centre for sustainable energy

Portishead Renewable Energy Study – Task 1 – proposed scope of the renewable energy study

Portishead Neighbourhood Planning Group

Final

1st April 2021

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Contents

1. Executive summary

Portishead Neighbourhood Planning Group commissioned the Centre for Sustainable Energy to undertake a technical renewable energy study, which would identify the renewable energy resources which could be developed within the area and provide an evidence base for policies within their neighbourhood plan.

The purpose of this report is therefore to define the scope of the renewable energy assessment to be undertaken, in order to commission new evidence only where it is needed and avoiding duplicating existing evidence and evidence that is being commissioned by North Somerset Council. A second intention is to understand the scope and likely content of energy policies likely to be developed within North Somerset Local Plan and to establish the policy gaps that the neighbourhood planning group might wish to fill, or the additional policy detail that the neighbourhood plan could provide.

North Somerset Council are intending to develop ambitious climate policies across the board within their emerging Local Plan, to align with their climate emergency declaration. Whilst the precise policies are still being established, the evidence base is already in place to support binding requirements that new development be zero carbon in use, going well beyond the performance levels required by buildings regulations, which themselves are being tightened up.

The council intend to update their evidence base in respect of renewable energy and sustainable heat, and identify suitable areas for renewable energy generation in the local plan including solar, wind and biomass and to provide a district target for renewable energy generation. The plan will require the use of district heating, but the precise policy wording is yet to be defined.

Evidence Base

We recommend investigating:

- The potential for a field based solar development in the green belt on Portishead Down (area to the east of the police HQ), and further investigations with the planning authority as to whether this site should be best promoted through the neighbourhood plan, or through an alternative route.
- Whether there is technical potential for onshore wind development in the green belt on Portishead Down. This would involve mapping buffers to residential properties, setbacks from hedgerows and public footpaths.
- Were there to be technical potential, the next step for the development of either onshore wind or field based solar, outside of the scope of this project as currently defined, would be to carry out an assessment of the value of the green belt land in terms of the objectives of green belt policy, to form part of the evidence base supporting the policy.

- Assessment of rooftop solar PV, assessing the potential of the existing buildings in Portishead. This would have limited value for the neighbourhood plan and the policies within it, as in most cases solar PV does not need planning permission. However it would have great potential in supporting community energy development in the area. Given that this study would essentially be independent of the neighbourhood plan, the geographical scope of such a study could be wider than the NDP area.

Energy and Carbon Policies

We recommend*:

- Including a sustainable design and construction policy if it was thought necessary, but leaving technical areas around carbon emissions from new development and district heating, where the Local Plan can be expected to include excellent policies
- A forward facing policy supporting renewable energy development in general which encourages innovative thinking regarding the area's resources, giving support to forms or applications of renewable energy which aren't currently viable but may be in the future and giving particular support to community energy projects. For example, the policy could also set out support (and set out criteria) for energy storage proposals and solar canopies over surface car parks and give in principle support to the use of tidal energy from the marina, and the use of the marina for water source heat pumps.
- A policy supporting solar farm or onshore wind development within the green belt at Portishead Down if the local community are found to be supportive of this option and if found to be feasible following engagement with North Somerset Council. If it was found that the green belt designations meant that an allocation for a solar farm in the neighbourhood plan was not possible alternatives could be to bring it forward through a Neighbourhood Development Order in parallel with the neighbourhood plan, or simply to pursue the development of this proposal as a community energy project by submitting a planning application. Note that it would not be possible to get planning permission for onshore wind by just submitting a planning application.

*This is in addition to those policies described in our review of 24th November 2020, summarised below:

- Highlight the town's objective to address and tackle climate change in the vision statement and ensure that climate change impacts and implications is considered across all policies
- Include a policy supporting the energy efficiency retrofitting of historic and traditional buildings
- Give policy support to community energy proposals, unless such a policy is included within the local plan
- Consider policies supporting environmental improvements and development around the proposed train station in terms of legibility and the quality of walking and cycling routes into the town centre

- Support the densification and redevelopment of the area of large format retail stores around Wyndham way, rationalisation of car parks and downgrading of Wyndham Way
- Incorporate planning policy supporting the creation of improved environments for walking and cycling, and consider sustainable transport infrastructure which might be funded from CIL funds or adjoining development
- Incorporate policies requiring EV charging unless included within the Local Plan
- Consider policies supporting home working and reducing out-commuting
- Consider incorporating a drainage policy covering permeable surfacing, natural sustainable urban drainage systems and permeable paving, unless adequately covered within the Local Plan
- strengthen and localise the evidence base in relation to green Infrastructure & biodiversity: map existing wildlife assets and the connections between them and include policies requiring new development to maintain and enhance their continuity / connectivity

Community involvement

We recommend that Portishead NPG's community involvement process explores support for a wide range of climate adaptation and mitigation policies, including all of the forms of renewable energy with technical potential defined in this paper. The public consultation planned should specifically explore whether there is public appetite for the development of renewable energy projects such as onshore wind or solar farm in the green belt, given the lack of other significant available options.

The consultation should also consider exploring support for onshore wind and field based solar outside the NDP area (but of relevance to the local community) for example near Portbury Dock, in order to influence the development of the local plan and support the development of as ambitious a local plan as possible.

Update April 2021

Following a meeting, the neighbourhood plan steering group resolved that due to green belt policy constraints, and possible public concern, that it would not be appropriate to explore the options for renewable energy within the green belt, and that these elements should not be taken forward within the public consultation or within the emerging draft plan.

2. Introduction

Portishead Neighbourhood Planning Group commissioned the Centre for Sustainable Energy to undertake a technical renewable energy study, which would identify the renewable energy resources which could be developed within the area and provide an evidence base for policies within their neighbourhood plan.

