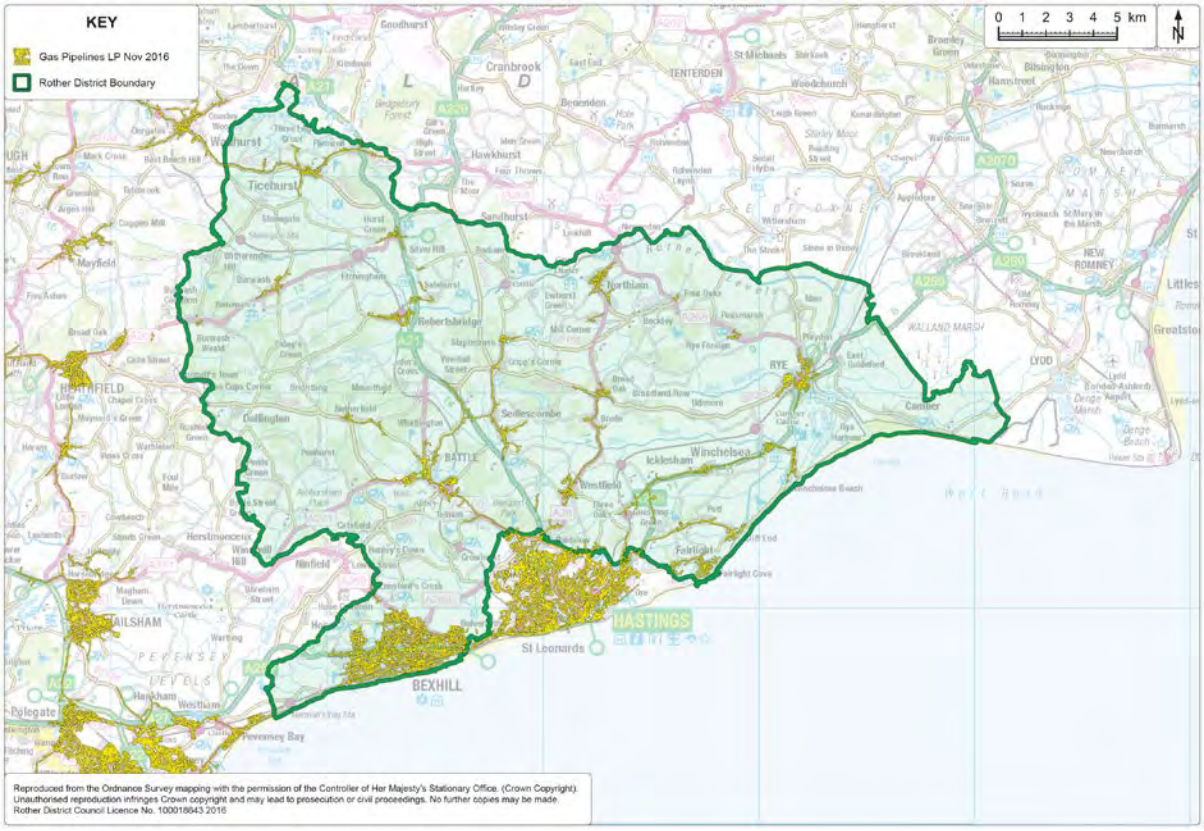
2.13 Much of rural Rother currently lacks gas connections (see Figure 1). This can in turn be a contributory factor towards fuel poverty. For instance, the District's highest proportion of fuel poor households[5] can be found in Crowhurst (16.1%), which although comparatively affluent in other ways, lacks gas connections.

2.14 Connection to gas may be a factor in whether households or industry decide to utilise renewable energy. The largest saving can be achieved when in areas with no gas connection.

2.15 The change from oil or electricity to biomass can bring large financial savings. A 50% saving can be achieved per kwh when substituting oil with wood chip, and 75% when replacing electricity with wood chip.

2.16 This factor may become progressively more important in the future. DECC figures show that electricity unit costs can be expected to rise by approximately 40% by 2020 compared to 2010 prices and a similar trend can be expected for gas.

Figure 1: Gas Connections – Rother District



[5] Source: East Sussex in Figures ' Households in fuel poverty, 2008-2014 - super output areas

Community Benefits and Initiatives

2.17 The PPG highlights that community initiatives, including alongside Neighbourhood Planning, should be encouraged as a way of providing positive local benefit from renewable energy development. Further information for communities interested in developing their own initiatives is provided by the Department of Energy and Climate Change.

2.18 Positive weight may be given to renewable and low carbon energy initiatives which have clear evidence of local community involvement and leadership. For example this may include links with a community energy group or to a community energy project to ensure maximum community benefit.

Energy Statement / Strategy

2.19 The Planning Advisory Service advises that an energy statement should be a requirement of development.' Rother's Core Strategy (Policy SRM1(i)) is one of few local plans that requires proposed developments above certain thresholds to provide a comprehensive energy strategy. Furthermore, these were set at a low level of 10 dwellings or 1,000sqm of non-residential floorspace The policy states it will be subject to further assessments of thresholds via a subsequent DPD and/or SPD.

2.21 In practice, the policy has been difficult to apply and the Validation List (part 5) requires an energy statement only for development in relation to North East Bexhill. This raises questions about whether the threshold should be amended (say from 10 dwellings to 50 dwellings to be more realistic and/or whether there is a need to clarify what the Energy Statement/Strategy should include.

2.22 For example, the Energy Strategy/Statement could realistically address the following matters:

- A site-specific feasibility study into different renewable or low carbon technologies.
- Proposals for improved fabric thermal efficiencies
- Proposals for increased heating, hot water, ventilation and lighting efficiencies
- A review of the location of any local heat networks

2.23 Subject to other plan policies, the implication of Policy SRM1(i) is that proposals will be expected to deliver renewable or low carbon technologies identified as being feasible in the Energy Statement where reasonably practicable and in a suitable location.

Conclusions

2.24 While Core Strategy policy SRM1(i) is positive in terms of promoting renewable and low carbon energy through a its requirements for an energy strategy, this appears to be at least perceived as an unduly onerous expectation from smaller developments. Hence, in line with the commitment in that policy to review the thresholds, it would be appropriate to consult on an option of a higher threshold. It is suggested that, for consultation, this is should be developments of more than 50 dwellings or non-residential developments of 5,000m2 or more floorspace which would be required to provide an Energy Strategy, or Statement.

2.25 It is further concluded that it would be helpful to provide practice guidance advising on the nature of such an energy strategy.

