PROPOSED DEVELOPMENT OF A BATTERY ENERGY STORAGE SYSTEM, ASSOCIATED INFRASTRUCTURE AND ACCESS ON LAND AT NEWBURN HAUGH INDUSTRIAL ESTATE, NEWCASTLE UPON TYNE

PLANNING AND DESIGN AND ACCESS STATEMENT

Prepared for

BALANCE POWER

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1.0 INTRODUCTION AND SCHEME OVERVIEW

1.1 Introduction

1.1.1 This Planning and Design and Access Statement (PDAS) has been prepared in support of a full planning application made by Balance Power Projects Limited (hereafter referred to as 'the Applicant') to construct and operate a temporary Battery Energy Storage System (hereafter referred to as a 'BESS' or the 'Proposed Development') associated infrastructure, earthworks, landscaping and access on land adjacent to the Newburn Haugh Industrial Estate, located off Northumberland Road (A6085), Lemington (hereafter referred to as 'the Site').

1.1.2 The location and extent of the Site is illustrated on the 'Site Location Plan' and the 'Proposed Plan' which form part of the planning application drawing package. The Site lies wholly within the administrative area of Newcastle City Council (NCC).

1.1.3 This document constitutes the PDAS, which has been prepared to accompany the planning application. Following on from this introduction, Section 2.0 provides a description of the Site, its surroundings and its planning history. Section 3.0 provides a detailed description of the BESS. Section 4.0 addresses the need for and benefits of the BESS; Section 5.0 considers a range of environmental matters and reports the assessment work carried out. Section 6.0 sets out the planning policy context and provides an associated appraisal. Finally, Section 7.0 provides a summary and draws a concise conclusion regarding the acceptability of the BESS in planning terms.

1.2 Scheme Overview

1.2.1 A detailed description of the BESS, including its construction and operation, is provided in Section 3.0 of this PDAS, whilst the 'Proposed Plan' illustrates the BESS, as summarised below:

- 28 No. prefabricated / modular storage container units including batteries supported by 14 No. transformers;

- Supporting infrastructure including a 132kV substation, private substation, control room, Distribution Network Operator (DNO) [1] room, auxiliary transformers and a storage building;
- All the above infrastructure would be set in gravel surfaced compounds surrounded by fencing (including 4m high acoustic fence), matching gates and closed-circuit television (CCTV); and
- A new section of gravel access track connecting to existing track and roadway which leads to a priority junction off the A6085 Northumberland Road.

1.2.2 The point of connection would be the Newburn Haugh Primary Substation, circa 200 m to the southwest of the Site. The cable connection would be installed below ground (within roadways) by an independent connection provider / statutory undertaker (under permitted development rights). Therefore planning permission is not being sought for this element of the project.

1.2.3 Permission is being sought on a temporary basis of 40 years [2]. Following this timeframe, and the cessation of energy operations, the infrastructure would be removed, and the Site restored to its present condition.

1.2.4 The BESS would provide a flexible back-up power source to the electricity transmission network / the Grid through critical active power services (responding rapidly to variations that result from local and national energy demand) and reactive power services (balancing voltages to maintain stability and efficiency of the transmission system). These services are vital to National Grid (NG) and the DNO, such as Northern Power Grid, especially as the transmission network will become more constrained as future renewable energy schemes connect into the system on route to reaching NGs aim of operating a zero-carbon electricity system by 2025 [3], in response the Government's net zero target by 2050 [4]. Accordingly, the BESS would contribute towards ensuring that there is a reliable and constant supply of electricity across the Grid in a cleaner and more cost-effective manner than the existing situation.

[1] *A District Network Operator is a company licensed to distribute electricity in the UK.*
[2] *At the point when the BESS first becomes operational / energisation (i.e. electricity connection becomes 'live')*
[3] *https://www.nationalgrideso.com/future-energy*
[4] *https://www.legislation.gov.uk/ukdsi/2019/9780111187654*

1.2.5 There is a significant need for BESSs to support the UK's switch to a low-carbon, smart energy system. As renewable energy schemes are brought forward (as part of the decarbonisation of the UK's energy network) there is an increasing need for energy storage systems to address increased intermittencies (i.e. when the wind is not blowing, or the sun is not shining) and help balance electricity demand and supply. The BESS specifically seeks to provide flexibility to the Grid, enabling it to harness increasing volumes of renewable energy generation, as well as ensuring clean, affordable and secure energy supplies.

1.2.6 NG and the DNO are prohibited from investing in energy storage themselves. As such schemes need to be brought forward through privately invested assets, which the NG and DNOs support. On the basis spare land within existing substations is reserved for future expansion by NG or the DNO, land near a substation (i.e. the point of connection) is needed to accommodate a BESS.

1.2.7 Full details regarding the operation, need and location, requirements of the BESS is contained within Sections 3.0 and 4.0 of this PDAS respectively.

1.3 Scope of the Planning Application

1.3.1 The Infrastructure Planning (Electricity Storage Facilities) Order 2020 [5] (the Order) came into force in December 2020. The Order amended the Planning Act 2008 [6] by removing electricity storage facilities [7] from the category of *'generating stations';* whose construction or extension requires development consent as a nationally significant infrastructure project. This means that developers of electricity storage projects above 50 megawatts (MW) in England can apply to the relevant Local Planning Authority (LPA) instead of having to apply to the Secretary of State for a Development Consent Order. Accordingly, planning permission is being sought from the LPA, which in this instance is NCC.

1.3.2 Battery storage projects are not specifically defined in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 [8]. However, the Government

[5] https://www.legislation.gov.uk/ukdsi/2020/9780348209846/contents
[6] https://www.legislation.gov.uk/ukpga/2008/29/contents
[7] except for pumped hydroelectric storage facilities
[8] https://www.legislation.gov.uk/uksi/2017/571/contents/made

have accepted that they are a subset of energy generation [9] in the planning system. As such, from an Environmental Impact Assessment (EIA) perspective BESSs are generally defined under Schedule 2, Part 3 'Energy Industry' Section (a) '*Industrial installations for the production of electricity, steam and hot water'* to which the specified threshold is: *"the area of development exceeds 0.5 hectares."* even though this relates to *'generation / production'* rather than *'storage'*. Although the project exceeds the threshold the further assessment contained in this PDAS demonstrates that the project would not result in significant environmental effects. In the Applicant's experience projects of a similar scale in other parts of the Country were found not to require EIA. Furthermore, it has been noted that other similar BESS schemes within the same administrative area, have been found not to require EIA [10]. As such, the application has been prepared on the basis that the requirement for EIA would be screened out during the determination of the planning application.

1.3.3 No formal pre-application advice has been requested from NCC on the basis that the scope of the application is well known from the previous synchronous gas-powered standby generation facility which was brought forward on part of the site (see the planning history sub-section of this PDAS) and other BESS schemes that have been brough forward in the administrative area. This PDAS has been prepared on this basis and is considered to include all the necessary assessment work required to support the determination process.

1.3.4 The BESS compound itself would occupy an area of circa 0.62 hectare (ha), however, due to the red line boundary extending to Northumberland Road alongside land to enable a drainage connection to the north of the Site the size of the land within the red line is circa 1.17 ha. As such, it falls into the 'Major' development category as specified in the Development Management Procedure (England) Order 2015 [11]. On this basis the statutory determination period is 13 weeks.

[9] *BEIS 'Proposals regarding the planning system for electricity storage confirms the Government considered electricity storage facilities to be a form of electricity generating station for planning purposes.* https://www.gov.uk/government/consultations/the-planning-system-for-electricity-storage-follow-up-consultation
[10] *NCC Ref: 2012/2405/01/DET.*
[11] https://www.legislation.gov.uk/uksi/2015/595/contents/made

1.4 The Applicant

1.4.1 Balance Power Projects Limited has been helping the UK transition to a decarbonised grid since the company was founded. Specialising in solar, battery storage, and peaking technologies, Balance Power works nationally with landowners, communities, and local authorities to bring about a fundamental shift in how the UK produces and uses power, in line with national targets. Its tailored energy solutions help balance demand as the UK moves to a greener, more flexible energy system.

1.4.2 Balance Power have secured planning consent for 426 MW of generating capacity, with further capacity under development / in the planning system. The Applicant has recently obtained permission for BESS projects in Cornwall, Hampshire, West Devon, Wychavon and South Staffordshire; noting that the latter two were in the Green Belt. Their website [12] provides greater detail on a variety of topics and illustrates their project portfolio.

1.5 Community Consultation

1.5.1 Balance Power have sought to consult with the local community prior to the application being submitted. A Statement of Community Involvement (SCI) is contained in **Appendix 1-1** and outlines the Applicant's approach to consultation, for example a leaflet providing information on the project, contact details, the option to complete a feedback form and link to the project specific website: https://www.newburnhaughbatterystorage.co.uk/ was posted to local residents. The SCI also identifies who else has been consulted and how points raised by consultees have been addressed in designing the project and preparing the planning application.

[12] *https://www.balancepower.co.uk*

2.0 THE SITE AND ITS CONTEXT

2.1 The Site and its Surroundings

2.1.1 The Site is located circa 6.3 km to the west of central Newcastle Upon Tyne (beyond the A1) and more specifically to the south of Lemington, north of the River Tyne. As illustrated by the Site Location Plan it is next to other commercial and industrial uses within the Newburn Haugh Industrial Estate which is located to the south of the A6085 Northumberland Road / Scotswood Road. It is bound to the:

- North by ad-hoc external storage, commercial units (forming part of the Glassworks Business Units) alongside a former car garage and the Lemington Cone;
- East by Lemington Gut which connects to the River Tyne and southeast by other commercial and industrial properties which form part of the Newburn Riverside area; and
- South and west by a range of open-air aggregates, inert waste processing facilities and other industrial / commercial units which form part of the wider Newburn Haugh Industrial Estate.

2.1.2 The Site is located to the northeast of the Newburn Haugh Industrial Estate. It currently comprises grass, scrub and broken hardstanding. The Site has historically formed part of the Lemington Staiths and railway sidings which supported the wider Lemington Glass Works / Tyne Iron Works. The land falls gently from circa 9.5 mAOD [13] (northwest) to circa 8.0 mAOD (southeast). Along the northern and eastern edges of the site the ground level changes by circa 2 m, resulting in land beyond the site being at a lower level.

2.1.3 Access to the Site is achieved from the A6085 Northumberland Road and subsequent access road which connects to the Site via another commercial properties existing access road and through the site currently occupied by a car repair yard.

2.1.4 The nearest existing residential receptor are the properties located beyond the A6085 circa 200 m to the north of the Site. These receptors are located off High Row and

[13] *Above ordinance datum.*

Northumberland Road. The Local Plan also includes a large residential allocation circa 320 m to the west of the Site. The potential for future residential receptors in this location has also been considered with the assessment work which supports the planning application.

2.1.5 The Site is located on land at lowest risk of flooding (Flood Zone 1) [14] and has a very low risk of surface water flooding. Lemington Gut is designated as a Local Wildlife Site (LWS). The River Tyne to the south is also designated as LWS (circa 530 m at closest point), whilst Sugley Dene LWS is circa 430 m to the northeast and Percy Pit LWS is circa 780 m to the northwest of the Site.

2.1.6 In terms of heritage assets, the nearest Listed Buildings are the Grade II* Listed Lemington Cone, the derelict Grade II Listed Manager's house and office of former iron works and the Locally Listed Tyne Ironworks, which are all located between the Site and the A6085. The Site is remote from other heritage designations, such as a conservation area.

2.1.7 The available information shows there is one historical landfill located within the Site boundary and extending beyond towards the northwest / northeast. This is referred to as Lemington Gut and was first input in 1980 until 1987. Wastes included inert and industrial waste. Information from the Environment Agency (EA) confirms that biodegradable / putrescible waste and poisonous, noxious or polluting wastes were all prohibited.

2.1.8 An existing culvert and combined sewer infrastructure are known to be located within and adjacent to the Site. This infrastructure has been identified at relevant places within this PDAS and the design has sought to ensure that the BESS either maintains the necessary wayleaves or proposes a suitable diversion.

[14] https://check-long-term-flood-risk.service.gov.uk/postcode

2.2 Planning History

2.2.1 A review of the NCC online planning register identifies that part of the site benefits from planning permission (ref: 2020/0045/01/DET) for the: *'erection of a synchronous gas-powered standby generation facility (maximum 7 MW export capacity), ancillary infrastructure, equipment, access and 2.4m high boundary fence and gates.'* This permission was granted in June 2021 and remains 'live' on the basis that Condition 1 stipulates that the development must be implemented no later than the expiration of three years from permission being granted.

2.2.2 The BESS is located on the same site as the gas-powered standby generation facility. Should permission be granted, and the BESS constructed, there would no ability for the gas-powered standby generation facility to be built. In comparison to the gas-powered standby generation facility, the BESS would not generate any emissions which would clearly be of benefit from a sustainability perspective.

2.2.3 The project team are also aware of other BESS schemes in the surrounding area, these include:

- Planning application ref: 2021/2405/01/DET for the proposed construction and operation of a 50 MW BESS facility and ancillary infrastructure, structures (including control and storage buildings) and equipment along with associated access, drainage, landscaping and other associated works on land south of Lemington Road was approved in May 2023. This is located to the north of the application site.
- Planning application ref: 2022/0869/01/DET for the erection of a Battery Storage Facility with associated plant and boundary treatment following the demolition of existing buildings on the site on two sites within the Newburn Haugh Industrial Estate was approved in January 2023. This is located to the west of the application site.

2.2.4 Both permissions demonstrate the acceptability of BESS schemes in the local area, especially ref: 2021/2405/01/DET on the basis the same designations as defined on the planning policies map apply. Due to the presence for these schemes, elements of the assessment work which supports the Proposed Development have taken account of the potential for cumulative effects, such as noise.

3.0 THE PROPOSED DEVELOPMENT

3.1 Introduction

3.1.1 This section describes the BESS, together with details regarding its construction and operation. When reading this section, reference should be made to planning application drawings, particularly the Proposed Plan.