North Somerset Council are themselves in the early stages of reviewing their local plan, and intend to align it with an ambitious climate emergency declaration committing to achieve net zero emissions across North Somerset by 2030. Additionally there is already a partial evidence base in respect of renewable energy in the district.

The purpose of this report is therefore to define the scope of the renewable energy assessment to be undertaken for Portishead, in order to commission new evidence only where it is needed, avoiding duplicating existing evidence and evidence that is being commissioned by North Somerset Council.

A second intention is to understand the scope and likely content of energy policies likely to be developed within North Somerset Local Plan to avoid wasted effort and costs for the neighbourhood planning group.

In part 2 we summarise national planning policy relevant to renewable energy and neighbourhood plans. In parts 3 and 4 we review the council's existing evidence base relating to renewable energy, the new evidence they are commissioning and their emerging policy content. We have reviewed the local plan consultations undertaken so far, and also directly approached officers to ask them of their policy intentions.

This report concentrates on sustainable energy issues, including standalone renewable energy, district heating, and technical energy performance and carbon emission standards for buildings. Our comments on these issues, based on more in-depth investigation, supersede our previous comments of 24th November 2020 in respect of district heating, energy performance and renewable energy, but our comments and recommendations from November on other issues are unchanged.

3. Summary of national planning guidance - renewable energy and neighbourhood plans

3.1. National Planning Policy Framework

National planning policy is set out in the National Planning Policy Framework[1], hereafter the NPPF. The NPPF sets out the Government's planning policies for England and how these should be applied. It provides a framework within which local and neighbourhood plans can be produced, and is a consideration in planning decisions and appeals.

[1]National Planning Policy Framework: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

The NPPF is supportive of the need to proactively plan for renewable energy development, as part of the need to transition to a low carbon economy. Paragraph 149 (incorporating footnote 48) states:

"Plans should take a proactive approach to mitigating and adapting to climate change (in line with the objectives and provisions of the Climate Change Act 2008[2]), 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."

Paragraph 147 advises:

"The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure."

In respect of renewable energy, the NPPF advises at Paragraph 150:

"To help increase the use and supply of renewable and low carbon energy and heat, plans should:

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

"When determining planning applications for renewable and low carbon development, local planning authorities should:

a) *not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and*
b) *approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas" (Paragraph 154)*

[2] The Climate Change Act 2008 sets out legally binding commitments for the UK to reduce national carbon emissions and a mechanism for establishing 5 year carbon budgets towards our overall commitment. In 2019 the Government amended the Climate Change Act to target full net carbon neutrality (a 100% reduction of greenhouse gas emissions) in the UK by 2050.

The first mention of neighbourhood plans in the context of renewable energy is at paragraph 155 of the NPPF:

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

The Ministry of Housing, Communities and Local Government is currently consulting on revisions to the NPPF, but the sections referred to above are not proposed to be altered.

3.2. Planning Practice Guidance

The online Planning Practice Guidance (hereafter PPG) resource, published by the Ministry of Housing, Communities and Local Government (MHCLG) provides further interpretation of national planning policy for the benefit of local planning authorities and planning practitioners.

The PPG provides the following elaboration on how local authorities are to promote renewable energy (*para 003 Reference ID: 5-003-20140306):*

"When drawing up a Local Plan local planning authorities should first consider what the local potential is for renewable and low carbon energy generation. In considering that potential, the matters local planning authorities should think about include:

- *the range of technologies that could be accommodated and the policies needed to encourage their development in the right places;*
- *the costs of many renewable energy technologies are falling, potentially increasing their attractiveness and the number of proposals;*
- *different technologies have different impacts and the impacts can vary by place;*
- *the UK has legal commitments to cut greenhouse gases and meet increased energy demand from renewable sources. 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."*

The role community led renewable energy initiatives have is outlined:

"Community initiatives are likely to play an increasingly important role and should be encouraged as a way of providing positive local benefit from renewable energy development…Local planning authorities may wish to establish policies which give positive weight to renewable and low carbon energy initiatives which have clear evidence of local community involvement and leadership."

In terms of identifying suitable locations for renewable energy development, such as wind power, the PPG states (Paragraph: 005 Reference ID: 5-005-20150618):

"There are no hard and fast rules about how suitable areas for renewable energy should be identified, but in considering locations, local planning authorities will need to ensure they take into account the requirements of the technology and, critically, the potential impacts on the local environment, including from cumulative impacts. ..."

It also goes on to state 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.

In respect of neighbourhood plans, the PPG states (Paragraph: 004):

"Neighbourhood plans are an opportunity for communities to plan for community led renewable energy developments. Neighbourhood Development Orders and Community Right to Build Orders can be used to grant planning permission for renewable energy development. To support community based initiatives a local planning authority should set out clearly any strategic policies that those producing neighbourhood plans or Orders will need to consider when developing proposals that address renewable energy development. Local planning authorities should also share relevant evidence that may assist those producing a neighbourhood plan or Order, as part of their duty to advise or assist. As part of a neighbourhood plan, communities can also look at developing a community energy plan to underpin the neighbourhood plan."

The PPG sets out commentary on particular planning considerations relevant to hydropower, active solar technology, solar farms and wind turbines.

It specifically confirms (Paragraph: 032 Reference ID: 5-032-150618) that neighbourhood plans are able to plan for the development of onshore wind in their areas by identifying suitable areas for wind energy development. The existence of such a policy, either in a neighbourhood plan or local plan is now a pre-condition if planning consent is to be granted for the development of onshore wind proposals.