2.26 It is noted that Policy SRM1, perhaps due to its strategic nature, does not indicate how an energy strategy is to be taken into account in the determination of planning applications. It would be consistent with the NPPF's policy to 'support the move to a low carbon future' (paragraph 95) to introduce a development management policy that states that, at any scale of development, a scheme that positively embraces options for renewable and low carbon energy will be a factor weighing in the favour of a proposed development.

3 WIND TURBINES

Context

3.1 Other than micro generation for local use there have been no applications or pre-application approaches for wind turbines in the District – although there have been in neighbouring Wealden, Hastings and Shepway.

Potential

3.2 The 'Low Carbon & Renewable Potential Study' has already noted that wind is one of two renewable technologies (together with biomass) for which there are particularly good opportunities in the District. The Study' suggested that *'wind speeds around Rother are favourable for generation of energy, particularly around the Bexhill and Rye areas'*.

3.3 There are a number of potential impacts and constraints which would need to be addressed by any future wind developments namely, protected areas, public rights of way, scattered settlements. Indeed, Rye is likely to be a problematic location due to the presence of international sites, particularly Special Protection Areas for birds

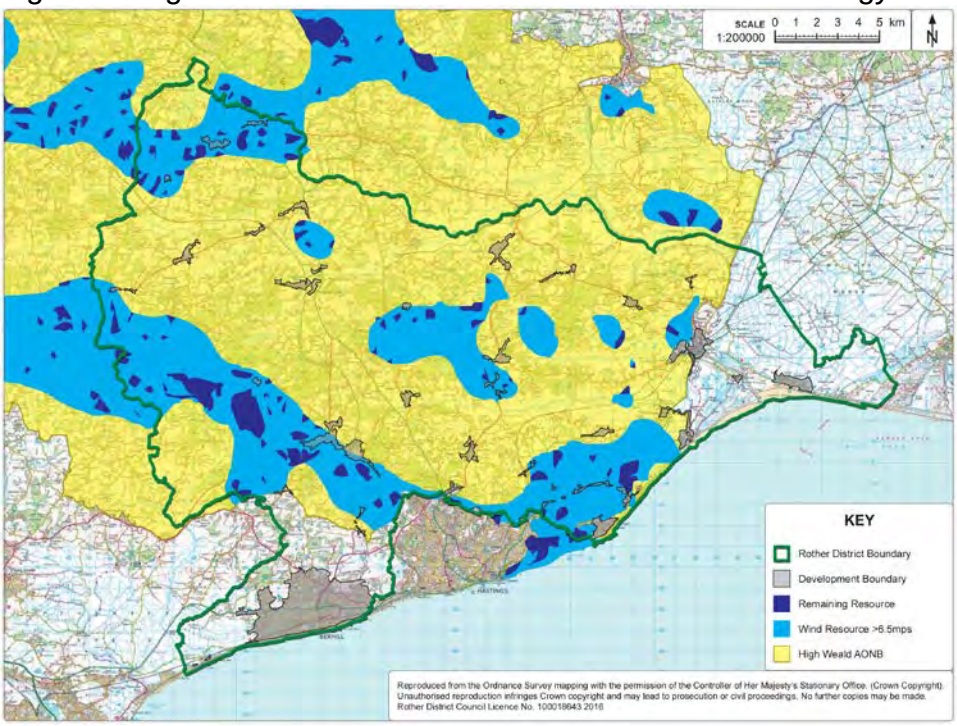
3.4 The Study suggested most appropriate wind energy developments may be single turbine or small clusters of up to 3 turbines, probably of 1.5-2MW capacity.

3.5 The HW AONB Energy Use & Generation Audit noted that a high deployment of small-scale wind turbines can in theory provide a significant contribution to total electricity demand. In common with the Council's Study, it suggested that although, large wind turbines have greater potential energy output; opportunities for deployment are likely to be more limited. Whilst the High Weald AONB Unit do not rule out wind turbines, the 2009 study noted that '*Any proposed wind developments would need to assess the wind resource and constraints in more detail and at a more localised level. It may be that at this micro level, adverse impacts upon buildings, habitats, etc. are minimal or can be mitigated'.*

3.6 Favourable conditions for wind power exist along the Fairlight, Hastings, Heathfield ridge, as demonstrated on Figures 1 & 2 (Source: HW AONB Energy Use & Generation Audit) and Figure 4 (source: The RDC 'Low Carbon & Renewable Potential Study' 2010). The potentially favourable locations

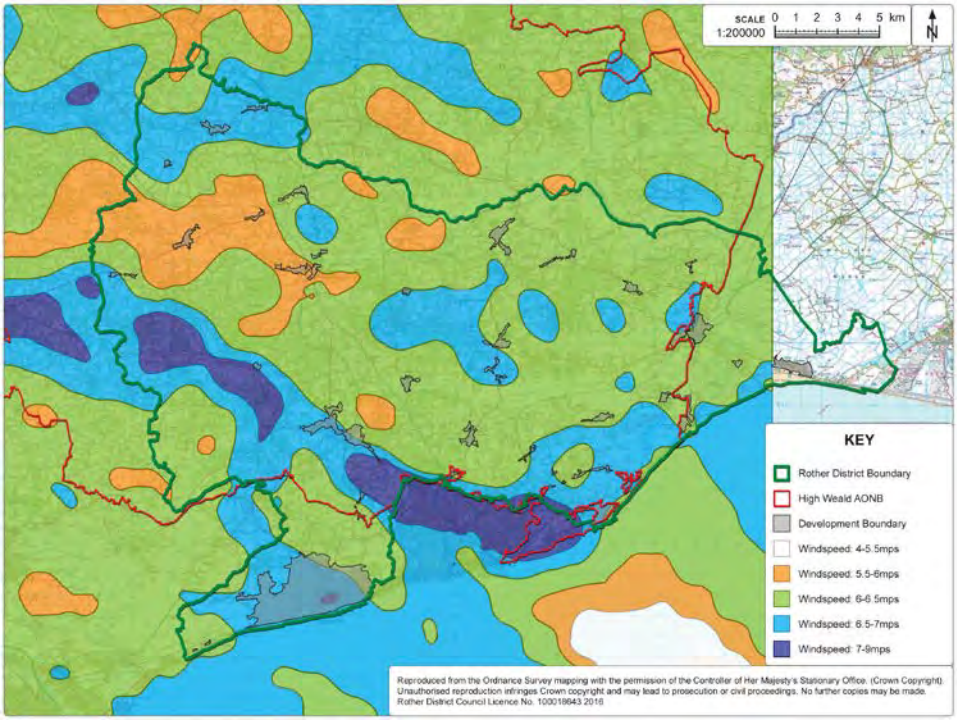
mapping factored in the requirement of consistent wind speeds in excess of 6-6.5 metres per second, as well as the separation distances set out in Table 1 below.

