



**Proposed Development of a Battery Storage Facility on Land to
the North of National Grid's 275/400kV Legacy Substation,
Talwrn, Wrexham, LL14 4HY**

PLANNING STATEMENT

March 2023



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1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

- 1.1.1 This Planning Statement has been prepared in support of a planning application made by HD639LEG Limited (hereafter referred to as 'the Applicant' or 'Pelagic Energy') to install and operate a battery storage facility ('BSF') and ancillary equipment on land to the north of National Grid's 275/400kV Legacy Substation, Talwrn, Wrexham (hereafter referred to as 'the Site'). The location of the Site is illustrated on Planning Drawing 2658-03-02 and the planning application boundary is shown on Planning Drawing 2658-03-01.
- 1.1.2 This planning application is for a revised layout to a BSF scheme consented at the same location, under planning reference P/2021/0441.
- 1.1.3 This application is being made to Wrexham County Borough Council ('WCBC') as the local planning authority.

1.2 Background

- 1.2.1 This application follows a recent proposal at the same location by the Applicant for the erection of a battery storage facility and ancillary development (under planning reference P/2021/0441). This scheme (hereafter referred to as the 'Consented BSF') was consented on 5 July 2021 and the permission remains extant.
- 1.2.2 The Consented BSF has since entered the detailed design phase and a technology supplier has been chosen. The Applicant has determined that it is not possible to accommodate the site layout for their chosen technology supplier within the existing site boundary for the Consented BSF. As such, a new planning application is being submitted with a slightly amended application boundary.
- 1.2.3 The site layout has also been amended from that shown on the planning drawings of the Consented BSF to reflect the detailed designs and the chosen technology supplier's specifications. This revised BSF scheme (and the subject of this planning application) is hereafter referred to as 'the Proposed Development'.

1.3 Scheme Overview

1.3.1 The Proposed Development would comprise the following elements:

- 30 no. battery banks (single stacked) housing two Battery Energy Storage Systems (BESS) units and sitting on an access deck. These BESS units would have a similar appearance to metal shipping containers (albeit smaller), with ventilation units for cooling. The battery banks would be arranged in two parallel blocks across the Site.
- The BESS units would be supported by ancillary infrastructure including: 15 no. battery inverter/transformer stations, 1 no. external switchgear units, 1 no. auxiliary transformer compound, and 1 no. client control room.
- The BESS units and ancillary infrastructure would be located within a secure compound surrounded by a 2.4m high weldmesh fence with CCTV security cameras.

1.3.2 The layout of the Proposed Development is shown on Planning Drawing 2658-03-03 and elevations are provided on Planning Drawings 2658-03-05, 2658-03-06, 2658-03-07, 2658-03-08, and 2658-03-09.

1.3.3 The Site would be accessed in the same way as the Consented BSF. This would be via the existing National Grid substation, which itself is accessed off Bronwylfa Road further south. The internal access tracks through the substation would then be used to reach a new access gate at the south east boundary of the Site. A single internal road is proposed within the Site.

1.3.4 The point of connection for the Proposed Development to the electricity grid, would be at the adjacent substation to the south of the Site. Planning permission for this connection is currently being sought through a separate planning application (reference P/2022/1027).

1.3.5 As with the Consented BSF, the Proposed Development would be capable of importing (storing) electricity from the grid at times of excess supply in the system and exporting it back to the grid at times of high demand / reduced generation capacity. The Proposed Development is referred to by National Grid as a 'balancing service'¹. It would assist in balancing grid frequency at times of system stress. The Proposed Development would provide a flexible back-up power source to the grid

¹<https://www.nationalgrideso.com/balancing-services>

and can respond rapidly to variations that result from local and national energy demand, alongside increasing fluctuations in generation resulting from an ever-greater use of intermittent renewable energy sources². Accordingly, the Proposed Development would contribute towards ensuring that there is a reliable and constant supply of electricity across National Grid's transmission network.

1.4 The Applicant

1.4.1 The Applicant for the Proposed Development is Pelagic Energy (formerly Harbour Energy). The Applicant is the same as for the Consented BSF. Pelagic Energy is one of the largest developers of energy storage projects, flexible generation and solar farms in the UK. Pelagic Energy have projects across the UK from the South Coast to Glasgow and have secured a number of development opportunities adjacent to National Grid's Super Grid Transformer Substations across the UK.

1.5 Scope of the Planning Application

1.5.1 The application is contained within this Planning Statement, the Appendices, the planning application forms and certificates, and the planning drawings.

1.5.2 This Planning Statement is divided into twelve main sections. Following on from this introduction, the sections are set out as follows:

- **Section 2.0** provides a description of the application site, its surroundings and its planning history;
- **Section 3.0** provides a detailed description of the Proposed Development;
- **Section 4.0** addresses the need for and benefits of the Proposed Development;
- **Section 5.0** address the potential issues of noise, landscape and visual impacts, ecology, drainage, arboriculture, and ground conditions.
- **Section 6.0** sets out the planning policy context and provides an associated appraisal; and
- **Section 7.0** provides a summary and draws a concise conclusion regarding the acceptability of the Proposed Development in planning terms.

²<http://www.telegraph.co.uk/business/2017/06/07/uk-sets-new-renewable-energy-record-wind-solar-surge/> a peak in renewables output occurred on 7th June 2017 as wind turbines and solar panels helped to meet more than half of the UK's electricity demand. In addition, <https://www.renewableuk.com/news/431383/New-wind-generation-peak-rounds-off-record-breaking-year-for-renewables.htm> which reports a number of key milestones in 2018.

Need for EIA

- 1.5.3 The Proposed Development area is 4,539m² (0.45ha) and therefore falls outside the scope of Schedule 2 of the Environmental Impact Assessment (EIA) (Wales) Regulations 2017, which sets a threshold of 0.5ha for such developments.

Validation and Determination Requirements

- 1.5.4 The Proposed Development would occupy an area of 4,539m² (0.45ha) and as such it would be below the site area threshold for classification as a 'Major' development in the Development Management Procedure (Wales) Order 2012.
- 1.5.5 The Proposed Development primarily comprises plant and machinery in the form of BESS containers, inverters, transformers and switchgear. The only 'buildings' on the Site would be the client control room, the floorspace of which would be 18m². As such, the Proposed Development would be significantly below the 1,000m² floor space threshold for classification as a 'Major' development in the Development Management Procedure (Wales) Order 2012.
- 1.5.6 Accordingly, the Proposed Development would not be classified as 'Major' development in respect of national validation requirements and the statutory determination period is 8 weeks.

2.0 THE SITE, ITS CONTEXT AND PLANNING HISTORY

2.1 Introduction

- 2.1.1 This section sets out the details of the existing site of the proposal and its wider context. Relevant planning applications made on the site and in the adjacent area are then discussed.

2.2 The Site and its Surroundings

- 2.2.1 The Site is largely the same as that for the Consented BSF. It is located to the north of and adjacent to National Grid's (NG) substation off the B5426 (Bronwylfa Road), Talwrn, Wrexham. The location of the Site is shown on Planning Drawing 2658-03-02 and the existing site layout is shown on Drawing 2658-03-04.
- 2.2.2 The Site covers an area of 4,539m² (0.45ha) and comprises unmanaged grass and scrubland with some self-seeded small trees. Part of the Site to the south and east sit within the existing National Grid substation complex on hardstanding.
- 2.2.3 The Site is not within an area subject to flood risk. The Site area is below 1 hectare, and therefore Flood Risk Assessment is not a requirement of this application. However, a Surface Water Drainage Assessment has been undertaken for the Site (see Appendix D).
- 2.2.4 The Site sits within a Local Wildlife Site ('LWS') and the potential impacts of the Proposed Development on this have been fully addressed within the accompanying Ecological Assessment Report and Ecological Technical Note (Appendix C) and this is summarised in subsequent sections of this PDAS.
- 2.2.5 The Site is not subject to any heritage or Conservation Area designations and there are no listed buildings on or in the immediate vicinity to the Site.

2.3 Comparison with the Consented BSF Site

- 2.3.1 As previously mentioned, the Proposed Development is situated on a slightly amended site boundary to that of the Consented BSF. These 'new' site and boundaries are summarised below:
- The site area is now 4,539m² (previously 4,013m²)
 - The southern boundary extends into the hardstanding of the adjacent substation by between 1.3m to 4.3m (variable along the edge)

- The eastern boundary extends into the hardstanding of the adjacent substation by between 6.7m to 11.5m (variable along the edge)
- The north and west boundaries would remain the same as for the Consented BSF

2.3.2 In summary, the site of the Proposed Development only extends into the existing hardstanding of the adjacent substation and does not take up any additional greenfield land to the north or west.

2.4 Planning History

2.4.1 As previously described, the Site benefits from an extant planning permission for a BSF under the Consented BSF (planning reference P/2021/0441). Details are set out within Table 2.1 below, along with relevant planning applications within the surrounding area.

Table 2.1: Planning History of the Site and Surrounding Area

Planning Ref.	Description	Outcome / Date
P/2021/0441	Erection of a battery storage facility and ancillary development.	Granted, July 2021
P/2008/0046	Installation of 40 Kva Generator and Ancillary Equipment at Legacy Substation.	Granted, February 2008
P/2014/0263	Installation of Solar Panels and Associated Equipment to Enable Energy Generation and Connection to National Grid.	Granted, July 2014
P/2016/0089	Application for Non-Material Amendment to Planning Permission P/2014/0263 For Retention of Temporary (Internal) Access Track and Alteration to Solar Array Layout as per Condition No 20.	Granted, March 2016
P/2020/0299	Pre-application for a 49.5MW Gas Peaking Plant Scheme.	n/a

2.4.2 In summary, the Consented BSF under reference P/2021/0441 demonstrates that the Site has been considered suitable for a battery storage facility of this size.

3.0 THE PROPOSED DEVELOPMENT

3.1 Introduction

3.1.1 This section provides a description of the Proposed Development, together with details regarding its construction and operation.