3.3. Future Homes Standard

Last year the government consulted on the Future Homes Standard, a proposal to tighten up the building regulations to achieve greater carbon savings through national regulations. The government's response to the consultation has now been published, confirming their intended approach as follows:

1. Interim standards requiring a 31% reduction in carbon emissions above current building regulations from 2021.
2. Reducing carbon emissions from new homes by at least 75% from 2025
3. Ending the installation of gas central heating in new homes from 2025.

The carbon emission reductions will be delivered through enhanced fabric energy efficiency standards and the installation of low-carbon heating technologies such as heat pumps, district

heating and/or renewables, such as photovoltaic panels. The government has confirmed that there will not be an outright "ban" on gas central heating, but the regulations will set emission performance standards at a level which means that new homes will not be built with fossil fuel heating, such as a natural gas boiler.

A developer could choose to use oil, LPG or solid mineral fuel in a new home, but if they did considerable mitigating measures would need to be installed, such as more insulation, to achieve the Part L targets. Thus it is intended that the cheaper option will be to specify new homes with renewable or low carbon heating.

The interim standards (31% reduction) from 2021 will now act as the "regulatory floor" in operation everywhere but the government's response confirmed that local planning authorities will continue to be able to set more challenging standards in local plans than are set out in the building regulations.

3.4. Commentary on significance and scope for the Portishead neighbourhood plan

National planning policy acknowledges and gives strong encouragement to neighbourhood plans to plan for renewable energy and for local planning authorities to support community energy projects.

National policy also discusses the need for plans to take a proactive approach to mitigating and adapting to climate change. However nowhere within national policy or guidance is there encouragement for neighbourhood plans to set out policies governing the technical energy performance of buildings. Such policies, where attempted, tend to be watered down in examination, though non-technical policies encouraging sustainable design and construction are often allowed.

4. Desk Review of 2014 Regen renewable capacity study

CSE reviewed the 2014 Regen study[3], which represents North Somerset Council's current evidence base for renewable energy, looking at the methodology and gaps in technologies covered to see whether its conclusions are still sound and whether it need repeating or carrying out in greater detail. The study only considered onshore wind and solar resources in detail but also set out opportunities to support the wider sustainable energy sector.

Our findings can be summarised as follows:

[3] www.n-somerset.gov.uk/sites/default/files/2020-03/Regen%20SW%20assessment%20for%20solar%20and%20wind%20technologies%20in%20North%20Somerset.pdf

4.1. Review of Methodology and Conclusions

The assumptions taken in the study were largely based on a national assessment methodology published by SQW Energy for DECC in 2010. For wind and ground mounted PV the assumptions are similar to those that would tend to be used nowadays when undertaking a basic assessment of an area's technical resource. The conclusions are therefore still likely to be broadly valid, although the constraint parameters used would need a detailed review to confirm suitability. For example, for recent wind assessment studies undertaken by CSE and Land Use Consultants, slightly different noise buffer distances from dwellings were modelled with different scales of turbine which, if applied, may impact the results.

The study's main conclusions on renewable energy resources can be summarised as follows:

- **Wind** - the wind assessment considered three scales of turbine: 2MW, 1MW and 500kW with housing buffer (noise) distances of 600m, 500m and 400m respectively. Road/rail buffers were 150m, 100m and 100m. Regen then modelled these constraints and mapped the resulting unconstrained areas across North Somerset, but no potential was identified in the Portishead NDP area for the turbine scales considered. The nearest areas with potential were indicated as being just off the area's NE boundary (Royal Portbury Docks) and west of Nailsea.

- **Ground-mounted solar PV** – this was also modelled for PV arrays >250kW, using a set of constraints including a 50m buffer from dwellings. No potential was identified in the Portishead NDP area, although when areas of Green Belt were removed as a constraint, an unconstrained area was identified in Portishead Down (area to the east of the police HQ). Apart from the mapped area, there are no accompanying figures given in the report to indicate the size of the area or its potential array capacity, but the study assumes 0.13MW/acre as a rule of thumb. Disregarding Green Belt as a constraint, there is also an unconstrained area indicated to West of Valley Road, although this is thought to be outside the NDP area.

- **Rooftop solar PV** – this was modelled using basic assumptions as to the proportion of each building type that could potentially accommodate a PV system e.g. 25% of existing homes could host a 2kW system, 40% of commercial buildings could host a 5kW system etc., and results were only given for the district as a whole – there was no breakdown into local areas.

The council have confirmed that they intend to update this study. North Somerset Council's sustainability officer commented:

"We are in the process of updating the Regen SW study, to gain a fuller picture of renewable energy potential across North Somerset, which will encapsulate renewable heat opportunities alongside solar, wind, biomass and hydropower. The broad ambition for the study is to identify suitable areas for renewable and low carbon energy sources and supporting infrastructure through the new Local Plan – including solar, wind and biomass and to provide a district target for renewable energy generation. We will wait for the study outputs before deciding on our approach to heat networks, but

I believe that identifying heat priority areas will be considered. We cannot say yet whether suitable areas for ground mounted solar will be identified in or around Portishead and it's not intended that this study will identify detailed roof mounted solar opportunities." This report was expected to be published on the council's website in March, but there is no sign of it yet. Email correspondence from the North Somerset Council planning policy manager and sustainability officer is attached at Appendix A.

5. Review of North Somerset Local Plan – to identify proposed policy coverage and existing evidence base, plus gaps in the policy and evidence base.