Figure 2: High Weald AONB – Potential Areas for Wind Energy



Source: Originally published by High Weald AONB Unit (Source data: DTI NOABL database of average UK windspeeds, Windspeeds recorded in metres per second per km grid square)

Figure 3: Wind Speeds in the High Weald AONB and Surrounding Area



Source: Originally published by High Weald AONB Unit (Source data: DTI NOABL database of average UK windspeeds, Windspeeds recorded in metres per second per km grid square)

Figure 4 Wind Speeds in and around Bexhill

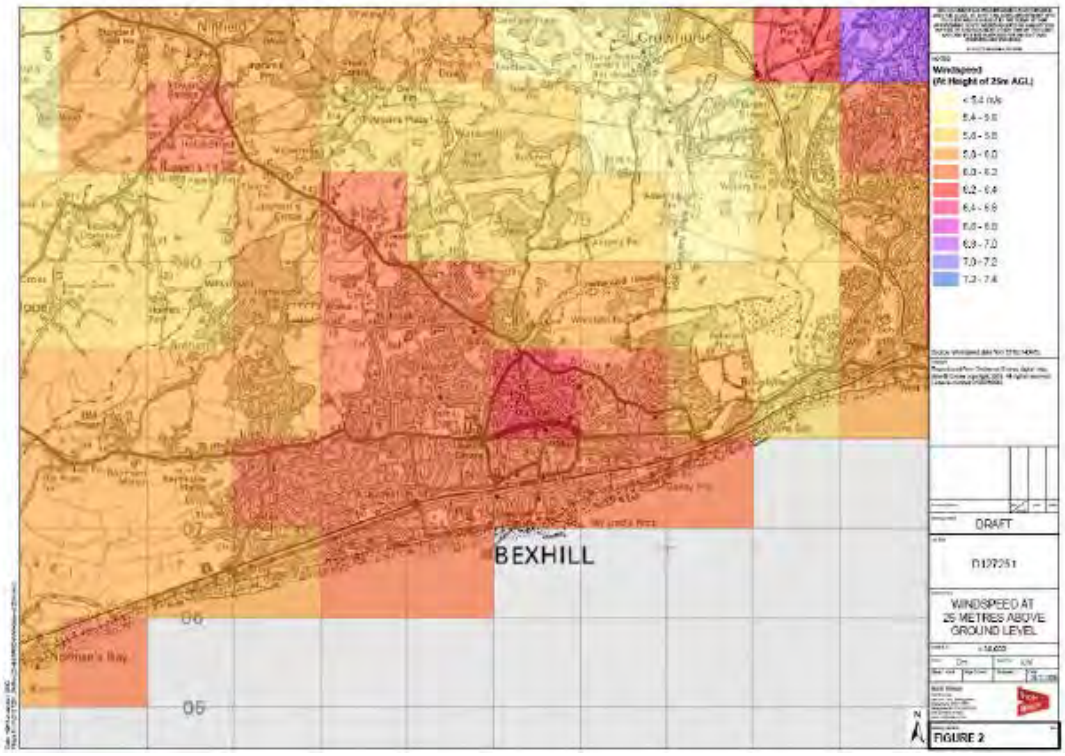
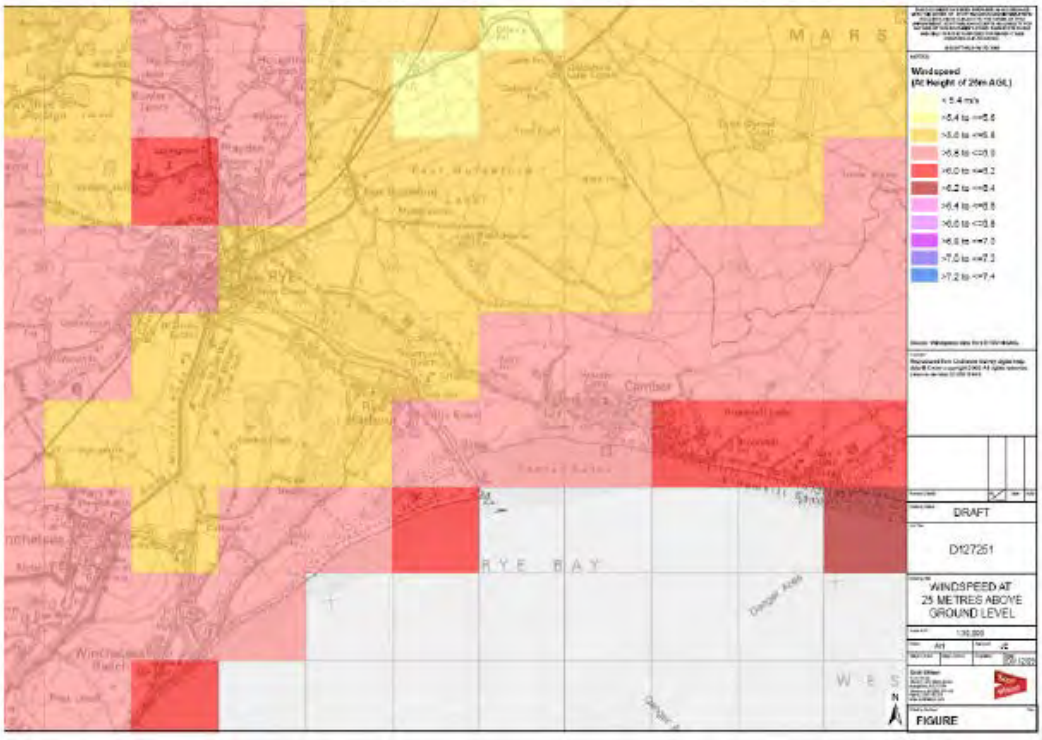


Figure 5 Wind Speeds in and around Rye



Wind Turbines: Impacts

3.7 Visual landscape impact is often the primary concern where wind turbine proposals are concerned. Great care should be taken to ensure landscape and heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting. Negative impacts can also have a detrimental impact on tourism.

3.8 Local topography is an important factor in assessing whether wind turbines could have a damaging effect on landscape. Impacts can be felt equally in flat and hilly areas.

3.9 Cumulative impacts need to be considered, especially the increasing impact that wind turbines can have on landscape and local amenity as the number of turbines in an area increases. The PPG contains guidance on how to assess cumulative impact.