3.2 Description of the Proposed Development

3.2.1 The BESS is proposed to be located within a compound, surfaced in gravel and including internal roadways. The compound would include:

- 28 No. battery containers (circa 9.7 m long x 1.7 m wide and 3.0 m high) which are supported by 14 No. inverter / Transformer container (circa 4.0 m long x 3.0 m wide and 3.0 m high).
- A storage building (circa 12.3 m long x 3.9 m wide and 4.0 m high) would be set next to the southern boundary of the compound and would comprise a GRP construction (or similar) with double leaf doors.
- A 132kV Substation compound would be set within the northeastern extent of the main compound. The substation would include a transformer and other transmission infrastructure (extending to a height of up to 7.5m).
- A private substation (15.6 m long x 4.0 m wide and 4.0 m high) would be located on the western edge of the substation. It would be of GRP construction (or similar) with double leaf doors and high-level ventilation louvres.
- A DNO room (9.1 m long x 4.1 m wide and 4.0 m high) would be located on the southern edge of the substation. It would be of GRP construction (or similar) with double leaf doors.
- A control room / welfare building (17.1 m long x 4.1 m wide and 4.0 m high) would be located on the southern edge of the substation. It would be of GRP construction (or similar) with double leaf doors.
- Two auxiliary transformers would be located on the southern edge of the 132kV substation. Both transformers would set within a compound (4.1 m long x 3.6 m wide and 2.5 m high) secured by palisade fencing with double leaf gates.

3.2.2 The compound would be secured by 2.4 m high paladin fencing, matching double leaf gates and CCTV cameras are located at various points within the compound. The cameras would be set on free standing poles circa 3.4 m high. It would also include 4.0 m high acoustic fencing along the northern and western site perimeter of the compound. The double leaf access gates to the compound will comprise a 4.0 m high acoustic fence.

3.3 Access

3.3.1 Access to the BESS would be achieved from an existing priority junction off Northumberland Road. The route would then follow the existing tarmac road and gravel hardstanding following the southern edge of the wider site. A new section of gravel access road (circa 4m wide) would then continue along the southern edge of the wider site in order to connect with the double leaf access gates associated with the BESS compound. Access to the Site has been designed to accommodate the relevant vehicles as illustrated by the tracking drawings contained within the TS (**Appendix 5-4**).

3.4 Drainage

3.4.1 As the BESS would not be permanently manned (periodic site maintenance) there is no requirement for foul drainage. It would introduce some new impermeable surfacing that could potentially increase surface water run-off from the Site. It would also introduce areas of permeable gravel, such as within the compound itself.

3.4.2 As set out in sub-section 5.4 of this PDAS and **Appendix 5-2**, a Sustainable Drainage System (SuDS) is proposed. The strategy will reduce peak flows, the volume of runoff and represents an enhancement from the current conditions where runoff is uncontrolled, untreated, unmanaged and unmitigated. Whilst a solution can be achieved it is proposed that the detailed drainage design could be the subject of a suitably worded planning condition.

3.4.3 An existing combined sewer runs through the site. As proposed for the synchronous gas-powered standby generation facility it would be diverted around the BESS with a 5m easement maintained. The diversion would be subject to Northumbrian Water's acceptance.

3.5 Landscaping

3.5.1 A Landscape Plan has been prepared and forms part of the package of drawings which support the application. The plan illustrates a mixture of specimen tree planting, native shrub mixes and meadow grassland. The planting has been designed to ensure that ecological enhancements are achieved whilst also maintaining the necessary sewer easement and buffer to the neighbouring Lemington Gut (which forms a local wildlife site). It is anticipated that the detailed landscape design could be the subject of a suitably worded planning condition.

3.6 Fire Safety

3.6.1 During the determination of applications for other BESSs, the Applicant has noted that in some instances consultees are concerned with the potential risk of fire. Specifically, should a battery overheat and combust it may be subject to discharging flammable and toxic gasses. This is not a new phenomenon and batteries have always been prone to potential combustion; however, media articles relating to batteries and personal hardware have raised public concerns and, in some cases, overexaggerated the issue. It must be recognised that lithium-based batteries are a proven technology used extensively in mobile phones, laptops and tablets across the planet.

3.6.2 In terms of legislation, all Lithium-Ion batteries must be transported in accordance with UN 38.3 to which the UK is a signatory. Safe transportation ensures no damage to the batteries prior to use. The BESS will be constructed in accordance with the International Electrotechnical Commissions standards for Electrical Energy Storage Systems. Details of these standards are listed below.

- Allianz Risk Consulting, Tech Talk Volume 26 BESS using Li-ion batteries (2019).
- Institute of Engineering and Technology – Code of Practice for Electrical Energy Storage Systems (August 2017).
- The Energy Institute: Battery Storage Guidance Note 1 - Battery Storage Planning (August 2019).
- Safety requirements for grid-integrated Electrical Energy Storage systems — Electrochemical based systems. IEC 62933-5-2:20204 National Fire Protection

Association (NFPA) 855, Standard for the Installation of Stationary Energy Storage Systems, 2020 Edition 5.

- UN 'Recommendations on the Transport of Dangerous Goods' – Section 38.3 covers Lithium-Ion Batteries.

3.6.3 There are numerous other BESS schemes across the country which operate without incident, plus those either in construction or benefitting from planning permission, which clearly demonstrate that this matter can be suitably addressed through an automatic fire suppression system. Although there have been instances of fire at BESSs, occurrences are rare, and it should be noted that where fires have occurred, they have been safely extinguished due to the installation of such a system.

3.6.4 It should be recognised that, compared to batteries found in devices such as mobile phones, the battery units used in battery storage systems are climate-controlled to maintain a safe operating range. All the battery units also have built-in alarms and fire suppression systems that can extinguish the fire automatically if needed. The infrastructure blocks are also set part so that there is no potential for fire to spread.

3.6.5 There are several fire suppression systems that can be installed, these include:

- High-Pressure CO_2: CO_2 extinguishes a fire by removing the oxygen from the surrounding area whilst also removing the heat. The CO_2 is provided by a series of tanks linked to the fire alarm system, which are triggered in the event of a fire.
- Inert gaseous system: Inert gaseous fire suppression systems work by depleting oxygen in the area and extracting heat from the fire. In the event of a fire, the fire suppression units automatically release argon or nitrogen, and propellant inert gases which effectively extinguish fires. This is likely to be the preferred method of fire suppression as it utilises an environmentally friendly clean agent system, with zero ozone depletion and negligible global warming potential.
- Mist system: Water mist fire suppression systems come as pre-packaged units including a water tank and booster nitrogen cylinders. The fire is extinguished using the properties of the water to cool the fire below ignition. The custom water mist systems use a combination of water and nitrogen to extinguish the fire.

3.6.6 One of these fire suppression systems will be installed prior to the operation of the BESS and will be in-situ and maintained thereafter. The exact suppression system to be used at the BESS would be established closer to the point of construction and will

be dependent on appointed construction contractor preferences, specification of the batteries to be used and market availability at the point of construction. On this basis, everyone should be reassured that the BESS will be safe for the entirety of its operation.

3.7 Battery Storage Facility (Construction and Operation)

3.7.1 The full period of construction is anticipated to take up to 52 weeks, with 5.5 construction days per week. Construction hours are anticipated to be between 08:00 – 18:00 weekdays and 08:00 – 13:00 on Saturday. No construction activities would take place on a Sunday or Bank Holiday. It is requested that a degree of flexibility is applied should it be necessary to transport a piece of infrastructure to the Site (such as transformer) outside of this time. It is requested that this could be agreed through the exchange of letter, prior agreement.

3.7.2 Peak construction activity (in terms of HGV vehicle numbers) would likely occur during the enabling works stage. Over this enabling works stage up to 230 HGV trips (460 two-way movements) are expected over an eight-week period. On the basis that construction takes place over 5.5 days per week, there would therefore be a minimum of 44 working days during the enabling works stage. Accordingly, HGV trips could stand at a maximum of approximately 5 per day (10 two-way movements).

3.7.3 The BESS comprises basic construction techniques and materials, and is not anticipated to generate a significant number of daily construction vehicle movements. Therefore, the temporary construction phase is unlikely to result in a detrimental impact on the local highway network. Further details on vehicle movements are provided in sub-section 5.5 of the PDAS and within the TS (**Appendix 5-4**).

3.7.4 The construction phase is anticipated to be controlled through a Construction Environmental Management Plan (CEMP), via a suitably worded planning condition to any forthcoming planning permission. This would ensure that there would be no potential for pollution and / or nuisance to the surrounding environment or residential properties.

3.7.5 During the operational phase, the BESS would be controlled remotely as it is fully automated. It would only be necessary for a maintenance engineer to visit the Site

on an occasional basis (i.e. monthly routine maintenance visit). As such the operational phase of the project would not generate any significant traffic impacts.

3.7.6 Planning permission for the BESS is being sought on a temporary basis for 40 years (at point when the BESS first becomes operational, i.e. energised). Following this timeframe, and the cessation of energy operations, the infrastructure would be removed, and the Site restored to its present use and condition. It is anticipated that this would be controlled through a suitably worded planning condition.

3.8 Parameter Plans (Height and Micro-Siting)

3.8.1 Battery research and development is a sector which the Government continues to fund through the Faraday Battery Challenge and more recently the Industrial Strategy. As a result of the continuing rapid advancements in battery technology, and given that BP have not committed to a technology provider, there may be a requirement to amend the layout and dimensions of the equipment within the compound in the future. To enable a degree of flexibility, it is requested that the precise equipment layout, scale and design of the equipment be conditioned.

3.8.2 To facilitate this a proposed height parameter plan and micro sitting plan have been submitted as part of the planning application drawing package. The height parameter plan illustrates that a height up to 7.5 m is requested across the Site, whist the micro siting requests a degree of flexibility on layout.

3.8.3 In terms of assessment this has followed the Rochdale Envelope principles where the worst-case parameters have been applied. For example, it is these maximum heights that have been assessed in the Landscape and Visual Appraisal to ensure that the worst-case scenario is considered. It should be noted that the noise assessment is based on an existing BESS technology. At this stage, as referred to above, it is not known who the supplier of the equipment will be, however in order to provide a robust assessment based on noise data from an existing technology some of the dimensions of the existing technology / equipment on which the noise assessment is based may ultimately differ. However, this does not impact the robustness of the assessment, and ultimately it will be for the applicant to demonstrate that the equipment that is eventually installed on site meets the required noise limits at the closest sensitive receptors. Noting that that the submitted noise

assessment illustrates that levels at receptors are well within the British Standard threshold where any impact could occur.

3.8.4 Based on the above, it is considered reasonable to couch any forthcoming planning permission in a way that permits a degree of flexibility within the parameters proposed. As an example, an approved BESS scheme in Dorset (ref: P/FUL/2022/06179) included the following condition: *"The development shall be carried out in accordance with the approved site layout plan, ref. ## or with an alternative layout which accords with the approved parameters plan, ref. ##. For the avoidance of doubt, there shall be no development outside of the development envelopes shown in green and blue in the parameters plan. Heights of all equipment shall be in accordance with those specified in the parameters plan, being up to 4m in the green area and up to 8m in the blue area. Reason: For the avoidance of doubt, in the interests of proper planning and to reasonably permit minor changes in responses to technological changes between the date of this permission and the implementation of the development."*

3.8.5 BP would welcome further dialogue on this matter during the determination of the planning application.

3.9 Sustainability Statement

3.9.1 The Tyneside Validation Checklist requires Sustainability Statements to be submitted for all 'Major' applications. To assist the preparation of these statements, Newcastle City Council published a 'Planning Process Note – Major Application Sustainability Guidance in November 2021 (hereafter referred to as the guidance). The guidance supports Policy CS16 of the adopted Core Strategy and Urban Core Plan. Please note that a detailed appraisal of Policy CS16 is contained in Table 6.1 of this PDAS.

3.9.2 The guidance sets out that an applicant should demonstrate how the carbon reduction targets beyond Building Regulations are achieved. It also seeks information demonstrating that the risk of overheating has been considered.

3.9.3 In response to the guidance:

- the BESS is specifically designed to assist minimise the predicted impacts of climate change by supporting the development of intermittent renewable energy generating schemes and NG in their target of decarbonising the electricity transmission network and the DNO in their electricity distribution network.
- As demonstrated in Section 4.0 of this PDAS, the BESS would provide grid stability for circa 112,350 houses [15] and will reduce the carbon footprint by circa 6,950 tonnes per annum, which is equivalent to taking 2,500 cars off the road.
- The design includes landscaping which provides ecological benefits, and the drainage design has taken account of the need to be resilient to increase rainfall intensities resulting from climate change.
- The very limited buildings would not be heated or cooled and would not require lighting as such they would be energy efficient.

3.9.4 The Government [16] confirms that you do not need an Energy Performance Certificates for: *"an industrial site, workshop or non-residential agricultural building that doesn't use much energy."* As identified previously, the BESS would be unmanned and does not use energy, it stores low carbon renewable energy (from other projects) ready for use (by others) as demand requires. On this basis the BESS is considered to fit the exemption criterion and energy performance modelling or CO_2 emission calculations are not relevant in this instance.

3.9.5 During the construction of the BESSS sustainable construction techniques would be employed. This would be controlled through a Construction Environmental Management Plan which is anticipated to form a condition to any potentially forthcoming planning permission. There are intrinsic sustainability benefits achieved through the pre-fabrication of infrastructure, however where possible further measures such as locally sourcing materials would always be applied for environmental and economic reasons.

[15] *Further details on the calculations can be provided upon request.*
[16] https://www.gov.uk/energy-performance-certificate-commercial-property/exemptions

3.9.6 For the reasons stated in Section 4.0 and appraisal of Policy CS16 in Table 6.1 of this PDAS, alongside the points set out above the BESS clearly accords with the overall thrust of the guidance which seeks developments to be lean, clean and green.

4.0 NEED, BENEFITS AND LOCATIONAL REQUIREMENTS

4.1 Introduction

4.1.1 This section of the PDAS sets out the benefits of, and need for, BESSs in relation to national energy policy and strategy. It then sets out NG's suite of future energy need documents that seek to achieve the ambition of being able to operate a zero-carbon electricity system by 2025 [17] and fully decarbonise by 2035 [18]. It also provides a reasoned justification as to why the BESS needs to be connected to a particular substation, and thereafter the Site's location to the substation.

4.1.2 From the outset it should be recognised that NCC declared a climate emergency in April 2019 [19], making a commitment to make Newcastle upon Tyne carbon neutral by 2030. NCC published the Net Zero Newcastle – 2030 Action Plan [20] in September 2020. The plan identifies that: *"Huge progress has been made over recent years to decarbonise the UK's national grid electricity by phasing out the remaining coal-fired power stations and recently removing restrictions on new onshore wind energy development. We now get more of our electricity from renewable sources than ever before, however as the generation from renewable energy sources is often variable, electricity storage and demand management to use power when it is available is increasingly important."* (page 38). In addition, page 58 sets out a series of key actions Newcastle will need to take to reach net zero commitment. Some of the priority actions include exploring options for increasingly smart energy systems which adopt 'time of use' and 'flexible demand' approaches to energy consumption and working with everyone to deliver net zero in the energy sector.