The North Somerset Local Plan is in the early stages of review. So far in respect of the local plan review, the council have published:

- Issues and Options Consultation – September – December 2018. This early stage consultation was designed to collect the issues which need to be addressed and to receive initial feedback on a range of proposed alternatives. Relatively detailed feedback was sought on a range of proposed climate policies.
- Challenges and Choices Part 2: Choices for the Future consultation – part 2 – Nov 2020 – This consultation concentrates on the spatial strategy for distributing development across the district, though high level mention is made of the council's climate policies
- Challenges and Choices Part 1: Challenges for the Future

The council intend to publish a draft plan this year, so are likely to have a working draft of their emerging plan for internal use based on the consultations so far, but this is not publicly available.

Below for each topic I have summarised the likely policy coverage within the emerging local plan for each area, and the evidence base prepared or being commissioned by the council as indicated by council officers. All of the comments from council officers are consistent with the above policy consultations, but more detailed, and therefore for brevity I have not pasted in extracts from the policy documents themselves. I have then set out recommendations for what the neighbourhood plan could address, and the evidence needed to support these policies.

5.1. Binding zero carbon policies and sustainable design and construction policies

Policies and supporting evidence

The council's Sustainability Co-ordinator confirmed:

"We are very much still engaged with the other West of England Authorities in providing evidence for new planning policy. We're still working through what this policy might look like, but the intention is to require a net Zero Carbon standard."

CSE was previously involved in writing a detailed technical study of the feasibility and impact on viability of adopting binding net zero carbon policies for the west of England authorities, comprising North Somerset, Bath and North East Somerset, Bristol and South Gloucestershire.

The net zero policy recommended in the study comprised energy efficiency standards beyond building regulations, on-site renewable electricity generation, renewable and low carbon heat and carbon offsetting payments. Over all, on-site measures would require a 35% reduction in carbon emissions over the 2013 building regulations, with residual emissions being compensated for by payments into a carbon offsetting fund, which would be spent locally on carbon saving initiatives.

Since this study was published, the government has published its response to the Future Homes Consultation, and as discussed above confirmed that local planning authorities will continue to be able to set more challenging standards than set out in the building regulations. This essentially support the approach set out in the Currie Brown Study, though the policy approach in the west of England will be more ambitious than the Future Homes Standard, securing net zero emissions rather than the 75 – 80% reduction to be required from 2025 through building regulations. Logically if the west of England authorities amend their policy approach, it will only be to strengthen the proportion of carbon to be saved "on-site" and reduce the reliance on carbon offsetting.

Recommendations

The Portishead NDP could include a general sustainable design and construction policy. , This would reinforce the NSC plan which is expected to include excellent policies setting binding zero carbon standards for new construction, plus policies relating to sustainable design and construction and climate adaptation.

5.2. Renewable and Low Carbon Heating, including District Heating

Policies and supporting evidence

The council's Sustainability Co-ordinator confirmed in respect of possible renewable heat policies:

"We are in the process of updating the Regen SW study, to gain a fuller picture of renewable energy potential across North Somerset, which will encapsulate renewable heat opportunities …. We will wait for the study outputs before deciding on our approach to heat networks, but I believe that identifying heat priority areas will be considered."

In this approach, the council will model heat density and the heat demand of existing and planned new development in order to identify areas where district heating will be required.

The alternative to this approach is to follow the approach set by Bristol City Council, and fold a requirement for sustainable heating into an over-arching zero carbon policy, see Draft Policy CCS2: Towards zero carbon development[4] below:

Energy use in new development

Development will be expected to:

- Minimise the demand for heating, cooling, hot water, lighting and power through energy efficiency measures; then
- Meet its remaining heat/cooling demand sustainably, as set out below; then
- Maximise on-site renewable energy generation; and then
- Meet any outstanding reduction in residual emissions through carbon offsetting.

Development will be expected to achieve:

- A minimum 10% reduction in regulated CO2 emissions through energy efficiency measures; and
- A minimum 35% reduction in regulated CO2 emissions through a combination of energy efficiency measures and on-site renewable energy generation.

After applying on site measures, development is expected to achieve a 100% reduction in its remaining regulated and unregulated emissions through the use of carbon offsetting as set out below.

New development should demonstrate through an Energy Strategy set out as part of its Sustainability Statement how these requirements will be met.

Where existing buildings are being converted into new uses and it is not feasible for the full CO2 emission reduction to be met, the Energy Strategy should show that energy demand has been reduced to the lowest practical level using energy efficiency measures, heating/cooling systems have been selected sustainably and that on-site renewable energy will be installed where feasible, aiming for a 20% reduction in regulated CO2 emissions on site and exceeding this whenever possible.

With this policy structure, proposals which don't achieve the required carbon emission reductions would be likely to be refused, and proposals are incentivised to maximise on-site carbon savings to minimise the carbon offset payments which need to be made.

Note that we would expect the North Somerset Council policy to be couched around the need for renewable or low carbon heat supply, rather than around the need for district heating per se, as seen in the example above from Bristol. Their policy can be expected to be formed around the heat

[4] www.bristol.gov.uk/files/documents/2275-local-plan-review-draft-policies-and-development-allocations/file

hierarchy, most likely looking at the feasibility of district heating first, then individual building renewable heating options such as the utilisation of heat pumps.

As a town, Portishead has a close association with water, with a beach, a marina, two swimming pools, salt marshes, drainage channels, the Severn Esturary and the Marine Lake. These could potentially act as heat sources for larger scale water source heat pumps. However in order to be feasible and viable, the heat pumps would need to have a district heating system through which to distribute the heat to an adequately matched local demand, including buildings with heating systems set up or adapted to make use of this heat. Such opportunities are often triggered by major development taking place very close to one of these heat sources, so in the absence of this it seems unlikely as to whether these opportunities could be exploited. Establishing the feasibility of exploiting this resource at a particular site will need specialist advice.