3.1.2 The key components of the Proposed Development are as follows:

- 30 no. battery banks (single stacked) housing Battery Energy Storage Systems (BESS) and sitting on an access deck;
- 15 no. battery inverter / transformer stations;
- 1 no. client control room;
- 1 no. switchgear building;
- 1 no. auxiliary transformer;
- 2.4m high steel palisade security fencing surrounding the entire BSF facility;
- CCTV monitoring / lighting column points;
- A single access track with a gated entrance to the south-east; and
- Availability for limited parking on the proposed areas of hardstanding.

3.2 Comparison with the Consented BSF

3.2.1 A key difference in the layout of the Proposed Development to that of the Consented BSF is that the BESS units are now single stacked (previously double stacked). This would represent a significant change to the appearance of the battery facility as the development height would effectively be reduced by half.

3.2.2 The following table provides a summary of the key differences between the Consented BSF and the Proposed Development.

BESS Scheme	BESS Units	Transformer / Inverter Units	Site Area	Height of BESS units
Consented BSF	52 units	26	4,013m ²	Approx. 6m (double stacked)
Proposed Development	30 battery banks	15	4,539m ²	2.6m

3.2.3 The volume of the built structures on the Site would be lower for the Proposed Development and the visual impact would be reduced due to the reduction in development height.

3.3 Description of Proposed Development

Battery Storage Facility, Ancillary Infrastructure and Compound

- 3.3.1 The Proposed Development would include 30 no. BESS battery banks, as illustrated on Planning Drawing 2658-03-03. Each battery bank would comprise two BESS units. The BESS units would be c. 9.3m long, 1.78m wide and 2.59m high with ventilation and cooling units, as illustrated on Planning Drawing 2658-03-05. The containers would be supported by concrete sleeper/skid foundations.
- 3.3.2 As illustrated on Planning Drawings 2658-03-03, the BESS units would be arranged in two rows to fit the shape of the Site. Each unit would be finished in dark grey or green and would be prefabricated off-site.
- 3.3.3 Two battery banks would be connected to each inverter/transformer station. Each inverter/transformer station would comprise inverters and a transformer, as illustrated on Planning Drawing 2658-03-06. The inverter would convert the supply between the direct current ('DC') from the battery and alternating current ('AC') from the national grid and the transformer would step-up or step-down the voltage of the supply as required for transmission/storage.
- 3.3.4 The BESS units are able to import and store surplus electricity from the grid via the adjacent substation and export it back to the grid as and when required. The batteries are likely to be lithium-ion based, similar to those used in many modern electronics. To maintain internal operating conditions, each container would include heating, ventilation and air conditioning ('HVAC') units.

Fire Risk Management

- 3.3.5 Fire risk within the BESS container is managed in a number of ways, (in addition to the base chemistry of the battery cells), including software and hardware fail safes and fire suppression systems. Temperature within each cell of each battery module is monitored by the BESS unit monitoring system and any temperature variation within an individual module outside optimum operating conditions would trigger a response from the air conditioning units. If temperature increase continues or there is a failure of the air-conditioning units, the BESS unit would automatically partially or fully shutdown to mitigate against the risk of thermal runaway and fire.
- 3.3.6 In the very unlikely event of a battery fire in one of the units, a fire suppression system would be triggered automatically. The fire suppression system would comprise

FM200 gas or similar. This is a waterless fire protection system and as such there is no risk to soils or ground water as a result of operation. FM200 would be discharged into the fire risk area and would suppress any fire immediately. FM200 is a synthetic/chemical fire suppression gas and extinguishes a fire by removing the free radicals or heat elements from the fire triangle. (Oxygen, Heat and Fuel). FM200 systems are widely used for confined spaces and reach extinguishing levels in 10 seconds or less, stopping fires before they cause significant damage. FM200 extinguishes the fire quickly, which means less damage to adjacent battery modules and lower repair costs.

- 3.3.7 FM200 fire suppression is found as an active compound as a propellant in medical inhalers as such it is extremely safe within the correct fire suppression design.

Ancillary Infrastructure

- 3.3.8 The BESS units and inverter/transformer stations would be supported by the following ancillary infrastructure to enable safe connection to the National Grid substation and management/monitoring of the BSF:

- 1no. switchgear unit as illustrated on Planning Drawing 2658-03-07;
- 1no. control room as illustrated on Planning Drawing 2658-03-08, and
- 1no. auxiliary transformer compound as illustrated on Planning Drawing 2658-03-09.

Access, Surfacing & Parking

- 3.3.9 Access to the Site would be the same as for the Consented BSF. This would be via the existing substation complex. An access point and short stretch of track would be created connecting the existing internal route within the substation complex to the Proposed Development site, as shown on Planning Drawing 2658-03-03. This route connects with the adopted Bronwylfa Road to the south. Construction traffic would also use this route to access the Site. The Substation is not publicly accessible due to health and safety requirement and as such public access to the Proposed Development has not been considered.
- 3.3.10 The Proposed Development would be surfaced with compacted stone to provide an even surface for vehicle movements and to provide a stable base for installation and maintenance cranes (when required). The BESS units, switchgear unit, auxiliary transformer compound, transformers, inverters, and control room would be located

on concrete foundations. All these areas would have a low permeability and have been treated as impermeable in the drainage strategy provided at Appendix D.

- 3.3.11 The areas of hardstanding on the Site would provide sufficient parking space for the occasional maintenance engineer vehicle to park while carrying out activities within the compound.

Grid Connection

- 3.3.12 The Proposed Development would be connected to the National Grid substation via underground cables. A separate application has been submitted to WCBC (reference P/2022/1027) to secure the development needed for this connection.

Drainage

Foul Drainage

- 3.3.13 As the Site would not be permanently manned there is no requirement for foul drainage.

Surface Water

- 3.3.14 The Site is not currently surfaced by hardstanding. The Proposed Development would introduce areas of impermeable surfacing that could potentially increase surface water run-off rates from the Site. To mitigate this potential effect, a Sustainable Urban Drainage System ('SuDS') scheme would be adopted for the Site, as discussed in detail within Appendix D. A review of geological, hydrogeological and soils data indicate that discharging to a watercourse with attenuation and a restricted runoff rate is likely to be most suitable for the Site.
- 3.3.15 Should infiltration testing prove that this would be the most sustainable option, this would be investigated further to ensure the most sustainable solution is used. The various drainage options would be explored further at the detailed design stage and it is suggested that the final drainage design solution could be approved through a suitably worded condition.

Security and Safety

- 3.3.16 The same security measures would be applied as for the Consented BSF, with the Proposed Development sited behind a 2.4m high security fence with a controlled

vehicle access gate. Appropriate signage to adhere to HSE regulations would be clearly displayed.

- 3.3.17 An Alarm Receiving Company would be appointed to ensure that no one enters the Site when the facility is not occupied, and they will monitor the Site 24/7 and raise any necessary alarms with site management staff or the local police. The security system will include a Closed-Circuit TV (CCTV) system, motion sensors, tannoy system and security lights.

Lighting

- 3.3.18 To reduce light pollution and running costs, lighting at the Site would be kept to a minimum and it would only be used when maintenance staff are present on site to allow them to safely move around the Site. Lighting would be low level directional LED lighting with shrouds to prevent upwards light spillage. Lighting would be fitted to CCTV columns, site office and perimeter fencing as required.

Staff

- 3.3.19 The Proposed Development would not be permanently manned. However, a team of maintenance engineers would visit the Site on routine monthly maintenance visits. The Site would also be constantly monitored by staff remote from the Site throughout the day.
- 3.3.20 The Proposed Development is part of a wider business strategy to develop additional storage facilities elsewhere in the UK and additional staff opportunities would be created for overall management of the business and the trading of energy with the National Grid.

Traffic

- 3.3.21 Traffic movements would be the same as for the Consented BSF. During site operations, very limited traffic would be generated by the Proposed Development. This would be limited to visits by maintenance engineers using a van. There may be occasions where more major maintenance would be required that might require a crane to be brought to the Site. However, this would be an infrequent event. As such the operational phase of the project would not generate any significant traffic impacts.

- 3.3.22 During construction, the maximum number of vehicles accessing the Site during the peak construction phase is anticipated to be 4 low loaders and approximately 15 light vehicles per day.

Construction Phase

- 3.3.23 The construction phase is expected to last circa 6-8 months.

Operational Phase

- 3.3.24 During the operational phase, the Proposed Development would be controlled remotely as the facility is fully automated.

4.0 NEED AND BENEFITS

4.1 Introduction

- 4.1.1 The Consented BSF demonstrates that WCBC has considered there to be need for battery storage development. This section re-affirms the benefits of and need for battery storage in respect of the latest national policy and energy strategies, including updated documentation published since the Consented BSF was granted.

4.2 Benefits of Battery Storage Facilities

- 4.2.1 BSFs provide a means of allowing electricity from the grid to be imported and stored at times of low demand / high generation, which can then be exported back into the grid at times of higher demand / system stress.
- 4.2.2 There is an ever-increasing reliance on renewable forms of energy generation, such as wind and solar, to supply the UK's energy demands. Renewable energy sources are highly variable due to their weather dependency. As a result of the intermittent nature of renewables and the continuous requirement for National Grid to balance grid frequency (within $\pm 1\%$ of nominal system frequency, which is 50.00Hz) supporting energy balancing solutions need to be incorporated into the UK's energy strategy.
- 4.2.3 System frequency is a continuously changing variable that is determined and controlled by the second-by-second (real time) balance between system demand and total generation. If demand is greater than generation, the frequency falls while if generation is greater than demand, the frequency rises. If the grid network is not maintained within the required frequency, tolerance system stress can result in wide spread power supply issues and damage to network infrastructure.
- 4.2.4 Battery storage is a key part of this energy strategy and provides National Grid with balancing services to help accommodate the increasing level of renewable energy generation.
- 4.2.5 Enhanced Frequency Response (EFR) is defined by National Grid as being: *"a dynamic service where the active power changes proportionately in response to changes in system frequency. This service was aimed at improving the management of the system frequency pre-fault to maintain system frequency closer to 50Hz."*³ EFR

³ <https://www.nationalgrideso.com/balancing-services/frequency-response-services/enhanced-frequency-response-efr>

is borne out of the National Grid procurement exercise, which allows tenders to be submitted to deliver balancing services. On recognising the benefits of BSFs, one procurement round solely awarded services to battery storage technologies as opposed to technologies that deliver power via diesel, gas or hydro-electrical generation.