4.1.3 The proposed BESS can provide grid stability for circa 112,350 houses [21] and will reduce the carbon footprint by circa 6,950 tonnes per annum, which is equivalent to taking 2,500 cars off the road. In addition to these figures the following section sets out why the BESS is entirely consistent with NCC's commitment towards the achievement of becoming carbon neutral by 2030. In 2022, battery energy storage

[17] https://www.nationalgrideso.com/news/zero-carbon-operation-great-britains-electricity-system-2025
[18] https://www.gov.uk/government/news/plans-unveiled-to-decarbonise-uk-power-system-by-2035
[19] https://www.newcastle.gov.uk/services/newcastles-climate-emergency
[20] https://www.newcastle.gov.uk/our-city/climate-change/net-zero-newcastle/net-zero-newcastle-2030-action-plan
[21] *Further details on the calculations can be provided upon request.*

saved the UK's power sector 615,000 tonnes of CO2 emissions [22]. This is the equivalent of 370,000 fewer cars on the road or 28 million more trees planted.

4.2 Benefits of Battery Storage

4.2.1 BESSs provide a means of allowing electricity from the Grid [23] 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. BESSs therefore can provide balancing services to NG (who are the Electricity System Operator (ESO)) through both frequency response and reactive power services.

4.2.2 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. NG's licence obligation [24] requires that they balance Grid frequency (within ± 1 % of nominal system frequency, which is 50 Hz). If demand is greater than generation, the frequency falls while if generation is greater than demand, the frequency rises. If the transmission system is not maintained within the required frequency tolerance system stress can result in widespread power supply issues and damage to network infrastructure. Frequency is currently managed by paying generators to cease generation (curtailment) and / or Demand Side Response (DSR). Through DSR services, businesses and consumers turn up / down, or shift demand in real-time to help balance the Grid.

4.2.3 Between 2015 and 2019, curtailment costs rose in line with wind output from £90 to £145 million per year. This cost doubled in 2020 as NG ESO faced a bill of £282 million linked to reduced demand associated with the pandemic – around £10 per household. Put another way, curtailment costs added £4 to each MW hour of wind energy generated [25]. More recent news articles on this matter illustrate that the cost of wind curtailment hit a record high of £507 million in 2021 [26], which translates to around £18 per household. More recently, the invasion of Ukraine and sharp rise in living costs means that households do not need further financial pressures. Clearly

[22] https://platform.modo.energy/phase/article/8973/carbon-benefit-battery-energy-storage-avoided-co2-emissions
[23] *The grid refers to all levels of voltage (i.e. 400kv to 11kv etc.) transmission / distribution.*
[24] *NETs System Security and Quality of Supply* https://www.nationalgrideso.com/rules-which-were-governed
[25] https://reports.electricinsights.co.uk/q4-2020/record-wind-output-and-curtailment/
[26] https://www.current-news.co.uk/news/cost-of-wind-curtailment-hits-record-high-of-507m-in-2021

if curtailment costs can be reduced and more green energy can be harnessed there are significant sustainable benefits.

4.2.4 Battery storage is a key part of the energy strategy and provides NG with balancing services to help accommodate the increasing variable levels of supply [27] and demand. By importing excess intermittent renewable energy (for example on windless nights when there is no solar power) from the Grid and storing it, batteries can capture energy that would otherwise be lost. A point recognised in a news article [28] which questions how we are going to keep the lights on. Furthermore, during situations when primary power sources (e.g. traditional power stations) are interrupted, BESSs 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 Grid. Accordingly, BESSs offer additional capacity to deal with system stress and any variations in frequency at both a local and national level.

4.2.5 Unlike frequency, which is consistent, voltages experienced at points across the Grid vary and without management could exceed statutory limits. Maintaining voltage levels across the Grid are becoming increasingly challenging (due to the changing nature of generation, as set out in greater detail within this Section) and therefore BESSs (which can absorb or inject energy into the Grid to manage voltage) provide a secondary beneficial reactive power [29] / balancing service to the NG ESO.

4.2.6 As recognised by NG ESO's System Operability Framework [30] a faster response is more effective and so less response is needed if speeds can be increased. BESS can respond more rapidly than other types of services, as they have no start-up delays. As such BESS balance the real-time requirements of the NG more efficiently. It also means that there is less gas used to generate electricity which clearly has major environmental benefits.

4.2.7 Finally, battery storage is a very 'dense' form of technology. When put into context on the amount of megawatt of energy generated per acre of land taken compared to

[27] https://reports.electricinsights.co.uk/q1-2021/power-system-records-8/
[28] https://news.sky.com/story/climate-change-rising-gas-prices-helping-to-make-the-case-for-onshore-wind-and-solar-12579108
[29] Reactive Power is used to manage voltage.
[30] https://www.nationalgrideso.com/research-publications/system-operability-framework-sof

a solar or wind farms. Installing battery energy storage systems assists in the transition to renewable energy, helps in diversifying the energy network and can reduce the need for further generation plants being installed that use fossil fuels/non-renewable sources.

4.3 National Energy Policy and Strategy Context

Climate Change Act 2008 (2050 Target Amendment) Order 2019

4.3.1 The Climate Change Act 2008 [31] set a legally binding target for the United Kingdom (UK) to achieve an 80 % reduction in greenhouse gas emissions by 2050 (from the 1990 baseline). However, the Government have since decided that this legally binding target was not ambitious enough to mitigate the nation's activities on climate change. In 2019 the Government became the first major economy in the world to pass laws to end its contribution to global warming by 2050 (compared to the 1990 baseline).

4.3.2 In June 2019, the Government made the draft Climate Change Act 2008 (2050 Target Amendment) Order 2019, which sought to amend the Climate Change Act 2008 by introducing a target for at least a 100 % reduction of greenhouse gas emissions (compared to 1990 levels) in the UK by 2050. This is otherwise and hereafter known as the net zero target. The draft Order amended the 2050 greenhouse gas emissions reduction target in the Climate Change Act from at least 80 % to at least 100 %. It is therefore a legally binding commitment to end the UK's contribution to climate change. The Order [32] came into force in late June 2019.

Ten Point Plan for a Green Industrial Revolution (November 2020)

4.3.3 The Ten Point Plan for a Green Industrial Revolution [33] was published in November 2020. Whilst the Plan seeks, amongst others, to advance offshore wind by quadrupling capacity (to 40 GW by 2030); it acknowledges (page 8) that: *"to integrate clean technologies like offshore wind, we must transform our energy system building*

[31] https://www.legislation.gov.uk/ukpga/2008/27/contents
[32] https://www.legislation.gov.uk/ukdsi/2019/9780111187654
[33] https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution

more network infrastructure and utilising smart technologies like energy storage." It also identifies that the Government will provide £100 million for energy storage and flexibility innovation challenges, as this is seen as essential technology in the move towards an increasingly renewables heavy system and the need to store energy.

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

4.3.4 The Sixth Carbon Budget: The UK path to Net Zero [34] 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."* Currently, there is circa 2.4 GW of operational battery storage [35]. 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.

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

4.3.5 In December 2020, the Department for Business Energy and Industrial Strategy (BEIS) published the Energy White Paper 'Powering our Net Zero Future' [36]. This Paper addresses the transformation of our energy system and how the UK will clean up its energy system and reach net zero emissions by 2050. It reiterates the aim to quadruple offshore wind capacity and the target of 40 GW (by 2030). It also recognises that supporting infrastructure on land (such a storage facilities) are vital to maximise the potential to harness this energy across UK shores for use in homes and industry.

[34] https://www.theccc.org.uk/publication/sixth-carbon-budget/
[35] https://www.solarpowerportal.co.uk/blogs/record_800mwh_of_utility_scale_storage_added_in_2022_according_to_solar_med#:~:text=There%20is%20now%202.4GW,energy%20storage%20in%20the%20UK.
[36] https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future/energy-white-paper-powering-our-net-zero-future-accessible-html-version

4.3.6 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"* (Chapter 2). It is clear from this that the Government sees storage as the way forward to balance and to ensure energy security.

Net Zero Strategy: Build Back Greener (October 2021)

4.3.7 The Government published the 'Net-Zero Strategy: Build Back Greener' [37] in October 2021. The Strategy sets out policies and proposals for decarbonising all sectors of the economy to meet the net-zero target and keep us on track for future carbon budgets. Chapter 3 'Reducing Emissions across the Economy' identifies under sub-section 3i. 'Power' that to deliver the key policy of a fully decarbonised power system by 2035 our key commitments are (amongst others) to: *"deliver the actions in our recent Smart Systems and Flexibility Plan and Energy Digitalisation Strategy to maximise system flexibility"* (page 94).

4.3.8 In 2021, the Department for BEIS and the Office of Gas and Electricity Markets (Ofgem) published the:

- Transitioning to a net zero energy system Smart Systems and Flexibility Plan [38], which sets out:
  - "*a vision, analysis and work programme for delivering a smart and flexible electricity system that will underpin our energy security and the transition to net zero. This system will need significant levels of flexibility and utilisation of smart technologies so that it can be almost entirely run-on low carbon energy sources."*
  - *"The net zero economy will be underpinned by cheap clean electricity, made in Britain. A clean, reliable power system is the foundation of a productive net zero economy as we electrify other sectors – so we will fully decarbonise our power system by 2035, subject to security of supply. Our power system will consist of abundant, cheap British renewables, cutting edge new nuclear power stations, and be underpinned by flexibility including storage, gas with CCS, hydrogen*

[37] https://www.gov.uk/government/publications/net-zero-strategy
[38] https://www.gov.uk/government/publications/transitioning-to-a-net-zero-energy-system-smart-systems-and-flexibility-plan-2021

and ensure reliable power is always there at the flick of a switch. The transformation of the power sector will bring high skill, high wage job opportunities right across the UK."

- Key policies include: *"Deployment of new flexibility measures including storage to help smooth out future price spikes"* and *"The deployment of smart technologies and flexibility will underpin our energy security and the transition to net zero. Flexibility from technologies such as energy storage, smart and bidirectional charging of electric vehicles, flexible heating systems, and interconnection could save up to £10 billion per year by 2050 by reducing the amount of generation and network needed to decarbonise."*

- Digitalising our Energy System for Net Zero Strategy and Action Plan [39] which sets out the need to digitalise the energy system, and the benefits of doing so for decarbonisation, consumers, and the economy.

4.3.9 The Strategy set out actions that seek to remove barriers to smart technologies (such as storage which includes batteries as illustrated within the case studies); enable smart homes and businesses; and improve access to energy markets for new technologies and business models. The actions are designed to support clean growth, reduce the cost of the energy system and keep energy bills low for consumers.

British Energy Security Strategy (April 2022)

4.3.10 The British Energy Security Strategy [40] was published in April 2022 in response to rising global energy prices, provoked by surging demand post-pandemic and the invasion of Ukraine. The Strategy seeks to wean Britain off fossil fuels and boost sources of homegrown energy which will in turn offer a greater energy security in the long-term.

4.3.11 The Strategy increases the previously stated 40 GW target (from the White Paper and Ten Point Plan) to 50 GW by 2030. It also identifies that the Government expects

[39] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004011/energy-digitalisation-strategy.pdf
[40] https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy

a five-fold increase in solar deployment. On the basis there is currently 14 GW of solar capacity this equates to 70 GW by 2035. The increased renewable capacity targets reinforce the previously stated need to build more network infrastructure and utilise smart technologies (including energy storage).

4.3.12 Under the sub-heading of 'Networks, Storage and Flexibility' the Strategy sets out that: *"accelerating our domestic supply of clean and affordance 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).

4.3.13 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)

4.3.14 The Energy Security Bill was introduced to Parliament in 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.

4.3.15 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.

Powering Up Plan (March 2023)

4.3.16 In March 2023, the government announced the 'Powering Up Plan' [41]. This sets out ambitious plans to scale up affordable, clean, homegrown power to boost the Country's energy security, independence and reduce household bills whilst also maintaining a world-leading position in achieving net zero. During the announcement, the Energy Security Secretary stated: *"Access to cheap, abundant and reliable energy provides the foundation stone of a thriving economy with our homes and businesses relying on it to deliver our future prosperity."* Furthermore. the Chancellor of the Exchequer added that: *"Transforming our energy system is no longer just about tacking climate change, it is also a matter of national security. To protect ourselves from future price spikes, we need to accelerate the move to cleaner, cheaper, home-grown energy."*

House of Commons Committee of Public Accounts – Decarbonising the Power Sector (June 2023)

4.3.17 The House of Commons Committee of Public Accounts published their report on 'Decarbonising the Power Sector' on 12th June 2023 [42]. The summary to the report sets out that: *"Decarbonising the power sector by 2035 is a massively ambitious undertaking, and vital to achieving net zero overall by 2050. In practice, this means that government expects all electricity will come from low-carbon sources by 2035, subject to maintaining security of supply (that is, no blackouts). Demand for electricity is also forecast to more than double over the next two decades as more sectors switch from fossil fuels to electricity. With only 12 years left to hit its ambition, the Department for Energy Security and Net Zero has a lot to do if it is to achieve its ambition, and do so at least cost to bill payers and taxpayers, all while ensuring security of supply so that the lights stay on."*

[41] https://www.gov.uk/government/news/shapps-sets-out-plans-to-drive-multi-billion-pound-investment-in-energy-revolution
[42] https://committees.parliament.uk/publications/40495/documents/197590/default/

4.3.18 The report identifies a series of recommendations, including:

- Recommendation 1: "*The Department should pull together its numerous decarbonising power plans in an integrated, coherent delivery plan as soon as possible, and by autumn 2023 at the latest, to demonstrate a clear path to achieving power sector decarbonisation."*
- Recommendation 3: "*The Department should set out in the delivery plan due later this year how it will provide greater clarity to the private sector to encourage the investment it needs to decarbonise the power sector."*
- Recommendation 5: "*The Department should publish in the delivery plan due later this year information on when and how the costs of decarbonising the power sector are likely to have an impact on energy bill payers and taxpayers, and update this regularly when new information becomes available that changes the cost profile."*

4.3.19 It is clear from the above that the Committee consider that there is a significant amount of work to be done to reach the net zero targets. The BESS would clearly assist towards the achievement of the targets and the recommendations set out by the Committee.

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

4.3.20 In July 2011, the Department of Energy and Climate Change (DECC)[1] published the overarching National Policy Statement (NPS) for Energy EN-1[2]. 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)

4.3.21 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 flexible approach to energy generation is required in order to provide backup supply for renewable energy sources, by stating: *"the more renewable generating capacity*

[1] *Now part of the Department for Business, Energy and Industrial Strategy.*
[2] https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure

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).