Biomass usually refers to a heating and hot water system fired by a wood chip or wood pellet boiler, and biomass can also be used to fuel a CHP system. This is suitable where there is a steady demand for heat, as the system is slow to respond to changes in temperature or use, and biomass boilers are generally most efficient when working at full load. Some systems combine biomass with a gas boiler for backup or for summer use. Biomass is often used in public buildings such as schools, but is less suitable for residential use unless as part of a mixed-use development.

The use of biomass for space and water heating has become less popular in recent years due to the increasing evidence base in respect of the health impacts of air pollution, and concerns over ensuring a genuinely sustainable supply. There are no obvious significant local resources within the plan area.

A source of evidence in respect of Portishead's carbon emissions from gas, electricity, and all other sources is CSE's new community carbon calculator. This will be useful in establishing the town's baseline emissions, and deciding on priorities for emission reductions in the future.

Recommendations

There would be no harm in the neighbourhood plan expressing support for the use of renewable and low carbon heating systems, including heat pumps and the retrofitting of existing buildings with such systems, although the replacement of gas heating systems with domestic scale heat pumps will not normally need planning permission.

CSE have the capability to model heat demand and the potential for a district heating network, locations for energy centres, and establish the required energy plant capacity of these centres. However as North Somerset Council are providing evidence and policy around the need for renewable or low carbon heating systems in new development such as district heating or heat pumps, there is no need for the neighbourhood plan to set out policy in this technical area. Additionally the upgraded building regulations will also require low carbon or renewable heating systems to be fitted from 2025. We would however recommend that the parish council engage with the council's consultations going forward to encourage the most ambitious approach possible.

5.3. Renewable Energy

Policies and supporting evidence

Within the local plan consultations undertaken to date, building integrated renewable energy policies have featured much more prominently than policies supporting standalone renewable energy. There has been no discussion of the need, identified by the Committee on Climate Change to quadruple the level of installed renewable energy generation in order to decarbonise grid electricity whilst simultaneously electrifying transport and heat generation.

Likewise the adopted local plan (adopted 2017) has no policies addressing standalone renewable energy, despite the 2014 Regen study which mapped the resource and could have formed the basis of policies identifying suitable locations for onshore wind and solar. The wind turbine supplementary planning guidance document, 2014 addresses planning issues material to wind turbines, but does not identify developable areas, and has an addendum specifically stating "North Somerset Council has not identified suitable areas for wind energy development." It could have stated that the Regen study identified potentially developable areas, which would have opened the door to applications for onshore wind development being submitted since 2015.

The council's Sustainability Co-ordinator confirmed in respect of their renewed evidence base:

"The broad ambition for the study is to identify suitable areas for renewable and low carbon energy sources and supporting infrastructure through the new Local Plan – including solar, wind and biomass and to provide a district target for renewable energy generation…. We cannot say yet whether suitable areas for ground mounted solar will be identified in or around Portishead and it's not intended that this study will identify detailed roof mounted solar opportunities."

Recommendations

It seems likely that the emerging local plan will set out ambitious and proactive policies for renewable energy, but the council's thinking on renewable energy is not so far advanced as its thinking in respect of zero carbon policies for new development. The scope of their evidence base for renewable electricity is unclear and it is unlikely that they will be able to review the deployable resource in Portishead in the detail that the parish council could, or build public support for the deployment of these resources in the way the parish council could. Therefore it would be worth investigating the likely deployable standalone renewable electricity resource in Portishead and developing policies to allocate sites or identify developable areas. It would also be worth developing policies supporting community energy projects as previously recommended. Policies should be future facing, welcoming innovative renewable energy projects which aren't obviously economically viable at the present time, using current technology.

Based on our appraisal of the 2014 Regen study we would make the following comments and recommendations regarding the different forms of renewable energy:

5.4. Ground mounted solar

The Regen study identified otherwise unconstrained areas for field based solar development in the green belt in Portishead Down (area to the east of the police HQ) and a site outside of the neighbourhood plan area. It would be worth undertaking further investigation (desk-based) of this opportunity identified in the Regen study, looking at land ownership, landscape character or other local factors that your group would be aware of and consideration of whether there might be public support for the development of this site for a solar farm.

Neighbourhood plans are by their nature community-led, and ultimately the plan will only come into force if the majority of registered voters vote support it in a referendum organised by the local planning authority. Therefore the following comments are contingent on the community being supportive of taking this green belt site forward.