- 4.2.6 By importing excess renewable energy from the grid and storing it, batteries can capture energy that would otherwise be lost / unutilised. In respect of their storage ability, batteries offer opportunities to support the intermittent nature of renewables by storing the excess energy they produce and importing it back into the grid when demand requires.
- 4.2.7 During situations when primary power sources (e.g. traditional power stations) are interrupted, BSFs can bridge the gap in production, thus avoiding potential blackouts. It should be noted that the UK electricity network is wholly interconnected and issues in one geographic location can have far reaching implications on the network. Accordingly, BSFs offer additional capacity to deal with system stress and any variations in grid frequency at both a local and national level.
- 4.2.8 As recognised by National Grid's System Operability Framework (SOF)⁴ a: *"Faster response is more effective and so less response is needed if speed can be increased."* BSFs are able to respond more rapidly than other types of balancing services, as they have no start-up delays. As such BSFs can balance the real-time requirements of the national grid more efficiently.

4.3 National Energy Policy and Strategy Context

- 4.3.1 The UK's energy sector is currently experiencing a rapid change in response to efforts to address commitments and policies on tackling climate change. The explicit need to introduce a step change in how the country deals with climate change has been recognised by the UK Government. On 1 May 2019, an Environmental and Climate Change Emergency was declared following the finding of the Inter-governmental Panel on Climate Change. In order to avoid more than 1.5°C rise in global warming, global emissions would need to fall by around 45 per cent from 2010 levels by 2030, reaching net zero by around 2050.

⁴ <http://www2.nationalgrid.com/UK/Industry-information/Future-of-Energy/System-Operability-Framework/>

- 4.3.2 In June 2019, the UK became the first major economy in the world to pass laws to end its contribution to global warming by 2050. The Climate Change Act 2008 (2050 Target Amendment) Order 2019 sets a legally binding target to bring all greenhouse gas emissions to net zero by 2050, compared with the previous target of at least 80% reduction from 1990 levels. In April 2021, the UK government announced that it intended to speed up the target to cut carbon emissions with a target of 78% cut by 2035.
- 4.3.3 This will inevitably see an increase in the development of renewable energy generation and this will need to be mirrored by similar increases in balancing services, such as the Proposed Development.
- 4.3.4 Two-thirds of existing traditional power stations in the UK are reaching the end of their operational lifespan and are anticipated to close by 2030. This fast-changing energy landscape coupled with an increasing reliance on renewable energy generation equates to a system of high grid frequency volatility. The UK is therefore facing a requirement to address our future energy demands and ensure that a system that is fit for purpose is developed.
- 4.3.5 In response to this requirement, the Government has set out a clear policy framework for the delivery of facilities to meet the UK's future energy demands. This section briefly describes that framework, and subsequently identifies the clear benefits of BSFs and their ability to contribute towards meeting the aims of Government energy policy.

National Policy Statement for Energy (EN-1) (July 2011)

- 4.3.6 In July 2011, the Department of Energy and Climate Change (DECC)⁵ published the overarching National Policy Statement (NPS) for Energy EN-1⁶. NPS EN-1 sets out national policy for energy infrastructure and states that: *"[it] is likely to be a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990 (as amended)."* (paragraph 1.2.1)
- 4.3.7 In terms of energy security, NPS EN-1 states that: *"It is critical that the UK continues to have secure and reliable supplies of energy as we make the transition to a low carbon economy..."* (paragraph 2.2.20) In addition, the NPS recognises that a

⁵ Now part of the Department for Business, Energy and Industrial Strategy.

⁶ <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>

flexible approach to energy generation is required in order to provide backup supply for renewable energy sources, by stating: *“the more renewable generating capacity we have the more generation capacity we will require overall, to provide back-up at times when the availability of intermittent renewable sources is low.”* (paragraph 3.3.11)

- 4.3.8 The NPS identifies that the overall capacity of the grid will require additional resources to meet future demands. This is reinforced by paragraph 3.3.12, which states: *“...we need more total electricity capacity than we have now, with a larger proportion being built only or mainly to perform back-up functions.”*
- 4.3.9 It is clear from a review of NPS EN-1 that the Government expect new balancing services to come forward through the planning system to ensure energy security and to support low carbon electricity generation. As such the Proposed Development is considered consistent with the aims of NPS EN-1.

Draft National Policy Statements

- 4.3.10 Updates of the National Policy Statements referenced above were published for consultation on 6th September 2021. The consultation period ended on 29th November 2021.
- 4.3.11 Planning Act 2008 Guidance on the process for carrying out a review of existing NPSS it states:

‘26. Where a review is undertaken and a decision is made not to suspend the existing National Policy Statement (in whole or in part), it will continue to have effect for the purposes of the Planning Act. Any emerging draft National Policy Statements are potentially capable of being important and relevant considerations in the decision-making process, but the extent to which they are relevant is a matter for the relevant Secretary of State to consider with regard to the specific circumstances of each Development Consent Order application’ (emphasis added).

- 4.3.12 Whilst the Proposed Development is being considered under the TACP Act (As amended) NPSS, and as referenced, draft NPSS can be a material consideration.

Draft National Policy Statement for Energy (EN-1) (September 2021)

- 4.3.13 The Draft NPS EN-1 sets out the government latest national policy for energy infrastructure and states that: *“There are several different types of electricity*

infrastructure that are needed to deliver our energy objectives. Additional generating plants, electricity storage, interconnectors and electricity networks all have a role, but none of them will enable us to meet these objectives in isolation.” (paragraph 3.3.15, emphasis added)

4.3.14 Paragraph 3.3.17 states that *“storage and interconnection can provide flexibility, meaning that less of the output of a plant is wasted as it can either be stored or exported when there is excess production. They can also supply electricity when domestic demand is higher than generation, supporting security of supply”* (emphasis added).

4.3.15 Paragraph 3.3.18 states: *“this means that the total amount of generating plant capacity required to meet peak demand is reduced, bringing significant system savings alongside demand side response (up to £12bn per year by 2050). Storage can also reduce the need for new network infrastructure. However, neither of these technologies, as with demand side response, are sufficient to meet the anticipated increase in total demand, and so cannot fully replace the need for new generating capacity”.* (emphasis added)

4.3.16 Paragraphs 3.3.24 and 3.3.25 states that:

“Storage has a key role to play in achieving net zero and providing flexibility to the energy system, so that high volumes of low carbon power, heat and transport can be integrated. There is currently around 4GW of electricity storage operational in GB, around 3GW of which is pumped hydro storage and around 1GW is battery storage.

Storage is needed to reduce the costs of the electricity system and increase reliability by storing surplus electricity in times of low demand to provide electricity when demand is higher. Storage can provide various services, locally and at the national level. These include maximising the usable output from intermittent low carbon generation (e.g. solar and wind), reducing the total amount of generation capacity needed on the system; providing a range of balancing services to the NETSO and Distribution Network Operators (DNOs) to help operate the system; and reducing constraints on the networks, helping to defer or avoid the need for costly network upgrades as demand increases” (emphasis added)

Draft National Policy Statement for Renewable Energy Infrastructure (EN-3)
(September 2021)

- 4.3.17 Draft EN-3 covers renewable energy infrastructure. However, only pumped hydro storage is specifically referenced because from December 2020 all other electricity storage falls outside the Nationally Significant Infrastructure Project (NSIP) regime.
- 4.3.18 Electricity storage is considered part of energy generation under the Planning Act 2008 which includes renewable and low carbon energy associated infrastructure. As such it follows that increases in the deployment of renewable energy to achieve Net Zero will need to be mirrored by increases in renewable and low carbon energy associated infrastructure, such as the Proposed Development.
- 4.3.19 The Government has updated the document to reflect the important role that renewables will play in developing a low carbon economy and meeting government's net zero targets. Draft EN-3 sets out in Paragraph 1.1.1 that:
- "Electricity generation from renewable sources of energy is an essential element of the transition to net zero. Our analysis suggests that demand for electricity is likely to increase significantly over the coming years and could more than double by 2050. This could require a fourfold increase in low carbon electricity generation, with most of this likely to come from renewables" (emphasis added)*
- 4.3.20 It is clear from a review of the draft NPS EN-1 & EN-3 that significant new balancing services will need to come forward through the planning system to ensure energy security and to support low carbon electricity generation. As such the Proposed Development is considered consistent with the aims of the draft NPS EN-1 & EN-3 in this respect.

Clean Growth Strategy (October 2017)

- 4.3.21 The Clean Growth Strategy⁷ was published in October 2017. The strategy outlines the ambition of delivering a: *"diverse electricity system that supplies our homes and businesses with secure, affordable and clean power."* It goes on to state that this: *"... means upgrading our electricity system so it is smarter (using data to provide greater control), more flexible (providing energy when it is needed) and takes advantage of rapidly developing technologies such as energy storage..." (page 95, emphasis added).*

⁷ <https://www.gov.uk/government/publications/clean-growth-strategy>

4.3.22 Page 96 identifies that one possible clean growth pathway (to 2032): “*could see power emissions fall by 80 per cent compared to today, to around 16 Mt.*” it goes on to identify that: “*This could be achieved by:*

- *Growing low carbon sources such as renewables and nuclear to over 80 per cent of electricity generation, and phasing out unabated coal power.*
- *Enabling a smarter, more flexible system, unlocking significant expansion of interconnection, electricity storage, and demand side response, the first steps of which are set out in the Smart Systems and Flexibility Plan...*”(emphasis added)

4.3.23 A range of policies and proposals are set out within the strategy; those of relevance to the Proposed Development include:

- “*The Government, Ofgem and industry will implement the 29 actions set out in the Smart Systems and Flexibility Plan published on 24 July. These will enable technologies such as energy storage and demand side response to compete effectively within the energy market, help integrate more low carbon generation such as solar into our energy system, and deliver secure, smart appliances and smart tariffs to allow consumers to benefit from using energy at times when it is cheaper. Innovations and other steps to increase flexibility could unlock up to £40 billion in energy cost savings up to 2050.*”
- “*We will work with Ofgem to ensure the necessary regulatory and market arrangements evolve to support the development of a clean, smart and flexible energy system as outlined in their strategy for regulating the future energy system.*”
- “*The Government expects to invest around £900 million of public funds between 2015 and 2021 in research and innovation in the power sector.*” For power and smart systems, this includes: “*Ensuring that the power system is smart and resilient to new demands and new sources of supply will be important for energy security, cost and industrial opportunities. The Government, in partnership with the Research Councils and Innovate UK, expects to invest around £265 million in research, development and deployment in this area which will help to reduce the cost of electricity storage, advance innovative demand response technologies and develop new ways of balancing the grid...*” (emphasis added)

4.3.24 The Proposed Development would help deliver the flexible energy network and move to a low carbon economy envisaged by the strategy.

