Frequently Asked Questions – Blandford Hill Eco Hub

1. Why is Blandford Hill deemed a suitable location for the proposed eco hub?

The site is situated along the A354 which is part of the Primary Route Network of England which "…designates roads between places of traffic importance across the UK, with the aim of providing easily identifiable routes to access the whole of the country."[i]. It is therefore a well-used and important road, providing an accessible location for EV-drivers.

EV numbers will increase rapidly over the coming years. In November 2020, the Government announced a ban on the sale of new petrol and diesel cars from 2030. At the moment there are insufficient charging facilities locally and those that exist typically comprise low-power chargers, in small numbers, in local towns. Research shows that unless charging facilities are provided in rural areas, rural communities will be left behind on EVs. This project plugs a regional gap in charging facilities and helps re-balance the current bias towards more populated areas.

The site itself has a variety of characteristics which makes it suitable for the proposed eco hub. It provides a safe access point through the existing layby, it is outside any landscape or ecological designated areas and it is close to a suitable electrical grid connection point. Sites with suitable grid infrastructure for multiple rapid and ultra-rapid EV charging points are scarce, and sites that also have the potential for an adjacent renewable energy generator, like the solar farm, are even scarcer. With the forecasted rise in EV use we expect that similar EV charging infrastructure will start to come forward in more locations, but whether or not they will comprise a solar farm and battery storage facility as well, like the Blandford Hill Eco Hub proposal, remains to be seen.

2. Why is there a need for an eco hub?

Electrifying transport has a critical part to play in tackling global climate change – in the UK, approximately 40% of the UK's greenhouse gas emissions came from transport and electricity (fossil fuels), with transport being the biggest contributor. As part of the plans to significantly reduce carbon emissions, the UK Government's policy is to phase out the sale of new petrol and diesel cars by 2030, less than 9 years away. The number of electric vehicles (EVs) on the UK's roads is therefore set to rise exponentially, whilst the number of traditional combustion engine cars will decline.

To ensure that people are not 'put off' from acquiring an EV due to 'range anxiety', the concern that the car battery will run out before one's destination is reached, it is important that the roll-out of charging infrastructure occurs in-line with the increase in the size of the EV fleet. Rural areas should not be left behind (as they were with the roll-out of broadband) and it is vital that sufficient numbers of powerful, reliable and accessible public EV chargers are available along main transport links such as the A354.

An eco hub such as this which combines EV charging with renewable energy generation and battery storage, powering the charging facility with green electricity whilst also having a connection to the local grid network. This provides the opportunity for using green energy right there where it is generated. It is hoped that sites can be found to develop similar installations across the country to support the sustained growth of EVs in the UK.

3. How does the eco hub work?

The roughly 15MWp solar farm generates electricity while emitting no carbon dioxide. This electricity feeds into the 3MW battery storage facility, where it gets stored. Excess

renewable energy would be fed into the local grid network at the existing Winterborne Kingston substation approximately 1 mile south of the site.

The battery storage is connected to the EV charging infrastructure at the hub, providing rapid charging for up to at least 12 cars. Stored power from the batteries can then be used to charge the batteries of the electric vehicles visiting the hub. Like the solar farm, the battery storage facility has a direct connection to the local grid network. It can provide power to the network as well as temporarily take excess electricity from the grid, therefore helping to balance supply and demand, supporting grid stability in the local area. Once operational, the solar farm would generate approximately 15.8 million kWh (kilowatthour; energy "units") per year - roughly equivalent to the annual electricity consumption of 4,000 average homes[ii] or equivalent to a journey of 47 million miles in a typical EV[iii].

4. What happens to the batteries used in EVs and in the hub?

Electric Vehicle batteries generally last for c. 80,000-100,000 miles (and have manufactures' warranties for this distance). To date, at the end of their lives (in a car), they are generally used to produce new electricity storage batteries for domestic and industrial applications. As the internationally acclaimed advisor McKinsey and Company puts it *"EV batteries have a tough life. Subjected to extreme operating temperatures, hundreds of partial cycles a year, and changing discharge rates, lithium-ion batteries in EV applications degrade strongly during the first five years of operation and are designed for approximately a decade of useful life in most cases. Yet, these batteries can live a second life, even when they no longer meet EV performance standards, which typically include maintaining 80 percent of total usable capacity and achieving a resting self-discharge rate of only about 5 percent over a 24-hour period. After remanufacturing, such batteries are still able to perform sufficiently to serve less-demanding applications, such as stationary energy-storage services."*[iv]

5. Will there be an increase in traffic once the hub is operational?

The hub is expected to have only a small effect on local traffic levels. At first, the number of EVs on the road will still be relatively small in comparison to petrol and diesel cars and the number of EVs that may make a detour to charge at the hub will be limited as well. However, the total number of cars on the road is forecasted by the Government to rise between 11 and 43% over the next 30 years, and – since the sale of new petrol and diesel cars will be banned from 2030 – a growing number of those will be EVs. The hub will therefore be able to serve a growing number of EVs that would be passing by in any event. At the moment, data shows that around 6,500 cars and light vehicles pass the site each day[v]. Even when the lowest forecasted increase in cars is taken into consideration, the hub is expected to be a viable proposition at this location.