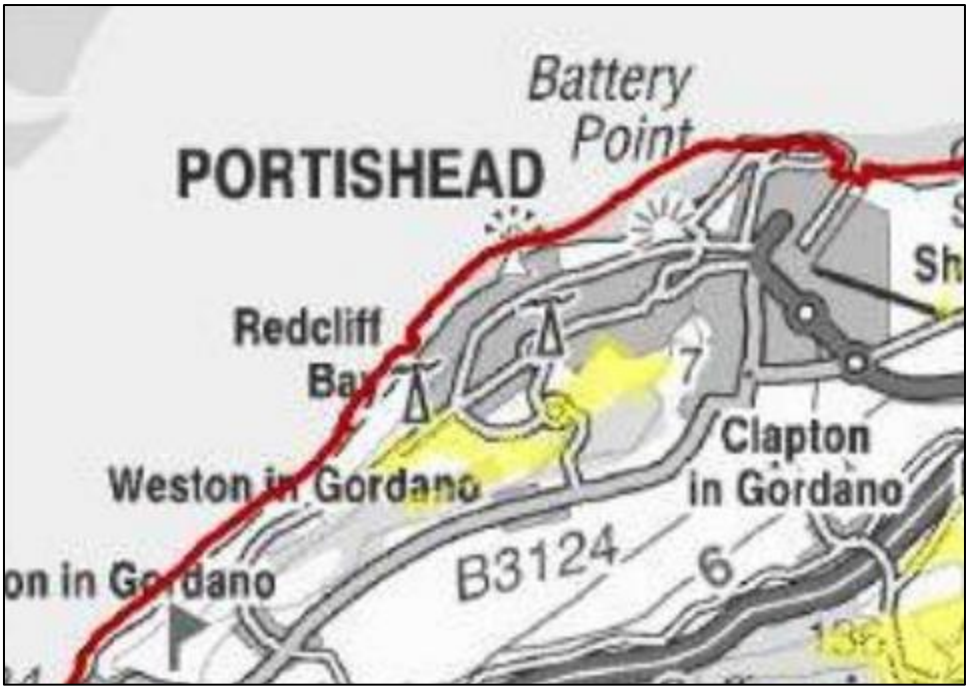

Figure 1 - potential for ground mounted solar parks - Regen study

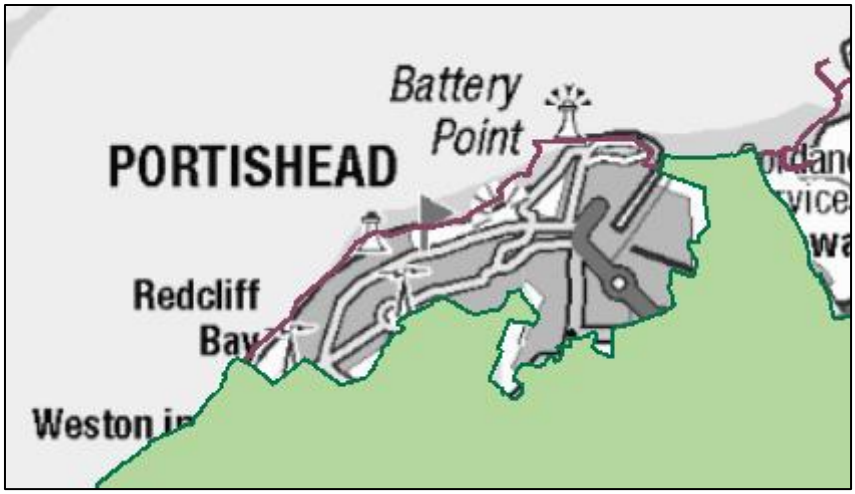

Figure 2 - extent of Green Belt around Portishead, source: magicmap

Another key area to be investigated is whether the local planning authorities would support your neighbourhood plan identifying a solar farm site within the green belt.

Green Belt designations are significant planning designations, intended to keep land permanently open and undeveloped, and essentially place a strong presumption against planning permission being granted for any development outside of a very few limited exemptions (see chapter 13 of the NPPF). Development outside of these limited exemptions is inappropriate and harmful by definition. The NPPF defines elements of many renewable energy projects as inappropriate development… and that in such cases developers will need to demonstrate very special circumstances if projects are to proceed, such as the wider environmental benefits associated with increased production of energy

Very special circumstances are unique to an individual case, but could include:

- That alternative options outside the green belt have been investigated and rejected for valid reasons
- That the specific benefits of the renewable energy project outweigh the harm it would cause to the Green Belt, which might include:

  - Contribution to increasing renewable electricity and heat generation, meeting local and national targets for renewable energy generation and carbon emission reductions
  - Social and economic benefits, including for example local job creation and rural diversification
  - Community benefits that the project might bring, for example: - Community ownership or part-ownership and the income from energy generated –
  - The temporary nature of the renewable energy development and the ability to restore land to its original condition at the end of the project's life.
  - That the impact on the openness and character of the Green Belt has been considered and mitigated at the design stage. The purpose of the Green Belt as outlined in national planning policy is defined at paragraph 134 of the NPPF.

Clearly another element of the very special circumstances here could be the community's evident wish to develop renewable energy to meet a proportion of its energy demand, against the limited deployable resources within the NDP area. The consultation could help to substantiate evidence whether there is public appetite for the development of renewable energy in the green belt, given the lack of other significant options.

Initial indications from the planning policy manager in respect of whether the neighbourhood plan could allocate this green belt site for the development of a solar farm was that theoretically might be possible from their perspective:

"My advice would be that the NP needs to very carefully assess the potential impact of the proposal on the Green Belt and set out the very special circumstances as this will be tested through the examination process if it is proposed as an allocated site."

My interpretation of this comment is that in supporting evidence it would be possible to assess the value of the green belt land in question against the five purposes of green belt designation set out in the NPPF:

134. Green Belt serves five purposes:

a) to check the unrestricted sprawl of large built-up areas;
b) to prevent neighbouring towns merging into one another;
c) to assist in safeguarding the countryside from encroachment;
d) to preserve the setting and special character of historic towns; and
e) to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

[5] Bath & North East Somerset (2013) Informal Guidance Note: Renewable energy in the Green Belt - www.bathnes.gov.uk/sites/default/files/sitedocuments/Planning-and-Building-Control/Planning-Policy/Sustainable-and-Retrofitting/regb_advice_note_april_2013.pdf

This is what LPA's routinely do when considering whether or not to remove land from the green belt, and where they are weighing up different options for removing land belt from the green belt to allocate for development to meet housing targets.

If having carried out this assessment the development of the land, or sub-parcels of the land were assessed as having a lower value in terms of the purposes of the designation, this could form part of the evidence base to support a policy within your plan, or would confirm that the proposal is unlikely to be deliverable.

If the solar farm were technically deliverable but could not be allocated within your plan due to the green belt policy issues, alternatives could be to bring it forward through a Neighbourhood Development Order in parallel with your neighbourhood plan (see para 146 (f) of the NPPF), or simply to pursue the development of this proposal as a community energy project by submitting a planning application. Our guidebook (p. 80) provides more detail on NDO's. This would be dependent on the wider community being in support of this as a proposal.