3.10 The High Weald AONB Study provides useful guidance regarding separation distances as visible in Table 1.

3.11 However, National guidance urges caution in the application of typical separation distance stating that *'Local planning authorities should not rule out otherwise acceptable renewable energy developments through inflexible rules on buffer zones or separation distances. Other than when dealing with set-back distances for safety, distance of itself does not necessarily determine whether the impact of a proposal is unacceptable. Distance plays a part, but so does the local context including factors such as topography, the local environment and near-by land uses. This is why it is important to think about in what circumstances proposals are likely to be acceptable and plan on this basis.'*

Table 1: High Weald AONB Unit recommendations for separation distances

Land Use	Separation Distances	Rational
TV Transmission	150 metres	Interference
Radars/Airports	30km consultative	danger to aircraft movements, interference causing clutter on radar
Airfields	3km	danger to aircraft movements, interference causing clutter on radar
Protected Areas, including: SNCI – Sites of Nature Conservation Importance LWS – Local Wildlife Sites SSSI – Sites of Special Scientific Interest SAC – Special Areas of Conservation SPA – Special Protected Areas LNR – Local Nature Reserve	None	Government guidance indicates it is not appropriate to create “buffer zones” around international or nationally designated areas and apply policies to these Zones that prevent the development of renewable energy projects. Therefore, no separation distance has been applied.
Public Rights of Way	200m	Potential disturbance and danger from turbines in close proximity to PROWs.
Energy Infrastructure: Grid and Connection	450m	Proximity to power lines and access to grid connection point.
Road Infrastructure and Historic Route ways	200m	Proximity issues of distraction, public safety
The Built Environment	500m	Shadow/Flicker, Icing, Noise,

Source: Wind Energy Regional Assessment for the High Weald AONB.

Ministerial Statement

3.12 On the 18th June 2015, a Ministerial Statement was published by the Government with regards to development involving more than one wind turbine. The Statement identifies that suitable areas for wind energy development will need to have been allocated clearly in a Local or Neighbourhood Plan and, following consultation, it can be demonstrated that the planning impacts identified by affected local communities have been fully addressed.

3.13 This was confirmed by the PPG *'In t*he case of wind turbines, a planning application should not be approved unless *the proposed development site is an area identified as suitable for wind energy development in a Local or Neighbourhood Plan.'* and *'Suitable areas for wind energy development will need to have been allocated clearly in a Local or Neighbourhood Plan. Maps showing the wind resource as favourable to wind turbines or similar will not be sufficient.'*

3.14 The general view of the industry is that the Ministerial Statement makes it hard for onshore wind turbines to be approved. RenewableUK reported at the time of the announcement that it was not aware of any Councils which have identified suitable areas for wind development. In the same article, the Planning Officers Society argued that it would be politically contentious to include a spatially specific strategy allocating sites for wind energy in a local plan. Notwithstanding this, the Council may consider if there are suitable locations. Favourable sites will typically have the following characteristics:

- Have been identified in the Council's supporting evidence as Areas in excess of 6-6.5mph wind speed
- Avoid protected areas - Proximity to natural habitats (and risks of collision with birds and bats)
- Apply appropriate safety and separation distances from nearby uses, resources and facilities, including residential
- Areas that have an impacts, in terms of landscape, heritage and ecological considerations.
- Have access for large vehicles.
- Have appropriate topography

Areas of potential

3.15 The earlier Study advised that, within the High Weald AONB landscape, smaller schemes of up to 3 turbines, of the order of 1.5 - 2MW capacity may be considered appropriate. Wind speed maps also suggest that the following spatial areas have potential:

- Fairlight – Hastings - Heathfield ridge
- Bexhill Fringes

3.17 In relation to the Hastings Fringes, there was a permission granted in Hastings Borough alongside its Queensway business sites, but this way never implemented. In relation to the latter, Rother's 2010 Study noted that the proposed North East Bexhill strategic site (approx. 1,100 dwellings) could potentially benefit from a wind energy development.

3.18 The combined estimated electrical demand for the above dwellings would be approximately 4,500 MWh/yr (based on an annual electrical consumption of 3,500 kWh per dwelling). A single turbine sufficient to meet the estimated electrical demand of North East Bexhill, would have a rotor diameter of 66 metres. However, there is no proposal for a wind turbine in association with the now committed proposals for either the residential or business development at North East Bexhill.

3.19 Notwithstanding the absence of any viable proposal to date in the area, given that the wind speeds and topography around the northern edges of Bexhill and western edges of Hastings appear to be favourable, there may be scope for limited environmental impact from a single turbine.

Conclusions

3.20 The potential for wind turbines, having regard to wind speeds should be highlighted and views sought on whether potential locations, including on the western edges of Hastings and the northern edges of Bexhill outside of nationally designated areas, may be acceptable for a wind turbine.

4 BIOMASS

Context

4.1 Depending on the fuel used, this can be a County Planning matter falling under the Waste Authority. This is the case if the fuel consists of food waste or construction wood waste. However, wood fuel resulting from woodland management falls under the domain of the District planning authority.

4.2 There are still comparatively few Larger CHP plants regionally, as Figure 7 shows.

Figure 7: CHP Installations across South-East England

4.3 There is some history of biomass applications in Rother. A proposal in Northiam would have provided electricity to 6,000 residential properties but was refused on grounds of scale, AONB impact and 24 hour traffic movements. More recently, several applications for smaller scale biomass boilers have received consent.

Potential

4.4 The most common fuel is wood pellets which in reality may be sourced from suppliers some distance away. However, there is, at least in theory, a huge potential from local wood sources. A small scale Biomass CHP plant powered from local wood would bring significant benefits encouraging woodland management as well as in generating energy from a renewable resource.

4.5 It is forecast that in the year 2021 there will be an annual production of around a million tonnes of biomass potentially available as wood fuel in the South East (source: RDC Low Carbon & Renewable Potential Study).

4.6 Rother is one of the most wooded areas in the country and the untapped potential of this local resource has been widely recognised in supporting evidence. Proper woodland management would potentially provide huge quantities of woodchip for heat networks. A feasibility study into large-scale biomass boilers to serve the village of Barcombe in Lewes District is currently underway.

4.7 The Rother 'Low Carbon and Renewable Potential Study (2010)' identified opportunities for biomass noting the substantial biomass resource associated with both farmland and woodland cover. It estimated the potential annual increment of woodland in Rother as being 40,000m^3 per annum (using Forestry Commission methodology). Increased woodland management would have the additional benefit of benefitting biodiversity, although appropriate transport links are critical.