6. Where will the proposed eco hub be visible from?

Part of the documentation that will be submitted along with the planning application is a comprehensive Landscape and Visual Impact Assessment (LVIA). As part of this report a series of photoviews will be prepared alongside a Screened Zone of Theoretical Visibility plan. These will help to show what the project would look like from certain locations and how visible it would be, to inform the assessment of the proposals and consider fully the landscape context within which the proposed development lies. The LVIA and the photoviews will be available for public viewing, including on Dorset Council's planning portal. The site benefits from good natural screening through existing boundary vegetation, including established hedges and mature trees, which will be retained. The project team is working on draft landscaping plans which propose further enhancement

of the existing hedges, to enhance the quality of habitat they provide to local wildlife, which will also further reduce the project's visibility.

7. How about local wildlife, would it be displaced?

The eco hub will be carefully designed to minimise effects on existing wildlife, both diurnal and nocturnal. However, the site is currently in agricultural use providing a relatively species-poor ecology. A habitat management scheme will help improve local biodiversity with the aim of a net gain, for example by establishing a wildflower meadow which attracts insects and provides food for small mammals and birds.

8. What opening times do you expect the hub to have?

The café/shop element will have fairly typical trading hours (perhaps 07h00-19h00, 7 day per week) although the EV charging element will be open for longer periods, potentially 24/7. This will be agreed at a later date with Dorset Council, should the project obtain planning consent.

9. How about noise? Will the hub be lit at night?

EVs are quiet by their nature and the hub, situated around one-quarter of a mile from Winterborne Whitechurch village, will cause little additional noise for the local community. The lighting scheme will be designed to reduce light pollution. The proposed canopy will help with that, ensuring the lighting will shine down and not up into the sky. The design will be sensitive to the rural location in which the hub would be situated.

10. Can the site still be used by petrol / diesel cars?

Yes, but only for parking, which will be provided to replace the parking lost through the removal of the existing lay-by.

11. Will the A354 be closed as a result of any of the works, including the cabling works? if so, how long for?

No, the A354 will not need to be closed. The grid connection route runs to the south of the project, to the existing substation at Winterborne Kingston, away from the A354.

12. What is the timeline for development and how long would the hub be operational?

The construction of the hub, subject to planning permission being granted, is planned for 2023. The project is expected to operate for 40 years.

13. How does this plan fit with Dorset Council's policies?

The project helps meet a number of local policies in respect of renewable energy generation and action to tackle climate change. It also helps address the Climate Emergency declared by Dorset Council in May 2019. Furthermore, by encouraging the up-take of EVs in the area, the project may have indirect benefits for local air pollution, regarded by Public Health England as *"the biggest environmental threat to health in the UK"*[vi].

14. What job opportunities will the eco hub create?

During construction, we expect the hub to create up to perhaps 50 temporary construction jobs over a period of 3-6 months. Once operational, the project is likely to support approximately 6-8 local, part-time jobs relating to the EV charging station, café and shop.

15. What are you considering in terms of community benefits?

If and when the project is built, Naturalis would provide funding for local projects and is asking the community to come forward with ideas. We have already been asked to consider adding solar panels to the south-facing roofs at Dunbury Church of England Academy in Winterborne Whitechurch. Others have raised the current concern of cars speeding through the village and supporting the provision of a speed camera could also be considered, for example.

16. What happens at the end of the eco hub's life?

At the end of its expected 40-year life, the site would be fully decommissioned, and this will incorporate all elements; solar farm, charging infrastructure and battery storage facility and associated infrastructure such as the seating area etc. The detailed decommissioning arrangements would be expected to be included in the list of planning conditions associated with any future planning permission. Nearer the time of decommissioning, a decision would be made as to how much of the underground infrastructure should be taken away, given that the environmental disturbance may be significant if it is to be removed after 40 years. That said, the project is completely reversible and all aspects could be fully removed if that is the preferred option at the time.

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[i] https://www.gov.uk/government/publications/guidance-on-road-classification-and-the-primary-route-network/guidance-on-road-classification-and-the-primary-route-network

[ii] "This assumes a capacity factor of 12% for the solar farm, noting Dorset has a relatively high solar resource for the UK. The UK average for solar photovoltaic project capacity factors is 11.2% (Source: 2020 Digest of UK Energy Statistics, Department for Business, Energy and Industrial Strategy). 15MWp x 1,000 x 8,760 x 12% = 15.8m kWh, to one decimal place. The Department for Business, Energy and Industrial Strategy, "Energy Consumption in the UK" Table C9, 22 October 2020, average, temperature-corrected domestic consumption in 2019 @ 3,772 kWh. 15.8m kWh divided by 3,772 kWh = 4,189 homes

[iii] The Nissan Leaf is the best-selling EV in the UK to date (Source: DfT Vehicle Licensing Statistics. Analysis Next Green Car, October 2020). The Nissan Leaf's power consumption (Wh/km): combined 180 - 206 (206 Wh/km assumed in calculation) (Source: February 2021, page 19 https://www-europe.nissan-cdn.net/content/dam/Nissan/gb/brochures/Vehicles/Nissan_Leaf_UK.pdf. 15.8m kWh = 15.8 billion Wh. 15.8 billion / 206 = 76.7 million km. 76.7 million km = 47.7 million miles

[iv] https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/second-life-ev-batteries-the-newest-value-pool-in-energy-storage#
https://www.autocar.co.uk/car-news/industry-news-technology/what-happens-ev-batteries-after-they-cant-be-used-cars

[v] https://roadtrafficstats.uk/traffic-statistics-dorset-a354-winterborne-whitechurch-26995#.YFDMyp37SUk

[vi] Public Health England "Public Health England publishes air pollution evidence review", 11 March 2019