5.5. Onshore wind

The overall wind assessment process followed within the Regen study is to map environmental and planning constraints where land isn't suitable for the development of turbines of different sizes. Having carried this process out, generally small slivers of land are left which might be suitable for onshore wind development, subject to further site specific assessment, for instance looking at whether components can be delivered to site, the impact on protected species and heritage and landscape impacts. The following shows the planning constraints mapped in respect of large 2+ MW wind turbines. Other constraints were applied for smaller 1 MW and 500 KW turbines.

Assumption	**Explanation**
An exclusion area was applied to the following key features: • Roads (Motorway, Primary, A & B): 150m = turbine topple height + 10 % • Railway: 150m = turbine topple height + 10 % • Airports: 5km (safeguarding mitigation) • Rivers: 50m	For roads and railway: safeguarding against the unlikely event of a turbine falling over For airports: safeguarding from low flying traffic For rivers: avoiding blades extending over the waterway
The following types of historic area were removed: • ancient semi-natural woodland	Protecting the historic environment in line with national policy

• Registered Parks and Gardens	
Areas with the following environmental designations were excluded: • SPAs • SACs • NNRs • SSSIs • Ramsars	Protecting the natural environment
Areas with landscape designations were excluded: • National Parks • Areas of Outstanding Natural Beauty	Protecting designated landscapes
Green belt area excluded	National Planning Policy Framework paragraph 91 states "When located in the Green Belt, elements of many renewable energy projects will comprise inappropriate development. In such cases developers will need to demonstrate very special circumstances if projects are to proceed." Only exceptional sites demonstrating "very special circumstances" would gain planning permission.
Wind speed below 6 m/s at 80m excluded	Minimum wind speed considered necessary for turbines to be economically viable
600m dwelling noise mitigation buffer	600m is an estimated distance to protect homes from noise from wind turbines. Specific sites could be closer than 600m to housing if the site conditions allow it – e.g. there are hills between the turbines and the homes. Additional analysis was carried out to remove miscellaneous buildings such as barns from the buffering and to add any houses that were missed using Google Earth.
Unavailable areas removed	With local knowledge of North Somerset, aided by North Somerset council, areas where wind turbine development is unavailable were

	removed, such as those where housing development is planned.
Unfeasible areas removed	Small areas of land that are, for example, inaccessible or on steep slopes were removed from the unconstrained area at the end of the process
Miscellaneous sites	The docks area has the potential for wind turbine development but is not picked up through the wider resource assessment. An estimate was made for the potential capacity of the area based on the specific site conditions. In addition, another site is very small and so a separate assessment of its capacity was made.
Installed capacity per km2 - Benchmark figure 9 MW per km²	The national methodology assumes a figure of 9 MW per km² based on relatively widely spaced turbines

Table 1 - Assumptions for 2+ MW wind resource assessment - Resource assessment for wind and solar in Regen Resource Assessment for Wind and Solar in North Somerset

The wind assessment within the Regen study considered three scales of turbine: 2MW, 1MW and 500kW with housing buffer (noise) distances of 600m, 500m and 400m respectively. Regen then modelled these constraints and mapped the resulting unconstrained areas across North Somerset, but no potential was identified in the Portishead NDP area for the turbine scales considered.

The nearest areas with potential were indicated as being just off the area's NE boundary (Royal Portbury Docks) and west of Nailsea.

The Regen report does not go into sufficient detail to enable us to see exactly what factors resulted in wind sites not being identified in Portishead, but Green Belt constraints and buffer distances from dwellings seem likely to be the predominant constraints. Small scale wind (<500kW) was not considered and although this might be less technically constrained, it does not benefit from the economy of scale inherent with larger turbines and so economic viability is likely to be prohibitive.

If the Parish Council want to take this further, it would be possible to carry out some further mapping, of buffer distances to residential properties, set-backs from hedgerows and public footpaths to see whether, if green belt issues can be surmounted, there is any technical potential for onshore wind on Portishead Down. We will confirm an outline cost for this, but it is likely this would take less than 3 days of our time.

If there were technical potential the process described above for assessing the green belt land would apply equally to the development of wind turbines, which are also defined as inappropriate

development within the Green Belt. The key difference between the development of a solar farm and a wind turbine in terms of the planning regime, is that the wind turbine could only be progressed through a clear policy in your neighbourhood plan defining the land as suitable for the development of onshore wind. It would not be possible to progress the development of a wind turbine through just submitting a planning application.

Note also that we would advise that if onshore wind development is to be promoted in the green belt, the policy should be screened to see if the proposal requires a strategic environmental assessment. This would be undertaken by the local planning authority. If it did, this would lengthen the process of taking your plan through to adoption, and is to be avoided if possible.

As discussed in respect of solar farm development in the green belt, this discussion is entirely contingent on the community being supportive of developing wind turbines in the green belt. The public consultation planned should specifically explore whether there is public appetite for this, given the lack of other significant options.