4.8 The High Weald AONB Management Plan stated '*the AONB woodlands are an under-utilized source of renewable energy: the total woodland area of the High Weald could provide nearly 11% of the current 1,120gigawatt/hours domestic and small business energy consumption in the AONB'.*

4.9 The High Weald AONB Energy Use & Generation Audit noted that ' The highest potential for roll-out of renewable energy technologies at a local building-integrated level is likely to be and biomass boilers/ stoves (as well as roof mounted solar PV and solar thermal systems). The Forestry Commission, in partnership with South West Woodland Renaissance have produced a useful guide to small-scale wood fuel (biomass) heating systems[6].

[6] 'A guide to small-scale wood fuel (biomass) heating systems'
https://www.cse.org.uk/pdf/guide%20to%20small-scale%20wood-fuelled%20heating.pdf

4.10 The Renewable Energy Study stated '*With the logistics to supply wood fuel locally in conjunction with Woodnet, Rother has the facilities in place to develop biomass potential further and our understanding is that despite the recent refusal of the 4.5 MWe facility in Northiam (Application RR/2009/1283/P November, 2009) on the grounds of adverse effect to AONB, visual impact and traffic movements and noise, the desire to promote this type of facility is supported by the Council and the Local Strategic Partnership. Therefore, should a suitable location be identified policies developed to encourage strategic sites for this type of facility should be encouraged. Biomass as a provider of heat would also benefit from the Renewable Heat Incentive (RHI) via incentive payments funded by a levy on suppliers of fossil fuels for heat (see Section 2.7.2 for details).*

4.11 The Rother DC 'Low Carbon and Renewable Potential Study (2010) also noted that Rother is a good area to grow miscanthus (an energy crop). However, subsequent research as part of the current report suggests the sheer scale of commercial operation means it is difficult to envisage miscanthus farming being possible in Rother, particularly in the medieval field pattern of the AONB.

4.12 Parks waste and commercial green waste are also potential fuels that are not currently fully utilised and may also contribute to biomass fuel supply.

4.13 Combined heat and power (CHP) plants can operate on a wide variety of biomass fuels. The Biomass Energy Centre contains useful information regarding CHP, which is the simultaneous generation of electricity and heat.

4.14 Tri-generation is a further extension to include a refrigeration process for air conditioning as well. It highlights that CHP is most suitable when there is year round demand for heat to balance the demand for electricity, but is useful in a number of situations, several of which are potentially applicable (at small scale) in rural areas:

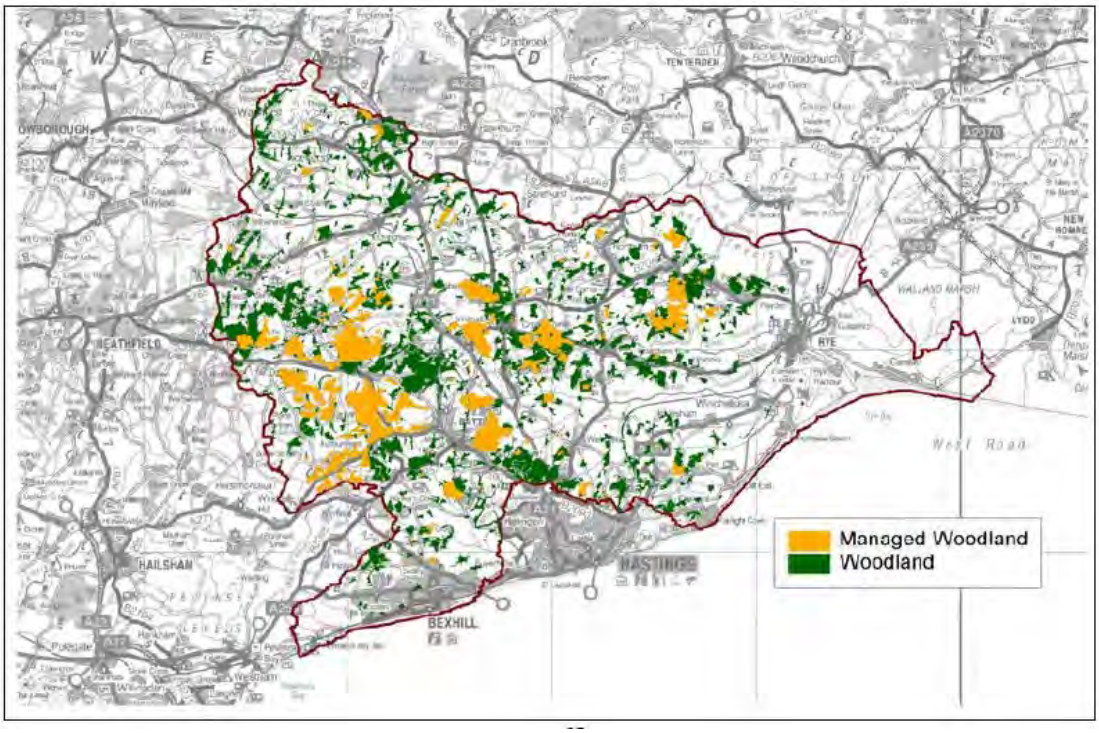
- When there is a requirement for space heating or process heat close to the generator
- To provide low temperature (up to 90ºC) hot water heating for local district schemes
- For applications that require (low grade) process heat, especially those that can supply their own fuel (i.e. sawmills and wood process industry which use heat for timber drying and steaming)
- At sites such as hospitals, leisure centres, greenhouses, and retirement complexes which have a year-round, and ideally 24 hour, heat demand
- To provide steam for other industrial applications

- Where there is a requirement for environmentally responsible disposal of waste (i.e. sewage sludge, clinical waste or agricultural residue) and where transport costs for disposal are high
- To power an absorption refrigerator to provide cooling in summer, giving tri-generation.

Biomass Impacts

4.15 The potential impacts of biomass may typically relate to: visual (flue), noise, and air quality.

Figure 8: Managed Woodland in Rother – A Sustainable Source of Biomass Fuel



Areas of potential

4.16 The Rother DC 'Low Carbon and Renewable Potential Study (2010) noted the greatest potential comes from managed woodland (i.e. subject of a grant scheme or felling licence), see supporting Figure 8. It is notable that there is the greatest concentration of managed woodland is around Battle, Netherfield and Mountfield – an area where highway connectivity to the A2100/A21 is another advantage.