4.3.22 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."*

4.3.23 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 Statement for Energy (EN-1) (September 2021)

4.3.24 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)

4.3.25 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).

4.3.26 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)

4.3.27 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)

4.3.28 It is clear from the above the Government are continuing the drive towards clean secure power which assists in reducing household bills. As set out in this section of the PDAS the BESS clearly assists towards the achievement of the Government's aspirations.

4.4 National Grid Strategy and Context

4.4.1 The NG ESO is required to ensure electricity is transported to all corners of Great Britain and meet supply / demand second by second (e.g. 'balancing' the Grid). In addition, properties like voltage and frequency must be carefully regulated to ensure they stay within statutory limits.

4.4.2 The NG ESO publishes a suite of documents on the future of energy needs in the UK. Those considered to be of most relevance to the BESS considered in turn below.

Future Energy Scenarios (FES)

4.4.3 The latest publication of the UK-wide Future Energy Scenarios (FES) was published in July 2023 [43]. The document sets out in the foreword that: *"The FES sets out*

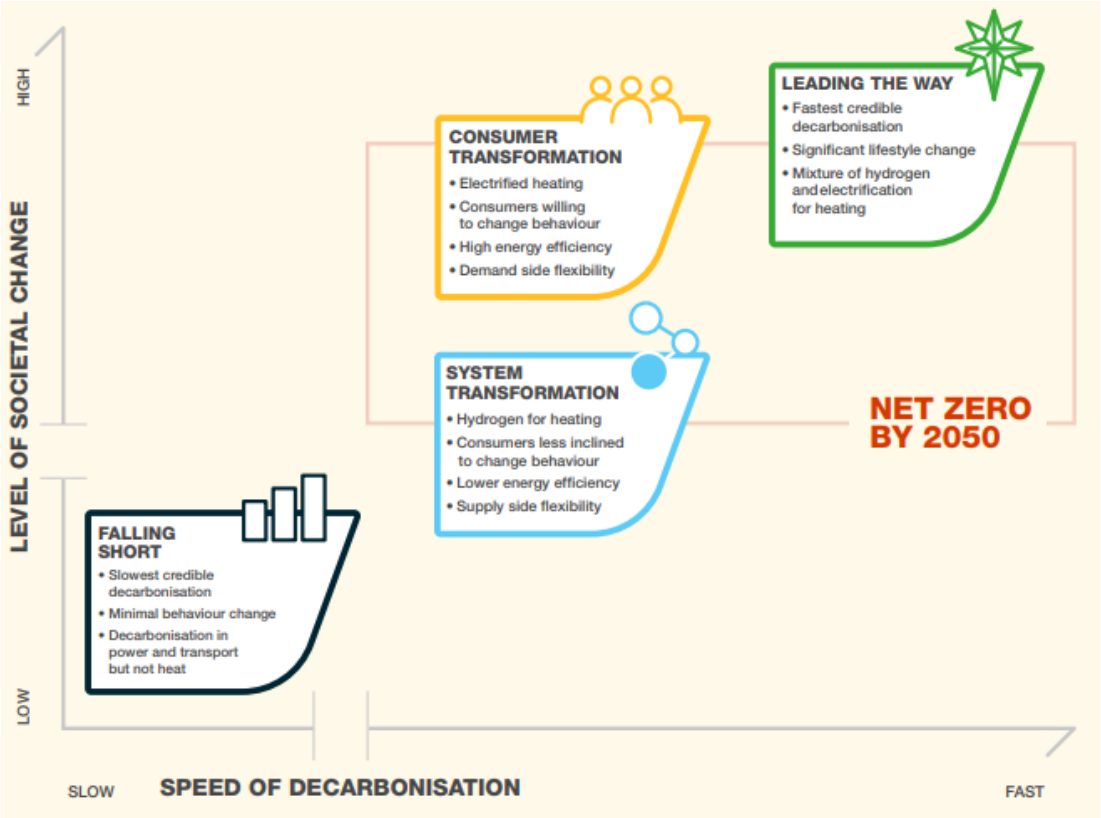
[43] https://www.nationalgrideso.com/future-energy/future-energy-scenarios

credible ways that the UK can achieve Net Zero by 2050, as well as the UK Government's commitment to a decarbonised electricity system by 2035…Our 2023 Future Energy Scenarios highlight one key overall theme – we must act now to achieve a clean, secure and fir energy system for all. If we don't, a once in a lifetime opportunity will pass us by."

4.4.4 The FES 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 might needed and where it would come from.

4.4.5 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.

Figure 4.1: Future Energy Scenarios: Scenario Matrix



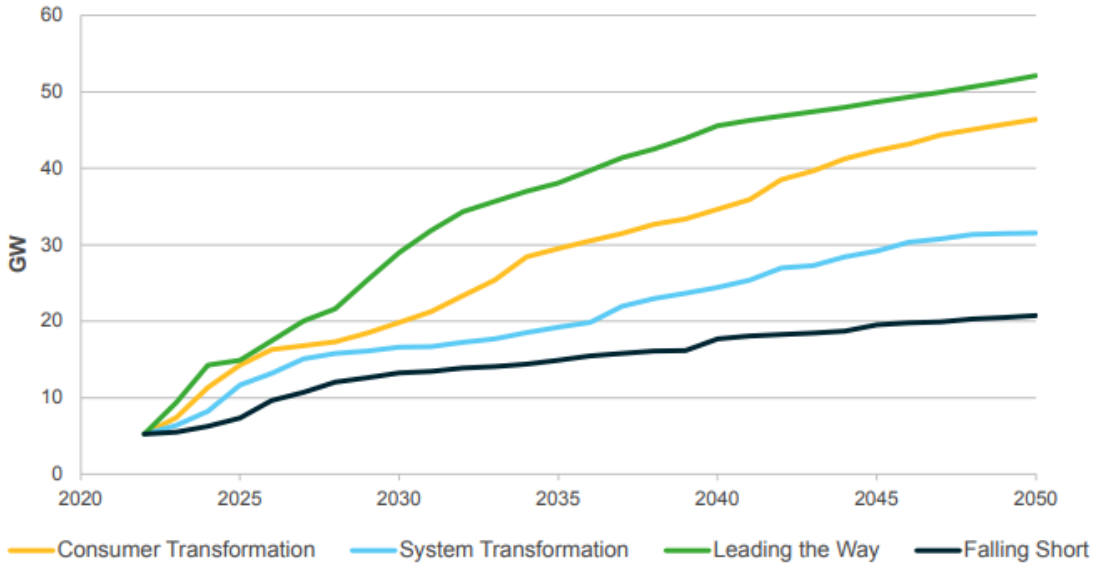
4.4.6 All four scenarios have net zero at their core and explore different pathways to achieving this. The one of the headline messages is that reaching net zero carbon emissions by 2050 is achievable. However, this requires immediate action across all key technologies and policy areas, and full engagement 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 2046. 'Falling Short' would not achieve net zero.

4.4.7 It sets out several key messages including Key Message 3 'Markets and Flexibility' (page 10) which identifies that:

- *"improved market signals and new distributed flexibility solutions are key to managing a secure, net zero energy system at lowest cost to the consumer."*
- "47 GW of electricity storage is operating by 2050 in Consumer Transition, with 18 GW connected at distribution level."
- *"The growth of distributed flexibility (such as storage) … is a key enabler of net zero. A market-wide strategy, including government targets, policy support and market reform is required to facilitate the significant growth in distributed flexibility."*

4.4.8 The key statistics set on page 13 of the FES illustrates that electricity annual demand increases from 286 TWh in 2023 to between 570 and 726 TWh (depending upon scenario) in 2050. In terms of total storage capacity this increases from 29 GWh in 2022 to between 62 and 166 GWh (depending upon scenario) in 2050. It is clear that storage capacity will need to increase two-fold to get close to reaching the net zero target. Under all scenarios considered in the FES increased electricity storage is predicted, as illustrated by Figure ES.E:26 from page 146, reproduced in Figure 4.2 below.

Figure 4.2: Figure ES.26 Electricity Storage Capacity



4.4.9 Page 146 of the FES specifically relates to electricity storage capacity and identifies that: *"Electricity storage is needed to reinforce security of supply and efficiently manage supply and demand. Installed capacity and volume need to increase significantly to support the decarbonisation of our electricity system as we transform to net zero."* This is continued on page 196 which states: *"Overall, the policy, regulatory and market environment for storage will need change to bring forward the levels of energy storage we expect to need on the system. This could involve changes to how storage is treated by electricity codes, removal of planning permission barriers and market change to allow greater revenue stacking of different services to improve the business case for storage projects."*

4.4.10 A further important aspect of electricity storage is that: *"At times of high renewable generation and low demand, oversupply also needs to be carefully managed with the need for additional energy to be consumed (either by increasing demand or using energy storage) to prevent the need to curtail generation…"* (page 117). Page 180 identifies that: *"Electricity storage at both transmission and distribution level is an efficient way to manage supply and demand by reducing the amount of generation and network investment needed to decarbonise…"* Both quotes demonstrate how NG ESO believe that storage plays an important role in managing the security of supply and demand.

4.4.11 NG NSO also published the Regional FES Explainer [44] in April 2022. The document explains the ambition to start modelling at a regional level, where relevant, so that the GB-wide forecast becomes the summation of regional results. It illustrates the direction NG ESO wish to take in respect of breaking GB down into regions and understanding how different parts of GB will decarbonise at different rates and in different ways. As set out on page 7: *"Understanding this down to a local authority level will be an important step so we can reflect each local authority's unique journey towards net zero."* Clearly there is more work to be done on this, but it provides a clear direction of travel in local to national, rather than top down.

System Operability Framework (SOF)

4.4.12 The System Operability Framework (SOF) [45] 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 with a programme of technical assessments to identify medium / long-term requirements for operability.

4.4.13 The latest version of the Operability Strategy Report [46] (OSR) was published in January 2023. The Report outlines the future challenges and actions in maintaining an operable electricity system. It sets out what needs to be done to reach NG's zero carbon 2025 ambition and highlights how stakeholders can engage to assist in the achievement of these challenges. It explains the challenges NG ESO face in operating a rapidly changing electricity system and describes what is needed to meet these challenges in the 7 no. key areas of: stability, voltage, thermal, restoration, frequency, within-day flexibility and Adequacy.

4.4.14 The executive summary states that: *"Decarbonisation, decentralisation and digitalisation are driving significant change across the electricity network … These will transform how we operate Great Britain's electricity system, and mean we are ready to operate a zero-carbon network in 2025. But it doesn't stop there, the system will continue to evolve as we strive towards net zero. This means a fundamental change in how our system is operated – integrating newer technologies right across*

[44] https://www.nationalgrideso.com/future-energy/future-energy-scenarios/regionalisation-fes
[45] https://www.nationalgrideso.com/research-publications/system-operability-framework-sof
[46] https://www.nationalgrideso.com/news/operability-strategy-report-2023

the system – from large scale off-shore wind, to domestic scale solar panels, to increased demand side participation." To support the integration of these technologies, storage will be key component of future operating systems.

4.4.15 The executive summary also identifies that: *"Falling inertia levels, increasing largest loss size and high rate of change of frequency (RoCoF) levels are driving many of the current and future frequency challenges. In addition, supply and demand are becoming increasingly variable. This is making system frequency more volatile and unpredictable… We are tackling these challenges through our new suite of reserve and response services. Dynamic Containment, Dynamic Regulation and Dynamic Moderation are all live on the system. Looking forward, several new reserve services will be launched include (amongst others): Quick Reserve will be used to recover frequency back towards 50Hz, mainly during normal operating conditions; and Balancing Reserve will provide flexibility in real-time to ensure balance between supply and demand."*

Electricity Ten Year Statement (ETYS)

4.4.16 The Electricity Ten Year Statement (ETYS) [47] was published in November 2022. It forms part of a suite of publications (FES, ETYS and Network Options Assessment (NOA)) and provides the ESO's view of future transmission requirements and the capacity of Great Britain's national electricity transmission system over the next ten years.

4.4.17 The Foreword confirms the ambition to: *"…Over the past year, both the devastating war in Ukraine and the ongoing cost-living-crisis has underlined the importance of reaching Net Zero. A fast transition to Net Zero bolsters our energy security and reduces our exposure to volatile international fossil fuel resources. prices, by harnessing abundant renewable and low carbon energy. As we transition to the Future System Operator (FSO), we will continue to drive the transformation to a fully decarbonised electricity system by 2035 which is reliable, affordable, and fair for all…"* (page 3).

[47] https://www.nationalgrideso.com/research-publications/etys

4.4.18 The ETYS sets out a series of key messages (pages 6 to 8), including:

- 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.
- The past year has sparked recognition of the importance of a faster transition to net zero and an increasing focus on Great Britain's, as well as the rest of the world's, energy security. This highlights the need for the ESO and the wider industry to secure the network against a wider range of conditions.

4.4.19 The ETYS breaks the National Electricity Transmission System (NETS) into a series of regions / boundaries, with the application site falling into the 'North of England Region. The ETYS identifies significant power flows from north to south, and states that: *"The connection of large amounts of new generation, most of which is intermittent renewables, in Scotland and the north will cause overloading in the northern transmission network unless appropriate reinforcements are in place. Future power transfer requirements could be more than double compared to what they are today in some scenarios"* (page 31).

4.4.20 The flow of power is illustrated within a series of figures contained within Appendix C of the ETYS (extracts provided in Figures 4.3 and 4.4 below). The figures show a snapshot of present (2022/23) and future (2026/27) power flows along the transmission network for the FES 'Leading the Way' Scenario. The power flow (in MW) is set out in the rectangular box and the direction of flow is illustrated by the arrows.

4.4.21 The figures clearly show the significant increase in flows from north to south. In addition, the Stella West substation, is a located on a very important point on the transmission network, enabling electricity to flow on the eastern side of the UK. This is also recognised by the pink highlight between Stella West and Harker.

4.4.22 In terms of the grid within the area surrounding the Site, the Newburn Haugh Primary Substation connects into the Stella North Substation which thereafter connects into the Stella West Substation.