Irrespective of whether there is further exploration of onshore wind on Portishead Down, we would recommend canvassing public opinion on the potential for large scale wind turbines to the east of the neighbourhood planning area, identified in the Regen study, see below:

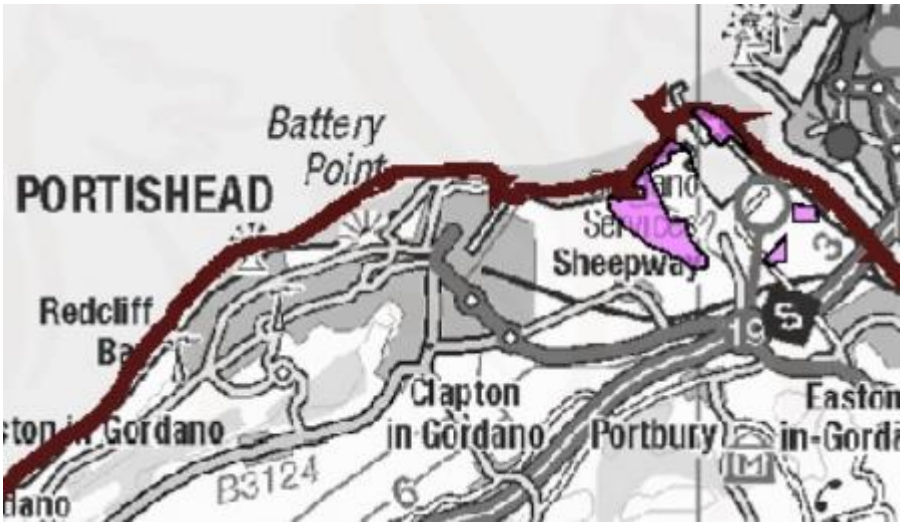

Figure 3 - potential for large scale onshore wind - Regen study

The other closest community affected Pill, Easton in Gordano and Abbots Leigh has already expressed support for onshore wind through their neighbourhood plan but stopped short of identifying suitable areas for onshore wind, as is required by government policy.

Were the community to express support for onshore wind development in this area it could encourage the council to take this further step, and identify these as suitable areas for onshore wind development through their Local Plan.

5.6. Solar canopies over car parks

Within Portishead there are numerous surface car parks which could have potential to be developed to generate renewable electricity through the addition of solar canopies above existing parking spaces, including several large car parks attached to retail units near the town centre.

Figure 4 – surface parking in blue near the town centre

Although CSE have not undertaken assessments looking at this type of solar deployment before, we could undertake a high level assessment of the likely scope and capacity for solar car parks in Portishead. Equally Mark Jackson from your group might able to take this forward.

Given the visual impacts of such installations, alongside technical considerations, you should also explore their impact on the setting of heritage assets, particularly if the intention is within your neighbourhood plan to identify locations where solar car parks would be supported. The alternative would be to develop a policy supporting solar car parks in principle, followed by criteria proposals would have to meet in order to be acceptable including their visual impact and impact upon the setting of the heritage assets. There might be commercial potential to develop these in combination with EV charging points and / or battery storage, though this would require further investigation in terms of feasibility and viability. Given the cost of the canopy structures however, it is doubtful whether installing a PV canopy as a discrete project on an existing car park would be financially viable and it would be more likely for these to come forward as part of a wider re-development project.

The use of surface car parks to generate energy should be balanced against considerations as to whether these surface car parks should be re-developed or rationalised to make better use of the land and achieve better outcomes in terms of place-making.

5.7. Roof based solar

The Regen study addressed rooftop solar only superficially. We recommend undertaking a more sophisticated assessment of rooftop solar PV, assessing the potential of the existing buildings in

Portishead – this would be GIS-based and would consider every rooftop taking into account surface area, orientation and shading and could also include discussion of solar water heating.

This would have limited value for your neighbourhood plan and the policies within it, as in most cases solar PV does not need planning permission. However it would have great potential in supporting community energy development in the area. Given that this study would essentially be independent of the neighbourhood plan, the geographical scope of such a study could be wider than your NDP area.

We acknowledge that Mark Jackson has already begun work on a manual assessment of possible sites in Portishead, and this could be an alternative way forward.

5.8. Micro-hydro, tidal and micro-tidal

Unless there are any existing studies of sites with potential of which you are aware, we think an assessment of 'run-of-river' micro-hydro is not necessary.

The marina could potentially generate electricity from micro-tidal, fitting a tidal turbine adjacent to the lock gates and capturing energy by releasing water at low tide. Likewise the Severn estuary has potential for energy generation through the use of tidal lagoons or tidal turbines. The Centre for Sustainable Energy does not have specialists working in this area and further specialist advice would be needed to determine whether these possible options would be feasible and whether they could be economically viable to develop. Tidal Lagoon Power, who have been working up plans for the Swansea tidal lagoons, would have the expertise to advise on this: info@tidallagoonpower.com.

5.9. Battery Energy Storage

Battery energy storage supports the decarbonisation of the energy system by allowing excess electricity from intermittent renewable energy generators to be stored at times of low energy demand for later use or export, whether in people's houses or adjacent to commercial renewable energy plant. Batteries can discharge to the distribution grid at times of peak demand and can accept loads from renewable energy generators at times when the distribution grid is overloaded and cannot accept any further supply. Batteries can be installed in homes for domestic use, in businesses or embedded within the distribution grid itself. In a domestic context, they can be used to store renewably generated electricity from solar panels so that the householder can maximise the use of the electricity they generate, and lessen their reliance on electricity from the grid. Aside from batteries installed within homes, batteries will most often be proposed either alongside commercial scale renewable energy projects in order sell renewably generated electricity when the prices are highest, or embedded within the electricity distribution grid in order to meet peak demand as an alternative to diesel generators (Short Term Operating Reserve). Thus battery storage can be used to smooth out fluctuations in both electricity supply and electricity demand and increase the amount of renewable energy which can feed into the grid.

As can be seen, the various ways in which battery storage can be used and the various different revenue flows from these different applications is highly complicated and rapidly changing, and viability is highly variable depending on scale and type of application

We do not think it particularly necessary, or given the complexity described above, possible to map locations where battery storage might come forward within Portishead with any precision. Your neighbourhood plan could however describe the role and potential importance of battery storage, give in principle policy support and set out criteria for that support.

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