



Ofgem's quicker and more efficient distribution connections consultation

Written evidence submitted by the National Trust

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Introduction

1. The National Trust is well aware of the impact of climate change on special places. Our statutory duty to protect the special places means we would be shirking our responsibility if we ignored the threat that a changing climate poses to them. We are therefore committed to reducing the effects of climate change.¹
2. If we want others to act to prevent climate change, then we need ourselves to reduce our own fossil fuel consumption and increase our use of renewable energy. We can demonstrate through these measures how organisations could reduce energy use and adopt renewable sources of heat and power without compromising beauty and natural integrity.
3. The National Trust aims to demonstrate how we can '[grow your own](#)' power without compromising the special qualities of our places, which brings with it unique challenges such as how to put renewables in Grade 1 listed buildings, exceptional environments and areas with historic special features. The Trust has a target of reducing energy use by 20% by 2020 with 50% of remaining energy coming from renewable sources. We currently have over 200 sites generating renewable energy across the Trust.

¹ National Trust's ten year strategy launched in April 2015, '[Playing our Part](#)'

4. After a successful pilot phase 2014/15 of 5 larger projects including two biomass boilers, one heat pump and two hydropower schemes, the National Trust's Renewable Energy Investment (REI) Programme has entered into its next phase with a £30 million investment to deliver over 40 more renewable projects.
5. The REI Programme aims to show how new energy generating infrastructure can not only harness abundant natural assets, but do so in a way that respects and where possible enhances conservation and natural beauty.
6. The hydropower schemes already installed have all been located in sensitive natural environments of the countryside, successfully installed so as to not damage their beautiful surroundings.



Hafod y Llan, Snowdonia hydro site a year after installation – a 660mm diameter pipe buried here

7. Hydropower is an especially valuable renewable technology because of its good energy profile generating 24 hours a day with only seasonal changes compared to daily changes that are experienced with solar and wind power. The National Trust is, therefore, very keen to support the development of hydropower schemes that work with the landscape.
8. The planning system should be the key determinate of where hydro systems are sited based on areas of low biodiversity, ecological, archaeological and landscape sensitivities. However, the National Trust is increasingly finding that planning is not the biggest barrier to developments, but rather the grid is determining where hydro

schemes go. Grid should facilitate not determine the location of hydro schemes. Where good grid is available it can have the result of placing environment sensitivities under more pressure not less.

9. The main issues that the National Trust is facing with regards to the grid are the costs of connection. This includes reinforcement costs; the lengthy application process and downsizing of schemes; the effect of price signals in Wales; and the inconsistency we experience across DNOs.

Grid cost

10. The quoted cost of connecting hydropower projects to the grid is an increasing issue for the National Trust:

- **Varying quotes received.** Quoted prices we have received for connecting schemes to the grid range from around £480/kW to £3,083/kW. This large variance makes it increasingly hard to predict the costs and plan for future projects.
- **Paying the premium for being the first to develop in an area.** The National Trust is usually finding that we are the first to develop in an area and have to pay for the network upgrades that all future connections will benefit from.

Because of these issues, the National Trust supports Ofgem in their analysis of this industry-wide problem and would like to offer support for any solutions.

11. The socialisation of costs could benefit the National Trust's work and help with these issues. Splitting the costs of upgrades to the grid with future developers would reduce the total cost paid by the National Trust. However, this solution does involve a certain level of risk as there are uncertainties around predicting the number and size of future developments wishing to connect to the reinforcement in the future.
12. To mitigate the risk, a greater level of transparency is required from the DNOs on other applications that have been submitted and their future plans for upgrading the

grid in the local area. A more collaborative approach is needed from parties wishing to develop hydropower and the DNOs. This could be done by the DNO taking the opportunity to act as a broker between developers in a district; working with Environment Agency or Natural Resources Wales to model resource and the Local Planning Authority to strategically plan opportunities for future development. This would require little extra work from the DNO but would enable potential developers and landowners to work together before submitting applications. The secondary benefit is this would maximise the resource in a way that could minimise impact on the landscape.

Grid application process

13. The National Trust finds the application process for getting a quote from the DNO inefficient. Due to the high costs we are being quoted, we have to resubmit applications for a lower capacity to reduce costs down. However, in some areas it takes roughly three months to receive a quote from the DNO. When this quote comes back too high, beyond our budgeted project costs, we have to resubmit another application for a smaller capacity. Often we have to then wait a further three months for a new quote. If a DNO provided a sliding scale for quotes for varying capacity, this would save time. It would also allow us to plan more effectively and reduce the number of applications being submitted to DNOs.
14. Having to downsize schemes because of capacity and cost is a frustrating part of connecting to the grid. Due to constraints on the grid, the National Trust is now designing most schemes to have a maximum output of 100kW. We are, therefore, missing the opportunity to optimise the amount of power available.
15. In the Lake District we have identified 167 potential schemes on Trust land each with a power rating of 25kW and above. This provides the potential for approximately 22MW of installed capacity or 69,000MWh/yr. We are seriously limited in our ability to develop these schemes because of the incapacity to connect to the grid due to the cost of reinforcement and connection.