Figure 4.3: ETYS App C: Extract from Fig C1 2022/23

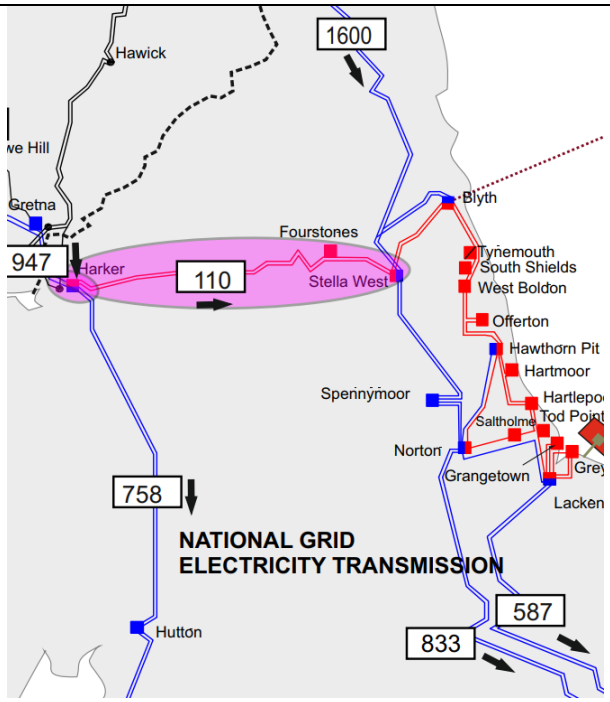
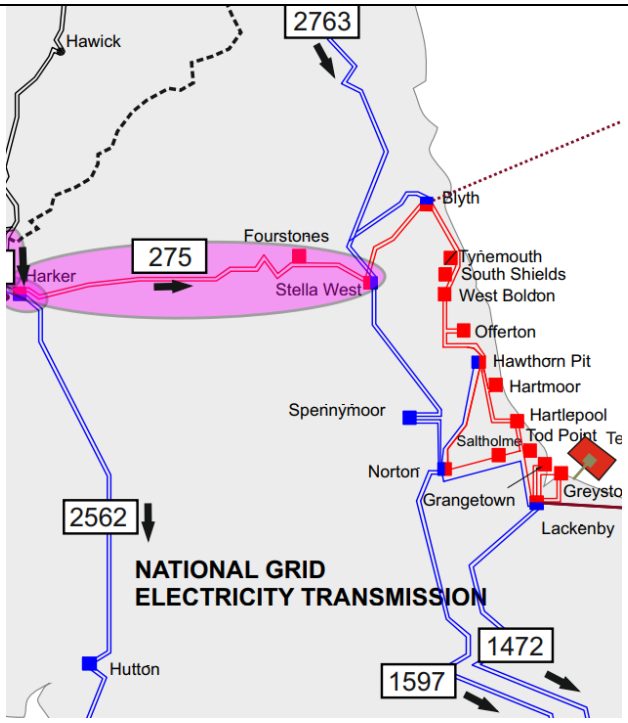


Figure 4.4: ETYS App C: Extract from Fig C5 2026/27



4.4.23 Regardless of region, all FES scenarios demonstrate gross demand increasing 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

4.4.24 Bridging the Gap to Net Zero [48] 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 NG 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'[49], the key findings of which are:

[48] https://www.nationalgrideso.com/document/247071/download
[49] https://www.carbontrust.com/resources/flexibility-in-great-britain

- *"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."*

4.4.25 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.

4.5 Summary of Need

4.5.1 It can be seen from the above review that the national policy message on energy security is strong and unambiguous. The increased deployment of renewable energy (50 GW of off-shore wind by 2030 and 70 GW of solar by 2035) reinforces the need to ensure security of supply through the development of a diverse system that supports increasing peak demands and the move to electric vehicles. The Government's position is clear that BESS fall within the renewable energy and associated infrastructure definition, even though the technology does not in itself produce renewable energy.

4.5.2 BESSs are a key component of the future energy mix under all scenarios considered in the FES. Existing storage provision will need to increase significantly by 2030 to be on track to achieve net zero by 2050 and support the deployment of wind and solar as set out in the FES and national policy. The ETYS also demonstrates the significant increase in power flows through the NETS which will need to be supported by storage to maintain voltage, stability and frequency.

4.5.3 Decarbonisation, decentralisation and digitalisation are creating significant changes across the Grid. As identified by the OSR, NG ESO consider that the next big challenge is around managing system imbalance during normal operation. As technology is becoming more decentralised (closure of large Power Stations etc.) the significant distributed and local generation will need to be supported by energy storage.

4.5.4 Battery storage is a key part of this energy strategy and provides NG ESO with reactive power / balancing services to help accommodate the increasing level of renewable energy generation. As recognised by NG ESO's SOF a: *"Faster response is more effective and so less response is needed if speed can be increased."* BESS can respond more rapidly than other types of balancing services, as they have no start-up delays. As such BESS can balance the real-time requirements more efficiently. 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, BESSs offer additional capacity to deal with system stress and any variations in Grid frequency and voltage at both a local and national level.

4.5.5 Finally, battery storage clearly assists towards mitigating against climate change (i.e. assisting NNC with their climate emergency declaration) and as illustrated by the Carbon Trust embedded flexibility assists with energy security and reducing costs to households.

4.6 Locational Requirements

4.6.1 The following subsection sets out the reasoned justification as to why the BESS is proposed to be connected into the Newburn Haugh substation. It thereafter explains why the application site has been chosen.

Point of Connection / Grid Connection

4.6.2 NG ESO / DNO have a statutory obligation to balance and maintain voltage within specific limits. Both have clearly identified that as the grid is becoming more decentralised the significant distribution and local generation projects will need to be supported by energy storage. Battery storage is a key part of this energy strategy and provides NG ESO / the DNO with reactive power / balancing services to help accommodate the increasing level of renewable energy generation.

4.6.3 The Applicant has identified the need to assist in balancing this part of the grid on the basis that the locality is heavily saturated with connections [50] which results in capacity

[50] *Due to the high number of demand customers, given the scale of industrial / commercial uses, plus the forthcoming residential-led allocation.*

issues. In addition, a point of connection in this part of the grid would assist in supply security, especially given there are large renewable schemes connected into the Stella West GSP substation which are known to cause intermittencies (i.e. need for specific weather conditions to operate). A BESS would support and stabilise the grid during periods when the renewable schemes do not operate.

4.6.4 Based on the preference for higher voltages [51], the Applicant has sought to connect to the Stella West Substation. However, this process has concluded that there is no connection opportunity, primarily due to reinforcement works, but also because of other projects benefiting from grid connection offers. The next preferential connection opportunity (based on voltages) is the Stella North and Stella South Grid Supply Points (GSP) substations. The process has also identified that a direct connection is unfeasible due to required reinforcement upgrades on both the 400 kV and 132 kV networks. For example, the overhead power lines to the west of the Stella West Substation are highlighted in pink (see Figures 4.3 and 4.4) thus NG ESO acknowledges there will need to be improvements in this part of the Grid before any feasible connections are available.

4.6.5 Electricity is distributed through by a series of interconnected GSP substations managed by the NG ESO. Thereafter electricity flows onto the distribution level network (managed by Northern Power Grid) at lower voltages (typically 132 kV and below) through Bulk Supply Point (BSP) and Primary substations.

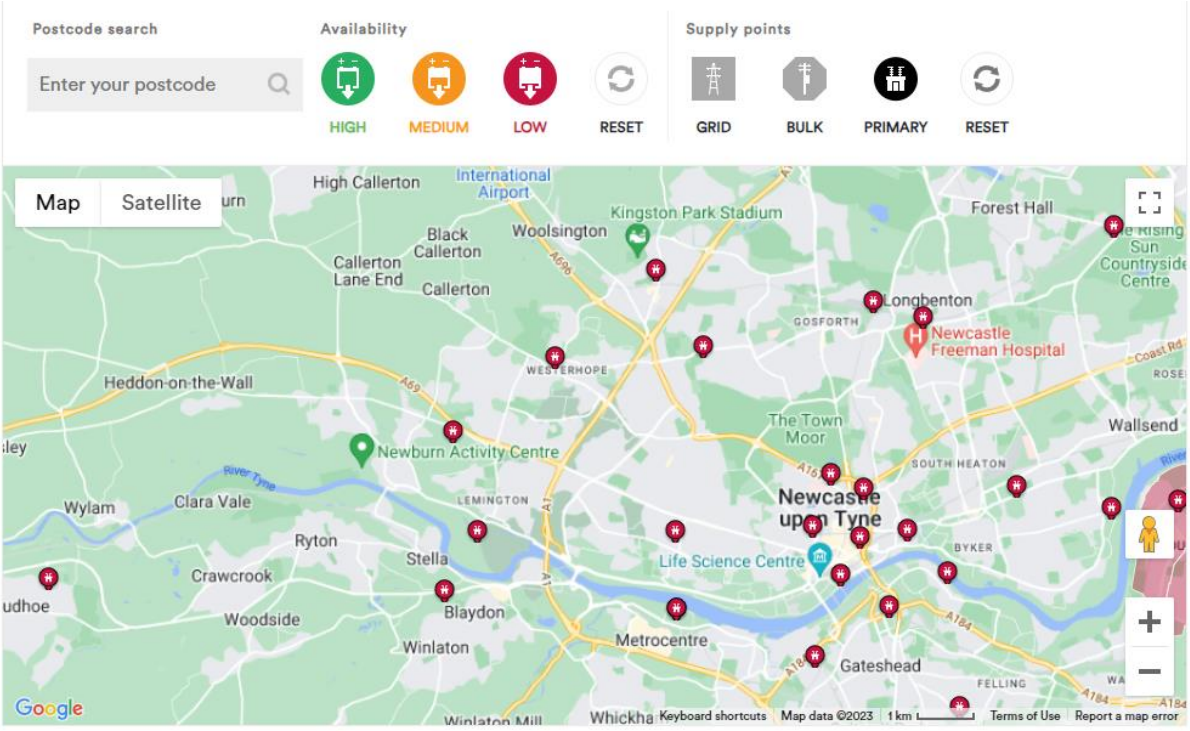
4.6.6 On this basis the Applicant has reviewed the next tier of substations (favouring highest voltage) as illustrated in the following bullet points. The location of each substation is provided in Figure 4.6:

- Blucher Bulk Supply Point Substation (11/132 kV) – the substation is bound by residential properties to the north and open fields to the east, south and west. The fields are in the Green Belt.
- Newburn Haugh Primary Substation (11/132 kV) – the substation is in an area where there appears to be available land which is immediately adjacent to commercial, industrial and waste management uses. Residential receptors are located at a greater distance than other substations.

[51] *It is more preferential to connect into higher voltages due to greater transmission efficiency losses at the lower voltages.*

- Benwell Primary Substation (11/66 kV) – the substation is surrounded by urban development (including residential properties) and there is no available land within a circa 500 m area which could potentially accommodate a BESS.
- Blaydon Burn Primary Substation (11/66 kV) – the substation is bound by a school and residential properties to the south with woodland and open fields to the north, east and west. These fields and woodland are in the Green Belt.
- Westerhope Primary Substation (11/33 kV) – the substation is surrounded by urban development (including residential properties) and there is no available land within a circa 500 m area which could potentially accommodate a BESS.

Figure 4.6: Substation Locations (source: Northern Power Grid [52])



4.6.7 On the basis that the land surrounding the Newburn Haugh Substation includes potential development opportunities (within 500 m), is remote from residential properties (when compared to Blucher) and is not located in the Green Belt, the Applicant then focused upon which plot of land could potentially be available in the area. Figure 4.6 below illustrates the eight sites that have been considered and Table 4.1 immediately after the figure considers the sites in turn.

[52] https://www.northernpowergrid.com/generation-availability-map - *accessed July 2023.*

Figure 4.6: Potential Land Parcel Search (source: Google Maps [53])

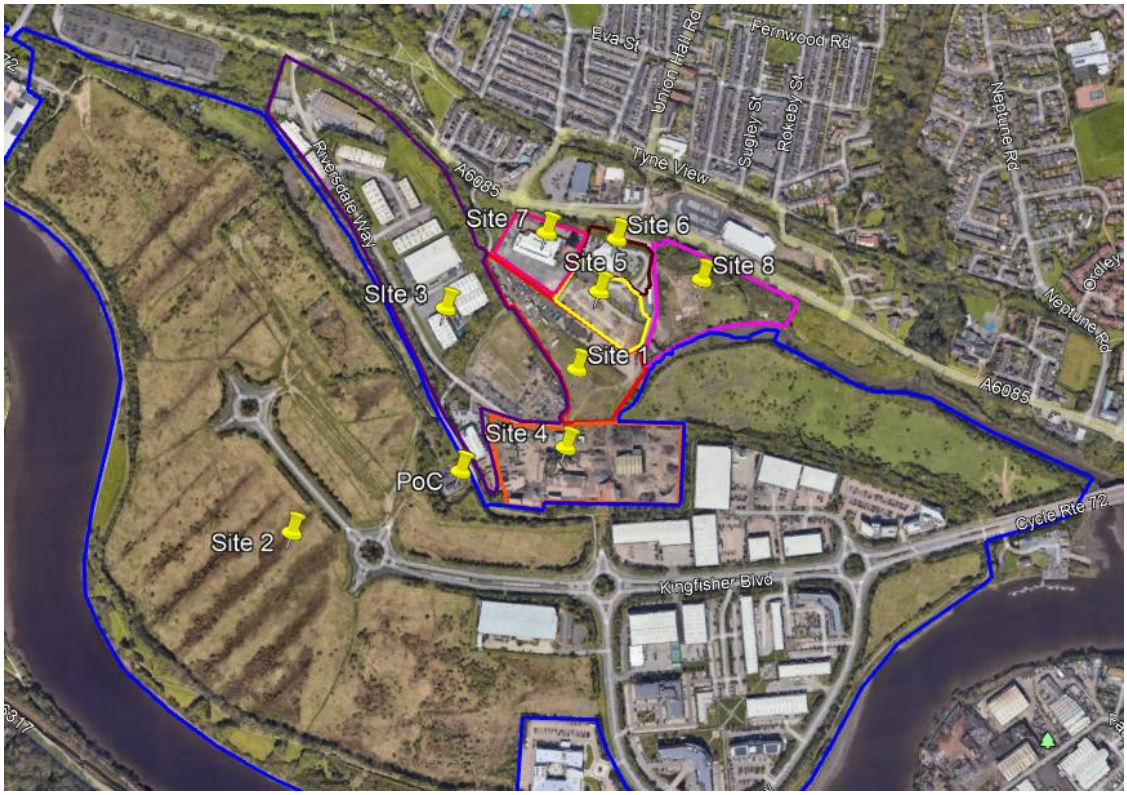


Table 4.1: Potential Land Parcel Search

Site	Comments
1	As illustrated in sub-section 2.2 of this PDAS, part of the Site benefits from planning consent for a gas-powered standby generation facility. Balance Power were the applicant for the previous consent, but believe that instead of using fossil fuels it would be significantly more sustainable to develop a BESS on the site. Other land (closer to the A6085) is being used by commercial activities and is therefore unavailable.
2	This site is allocated for a large residential led development (Policy AOC 1) which at the time of preparing this PDAS is the subject of an outline planning application for development of up to 900 dwelling and other associated development / infrastructure. The site is clearly being promoted and is unavailable. In addition, other land (i.e. Gateway West – Newburn Riverside and the Waterfront) are fully occupied. It has been noted that there would be residential receptors in the future, this site has been treated as a residential receptor in the noise modelling.
3	Most of this site is already occupied by commercial and industrial units (Newburn Haugh Industrial Estate, employment allocation), part of which benefits from planning permission for a BESS scheme (ref: 2022/0869/01/DET). The land located at the southern extent of Riverside Way (forming employment allocation 'Site to the East of Riverside Way') is occupied by a range of uses and is therefore unavailable. The undeveloped land between Riversdale Way and the public right of way is

[53] https://www.google.com/maps/

	heavily vegetated and constrained by overhead power lines, with land between the units and A6085 steeply sloping. Therefore the land is either unavailable or constrained to a level which makes the development of a BESS very difficult.
4	This site is occupied by a construction / waste management and aggregates processing operator and is therefore unavailable.
5	At the time of preparing this PDAS, the site is the subject of a currently undetermined planning application for the development of 16 No. units (ref: 2023/0324/01/DET). The site is clearly being promoted and is unavailable.
6	The site is occupied by a range of commercial premises, immediately adjacent to the Lemington Cone (a listed building) with the managers house (another listed building) immediately to the east of the site. The site is located next to the A6085 with residential properties beyond. Due to the topography the properties have views into the site making noise and visual impact more of a challenge.
7	This site is occupied by a commercial business, having previously been occupied by a car dealership. Site benefits from planning permission (ref: 2022/1936/01/DET) for the conversion of the existing car dealership into 8 No. hybrid units and is therefore clearly being promoted and is unavailable. The site is located next to the A6085 with residential properties beyond. Due to the topography the properties have views into the site making noise and visual impact more of a challenge.
8	This site benefits from planning permission for a BESS (ref: 2021/2405/01/DET) [54] and is therefore unavailable.