4.17 The High Weald Area of Outstanding Natural Beauty Energy Use & Generation Audit (January 2011) also noted *'An additional important consideration given the area being assessed is the limited availability of the mains gas network within rural locations and the impact that biomass can make as an alternative to the use of higher cost fossil fuels for heating (heating oil, LPG, solid fuel and electricity)'*

4.18 The now expired South East Plan nonetheless had a useful policy (NRM16). It cited the following as factors in the consideration of biomass plants *'The proximity of biomass combustion plants to the fuel source and the adequacy of local transport networks; and availability of connection to the electricity distribution network.'*

4.19 As with other renewable energy technologies, the scale should be proportionate to the need and the areas considerable environmental and heritage constraints, not least AONB designation.

4.20 Rother DC 'Low Carbon and Renewable Potential Study (2010) cited the North Bexhill development as potential location, stating that *'Whilst the existing road system is congested, the construction of the new link road could provide a convenient access route for fuel deliveries (e.g. local biomass)'*. However, as noted above, the approved proposals do not include such provision, developers citing it as uneconomic and unpopular.

Conclusions

4.21 Large-scale biomass plants do not appear to be likely to be viable, notwithstanding the scale of the potential resource, due to its highly fragmented nature. Nevertheless, small-scale biomass plants (particularly those using local wood fuel) may be viable and there should be consultation on its potential especially within more rural parts of the District, especially those lacking a connection to the mains gas network.

4.22 The considerations that will inform the determination of planning applications will substantially depend upon the scale the biomass burner. It is most likely that it would serve a single user, which may be relatively large, such as a school or commercial building, or a single dwelling.

4.23 Consideration may be given to encouraging suitable commercial buildings to be heated by biomass boilers and for residential properties to be designed to accommodate them, or wood burners, which essentially means providing working chimneys or flues.

5 SOLAR

Context

5.1 Solar panels can be mounted on buildings or free-standing solar farms.

5.2 The Planning Practice Guidance (PPG) provides extensive and universally applicable guidance on solar energy.

5.3 Active solar technology, (photovoltaic and solar water heating) on or related to a particular building is often permitted development provided the installation is not of an unusual design, or does not involve a listed building or ancient monument or is within a designated area.

5.4 In Rother, one solar farm has been granted permission on a site near Catsfield and two others rejected. Development pressure reflects network capacity. Information on network capacity, including mapping, is available from UK Power Networks.

Potential

5.6 The costs for solar PV are continuing to reduce, although reductions in Feed-in-Tariffs have made developments less attractive.

5.7 The High Weald AONB Energy Use & Generation Audit noted that there is likely to be potential for electricity generated by large scale solar PV farms, but that *'The highest potential for roll-out of renewable energy technologies at a local building-integrated level is likely to be roof mounted solar PV and solar thermal systems, (and biomass boilers/ stoves).'*

Solar Roofs

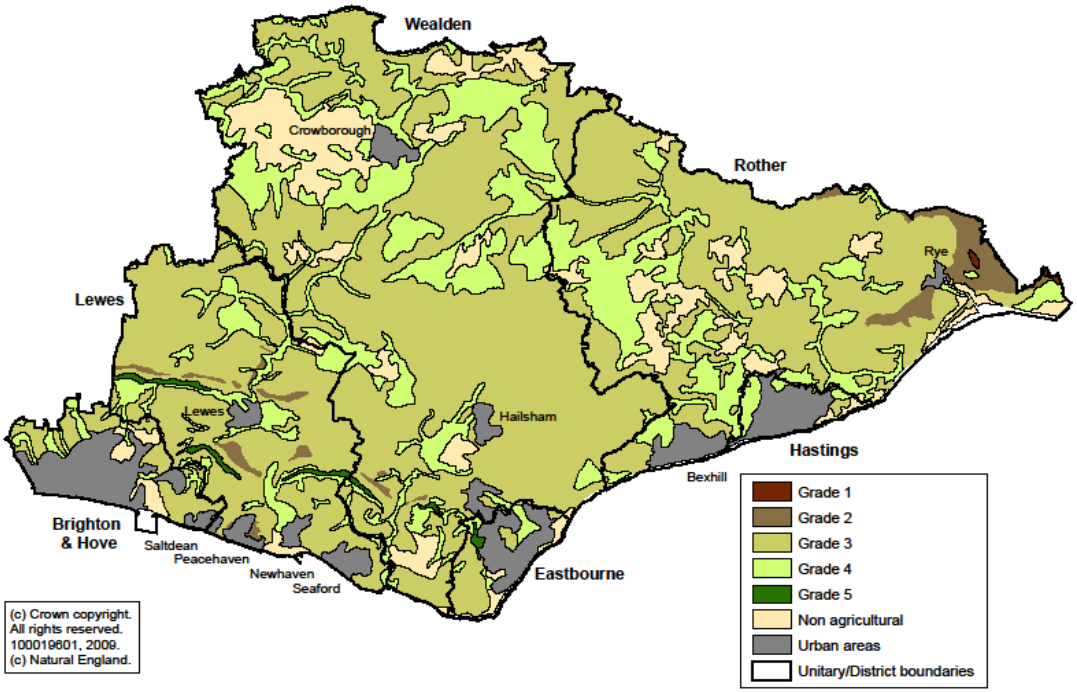
5.8 Generally, roof space is the preferred location for large scale solar arrays and may not require planning permission. However, within the High Weald AONB, careful regard would also need to be given to the impact on landscape character and scenic beauty.

5.9 New development will provide further opportunities for solar power - as well benefit from passive solar gain through their orientation – with a north/south axis being most advantageous.

Ground-Mounted Solar

5.10 The PPG set out universal considerations for the siting of ground-mounted solar. For context, the agricultural land quality map for East Sussex is illustrated below.

Figure 9: Agricultural Land Quality in East Sussex



5.11 The AONB and protected areas of the District do not generally lend themselves to large scale ground mounted commercial solar farms.

5.12 It is recognised that solar farms are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use.

5.13 Proposals can have a significant impact on ecology. Projects are typically accompanied by an ecological study and a habitat management plan. The mating season for birds is normally avoided if their habitat is being affected by a scheme.

5.14 The PPG (Paragraph: 013Reference ID: 5-013-20150327) highlights the factors to be considered. These cover:

- The extent to which there may be additional impacts if solar arrays follow the daily movement of the sun;
- The colour and appearance of the modules, particularly if not a standard design.
- The need for, and impact of, security measures such as lights and fencing;
- The potential to mitigate landscape and visual impacts through, for example, screening with native hedges;
- The importance of siting systems in situations where they can collect the most energy from the sun. The energy generating potential, which can vary for a number of reasons including, latitude and aspect.

Conclusions

5.15 Given the extensive guidance in the PPG in relation to for ground-mounted solar arrays, as well as the universal potential for solar power on buildings, no further policy is considered necessary.