Prosperity for All: Low Carbon Wales (2019)

- 4.3.25 This document sets out actions that will be taken by the Welsh Government to cut emissions and support the growth of a low carbon economy, in light of the decarbonisation agenda.
- 4.3.26 Under Part 3 ‘Sector Emission Pathways: Power’ (page 65), the ‘ambition’ of the Welsh Government is set out: *“We need low carbon electricity to become the main source of energy in Wales. Renewable electricity will be used to provide both heating and transport in addition to power.”*
- 4.3.27 It continues by addressing the key issue with reliance on renewable energy: *“Renewable generation will continue to increase to meet a large portion of power in a decarbonised system. However, the intermittent nature of renewables means they alone cannot currently meet an electricity demand that varies considerably by time of day and season and will increase with the penetration of electric vehicles and electric heating... The system will need to integrate renewable generation with storage and other flexibility services, in order to minimise the need for new generation and system reinforcement to serve large peak demands.”* (emphasis added).
- 4.3.28 It is clear from this recent publication that the Welsh Government acknowledges storage (such as battery) as important integration technology to support existing and new renewable energy schemes.

Energy Generation in Wales (2020)

- 4.3.29 The Energy Generation in Wales 2020 report sets out the energy generation capacity in Wales in 2020 and analyses how it has changed over time. The aim of the report is to support the Welsh Government with the development of energy policy, helping to evidence the economic, social and environmental benefits from the development of Welsh energy projects.
- 4.3.30 The report states that *“There are significant benefits from new storage projects, helping Wales make greater use of its renewable generation, avoiding network constraints and gaining value from the considerable supply chain value associated with large-scale projects.”*

Single Department Plan (June 2019)

4.3.31 In June 2019, the Department for Business Energy and Industrial Strategy (BEIS) published ‘The Single Department Plan’⁸. The plan identifies five overarching objectives, including ensuring that: *‘the UK has a reliable, low cost and clean energy system’*. This objective is broken down into the following sub-objectives:

1. *“Set out a vision for the energy system consistent with the Government’s 2050 climate goals, with concrete actions that the Government will take up to 2030”* – to be achieved by (amongst others): *“delivering an ambitious Energy White Paper addressing the transformation of the GB electricity system, including proposed legislation where appropriate”; and “further developing carbon capture, use and storage deployment, to support decarbonisation and meet our legally binding carbon budgets, including potential ‘net zero’ by 2050.”*
2. *“Support clean growth and promote global action to tackle climate change”* – to be achieved by (amongst others): *“working with business...to deliver the Clean Growth Strategy, our legally binding greenhouse gas emissions reductions targets...”; “becoming the first major economy to legislate for net zero. Maintain the UK’s position as a global leader in cutting emissions while growing the economy, and develop world leading sectors to drive clean growth across the UK”; and “continuing to decarbonise the power sector by running the next Contracts for Difference allocation round to secure new renewable capacity.”*
3. *“Ensure our energy system is reliable and secure”* – to be achieved by (amongst other): *“ensuring reliable supplies of electricity and gas, including for example through...industry to reinstate the capacity market and undertaking a statutory 5- year review of the capacity market.”*
4. *“Deliver affordable energy for households and businesses”* – to be achieved by: *“continuing to implement the Government and Ofgem’s ‘Smart Systems and Flexibility Plan’ by 2022, removing barriers to smart technologies, enabling smart homes and businesses, and improving access to markets for new technologies and business models.”*

Energy White Paper – Powering our Net Zero Future (December 2020)

4.3.32 In December 2020, the Department for BEIS published the Energy White Paper ‘Powering our Net Zero Future’⁹. This Paper addresses the transformation of our

⁸ <https://www.gov.uk/government/publications/department-for-business-energy-and-industrial-strategy-single-departmental-plan>

⁹ <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future>

energy system and how the UK will clean up its energy system and reach net zero emissions by 2050.

- 4.3.33 The Paper's 'Ten Point Plan' sets out, *inter alia*, the aim to quadruple offshore wind capacity by 2030, targeting 40GW of offshore wind by this date. This is a significant investment in the renewable energy industry. Supporting infrastructure on land (such as storage facilities) will be even more vital to maximise the potential to harness this energy across UK shores for use in homes and industry.
- 4.3.34 The Paper sets out that "By 2050, we expect low-carbon options, such as clean hydrogen and long-duration storage, to satisfy the need for peaking capacity and ensure security of supply at low cost, likely eliminating the reliance on generation from unabated gas." (emphasis added). It is clear from this that the UK Government sees storage as the way forward for peaking facilities and to ensure energy security.

The Sixth Carbon Budget: The UK Path to Net Zero (December 2020)

- 4.3.35 The Sixth Carbon Budget: The UK path to Net Zero ¹⁰ was published by the Climate Change Committee (CCC) in December 2020. Page 135 of the Main Report identifies that: *"A more flexible electricity system will help balance out the variability in renewable generation. Increasing flexibility comes from both demand and supply (e.g. use of electricity storage)...With an increasing share of variable renewables, storage can capture surplus energy when demand is low and provide backup generation when demand is particularly high...Batteries can provide within-day flexibility. The Balanced Pathway assumes 18 GW of battery storage capacity by 2035."* As such, to achieve the CCC's balanced pathway it will be necessary to develop additional battery storage to assist in the deployment of variable renewable energy schemes.

IEA Net Zero by 2050 (May 2021)

- 4.3.36 The International Energy Agency (IEA) published their 'Net Zero by 2050 – A Roadmap for the Global Energy Sector'¹¹ in May 2021. The report sets out clear milestones (more than 400 in total, spanning all sectors and technologies) for what

¹⁰ <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

¹¹ <https://www.iea.org/reports/net-zero-by-2050>

needs to happen, and when, to transform the global economy from one dominated by fossil fuels into one powered predominantly by renewable energy.

- 4.3.37 The report sets out that: *“The rapid electrification of all sectors makes electricity even more central to energy security around the world that it is today – electricity system flexibility – needs to balance wind and solar with evolving demand patterns ... The transition calls for major increases in all sources of flexibility [including batteries] ... supported by smarter and more digital electricity networks”* (page 23).
- 4.3.38 The priority action box at the bottom of page 23 states that: *“The focus of energy security will evolve as reliance on renewable electricity grows and the role of oil and gas diminishes. Potential vulnerabilities from the increasing importance of electricity include the variability of supply and cybersecurity risks. Governments need to create markets for investment in batteries, digital solutions and electricity grids that reward flexibility and enable adequate and reliable supplies of electricity.”*
- 4.3.39 Section 2.5 sets out the key pillars of decarbonisation and states (on page 74) that: *“The rise in electricity demand also calls for extensive efforts to ensure the stability and flexibility of electricity supply through demand-side management, the operation of flexible low-emissions sources of generation including hydropower and bioenergy, and battery storage.”* The report also identified on page 94 identifies that: *“The additional electricity that would be needed could be produced using renewables, which would require an additional 1,700 GW of wind and solar PV capacity and almost 350 GW of additional battery capacity in 2050.”*
- 4.3.40 It is clear from the report that the rapid electrification of all sectors makes electricity even more central to energy security. As reliance on renewable electricity grows the stability and flexibility of electricity supply through demand-side management (including battery storage) will also be necessary.

Net Zero Strategy: Build Back Greener (October 2021)

- 4.3.41 The Government published the ‘Net-Zero Strategy: Build Back Greener’ in October 2021¹². The Strategy sets out policies and proposals for decarbonising all sectors of

¹²

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf (CD34)

the UK economy to meet the net-zero target and keep us on track for future carbon budgets.

- 4.3.42 In terms of policies and proposals for power, Chapter 3i 'Reducing Emissions across the Economy - Power' sets out on pages 94 and 95 that, subject to security of supply, government's commitment to a fully decarbonised power system will be brought forward to 2035. It also seeks to accelerate deployment of low-cost renewable generation, such as wind and solar, and to ensure that the planning system supports the deployment of low carbon energy infrastructure.
- 4.3.43 Decarbonising the power sector forms the foundation of a productive net zero economy and needs to meet a 40-60% increase in demand by 2035. The strategy also identifies that this will regenerate communities and create new employment opportunities right around the UK (paragraph 20, page 99).
- 4.3.44 The strategy recognises that decarbonising gas heating is likely to take longer than decarbonising the electricity system and as such heat pumps and a high electrification scenario, as per National Grid's future energy scenarios, is the most likely to 2035.
- 4.3.45 The Net Zero Strategy sets out that *"this means increased investment in the grid network, electricity storage solutions and flexible grid management, to ensure decarbonisation without risking security of supply"* (page 78 emphasis added).
- 4.3.46 In terms of economic development, the strategy suggests that *"increased deployment of storage and demand side flexibility could support up to 7,000 jobs, levelling up the power sector across Great Britain"* (page 99).
- 4.3.47 The Proposed Development would deliver the electricity storage solutions envisaged by the Net Zero Strategy.