4.6.8 The above table illustrates that Site 1 (previous occupied by the gas-powered standby generation facility) has been identified as the most appropriate site to accommodate the proposed BESS which is near the Newburn Haugh Primary Substation.

4.6.9 In addition to the above, it is considered that the site would result in the fewest technical and / or environmental impacts and has a range of sustainable benefits, as set out below:

- Environmental: it has been located on a parcel of previously developed land which as demonstrated by assessment work is of low ecological value and located on land at lowest risk from flooding. The proposal will also supersede the extant synchronous gas-powered standby generation facility approved on Site and thus reduce the emissions.
- Social / Technical: The Site is remote from existing / proposed receptors and as demonstrated by this PDAS, would not result in detrimental amenity impacts.

[54] https://portal.newcastle.gov.uk/planning/index.html?fa=getApplication&id=126991

Whilst not site specific, the wider benefits of balancing the Grid and supporting the deployment of renewable energy projects which will help assist the progression towards net-zero are important social factor (as demonstrated by the powering of homes and CO2 reductions set out at the beginning of Section 4.0)

- Economic: The BESS is located on land that is commercially available for development, should planning permission be granted. Whilst not site specific, the BESS would provide essential infrastructure necessary for balancing services to ensure a stable / reliable energy supply. This is vital to economic growth and as such it is considered that the BESS would help deliver the economic objectives of sustainable development.

5.0 ENVIRONMENTAL MATTERS

5.1 Introduction

5.1.1 This section considers environmental matters under the sub-headings of ecology and nature conservation, arboriculture, flood risk and surface water drainage, noise and traffic and transportation, landscape and visual, land contamination and heritage.

5.2 Ecology and Nature Conservation

5.2.1 An Ecological Appraisal (**Appendix 5-1a**) and supporting Figures (**Appendix 5-1b**)has been prepared in support of the BESS. A desk study was undertaken to identify existing information on the presence of designated sites for nature conservation, protected and notable species and habitats proximate to the Site. This information was obtained from a site visit and from the local biological records centre. A summary of the assessment is provided below for ease of reference.

5.2.2 An extended habitat survey and desktop study were completed to inform the ecological assessment. The survey included a walkover of the Site on 28 June 2023 mapping all habitats present on site along with their potential to offer suitable habitat for protected and notable species.

5.2.3 There are six statutory designated sites within 2 km of the Site. Shibdon Pond is a Site of Special Scientific Interest (SSSI), whilst the others are Local Nature Reserves (LNRs).

5.2.4 The Site is dominated by other neutral grassland which is of low nature conservation value. This is a common and widespread habitat supporting limited botanical diversity. The habitat has signs of disturbance. This is shown by tyre tracks caused by vehicular activity. A linear area of developed land; sealed surface, is also present within the boundary of the Site. The area to be cleared should be first checked for signs of nesting birds by an ecologist. In addition, a range of additional enhancement could be introduced including bat and bird boxes and native species planting within landscape proposals.

5.2.5 A Biodiversity Net Gain Assessment and supporting Calculation have been submitted as part of this planning application (**Appendix 5-1c**). At present, the on-site baseline consists of 2.68 habitat units, with a total of 2.948 units required to deliver a 10 % Gain. No linear habitats or watercourses were recorded within the Site. On-site post intervention consists of 1.59 habitat units. Therefore, proposals will deliver an overall loss of 1.09 units, equating to a 40.53 % loss in habitat units, with an additional 1.358 units required to deliver a 10% gain. Given the above and the limited scope for additional habitat enhancements on-site, the remaining 1.358 habitat units required could be secured through an offsite compensation scheme for the project to deliver a 10% net gain to biodiversity.

5.3 Flood Risk and Surface Water Drainage

5.3.1 The Site lies within Flood Zone One (low risk of flooding) but covers an area greater than one hectare. As such, a Flood Risk and Drainage Assessment been prepared (see **Appendix 5-2** for full details) with a summary of the findings set out below.

5.3.2 The Site is not at risk of flooding from a major source, e.g. fluvial and / or tidal. The Site has a 'low probability' of fluvial / tidal flooding as it is located in Flood Zone One with less than a 1 in 1,000 annual probability of river or sea flooding in any year. There will be no net loss in flood storage capacity or impact on movement of flood water across the Site. the overall direction of the movement of water will be maintained within the developed site and surrounding area. The conveyance routes (flood paths) will not be blocked or obstructed. The BESS is classified as 'essential infrastructure' which is appropriate in Flood Zone One after completion of a satisfactory flood risk assessment. In conclusion the floor risk of the Site can be considered to be limited, the Site is situated in Flood Zone One, with a very low annual probability of flooding from all sources. Therefore the Site is unlikely to flood except in very extreme conditions.

5.3.3 The SuDS strategy ensures that a sustainable drainage solution can be achieve which reduces the peak discharge rate to manage and reduce the flood risk posed by the surface water runoff from the Site. The strategy considers the following principles: no increase in the volume or runoff rate of surface water from the site; on increase in flooding to people or property offsite because of the development; no

surface water flooding of the site; and the proposal takes into account a 45 % increase in rainfall intensity due to climate change.

5.3.4 In line with adopting a 'management train' it is recommended that water is managed as close to source as possible. This will reduce the size and cost of infrastructure further downstream and shares the maintenance burden more equality. The strategy will take the form of permeable surfaces; attenuation storage with a restricted runoff rate of 2 litres / second before discharge to the nearby watercourse or public sewers.

5.3.5 The strategy will reduce peak flows, the volume of runoff, slow down flows and will provide a sustainable solution of this Site. The adoption of the strategy at the Site represents an enhancement from the current conditions as the current surface water runoff from the Site is uncontrolled, untreated, unmanaged and unmitigated. In adopting these principles, it has been demonstrated that a scheme can be development that dose not increase the risk for flooding to adjacent properties and development further downstream.

5.3.6 Development of the Site will take place with separate systems for foul and surface water drainage. The separate system will extend to the public sewer with the foul water from the welfare unit discharging to the public combined sewer at an existing manhole.

5.3.7 In conclusion, the Site would be expected to remain dry in all but the most extreme conditions. The consequences of flooding are acceptable, and the development would be in accordance with the requirements of the National Planning Policy Framework. The BESS would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of national policy. The BESS would considerably reduce the flood risk posed to the Site and to off-site locations due to the adoption of the strategy. A detained drainage design would be subject to further site investigations, and it is suggested that the final design configuration could be secured by a suitably worded planning condition.

5.4 Noise

5.4.1 A Noise Assessment has been carried out for the Site, a copy of which is contained in **Appendix 5-3**. A summary of this assessment has been provided below.

5.4.2 The prevailing noise conditions in the area have been determined by an environmental noise survey conducted during both daytime and nighttime periods between 11 and 12 November 2019. This background data has formed the basis for the three-dimensional noise model.

5.4.3 The assessment methodology contained in British Standard 4142: 2014+A1:2019 Method for rating and assessing industrial and commercial sound has been used in conjunction with supplementary acoustic guidance. The assessment considers the potential noise generation from the plant associated with the Proposed Development, with respect to existing sound levels in the area, including mitigation measure of a 4 m high acoustic fence around the northern, western and part of the southern boundary of the Site.

5.4.4 The assessment identifies that the Proposed Development will give rise to rating sound levels that do not exceed the measured background sound level in the area during the daytime, thus giving rise to a ‘Low Impact’. The assessment also identifies that the Proposed Development might give rise to rating sound levels that are 2 dB above the measured background sound level in the area during the night. The assessment goes on to consider the context in which the sound occurs. The assessment also identifies that no significant change in ambient sound level at the identified receptor locations will be engendered as a result of the Proposed Development in its proposed and assessed form and that the amenity of residential receptors will not be compromised.

5.4.5 Consequently, the assessment demonstrates that the Proposed Development will give rise to noise impacts that would be within the range of NOAEL of the NPPG England guidance.

5.4.6 For ease of reference, the definition of No Observed Adverse Effect Level in PPG Noise is reproduced here: “Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.”

5.4.7 Since the Proposed Development conforms to British Standard and National Planning Policy requirements, it is recommended that noise should not be a

considered constraint to the approval of this Planning Application, providing that the plant is constructed and operated in accordance with the acoustic assumptions and recommendations set out within this report.

5.5 Traffic and Transportation

5.5.1 A Transport Statement (TS) has been prepared in support of the BESS, a copy of which is contained in **Appendix 5-4**. A summary of this assessment has been provided below.

5.5.2 Analysis of accident data indicates that only one accident has been recorded on the local highway network within the most recently available three-year period. No accidents were recorded along Northumberland Road in the immediate vicinity of the proposed site access junction. Therefore, the existing accident record does not present a material concern in the context of the BESS.

5.5.3 Access to the BESS during both the construction and operational phases would be from the A6085 Northumberland Road via the existing access road and through the site currently occupied by the Pringles Automotive car repair yard. A gravel track would be constructed to connect this access to the Site. A set of double leafed acoustic gates located on the north-western edge of the BESS compound would provide access to the Site itself. There is sufficient space within the Pringles Automotive site to allow construction vehicles to turn round to exit the site in forward gear. An area of hardstanding will also be provided within the Site compound to allow construction vehicles to turn round.

5.5.4 During the construction phase, it is anticipated that all traffic would approach the Site from the A1 to the east via the A6085 and A695, and as such would turn left in and right out of the proposed site access onto the A6085 Northumberland Road. During the operational phase, the Proposed Development would be operated remotely, and it would only be necessary for an operative to undertake a monthly visit. This would be undertaken using a small van, pickup or equivalent vehicle.

5.5.5 This TS assesses the traffic generation of the construction phase only, which would take place over an anticipated timeframe of between 10-12 months. Once

operational, trips to the Site would be limited to the occasional light Good Vehicle (i.e. van) accessing the Site for maintenance purposes.

5.5.6 The anticipated trip generation associated with the construction of the BESS development has been estimated from first principles, based on experience of having promoted other BESS sites nationally and from information supplied by the Applicant.

5.5.7 The full period of construction is anticipated to last around 40-52 weeks, with 5.5 construction days per week. Peak construction activity (in terms of vehicle numbers) would occur during the enabling phase, when daily traffic levels are estimated to be a maximum of 15 vehicles per day, including 5 HGV trips. This equates to 30 daily two-way movements, which will include a maximum of 10 two-way HGV movements per day. Such traffic levels are unlikely to give rise to any material issues on the local highway network. Moreover, such levels of HGV traffic would not be maintained over any lengthy period.

5.5.8 Having regard to the above, it is therefore concluded that there can be no highway or transport reasons to withhold planning permission for the scheme.

5.6 Landscape and Visual

5.6.1 A Landscape and Visual Assessment (LVA) has been prepared in support of the BESS, a copy of which is contained in **Appendix 5-5** (due to file sizes the report has been subdivide into several parts). A summary of this assessment has been provided below.

5.6.2 In summary of the potential for landscape and visual effects of the Proposed Development, initially there would be short duration effects resulting from construction, notably due to the presence of plant equipment within the Site, however this would be seen within the context of the surrounding industrial and storage use. As such effects on landscape and visual during construction would not be significant.

5.6.3 Landscape effects upon the host landscape Tyne Riverside and Western Villages would be negligible and not significant. There would be limited effects on the other landscape character areas within the study area (i.e. a 3 km radius from the Site).

5.6.4 There would be minor adverse visual effects experienced from Viewpoints 1 and 5 (see Figures 3.3 of the LVA). Viewpoint 5 is located in close proximity to the Site to the south-west from the footpath. Views from Hadrian's Wall Path (Viewpoint 1) are glimpsed through gaps in vegetation so for very limited durations of the remaining visual effects experienced by receptors at Viewpoints 2, 3 and 4 would be negligible.

5.6.5 Following establishment of the soft landscaping (trees) as part of the Proposed Development, there would be partial screening of the development from the surrounding area and the Proposed Development would be integrated into its surroundings.

5.7 Heritage

5.7.1 A Heritage Impact Assessment (HIA) has been prepared in support of the BESS, a copy of which is contained in **Appendix 5-6**. A summary of this assessment has been provided below.

5.7.2 The HIA has established that there is very little evidence for prehistoric or Roman activity in the vicinity of the Site. It is considered likely that the Site was in agricultural use, possibly as part of riverside pastures, during the early medieval and medieval periods prior to post-medieval industrialisation. It is assessed that post-medieval development, and subsequent modern activities, would have severely impacted any surviving buried remains dating from the prehistoric through to the medieval periods. Consequently, it is considered that there is a low potential for surviving remains of prehistoric through to medieval date to survive within the Site.