6 OTHER TECHNOLOGIES

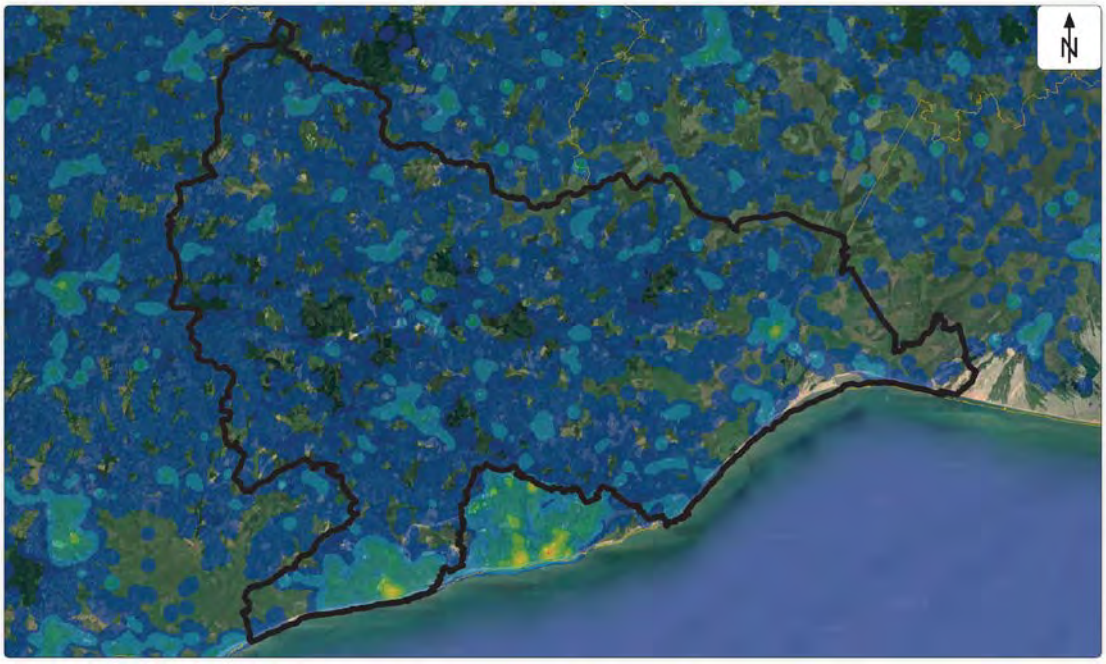
District Heating Systems

Context and Potential

6.1 The PPG outlines that *'Planning can provide opportunities for, and encourage energy development which will produce waste heat, to be located close to existing or potential users of the heat. Planning can also help provide the new customers for the heat by encouraging development which could make use of the heat.'*

6.2 Information on local heat demand is published by the Department of Energy and Climate Change to assist planners and developers in identifying locations with opportunities for heat supply. See the national heat map and the UK CHP development map. The map of Rother Heat Density is visible in Figure 20.

Figure 20: Rother Heat Density



Source: Department for Business, Energy & Industrial Strategy 'National Heat Map'

6.3 However, district heating networks are expensive and usually only commercially viable in higher density areas.

6.4 The Rother DC 'Low Carbon and Renewable Potential Study (2010) looked at the potential for Rother. It noted that the South East England Partnership Board had already assessed the potential for CHP and Distributed Heat and the results of the work carried out in the CHP and Distributed Heating study show, however, that Rother is not an area identified as having a high level of strategic opportunity. The potential for localised systems were also considered as part of this study, under the following points of consideration:

- District heating networks are only viable in areas of high heat demand density, ideally with a mix of uses; and
- Opportunities for policy intervention are primarily in areas of new development and their surroundings – there are significant barriers to retrofit solutions, not least the inertia of entrenched ideas and systems.

6.5 Even when only considering these two criteria for a district heating scheme, it noted that without recourse to extensive modelling, that major opportunities for district heating are likely to be limited within Rother District. Heat densities are generally low, and where there is new development planned – e.g. North-East Bexhill, North and West Bexhill, the surrounding areas are of low density and the economic viability of expansion is likely to be very limited.

6.6 As a result of the outline analysis above, the 2010 study did not consider it necessary or appropriate to carry out significant heat demand mapping of the District.

Conclusion

6.6 In the absence of any existing networks, a policy on district heating potential is unnecessary.

Ground Source Heating and Cooling Schemes

Context

6.7 Ground source heating and cooling (GSHC) schemes use the solar energy stored in the ground, and in groundwater, to heat and cool buildings. They are generally permitted development for planning purposes, although need to satisfy building regulations.

6.8 There are two principal types of ground source heating and cooling (GSHC) schemes:

1. open-loop schemes, which rely on groundwater in an aquifer (an underground water source
2. closed-loop schemes, where a closed piping system is buried in the ground.

6.9 Since they abstract and discharge water, the Environment Agency (EA) regulates open-loop ground source heating and cooling schemes so the necessary permits, licenses and consents should be sought from the EA. Some schemes which abstract and discharge from surface water (rather than groundwater) will also require EA involvement. The EA don't regulate closed-loop schemes but expect all GSHC systems to follow good practice and avoid sensitive locations.

Potential Locations

6.10 In partnership with the British Geological Survey, the EA have developed a screening tool to show whether an area may be suitable for an open loop ground source pump[7]. A Plans showing the tool applied to East Sussex is at Figure 22.

Ground Source Heating and Cooling Schemes' Impacts

6.11 All GSHC schemes can damage the water environment:

- Installation (or removal) of any GSHC system deep in the ground risks connecting two separate bodies of groundwater (aquifers). Such a connection can damage water quality and flow.
- All GSHC systems can change the temperature of the groundwater. This may reduce water quality and harm the wider aquatic environment.

6.12 The EA have particular concerns about schemes near:

- groundwater source protection zones
- contaminated land
- rivers
- wetlands
- cesspits or septic tanks

[7] Linked Here: **British Geological Survey screening tool**

6.13 Figure 21 illustrates the location of some of the more sensitive locations for Ground Source Heating and Cooling. Particular care should be taken in the vicinity of the sensitive locations, including:

- groundwater source protection zones, rivers, wetlands
- contaminated land
- cesspits or septic tanks
- the hydrological catchment areas of internationally protected areas, particularly wetlands

Conclusion

6.14 As they are generally 'permitted development' for planning purposes, a specific policy is not considered necessary.

6.15 Given that heat pumps can represent a positive contribution towards low carbon/renewable goals, development managers may helpfully advise developers of the British Geological Survey/EA screening tool to show whether an area may be suitable for an open loop ground source pump and recommend that persons wishing to install GSHC should seek further advice from the Environment Agency.