Upgrading our Energy System: Transitioning to a Net Zero Energy System: Smart Systems and Flexibility Plan (July 2021)

- 4.3.48 In July 2021 the Department for BEIS published the 'Smart Systems and Flexibility Plan 2021'¹³ in conjunction with Ofgem. The plan sets out a vision, analysis and work

¹³

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1003778/smart-systems-and-flexibility-plan-2021.pdf (CD35)

programme aimed toward delivering flexible electricity systems that will underpin energy security and the transition to a net zero 2050. The plan is broken down into five sections. Notably, “*Chapter 2: Removing barriers to flexibility on the grid: electricity storage and interconnection*” which sets out methods for addressing policy and regulatory barriers to electricity storage.

- 4.3.49 Page 37 of the plan states energy battery storage is targeted to provide “*significant flexibility to the system...and helping to address many of the challenges presented by a low carbon system, including maintaining energy security*” by 2030. It continues; “*It [electricity storage] is essential to a net zero system as it can store electricity when it is abundant (e.g. when it is windy or sunny) for periods when it is scarce (e.g. when demand is higher).*”
- 4.3.50 Page 5 of the plan notes that BEIS and Ofgem analysis shows around 30GW of carbon flexible capacity could be needed as early as 2030, and 60GW by 2050. There is a clear need for increased electricity storage to achieve these targets as page 40 notes a total of 4GW of electricity storage was operational in Great Britain as of the publication date, of which just 1GW was made up of lithium-ion battery storage.
- 4.3.51 The Proposed Development would help deliver the flexible energy network envisaged by the plan.

Electricity Ten Year Statement (ETYS) (November 2021)

- 4.3.52 The Electricity Ten Year Statement (ETYS)^[1] was published in November 2021. It forms part of a suite of publications (Future Energy Scenarios (FES), ETYS and Network Options Assessment (NOA)) and provides the Electricity System Operator’s (ESO) view of future transmission requirements and the capacity of Great Britain’s National Electricity Transmission System (NETS) over the next ten years.
- 4.3.53 The Foreword confirms the ambition to: “*be able to operate a zero-carbon electricity system by 2025; a big milestone on the UK’s journey to net-zero by 2050. The ETYS, along with our other ESO publications, is key in helping us to achieve these goals, through encouraging innovation and informing the development of the electricity network - so that together we can deliver a secure, sustainable, and affordable energy future*” (page 3).

^[1] <https://www.nationalgrideso.com/research-publications/etys>

4.3.54 The ETYS sets out a series of key messages (pages 5 to 7), including:

“The past year has seen increased ambition for offshore wind, with the Government’s Ten Point Plan re-affirming the commitment to reach 40 GW of installed capacity by 2030.”

“Electricity demand is predominantly located in the south, leading to high north-south power flows. These flows are highly variable due to the intermittent nature of wind generation and interconnection. The system will need to be prepared to manage large swings in power flows.”

4.3.55 Key message 2 (page 6) states that in the next decade, the electricity transmission system will face growing needs in a number of regions. In relation to the South of England, the ETYS states that *“New interconnectors with Europe will place increased requirements on the transmission network, interconnector capacity is anticipated to exceed transmission connected generation in the South of England.”* This *“could potentially drive very high circuit flows causing circuit overloads, voltage management and stability issues”* (page 46).

4.3.56 The final paragraph of the key messages sub-section (page 7) identifies that the ESO is progressing a five-point plan to further tackle network constraints. The plan^[2] (published in March 2021) identifies that one of the points is to exploit storage potential in a heavily constrained network. On the basis that: *“If the energy contributing to the network congestion could be stored and used at different times, system balancing costs could be reduced.”*

4.3.57 The ETYS breaks the NETS into a series of regions. Iron Acton Substation lies within the ‘South Wales and South of England’ region.

4.3.58 In the South of England, the ETYS identifies that power generally flows from north to south and into London. The ETYS states (at Page 46) that: *“The high demand and power flows may also lead to voltage depression in London and the south-east. The closure of conventional generation within the region will present added stability and voltage depression concerns which may need to be solved through reinforcements. In the future, the southern network could potentially see a number of issues driven by future connections. If the interconnectors export power to Europe at the same*

^[2] <https://www.nationalgrideso.com/news/our-5-point-plan-manage-constraints-system>

time that high demand power is drawn both into and through London, then the northern circuits feeding London will be thermally overloaded.”

- 4.3.59 Regardless of region, all Future Energy Scenarios demonstrate gross demand increasing from 2020 to 2050, which is reflected by the low-carbon and renewables (supported by interconnectors and storage) taking over and surpassing fossil fuel generation. It is clear from the regional data that as low-carbon and renewable generation is connected into the NETS, due to its intermittent nature, the system will need to be prepared to manage large swings in power flows. This includes new reinforcements to facilitate power flows through northern regions to supply southern demand.

Bridging the Gap to Net Zero (March 2022)

- 4.3.60 Bridging the Gap to Net Zero¹⁴ was published in March 2022. The Report includes three key messages, one of which is that: *“Flexibility needs broad and largescale investment to start now.”* Furthermore, that Nation Grid ESO’s milestones for investment show that everyone needs to start building the necessary infrastructure for 2035 in the next few years. Page 23 of the report references ‘The Carbon Trust: Flexibility in Great Britain’¹⁵, the key findings of which are:

- *“Embedding greater flexibility across the entire energy system will reduce the cost of achieving net zero for all consumers while assuring energy security.*
- *Investing in flexibility is a no-regrets decision as it has the potential to deliver material net savings of up to £16.7bn per annum across all scenarios analysed in 2050.*
- *A more flexible system will accelerate the benefits of decarbonisation supported by decentralisation and digitalisation.”*

- 4.3.61 It is clear from both the report and Carbon Trust that there is an urgent need for a more flexible system which will assist in reducing costs.

British Energy Security Strategy (April 2022)

- 4.3.62 The British Energy Security Strategy was published in April 2022. Under the sub-heading of ‘Networks, storage and flexibility’ the strategy sets out that: *“accelerating*

¹⁴ <https://www.nationalgrideso.com/document/247071/download>

¹⁵ <https://www.carbontrust.com/resources/flexibility-in-great-britain>

our domestic supply of clean and affordable electricity also requires accelerating the connecting network of infrastructure to support it. Within this decade, our modern system will prioritise two key features: anticipating need because planning ahead minimises cost and public disruption; and hyper-flexibility in matching supply and demand so that minimal energy is wasted. This more efficient, locally-responsive system could bring down costs by up to £10 billion a year by 2050.” (page 24)

- 4.3.63 The strategy sets out that the Government will ensure a more flexible, efficient system for both generators and users by (amongst others): *“Encouraging all forms of flexibility with sufficient large-scale, long-duration electricity storage to balance the overall system by developing appropriate policy to enable investment”* and *“Smartening up the system with more flexible pricing, through Time of Use tariffs and battery storage through Electric Vehicles”* (pages 24 and 25).

Energy Security Bill (July 2022)

- 4.3.64 The Energy Security Bill was introduced to Parliament on 6th July 2022. The Bill seeks to protect household from the full impact of rising prices and ensure secure, clean and affordable energy for the long term through the transformation of the energy system. This means more home-grown energy from more diverse sources which reduces our dependency on imported fuels and our exposure to volatile and high prices in international markets.
- 4.3.65 A factsheet (published alongside the Bill) seeks to accelerate the growth of low carbon technologies, and in relation to battery storage, seeks to remove obstacles to innovative batteries, stating: *“We will facilitate the deployment of electricity storage, such as batteries..., by clarifying it as a distinct subset of electricity generation.”* Whilst the Bill still needs to pass through numerous stages on its way to receiving royal assent, it forms one of the most recent examples of the continuing need for low carbon technologies and reducing costs to households.

National Grid Predicted Future Requirements

- 4.3.66 National Grid ESO publishes a suite of documents on the future of energy needs in the UK annually. Those considered to be of most relevance to the Proposed

Development are the latest Future Energy Scenarios¹⁶ and System Operability Framework¹⁷ documents, both of which are considered in turn below.