5.7.3 The earliest post-medieval activity recorded within the Site relates to features associated with the transportation of coal and includes staithes adjacent to Lemington Gut and the 18th and 19th century wagonways. The other major changes in the vicinity of the Site in the later 18th century were the establishment of the Lemington Glass Works and Tyne Iron Works with the associated residential development involving a row or terraces 'Low Row' whose allotment gardens extended towards the area of the proposed access route along with not one, but possibly two, public houses.

5.7.4 The walkover survey confirmed that there are surviving remains of a quayside along the Lemington Gut and remnants of wooden structures that may be associated with

the former coal staithes along the eastern edge of the Site. Despite later clearance and infill, it is considered that there is a high potential for surviving post-medieval remains within the Site. Any such remains would most likely be related to earthwork and material remains of the wagonways / tramways and subterranean structural elements (foundations and cellars) related to the staithes and associated buildings, as well as the Doctor Syntax Public House.

5.7.5 The Site was cleared of almost all its post-medieval assets during the modern period and in the later 20th century the area was used as a landfill. The access route now contains a timber yard and vehicle repair yard. No new structures were built within the Site during the modern period and, consequently, it is anticipated that there is a low potential for any modern remains to survive within the Site.

5.7.6 The BESS would involve relatively limited groundworks for the compound with deeper excavations anticipated for the installation of the grid connection route. It was unclear from the Site visit how much made ground has been deposited within the Site and there are no previous geotechnical investigations within the Site that can be utilised to ascertain this information. Although it is considered likely that post-medieval remains survive within the Site, they are considered likely to be buried beneath an unknown thickness of made ground that was created during 20th century landfilling.

5.7.7 The surviving quayside wall and wooden structural remains (likely related to the former coal staithes) within the Lemington Gut, located along the eastern boundary of the Site, should be preserved in situ. The design plan for the BESS should avoid direct impacts upon these features and it may be appropriate to demarcate a buffer zone during the construction programme.

5.7.8 For most of the designated assets considered by the HIA the effect upon their setting has been judged to be none. Consequently, no harm to these assets is predicted, and the policy tests as set out in NPPF are not invoked.

5.7.9 The impact upon the settings of the Grade II* Listed Lemington Cone, the Grade II Listed Manager's house and office of former iron works and the Locally Listed Tyne Ironworks has been judged to be, at worst, low. These impacts would cause a level of harm which is less than substantial and would need to be weighed against the public benefits of the proposal in line with paragraph 202 of the NPPF.

5.7.10 The impact upon the settings of the Grade II Listed Church of St George and its attached presbytery, the Grade II Listed Church of Holy Saviour, the Grade II Listed Summerhouse, the Locally Listed Lemington Hotel and the Locally Listed Stella Park has been judged to be, at worst, Negligible. These impacts would cause a level of harm which is less than substantial and would need to be weighed against the public benefits of the proposal in line with paragraph 202 of the NPPF. It should be noted that given the assessment of negligible impacts upon the setting of these assets, that any harm would be at the lower end of the less than substantial scale.

5.8 Land Contamination

5.8.1 A Stage 1 Contamination Assessment (including coal Mining Risk Assessment) has been prepared to support the planning application, a copy of which is contained in **Appendix 5-7** (Due to file sizes the report has been subdivide into several parts). For ease of reference the non-technical summary has been provided below.

5.8.2 The earliest available mapping (1859-1921) shows the Site to have been occupied by a public house (Doctor Syntax), two industrial premises and railway sidings (Wallbottle Wagonway and the Mineral Railway) serving the Lemington Coal Staiths. From 1950 the site was the location of a refuse / slag heap located in the north / centre of the site. Within the same year a tunnel, was mapped entering the site in the south travelling under the remaining railway sidings. One building remains in the centre of the site, Staith House. By approximately 1981-1984 available mapping indicates the site's remaining infrastructure had been demolished, and the removal of spoil heaps and railway sidings had been completed. An embankment from previous activity remains on site. The site has been vacant since approximately 1981 to present day (2022).

5.8.3 The surrounding area has a long industrial land use including Lemington Glass Works and Iron Works dominated land to the north and north/ east of the site. The Lemington Staiths (1859-1950) related infrastructure including railway sidings, buildings and track roads became the footprint for future development further south of the site on the banks on the River Tyne. Historical reclamation works have also taken place to the east with the infilling of a meander of the River Tyne to form the Lemington Gut, a tidal watercourse which currently remains. Within the wider area a former power station (Stella North) was constructed between 1957a and 1971 circa 550 m to the

east and a graphite works with spoil heap 250 m to the south. Both were demolished in 1999-2000 and subject to remedial and reclamation works to prepare the site for commercial / industrial land use.

5.8.4 Made ground is anticipated to be widespread across the Site, however the depth and composition remains uncertain. Ashy soils were observed in the southeast at the Site surface during the site walkover, and this could be associated with historical embankments / refuse heaps. The presence of domestic refuse is unlikely given the age in which refuse heaps were mapped, however this can only be confirmed through investigation. Similarly, a historic landfill is mapped on the Site, with information suggesting the filling of inert and industrial waste with information confirming the EA prohibited the import of degradable or putrescible wastes. There is therefore some uncertainty on the composition of fills on the Site and potential deep deposits could be present.

5.8.5 The presence of ashy fills which have been observed can contain elevated concentrations of heavy metals and polycyclic aromatic hydrocarbons which could exceed industrial / commercial generic risk assessment values. Similarly, the placement of fills from unknown sources could contain asbestos and hydrocarbons. Ash fills can also contain elevated sulphate which can give result in aggressive concrete conditions for concrete. The presence of deep fills both on and off-site and the potential for shallow mine workings can give rise to ground / mine gas resulting in elevated concentrations of carbon dioxide (asphyxiant) and methane (flammable) as well as severely depleted oxygen.

5.8.6 The Coal Mining Risk Assessment (CMRA) identified that there is a possible risk to the stability of the site from past activity in the Tilley Coal and Top Busty Coal. A tunnel was mapped in the south (1949-1992) of the site going beneath an embankment and railway sidings and by 1981 it was no longer shown. It is uncertain whether the tunnel remains, has been infilled or removed. If the structure remains there is potential for collapse which could result in surface instability.

5.8.7 The proposed use of the Site is industrial in nature and includes full surface hardstanding or areas of aggregate to form a surface cover across the site. The risk of exposure to future site users to underlying ground conditions is considered low.

5.8.8 Any shallow ground contamination present could pose an acute risk to site workers during construction works and future maintenance workers and suitable mitigation measures and precautions would be required. Any services may require laying trenches backfilled with clean material and provided with suitable construction material.

5.8.9 The risk to future users due to ground / mine gas is low due to the nature of the proposed construction. Ingress of ground gas is unlikely under current proposals where a venting space is present beneath the floor and the modular units and the gravel which will allow dispersion and dilution of any ground gases present. It is understood that construction works will be limited to shallow excavations to install services. Gas meters should be used prior to entering any excavations as part of a standard precautionary procedure.

5.8.10 It is concluded that the main risk to human health is to construction workers, particularly during any excavation / ground disturbance works which may result in direct contact / inhalation of contaminants if present.

5.8.11 Similarly, releases (associated with existing ground contamination) from the site with the potential to cause pollution or harm in the immediate surrounds are most likely during the construction phase when the maximum level of mechanical disturbance can be anticipated. Due to the close proximity of two surface watercourses, a pond to the immediate east and Lemington Gut there is potential for the surface run-off of silts during construction works.

Recommendations

5.8.12 It is recommended that a site investigation is carried out across the site to determine the composition and chemistry of shallow soils. This could be undertaken to satisfy any contaminated land conditions once planning permission is granted. Such works could be completed concurrently with any geotechnical investigation to inform the structural design / bearing capacity. Sampling of the soils should include analysis for a range of typical industrial contaminants including pH, heavy metals, speciated PAHs, fractionated hydrocarbons and asbestos.

5.8.13 A programme of ground gas monitoring is not considered necessary due to the proposed design of the facility where enclosed spaces are limited to within modular units which reside above ground level on legs / frames and therefore break the migration pathway for any mine / ground gas. However, if design proposal changes to incorporate permanent enclosed structures situated on ground level, then a ground gas monitoring programme would be required.

5.8.14 The proposals for further investigation with regards to ground contamination should be agreed in advance with the NCC Contaminated Land Officer. However, SGP considers that the site is suitable for the proposed use with regards to ground contamination subject to implementation of certain mitigation measures.

5.8.15 The Coal Mining Risk Assessment identified that an intrusive investigation is required to determine the presence of shallow mine workings and the overlying deposits to confirm remedial requirements.

5.8.16 It is assumed that a geotechnical investigation will be undertaken to confirm the shallow ground conditions and bearing capacity of the underlying stratum to inform the design of the development. This should include the confirmation of the depth of made ground and could be carried out concurrently with the recommended contamination investigation to be conditioned and carried out as part of pre-commencement requirements.

6.0 PLANNING POLICY CONTEXT AND APPRAISAL

6.1 Introduction

6.1.1 This section undertakes an appraisal of the BESS in the context of the statutory planning policy framework, and any relevant material considerations. It needs to be read in conjunction with Section 5.0, which sets out the need / site selection and Section 6.0 which reports a range of environmental / technical assessment work.

6.2 Planning Policy Context Overview

6.2.1 Section 38(6) of the Planning and Compulsory Purchase Act 2004 [55] requires that planning applications should be determined in accordance with the statutory Development Plan unless material considerations indicate otherwise. At the time of drafting, the adopted Development Plan, relevant to the BESS includes the NCC Part 1 Core Strategy and Urban Core Plan (CSUCP) which was adopted in March 2015 and subsequently reviewed in March 2020 and the Part 2 Development and Allocations Plan (DAP) which was adopted in June 2020 [56].

6.2.2 It is also necessary to appraise the BESS in the context of other material considerations. 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. Such considerations can include the National Planning Policy Framework [57], emerging planning policies, government policy and strategy and Supplementary Planning Documents.

The Statutory Development Plan

6.2.3 The CSUCP and DAP are supported by a Policies Map which illustrates that the Site is the 'Tyne Corridor' Strategic Green Infrastructure Network (Policy DM27) and the

[55] https://www.legislation.gov.uk/ukpga/2004/5/contents
[56] https://www.newcastle.gov.uk/services/planning-building-and-development/planning-policy/newcastle-local-plan
[57] https://www.gov.uk/government/publications/national-planning-policy-framework--2

'City West' Wildlife Enhancement Corridor (Policy DM29). The southern part of the Site is also located in the 'Green Infrastructure Opportunity Area – Area G' (Policy DM27). The 'Lemmington Gut' Local Wildlife Site (LWS) is located almost immediately to the east of the Site.

6.2.4 The CSUCP provides the overall vision, aims / objectives, spatial strategy, strategic policies and urban core policies to 2030. It includes strategic objective SO 11 which seeks to mitigate the adverse impacts and taking advantage of the opportunities presented by climate change. The policies of relevance to the BESS are listed below, noting that the Site is not located within the urban core.

- CS 1 Spatial Strategy for Sustainable Growth;
- CS 3 Spatial Strategy for Neighbourhood Area;
- CS 5 Employment and Growth Priorities;
- CS 13 Transport;
- CS 14 Wellbeing and Health;
- CS 15 Place Making;
- CS 16 Climate Change;
- CS 17 Flood Risk and Water Management; and
- CS 18 Green Infrastructure and the Natural Environment.

6.2.5 The DAP provides the more specific development management and site-specific policies to 2030. The policies of relevance to the BESS are listed below.

- DM 10 Pedestrian and Cycle Movement;
- DM 11 Public Transport;
- DM 12 Parking and Servicing;
- DM 13 Road Hierarchy;
- DM 14 Mitigation and Highway Management;
- DM 16 Conservation and Enhancement of the Setting of Heritage Assets;
- DM 17 Preservation of Archaeological Remains and Archaeological Work;
- DM 20 Design;
- DM 23 Residential Amenity;
- DM 24 Environmental and Health Impacts of Development;
- DM 26 Flood Risk and Water Management;
- DM 27 Protecting and Enhancing Green Infrastructure;
- DM 28 Trees and Landscaping; and

- DM 29 Protecting and Enhancing Geodiversity, Biodiversity and Habitats.

Material Considerations

6.2.6 Whilst there is no strict definition of what constitutes a 'material consideration' in planning legislation, the following documents form material considerations in respect of the BESS are the National Planning Policy Framework (NPPF, 2021)[58] and National Planning Practice Guidance (PPG, 2014, as amended) [59]. In addition NCC has published a range of supplementary planning guidance and guidance which have also been identified in Table 6.1 below.

6.3 Planning Appraisal

6.3.1 Table 6.1 provides a summary of the overall planning context, as identified in the sub-sections above. It also includes an appraisal as to how the proposal conforms with that context, or otherwise. The tabular planning appraisal is structured in terms of listing the relevant 'policy' and then confirming whether the BESS either: complies with the overall objectives of the policy; conflicts with the overall objectives of the policy; or neither complies with nor conflicts with the policy (i.e. has no direct effect on the objectives of the policy). Commentary is also provided within the right-hand column. It should be noted that where a policy criterion is not relevant to the BESS this has been removed from the policy description.