Figure 21: Sensitive Locations for Ground Source Heating and Cooling.

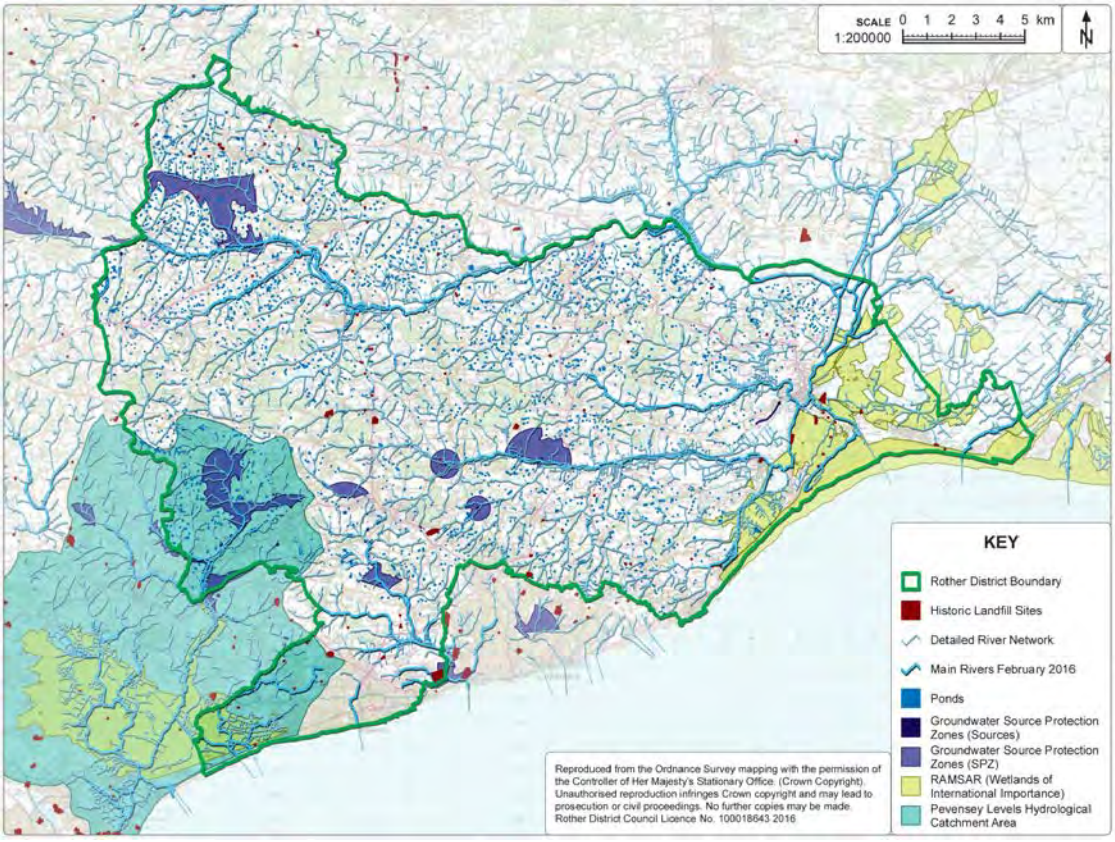
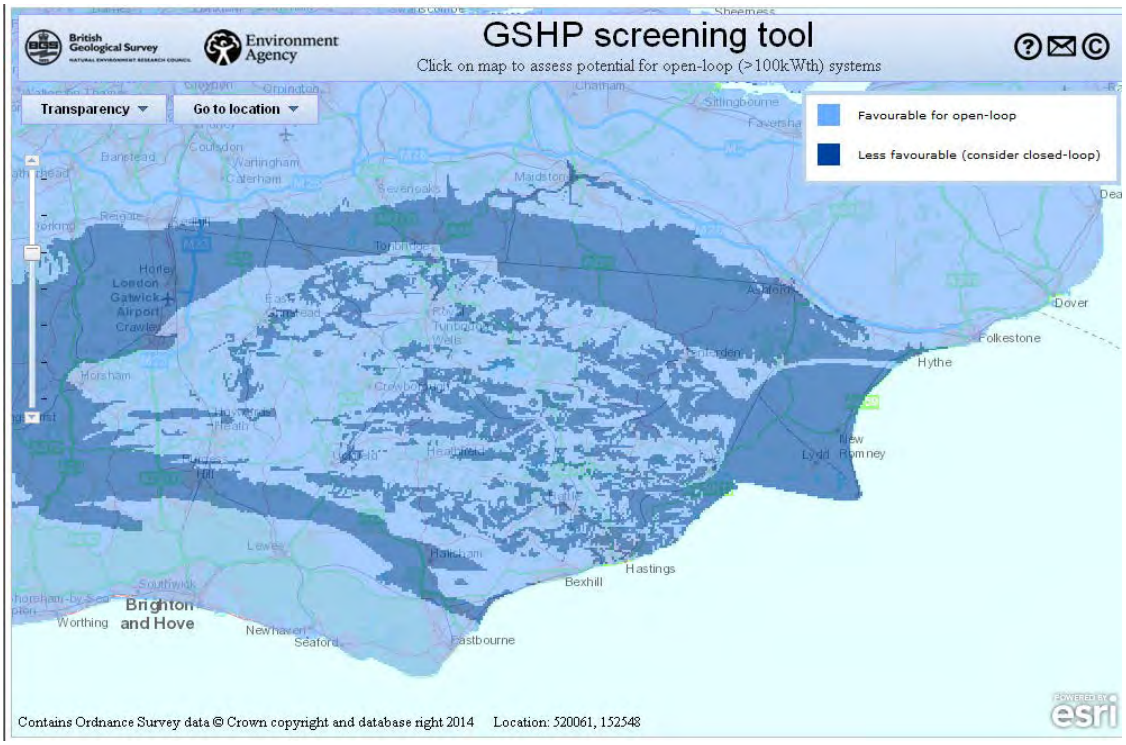


Figure 22: Ground Source Heating and Cooling – BGS Screening Tool



Source: British Geological Survey & Environment Agency

Hydropower

6.16 The Rother DC 'Low Carbon and Renewable Potential Study (2010) assessed the potential for hydropower in Rother. It concluded that Rother offers no opportunities for large, medium and small scales of hydro installations due to the geography (i.e. available head) and the river flow conditions of the District. Therefore a technology specific policy is not considered necessary.