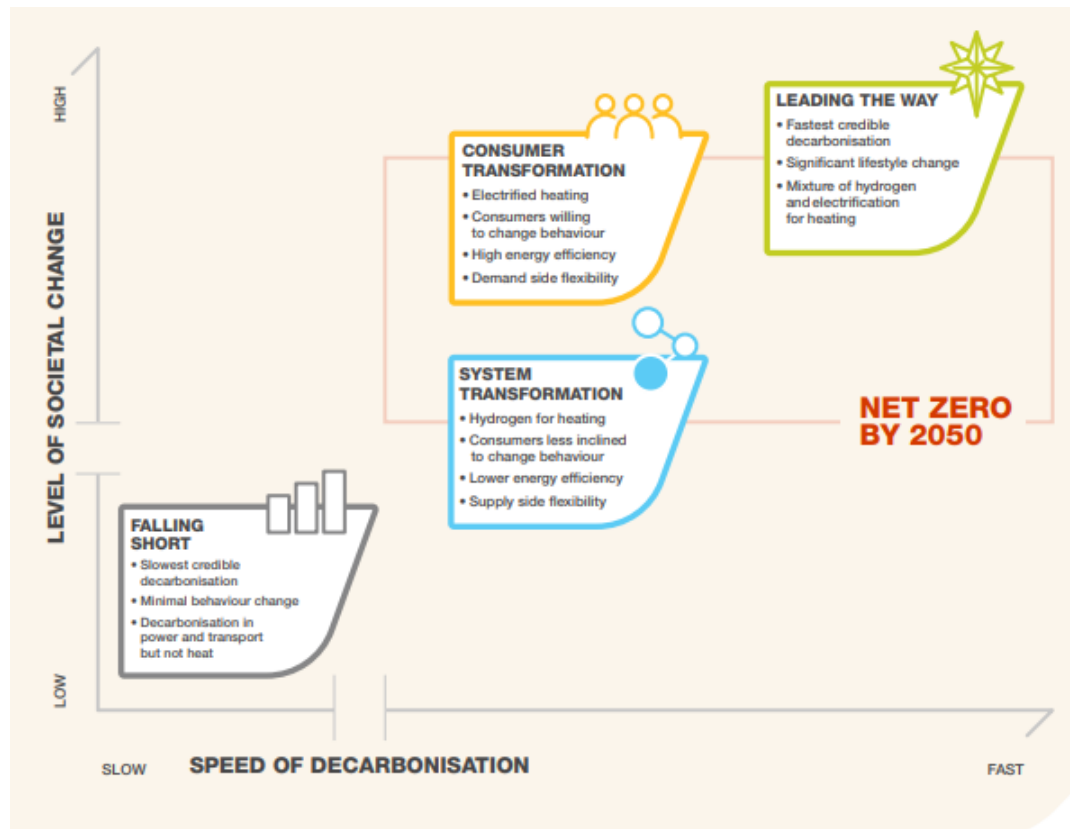
Future Energy Scenarios

- 4.3.67 The latest publication of the FES was published in July 2022. The document sets out in the introduction that: *“By 2035, we want to run a fully decarbonised electricity system all the time – helping the UK on its way to meeting its legally binding target of Net Zero by 2050”*. The FES also recognises that the past year has sparked recognition of the importance of a faster transition to Net Zero following unprecedented changes from the COVID-19 pandemic, the war in Ukraine, rapidly increasing oil and gas prices and the cost-of-living crisis. As a result, the Electricity System Operator (ESO)’s mission is to drive the transformation to a fully decarbonised electricity system by 2025. This will, in turn, support energy security and reduce exposure to volatile international fossil fuel prices by harnessing abundant renewable and low carbon resources.
- 4.3.68 The FES 2022 outlines four different credible pathways, based around two drivers: the speed of decarbonisation and the level of decentralisation, for the future energy between now and 2050. Each considers how much energy we might need and where it would come from.
- 4.3.69 The four scenarios are: (1) Leading the Way; (2) Consumer Transformation; (3) System Transformation; and (4) Falling Short. The latter was the ‘Steady Progression’ scenario in previous versions of the FES, but was renamed to reinforce how this scenario does not meet the Net Zero target by 2050. They are illustrated in Figure 4.1 below.

¹⁶ <http://fes.nationalgrid.com/>

¹⁷ <https://www.nationalgrideso.com/insights/system-operability-framework-sof>

Figure 4.1: Future Energy Scenarios: Scenario Matrix

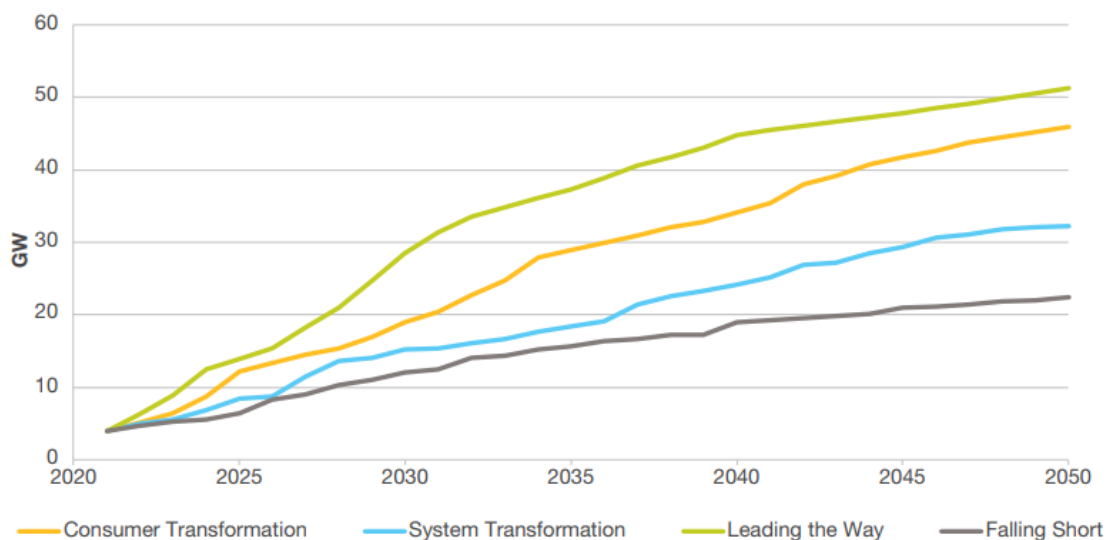


4.3.70 All four scenarios have net zero at their core and explore different pathways to achieving this. The one of the headline messages is that reaching net zero carbon emissions by 2050 is achievable. However, this requires immediate action across all key technologies and policy areas, and full engagement across society and end consumers. The ‘Consumer Transformation’ and ‘System Transformation’ scenarios both hit the target of zero emissions in 2050, and ‘Leading the Way’ achieves the target slightly earlier in 2048. ‘Falling Short’ would not achieve net zero.

4.3.71 The FES sets out several key messages, including Key Message 3 ‘Markets and Flexibility’ which identifies that: *“Reforming energy markets to improve price signals will help unlock the flexible solutions needed to integrate renewables efficiently.”* To achieve this it could require as much as *“115GWh of electricity storage in 2035 compared to less than 30 GWh today”*. The fourth key message states that *“The whole energy system of the future will require strategic storage to balance inter-seasonal demand and supply and increase resilience against external security of supply risks”*, further highlighting that *“electricity storage projects must commence now to support an electricity system without unabated natural gas after 2035”*.

4.3.72 Page 180 of the FES states that: *“Electricity storage capacity increases in all scenarios to ensure peak demand can be met reliably as an increasing proportion of our electricity is generated from weather-dependent renewables.”* It goes on to state that: *“We need somewhere to store excess energy at times of high renewable generation, and somewhere to get energy from when demands are high and generation output is low.”* Under all scenarios considered in the FES, increased electricity storage is predicted, as illustrated by Figure ES.E:26 from page 180, reproduced in Figure 4.2 below.

Figure 4.2: FES 2022 Report – Figure ES.E:26: Electricity Storage Capacity, excluding Vehicle-to-Grid and Hydrogen Storage (GW)



4.3.73 It should be noted that only the Leading the Way, Consumer Transformation and System Transformation scenarios achieve the net zero target by 2050. Under these scenarios energy storage by 2030 will need to increase from the 2021 baseline position of 4GW to 30GW, 20GW and 15GW, respectively. This is more than triple the current battery storage capacity available for the System Transformation scenario and almost eight-fold for the Leading the Way scenario.

4.3.74 By 2050 energy storage will need to increase to 71GW, 63GW and 40GW respectively under the three scenarios that achieve net zero.

System Operability Framework

4.3.75 The System Operability Framework (SOF) takes a holistic view of the changing energy landscape to assess the future operational requirements of the electricity

network. It combines insight from the FES report with a programme of technical assessments to identify medium- and long-term requirements for operability.

4.3.76 The Operability Strategy Report 2022 outlines the future challenges and actions in maintaining an operable electricity system. It sets out what needs to be done to reach National Grid's zero carbon 2025 ambition and highlights how stakeholders can engage to assist in the achievement of these challenges.

4.3.77 The Report states that; *"we have delivered, and are delivering, innovative systems, products and services. These will transform how we operate Great Britain's electricity system, and mean we are ready to operate a zero carbon network in 2025. This means a fundamental change in how our system is operated – integrating newer technologies right across the system – from large scale off-shore wind to domestic scale solar panels and increased demand side participation."* To support the integration of these technologies, storage will be key component of future operating systems.

4.4 Summary

4.4.1 It can be seen from the above review that the national policy message on energy security has not changed since the Consented BSF (P/2021/0441) was granted planning permission in 2021. If anything, the policy message is stronger in stating the need to ensure security of supply through the development of a diverse energy generation system to support the increased deployment of renewable energy, increased peak demands and the move to electric vehicles.

4.4.2 BSFs are considered to be a key component of the future energy mix in the UK under all scenarios considered in the FES. The existing storage provision will need to increase significantly by 2030 to be on track to achieve net zero by 2050.

4.4.3 The Proposed Development would provide the type of significant capital investment that the Government envisaged would come forward through the mechanisms promoted through Energy Market Reforms. The BSF would provide a flexible modular energy storage system which could instantly deliver or store power in response to system stress events on the National Grid transmission network.

5.0 ENVIRONMENTAL MATTERS

5.1 Introduction

- 5.1.1 This section of the Planning Statement considers the environmental matters of the Proposed Development. It should be noted that these same matters were addressed previously for the Consented BSF. In most cases, the conclusions of the technical reports prepared for the Consented BSF remain valid.
- 5.1.2 Where necessary, technical reports have been updated with new surveys to establish the contemporary baseline position. This is the case for noise and ecology (discussed below).

5.2 Noise

- 5.2.1 Background sound levels have previously been measured for the noise assessment carried out for the Consented BSF. Measurements were taken on 26 and 27 February 2020, inclusive of a daytime and night-time period. The measurement methodology was in accordance with BS4142:2014+A1:2019.
- 5.2.2 The results of the previous survey are still considered relevant and have been applied within an updated Noise Assessment, undertaken for the Proposed Development (see Appendix A).
- 5.2.3 The Noise Assessment considers the potential noise generation from the components of the Proposed Development, using noise levels obtained from the Applicant's chosen technology provider.
- 5.2.4 The Noise Assessment concludes that the Proposed Development would not generate sound levels that would exceed the measured background sound levels in the area. No mitigation measures are deemed to be required.
- 5.2.5 WCBC raised no issues regarding noise impacts of the Consented BSF.

5.3 Landscape and Visual Effects

- 5.3.1 This application is supported by a Landscape and Visual Appraisal (LVA), provided at Appendix B. The LVA assesses the revised layout in the context of landscape and visual effects.