Hayeswater Valley Case Study

16. The valley at Hayeswater has the capable capacity of 610kW. However, the quote we received in 2011 to connect this to the grid was £1.85 million. This was too

expensive for the project to justify, and therefore the project was abandoned. The team in the Lake District came back to this project in 2013 and started looking at reducing the amount of power we wanted to export. We re-submitted an application for 500kW but this again came back too high. The project was further downsized to 250kW and we received a more reasonable quotation of £206,000. This long, drawn out process delayed the Hayeswater project and took up time and money for both our team and the DNO, and in the meantime FiT rates have digressed significantly and consequently our scheme will generate less income in the future to invest in conserving this special environment. This could have been avoided if the first quote showed how much it would cost for a downsized scheme.



Hayeswater valley - Myers Head Lead Mine & Water Wheel Leat, a Scheduled Ancient Monument

Wasdale Valley Case Study

17. In the Wasdale Valley in the Lake District, there are four possible schemes with a total combined output of 884kW. However, the total cost of connecting all four projects came back with a quote of £2.7million. To avoid the cost of reinforcement we can only develop one of the schemes, Netherbeck, with a maximum output of 100kW, therefore not optimising the amount of power available.



The intake point at Netherbeck in Wasdale Valley

18. The National Trust is experiencing the same problem with downsizing in Wales.

The Upper Conwy valley hydro with 920kW potential was constrained to 100kW because of the grid cost; Ogwen hydro with a 900kW capacity was resized to 499kW; and the Anafon hydro with a 500kW capacity was downsized to 270kW maximum output due to connection costs, even though the construction costs for this project are almost the same as the larger scheme.

19. Having to downsize so many schemes becomes increasingly frustrating knowing that the civil engineering involved in hydropower schemes has to be done no matter what the power generated is, and these cannot be easily upgraded at a later date to enable a higher generation of power. More transparency is needed of where there are plans already in place to upgrade areas of the grid to enable the National Trust to phase and time our projects more effectively.

Price signals

20. The National Trust has yet to develop a hydropower scheme in the Brecon Beacons. This is not due to the lack of potential on National Trust land in the area, but because a proposed wind farm of 29MW has paid a small deposit to secure all the remaining grid capacity in this area. This has effectively closed large parts of mid-Wales to any further distributed generation over 3.7kW per phase. The 'price signal' has meant that large parts of the distribution network in the UK are now effectively full, and has enabled the monopolisation of the grid by the largest commercial developers. The same is true in the South West where the DNO has told us that the grid is 'full' for the next 4-6 years, by which point the potential hydro schemes we do have, that could generate clean energy for the next 50 years will be uneconomic and won't be built.

Inconsistency across DNOs

21. Another frustrating element of the grid connection process is the inconsistent approach from DNOs across the UK. This is in relation to their application process and their level of innovation. The length of waiting time for a quote from an application in the Lake District, as discussed above, is around three months. However, in Wales after receiving a quote of too high a cost, we are blocked for six months before being allowed to resubmit the application at a smaller capacity. This causes huge delays to our projects and puts pressure on finance and resources.

Having a consistent approach to the application process would be far easier to work with and would allow more sharing learning across the regions.

22. It also seems that some DNOs are trying to be more innovative than others. It is felt that the DNO needs to take a much more active role in innovation. DNOs can do more to work with stakeholders to find solutions to the benefit of all involved for the problems we are facing with the grid. A more collaborative approach is needed, with the DNO playing a large role in driving this innovation forward.

23. One form of innovation that we would like to see is more work to make the grid demand responsive. The nature of a hydropower scheme means that it tends to be connected towards the end of a network, often at the top end of high valleys. We would like to see a greater use for smart meters on all energy users' buildings at the top end of valleys allowing the top end of the network to work in a more dynamic way, managing demand by using the power from the hydropower scheme located closest to the users. The lack of testing and innovation of this kind is slowing down the evolution to a more demand responsive and smarter grid network. The National Trust wants to work proactively with DNOs to enable this innovation and test possible solutions of this type.

Conclusion

24. The National Trust would like to find new ways to work closer with DNOs and other developers to reduce the problems and drive innovation across the grid. Increased transparency from DNOs about the plans would help transform the situation and be a real game changer for all involved with connection. It would enable independent generators to plan their schemes and applications more effectively and help make the process more streamlined.

25. The National Trust is keen to find ways to drive innovation and to work with Ofgem and DNOs in the following ways to find solutions that work for all:

- Use the National Trust land to model possible scenarios and analyse how they work in the unique, sensitive, natural environment.
- Offer schemes to pilot for the socialisation process and wider innovation.
- Offer the hand of partnership to other landowners, developers and wider stakeholders.

- Provide our existing installed hydropower schemes as case studies to Ofgem, with an explicit offer to host site visits to present and future schemes.
- Finally whilst we welcome this consultation we would ask that conclusions are reached quickly to ensure improvements are delivered at pace.

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