- 5.3.2 The revised layout of the Site is for a single layer of BESS units (approximately 2.6m in height), whilst the Consented BSF was for double-stacked BESS units (approximately 6m in height). Accordingly, the Proposed Development would introduce a significant reduction in development height across the Site. Notwithstanding this, no issues were raised by WCBC to the development height of the Consented BSF.
- 5.3.3 The LVA concludes that the Proposed Development would be modest both in extent and in height, being contained within an existing field defined by the dense perimeter vegetation. The proposed new structures would be barely visible from beyond the Site boundary and would have no appreciable influence upon the wider landscape or views across it. They would no greater visual influence than the Consented BSF.
- 5.3.4 The LVA concludes that the landscape and visual effects of the Proposed Development would not be significant and no mitigation measures are required.

5.4 Heritage Impacts

- 5.4.1 There are several designated heritage assets within 2km of the Site. However, as identified in the LVA, views of the Proposed Development will be heavily screened by the planted embankments surrounding the substation. In addition to this, the topography of the surrounding landscape, existing buildings of the substation, and existing vegetation in the wider landscape would further screen views of the Site to these heritage assets.
- 5.4.2 No heritage issues were raised by WCBC for the Consented BSF.

5.5 Ecology and Nature Conservation

- 5.5.1 An updated survey (a 'ground truthing exercise') was undertaken for the Site in February 2023 to establish the contemporary baseline of ecological features within the Site and in the immediate surrounding area. This follows the ecological surveys undertaken for the site of the Consented BSF in 2019 and 2020 (presented within an Ecological Assessment Report (EAR)). The main objective of the updated survey was to establish if ecological features had significantly changed on the Site since the time when the Consented BSF was granted planning permission.
- 5.5.2 The findings of the updated survey are presented within an Ecological Technical Note. Both this and the EAR are included at Appendix C to this PDAS. The Technical Note concludes that the original conclusions of the EAR remain valid and sets out a

series of updated measures to protect and enhance the surrounding Local Wildlife Site at Legacy Substation.

- 5.5.3 Some of these measures are mirrored in the GCN Mitigation Strategy for the Proposed Development. The GCN Mitigation Strategy is a full version of that submitted in outline for the Consented BSF and can be viewed at Appendix G to this PDAS.

5.6 Surface Water Drainage

- 5.6.1 KRS were commissioned to undertake a Surface Water Drainage Assessment for the Proposed Development. The purpose of this report is to assess the potential for disposing of surface water. The full report is provided at Appendix D.
- 5.6.2 As previously identified for the Consented BSF, the ground conditions at the Site suggest infiltration would provide inception storage, but disposal of significant volumes of runoff may not be appropriate. At this stage, it is proposed that the surface water runoff from the Site can be discharged partially via infiltration SuDS methods.
- 5.6.3 There would be no additional greenfield land being developed on and the impermeable area over the Proposed Development site would be similar to that of the Consented BSF. As previously discussed in section 2.0, the site boundary for the Proposed Development would extend into the existing hardstanding of the adjacent substation. Surface waters on this hardstanding are directed to the existing drainage system of the substation. Accordingly, no further consideration is necessary to address the drainage within the additional land-take for the Proposed Development.
- 5.6.4 The Surface Water Drainage Assessment demonstrates that the Proposed Development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of the SuDS Standards. The Proposed Development will considerably reduce the flood risk posed to the Site and to off-Site locations due to the adoption of a SuDS Strategy.
- 5.6.5 No issues were raised with the drainage scheme for the Consented BSF by WCBC.

5.7 Arboriculture

- 5.7.1 An Arboricultural survey to BS5837 of all trees within impacting distance of the Site was undertaken by Arbtech Consulting on 1st June 2020 for the Consented BSF scheme. The survey results are considered to still be relevant to the Proposed

Development site and an updated Arboricultural Method Statement (AMS), Tree Protection Plan and Arboricultural Impact Assessment have been prepared (see Appendix E).

- 5.7.2 The arboricultural works required onsite are unchanged from the Consented BSF, as well as the recommended methodology and protection measures. These were confirmed acceptable by WCBC.

5.8 Ground Contamination and Instability

- 5.8.1 Smith Grant Environmental Consultancy LLP ('SGP') were commissioned to undertake a Stage 1 Geo-Environmental Assessment (Desk Study) to determine any potential constraints with regard to ground conditions and contamination that may impact the Proposed Development. This Assessment is contained within Appendix F.
- 5.8.2 The conclusions and recommendations of the report are unchanged from those identified for the site of the Consented BSF.
- 5.8.3 The report found that there were no particular constraints to the Proposed Development with regards to ground contamination and concluded that the Site is suitable for the proposed use with regards to ground contamination and no further investigations or assessment with regard to contaminated land were considered necessary.

5.9 Summary

- 5.9.1 The technical assessments carried out for the Proposed Development demonstrate that it would have no greater impact than that of the Consented BSF.

6.0 PLANNING POLICY CONTEXT AND APPRAISAL

6.1 Introduction

- 6.1.1 This section undertakes an appraisal of the Proposed Development in the context of the current and emerging planning policy framework.
- 6.1.2 The principle the Proposed Development been established through the Consented BSF scheme. Furthermore, the environmental and amenity impacts of the Proposed Development are considered the same (in most instances) as the Consented BSF (being the same type of development and situated on practically the same site).
- 6.1.3 As such, the policy appraisal in this section addresses only those aspects of the Proposed Development which have materially changed or where the existing baseline has been re-assessed from the Consented BSF scheme.

Local Development Plan

- 6.1.4 Section 38(6) of the Planning and Compulsory Purchase Act 2004 (PCPA) requires applications to be determined in accordance with the Development Plan unless material considerations indicate otherwise. At the time of writing, the adopted Development Plan, relevant to the Proposed Development comprises:
- Wrexham Unitary Development Plan ('UDP'), adopted February 2005; and
 - Future Wales: The National Plan 2040, adopted February 2021.

Material Considerations

- 6.1.5 There is no strict definition of what constitutes a 'material consideration' in planning legislation, although case law indicates that any consideration, which relates to the use or development of land is capable of being a material consideration in the determination of a planning application.
- 6.1.6 Such considerations can include Planning Policy Wales ('PPW'), emerging planning policies, government policy & strategy and Supplementary Planning Documents ('SPDs').
- 6.1.7 The emerging Wrexham Local Development Plan ('LDP') will replace the UDP once adopted. The LDP will be used as a basis for making land use planning decisions on until 2028. A 'Deposit Plan' of the LDP was submitted for examination in November

2018. The latest update on the LDP consultation webpage indicates that the LDP has been reviewed in full by an Inspector and has met the tests of soundness. Whilst the LDP is not yet formally adopted, it is a material consideration for planning decisions and therefore the relevant policies have been addressed in the subsequent sections.

6.2 Planning Policy Appraisal

Statutory Development Plan

Wrexham Unitary Development Plan (UDP) (2005)

Policy PS2

- 6.2.1 Strategic Policy PS2 states that “*Development must not materially detrimentally affect countryside, landscape/townscape character, open space, or the quality of the natural environment*”. As set out within the conclusions of the LVA (see Section 5.0 of this Statement and Appendix B), the Proposed Development would have no greater impact on landscape character than that of the Consented BSF.
- 6.2.2 The Ecological Technical Note (Appendix C) reports on the findings of an updated site survey carried out to that done for the Consented BSF. The Technical note concludes that the ecological situation at the Site is unchanged and draws on the mitigation measures prescribed within the existing assessment (and as deemed suitable for the Consented BSF). Accordingly, the Proposed Development would not detrimentally affect the quality of the natural environment.
- 6.2.3 In light of the above, the Proposed Development is considered to conform to this policy.

Policy PS11

- 6.2.4 This policy seeks that development proposals improve biodiversity and protect sites of local nature conservation. It is considered that the mitigation measures to protect the Legacy Substation Local Wildlife Site (LWS) adopted for the Consented BSF scheme would be equally applicable to the Proposed Development. Accordingly, the Proposed Development would comply with this policy.

Policy GDP1

- 6.2.5 Policy GDP1 sets out several criteria for which all new development should follow. The Consented BSF was considered to comply to each of these. Nevertheless, these have been set out below and discussed in context of the Proposed Development.
- a) *Ensure that built development in its scale, design and layout, and in its use of materials and landscaping, accords with the character of the site and makes a positive contribution to the appearance of the nearby locality.*
- 6.2.6 The Proposed Development would sit within the broad footprint of the Consented BSF and is similar in scale, design and layout.
- b) *Take account of personal and community safety and security in the design and layout of development and public / private spaces.*
- 6.2.7 The Proposed Development would be enclosed within a secure gated compound surrounded by a 2.4m weldmesh fence to prevent unauthorised access.
- c) *Make the best use of design techniques, siting and orientation in order to conserve energy and water resources.*
- 6.2.8 A key benefit of locating the Proposed Development adjacent to a NG substation is the reduced transmission losses (hence, energy conservation) as electricity imported and exported from the BSF has minimal distance to travel before it connects to the grid. The location and sitting of a BSF here has been established through the Consented BSF. Furthermore, the Proposed Development would have no significant impact on water resources.
- d) *Ensure safe and convenient pedestrian and vehicular access to and from development sites, both on site and in the nearby locality.*
- 6.2.9 The Site is not available for public access. Vehicle access would be via the existing route through the NG substation complex to Bronwylfa Road.
- e) *Ensure that built development is located where it has convenient access to public transport facilities and is well related to pedestrian and cycle routes wherever possible.*
- 6.2.10 Due to the nature of the proposals, the Site is restricted from public access and will operate unmanned. Maintenance engineer visits would be via a van. As such, public transport facilities to such infrastructure is not a relevant consideration.

- f) *Ensure the safety and amenity of the public and safeguard the environment from the adverse effects of pollution of water, land or air, hazards from industry and quarrying, and associated noise, odour or vibration arising from development.*

6.2.11 The potential noise impacts of the Proposed Development on public amenity and the environment have been assessed in Appendix A. The Noise Assessment concludes that the Proposed Development would not cause significant adverse impacts on the environment nor on public amenity. Furthermore, the Proposed Development would not create any adverse effects related to air, land or water pollution, nor would it generate significant vibrations. As such, the proposal is considered to conform with this policy criterion.

- g) *Secure public services (e.g. gas, water, electricity) to development at minimum public cost.*

6.2.12 The Proposed Development would provide important public services through grid balancing infrastructure.

- h) *Safeguard sites and areas of nature conservation and wildlife interest, and to provide new habitats where there is an unavoidable loss of existing habitats and areas of wildlife interest.*

6.2.13 As previously identified, the Site sits within the Legacy Substation LWS. The Ecological Technical Note (Appendix C) assesses the impacts of the Proposed Development on the LWS and finds that the conclusions of the EAR for the Consented BSF site remain valid. Furthermore, a full GCN Mitigation Strategy has been prepared (following the outline version submitted for the Consented BSF) and is provided at Appendix G. The GCN Mitigation Strategy sets out measures to improve the ecological habitats surrounding area to the Site, as well as measures to translocate rare Orchid species from the Site itself.

- i) *Ensure that development does not result in, or is subject to, flooding, soil erosion, landslides or contamination, either on or off the site.*

6.2.14 The Site is not within an area of flood risk. The Surface Water Drainage Assessment (Appendix D) concludes that the Proposed Development would considerably reduce the flood risk posed to the Site and to off-site locations due to the adoption of a SuDS Strategy.

- j) *Have regard to the need to safeguard those areas that possess a strong Welsh cultural and/or linguistic identity from development that could harm this identity.*

6.2.15 The Site does not sit within an area of cultural / historic value and is located adjacent to an existing substation complex, which itself has no cultural / historic value. The Proposed Development would therefore cause no harm to areas of strong cultural and/or linguistic identity.

- k) *Secure the development of sustainable communities, through the promotion of the economic, social and environmental well-being of the area.*

6.2.16 The Proposed Development would support renewable energy generation and, through its grid balancing services, would support the energy security and sustainability of the local community.

6.2.17 Overall, the Proposed Development is considered to accord to the criteria of this policy.

Policy EC5

6.2.18 This policy sets out that *“Within Special Landscape Areas, priority will be given to the conservation and enhancement of the landscape. Development, other than for agriculture, small-scale farm-based and other rural enterprises, and essential operational development by utility service providers, will be strictly controlled. Development will be required to conform to a high standard of design and landscaping, and special attention will be paid to minimising its visual impact both from nearby and distant viewpoints.”*

6.2.19 The Proposed Development sits within a Special Landscape Area as defined on the council’s proposals map. The LVA at Appendix B identifies that the Proposed Development would have no greater visual impact than that of the Consented BSF. Landscape and visual effects of the Proposed Development on the Special Landscape Area are therefore not significant. The Proposed Development is considered to comply with Policy EC5.

Policy EC6

6.2.20 Policy EC6 requires that *“Development either within or close to sites of biodiversity interest will only be permitted where it can be clearly demonstrated that the need for the development outweighs the need to safeguard the intrinsic nature conservation*

value of the site. Where such development is permitted, damage should be kept to a minimum, and compensatory measures should be provided. Measures to improve the biodiversity value of sites and enhance their natural conservation interest and landscape quality including the establishment of local nature reserves, will be supported.”

- 6.2.21 The principle of the Proposed Development has been established through the Consented BSF. The need and benefits of the Proposed Development are carried through from the Consented BSF (as reaffirmed under Section 4.0). Appropriate ecological mitigation measures have been set out within the Ecological Technical Note and EAR at Appendix C (drawing on those conclusions of the assessment work for the Consented BSF).
- 6.2.22 These mitigation measures not only seek to conserve the existing features of ecological value on the Site (e.g. translocation of rare Orchid species to designated places in the surrounding area) but also enhance the biodiversity of the surrounding land (e.g. through scrub clearance and the installation of bat and bird boxes).
- 6.2.23 Furthermore, a GCN Mitigation Strategy has been prepared for the Proposed Development (see Appendix G). The aim of the Strategy is to protect the existing GCN habitat areas in the LWS and provide improved habitat.

Future Wales: The National Plan 2040

- 6.2.24 The Future Wales: National Plan 2040 (‘FWNP’) was first published in February 2021. This document is intended to set the direction for development in Wales to 2040 and has Development Plan status. The FWNP covers a range of issues and challenges which will need to be addressed in Wales. Energy security and decarbonisation feature at the forefront of these.
- 6.2.25 Page 48 of the FWNP addresses Renewable Energy and states that *“Wales can become a world leader in renewable energy technologies. Our wind and tidal resources, our potential for solar generation, our support for both large and community scaled projects and our commitment to ensuring the planning system provides a strong lead for renewable energy development, mean we are well placed to support the renewable sector, attract new investment and reduce carbon emissions.”* (emphasis added).

- 6.2.26 The FWNP sets out 11no. 'Outcomes' which are the overarching ambitions based on the national planning principles and national sustainable placemaking outcomes set out in PPW. The 11no. Outcomes are collectively a statement of where Wales needs to be in 20 years' time. Every part of the FWNP, from the spatial strategy to regional policies, is concerned with achieving these Outcomes.
- 6.2.27 Outcome 11 sets out that *"The challenges of the climate emergency demand urgent action on carbon emissions and the planning system must help Wales lead the way in promoting and delivering a competitive, sustainable decarbonised society. Decarbonisation commitments and renewable energy targets will be treated as opportunities to build a more resilient and equitable low-carbon economy, develop clean and efficient transport infrastructure, improve public health and generate skilled jobs in new sectors[...]"* (emphasis added).
- 6.2.28 The FWNP contains several policies, of which Policy 17 relates to renewable energy and associated infrastructure.

Policy 17 – Renewable and Low Carbon Energy and Associated Infrastructure

- 6.2.29 This policy sets out a clear message that *"The Welsh Government strongly supports the principle of developing renewable and low carbon energy from all technologies and at all scales to meet our future energy needs."* The policy goes on to state that *"In determining planning applications for renewable and low carbon energy development, decision-makers must give significant weight to the need to meet Wales' international commitments and our target to generate 70% of consumed electricity by renewable means by 2030 in order to combat the climate emergency."* Section 4.0 of this Statement sets out this need in detail.
- 6.2.30 In summary, the FWNP adds an additional level of support to the national agenda for decarbonisation across Wales and the UK. The message of support for renewable energy development and associated infrastructure (such as energy storage technology) has not changed since the Consented BSF was granted.

Material Considerations

Wrexham Local Development Plan (LDP) (Deposit Plan) 2013-2028

Policy NE2: Local Designations for Nature Conservation and Geological Importance

- 6.2.31 The Site sits within a Locally Designated site on the draft proposals map of the LDP. Policy NE2 permits development within such sites only where it is demonstrated that:

- i. there is no satisfactory alternative location for the development which avoids nature conservation impacts, and*
- ii. compensation measures are designed to ensure that there is no reduction in the overall nature or geological conservation value of the site.*

6.2.32 The site for the Consented BSF went a through a site selection process, whereby the current location was considered one of the most suitable locations in the UK. The Applicant is seeking to use the same site for a revised BSF (the Proposed Development).

6.2.33 In consideration of point ii, it is considered that same compensation / mitigation measures agreed with WCBC for the Consented BSF will be suitable for the Proposed Development. The Ecological Technical Note (Appendix C) confirms these measures are suitable for the Proposed Development and the GCN Mitigation Strategy (Appendix F) identifies the surrounding areas to the Site where measures would be carried out.

6.2.34 In summary, the Proposed Development is considered to conform to the policies of the emerging LDP policies. The LDP position on energy developments is supportive, in line with the Welsh and UK Government's agenda. This position has not changed since the Consented BSF was granted planning permission.

Planning Policy Wales 11th Edition (February 2021)

6.2.35 Planning Policy Wales ('PPW') 11th Edition sets out the land use planning policies of the Welsh Government. PPW has not seen a revised edition since the Consented BSF was granted planning permission, and as such, the policy position has not changed. The message in PPW is still clear in its strong support for energy storage schemes. Such developments are still considered pivotal to help the Welsh Government achieve its renewable energy targets.

6.3 Summary

6.3.1 This policy appraisal has demonstrated that the Proposed Development conforms to the relevant policies of the Development Plan and all other material planning considerations. The principle of developing a battery storage facility here has been established through the Consented BSF. The Proposed Development represents a updated scheme to that of the Consented BSF, which sits on virtually the same site and would have almost identical impacts.

7.0 CONCLUSIONS

- 7.1.1 This Planning Statement has been prepared by AXIS, on behalf of HD639LEG Ltd in support of a full planning application for the development of a Battery Storage Facility on land to the north of National Grid's Legacy Substation, Talwrn, Wrexham.
- 7.1.2 This application follows a recent consent at the same location for a battery storage facility under planning reference P/2021/0441 (the Consented BSF). The detailed design stage for this Consented BSF has identified a need to amend the site boundary to accommodate the facility layout of chosen technology provider. As such, a new planning application is being submitted with a slightly amended application boundary and a revised layout.
- 7.1.3 As established for the Consented BSF, the Proposed Development would also support the decarbonisation of the energy industry in the UK and increasing deployment of intermittent renewable energy.
- 7.1.4 The technical assessments carried out for the Consented BSF scheme have been updated as necessary to bring them in line with the Proposed Development. The updated technical assessments demonstrate that the Proposed Development would not give rise to any environmental impacts greater to those of the Consented BSF.
- 7.1.5 As with the Consented BSF, the Proposed Development is considered to meet all policy tests.
- 7.1.6 Based upon the foregoing, it is demonstrably the case that the planning application should be approved without delay.

Appendix A: Noise Impact Assessment

Appendix B: Landscape and Visual Appraisal

Appendix C: Ecological Assessment Report and Ecological Technical Note

Appendix D: Drainage Impact Assessment

Appendix E: Tree Survey and Arboricultural Impact Assessment

Appendix F: Stage 1 Geo-Environmental Assessment

Appendix G: Great Crested Newt Mitigation Strategy