[58] https://www.gov.uk/government/publications/national-planning-policy-framework--2
[59] https://www.gov.uk/government/collections/planning-practice-guidance

Table 6.1: Planning Policy Summary and Appraisal

Policy / Plan / Guidance		Complies	Conflicts	Neutral	Commentary
THE DEVELOPMENT PLAN					
PART 1 CSUCP					
CS1	'Spatial Strategy for Sustainable Growth seeks to create and sustain thriving communities and a more prosperous economy. It identifies significant new homes and employment over the plan period. This will be achieved by ensuring that all development is designed to reduce carbon emissions and adapt to the effects of climate change.	✓			The Site is not allocated for a specific purpose in the Development Plan documents. It is located on previously developed land (as confirmed during the determination of previously consented gas-powered standby generation facility) which is surrounded by a range of other commercial, industrial and waste management uses. Accordingly, it is considered that the BESS would not prejudice the surrounding use and is an appropriate location, in principle. It would assist in supporting the existing and proposed communities and a more prosperous economy by providing a secure and constant source of affordable electricity. The electricity would be generated by renewable and low carbon sources and stored until such time as it is required. It therefore assists in reducing carbon emissions and the effects of climate change. It would also result in the previously consented gas-powered standby generation facility not being built which as identified in the planning history sub-section of this PDAS would have further sustainability benefits. On this basis, the BESS accords with the overarching sustainable growth and spatial strategy.
CS 3	'Spatial Strategy for Neighbourhood Area' sets of that sustainable communities will be promoted and maintained through meeting housing needs and supporting jobs.	✓			The Site is in the defined 'neighbourhood area' next to the 'area of change at Newburn' (Policy AOC1) which relates to a large residential led allocation. The BESS would support the existing and proposed growth of communities and jobs through the provision of infrastructure which supports the distribution of electricity that has been generated by renewable and low carbon sources, nor will the proposal prejudice the residential development. On this basis, the BESS accords with the overarching spatial strategy for neighbourhood areas.
CS 5	'Employment and Economic Growth Priorities' identifies the important role the City will play in the economic growth of the northeast. The policy seeks to continue to develop	✓			The BESS would support the continued development of a diverse economy by supporting the distribution of electricity that is needed to enable the identified growth in the economy. It has not been located on land within the Newburn Haugh Industrial Estate due to the protection / safeguarding of this land for

	a diverse economy which delivers significant increase in businesses and jobs.				employment uses and inability to secure a commercially available plot of land. The BESS is a sui-generis use as such, it would be a departure from the Development Plan policies. However, there are clear requirements to locate the BESS close to the existing substation. It is also considered that the BESS would not prejudice the surrounding employment area. On this basis, the BESS accords with the overarching economic growth priorities.
CS13	'Transport' identifies that the enhancement and delivery of an integrated transport network to support sustainable development and economic growth will be achieved by promoting sustainable travel choices, improving the operation of the network and ensuring that sustainable transport modes are promoted, and development connects safely to and would not impact the network.	✓			The Transport Statement (**Appendix 5-4**) which has been prepared in support of the planning application demonstrates that the BESS connects safely to and would not impact the highway network. Due to the nature of the operations (periodic visit by an engineer who needs to carry tools and spare parts), the promotion of sustainable transport modes is not relevant in this instance. On this basis, the BESS accords with the overarching transportation policy.
CS14	'Wellbeing and Health' identifies that the health and wellbeing of communities will be maintained and improved by preventing negative impacts on residential amenity and wider public safety from noise, ground instability, ground and water contamination, vibration and air quality.	✓			A range of technical assessment work has been prepared in support of the planning application. This includes a Noise Impact Assessment (**Appendix 5-3**), Contaminated Land Assessment (**Appendix 5-7**), Flood Risk and Drainage Assessment (**Appendix 5-2**). In addition, the safety of batteries is set out in Section 3.0 of this PDAS. Together these assessments demonstrated that the BESS would not result in an impact on the health and wellbeing of existing and proposed communities. On this basis, the BESS accords with the overarching public protection policy.
CS15	'Place making' identifies that development will contribute to good-placemaking through the delivery of high quality and sustainable design, and the conservation and enhancement of the historic environment. It identifies that development will be required to respond positively to local distinctiveness and character, respond to the unique character and importance of the River Tyne, its tributaries and its setting, respect and enhance significant views and the setting of heritage assets and create safe environments.	✓			The BESS has been designed to provide a specific function and therefore elements of this place making policy are lesser relevance that they would to a new residential development. Regardless, when preparing the design, the local character of the area has considered to ensure that the BESS responds to and takes account of important aspects of the surrounding environment. The BESS has been off-set from the eastern boundary to enable the diversion of existing combined sewer and landscaping to be proposed to the Lemmington Gut. In addition, the Heritage Impact Assessment (**Appendix 5-6**) and the Landscape and Visual Assessment (**Appendix 5-5**) demonstrate that the BESS would not result in a significant impact from a range of viewpoints or upon the setting of the nearby heritage assets.

					The BESS would be industrial in appearance and would mirror the industrial surrounding in the area. New fencing is proposed around the BESS to ensure that the site is secure and specific security specifications would be implemented to maintain safe environments. On this basis, the BESS accords with the overarching place making policy.
CS16	'Climate change' states that development will be sustainable, flexible and address the impacts of climate change. It identifies development will be required to (amongst others) deliver a good level of sustainability required by relevant government schemes and guidance, minimise its contribution and provide resilience to ongoing and predicted impacts of climate change and optimise the use of local renewable and or low carbon energy.	✓			NCC published a planning process note – major application sustainability guidance in November 2021. This confirms that whilst Policy CS16 is applicable to all forms of development, the Tyneside Validation Checklist requires that Sustainability Statements are submitted for all 'Major' applications. The application is defined as a 'major' development and therefore a Sustainability Statement has been provided in sub-section 3.9 of this PDAS. Regardless, the following bullet points identify the six criteria set out in the policy and how the BESS accords with them: • The BESS is designed to be functional and minimises energy use through prefabricated infrastructure (GRP) alongside landscaping. It would not be occupied and only visited periodically for maintenance purposes. As such, the energy demand would be minimal. • The BESS provides a specific use; however the design is flexible by virtue of the prefabricated infrastructure being easily altered, subject to planning. Furthermore, permission is sought on a temporary basis, thus the site could be developed for an alternative use in the future. • During the construction of the BESS a range of best practice would be employed to ensure the sustainable use of materials and construction techniques. It is anticipated that this would be controlled through a Construction Environmental Management Plan which would be required through planning condition. As previously identified the site would not be occupied and only visited periodically for maintenance purposes, therefore the use of water is not relevant in this instance. • The BESS is specifically designed to assist minimise the predicted impacts of climate change by supporting the development of intermittent renewable energy generating schemes and NG in their target of decarbonising the electricity transmission network. The design includes landscaping which provides ecological benefits, and the drainage design has taken account of

					the need to be resilient to increase rainfall intensities resulting from climate change. The energy efficient design would limit the potential for overheating. • As demonstrated in Section 4.0 of this PDAS, the BESS would provide grid stability for circa 112,350 houses [60] and will reduce the carbon footprint by circa 6,950 tonnes per annum, which is equivalent to taking 2,500 cars off the road. In terms of design, the buildings on the site would not be heated and would not require lighting as such they would be energy efficient. • The BESS specifically seeks to support the use of renewable and low carbon energy by providing a balancing service where the intermittent generation of electricity can be stored and utilised at times of demand. Based on the above, the BESS accords with the overall thrust of this policy and the six criteria to which development is required to accord with.
CS17	'Flood Risk and Water Management' identifies that development will avoid and manage all sources of flood risk, taking into account the effects of climate change over its lifetime. This includes prioritising the use of Sustainable Drainage Systems and ensuring that development does not affect water quality, and where possible enhances water quality.	✓			The Flood Risk and Drainage Assessment (**Appendix 5-2**) which has been prepared in support of the planning application demonstrates that the Site is not at risk from flooding (Flood Zone 1 – Lowest Risk). The BESS would be designed to include sustainable drainage systems (including drainage hierarchy) which take account of the effects climate change to ensure that the development does not affect water quality. On this basis, the BESS accords with the overarching flood risk and water management policy.
CS18	'Green Infrastructure and the Natural Environment' identifies that a high quality and comprehensive framework of interconnected green infrastructure that offers ease of movement and an appealing natural environment for people and wildlife will be maintained, protected, enhanced and managed. The policy includes six criteria which have been considered in the appraisal column.	✓			The Site is in the 'Tyne Corridor - Strategic Green Infrastructure Network' and 'City West Wildlife Enhancement Corridor' with the southern extent of the site forming part of the 'Green Infrastructure Opportunity Area G'. In terms of the criteria contained within the policy, the BESS is considered to accord with this policy for the following reasons: 1. The Tyne Corridor extends from 'Tyne View' in the north to beyond the Tyne in the south. As drawn on the Policies Map, it does not take account of existing or proposed built development and in the instance of the Site leads to a dead end. 2. As identified in the Ecological Assessment and Biodiversity Net Gain Calculation (**Appendix 5-1c**) the BESS would result in a net loss, even

[60] *Further details on the calculations can be provided upon request.*

					through the introduction of soft landscaping. Given the limited scope for additional habitat enhancements on-site, the remaining unites required to achieve a 10% gain are proposed to be secured through an off-site compensation scheme. Through the pollution control measures included in the drainage design the existing green infrastructure network, wildlife corridor and Lemmington Gut LWS would be protected. 3. Part of the Site is located Green Infrastructure Opportunity Area G, the Green Infrastructure Delivery Framework (December 2018) sets out the green infrastructure strategy for the City. This identifies four themes including mitigating and adapting to climate change for which the BESS specifically seeks to assist. It also seeks to protect and enhance the natural environment and biodiversity. As previously stated, the BESS would protect and enhance the natural environment, and therefore accords with the Strategy. 4. In terms of improving and extending the linkages, the Site is located within a 'dead end' surrounded on three sides by other development. However, there would be landscaping along the northern and eastern boundaries which would help the BESS blend into the surrounding environment and enhance the linkages around the Site. 5. This relates to open space and is not relevant in this instance. 6. This relates to access to, along and onto the River Tyne which is not considered to be relevant in this instance.
PART 2 DAP					
DM10 - 14	These transport policies seek to provide safe, convenient, attractive and continuous pedestrian and cycle links, promote the use of sustainable modes of travel, provide safe, secure and useable parking, following the hierarchy of roads to support movement on the highway network and adequately mitigate against a developments impact on the highway network in the interest of safety, efficiency and accessibility.	✓			As identified through the appraisal of Policy CS13 above, a Transport Statement (**Appendix 5-4**) has been prepared in support of the planning application demonstrates that the BESS connects safely to and would not impact the highway network. Due to the nature of the operations (periodic visit by an engineer who needs to carry tools and spare parts), the promotion of sustainable transport modes is not relevant in this instance. On this basis, the BESS accords with these development management transportation policies.
DM16	'Conservation and Enhancement of the Setting of Heritage Assets' identifies that development proposals which impact on the setting of heritage assets will be required to ensure that its design, location, sitting, form and appearance conserves or enhances the significance	✓			As identified through the appraisal of Policy CS15 above, the Heritage Impact Assessment (**Appendix 5-6**) and the Landscape and Visual Assessment (**Appendix 5-5**) demonstrate that the BESS would not result in a significant impact from a range of viewpoints or upon the setting of the nearby heritage

	of the heritage asset, its setting and surrounding key views.				assets. On this basis, the BESS accords with this development management policy on heritage asset protection.
DM17	'Preservation of Archaeological Remains and Archaeological Work' confirms that development will be required to safeguard the understanding of the historic environment of the City.	✓			As demonstrated by the historical mapping contained in both the Heritage Impact Assessment (**Appendix 5-6**) and the Stage One Geo-Environmental Assessment (**Appendix 5-7**), the Site has been subject to historic development and landfilling which is likely to have destroyed the potential for archaeological remains to exist. However, the need for any further assessment work would be discussed during the determination of the planning application to ensure that the BESS would comply with the requirements of this policy.
DM20	'Design' identifies that development will be required to deliver high quality and sustainable design. It identifies a number of criteria which have been considered in the appraisal.	✓			The BESS is considered to accord with the relevant requirements of this policy for the following reasons. • The Site is currently unoccupied and surrounded by commercial, industrial and waste management uses. The use of this and is considered to improve the character and quality of the area. • The BESS has been designed to take account of the surrounding environment, and through the efficient use of the site and landscaping it is considered that it would positively respond to its setting and character of the area. • There are a range of different materials and colours within the area surrounding the site. The BESS has been designed to a high quality and elements of the development would be finished in recessive colours (green) to ensure that it is appropriate to the characteristics of the area. • The active use of the site rather than continuing unoccupied nature is considered to enhance the appearance of the City from Northumberland Road which is identified as a major movement corridor. • The BESS incorporates hard and soft landscaping as an integral part of design and providing for its long-term maintenance. • As set out in Section 4.0 of this PDAS, the BESS specifically seeks to support the mitigation of climate change. • NCC has published guidance on the design and layout of the built environment to reduce crime, the fear of crime and anti-social behaviour. The BESS includes a range of measures as set out in Section 3.0 of the PDAS which would reduce the opportunities for criminality.

DM23	'Residential Amenity' identifies that development will be required to provide a high-quality environment and a good standard of residential amenity for existing and future occupants of land. Development which would have an unacceptable adverse impact on the residential amenity of existing or future occupants of land and dwellings will not be allowed. The policy includes a number of criteria upon which residential amenity will be assessed. These have been considered in the appraisal.	✓			The BESS accords with the relevant requirements of this policy for the following reasons: • The design of the BESS has been carefully considered, and as demonstrated by the Landscape and Visual Assessment (**Appendix 5-5**) it would not result in an impact on the surrounding area; • Through the proposed landscaping around the northern and eastern boundaries of the BESS, there would be enhanced landscaping which would assist in improving the overall quality of the site from a biodiversity and visual perspective. • The Transport Statement (**Appendix 5-4**) and Noise Impact Assessment (**Appendix 5-3**) demonstrate that the BESS would not result in an unacceptable adverse impact on residential amenity (existing or proposed).
DM24	'Environmental and Health Impacts of Development' identifies that proposals will be required to demonstrate that there are no unacceptable adverse environmental impacts from the development. To ensure this, proposals must assess and mitigate a range of defined impacts which have been considered in the appraisal.	✓			As demonstrated in Section 5.0 of this PDAS the BESS would not result in an unacceptable adverse environmental impact in respect of noise, land contamination, amenity and biodiversity. Matters such as vibration, air quality and odour are not relevant to the proposal. As such the BESS accords with this environmental health / protection development management policy.
DM26	'Flood Risk and Water Management' sets out that development will be required to management and reduce flood risk by maximising permeable surfaces, demonstrating that the surface water design would prevent an increased risk flooding on or elsewhere and is in line with the drainage hierarchy and where possible take the opportunity to protect and improve surface and ground water quality.	✓			As demonstrated through the appraisal of C17, the Flood Risk and Drainage Assessment (**Appendix 5-2**) which has been prepared in support of the planning application demonstrates that the Site is not at risk from flooding (Flood Zone 1 – Lowest Risk). The BESS would be designed to include sustainable drainage systems (including drainage hierarchy) which take account of the effects climate change to ensure that the development does not affect water quality. On this basis, the BESS accords with the overarching flood risk and water management policy.
DM27	'Protecting and Enhancing Green Infrastructure' identifies that development will be required to optimise the benefits and to enhance existing green infrastructure assets, and contribute towards the delivery of new green infrastructure assets by providing on-site green infrastructure, or where it can be demonstrated that this is not possible, contribute to off-site provision. Any	✓			The soft landscape design illustrates that new landscaping would be created along the northern and eastern boundaries of the Site. This would improve and enhance the function of the strategic green infrastructure network and provide improvements in line with the site's location with a defined opportunity area. In addition to the above, the BESS has been specifically designed to assist with addressing climate change. On this basis and for the reasons already stated in

	development that would have an adverse impact on green infrastructure assets will be required to demonstrate that the benefits of any development will outweigh the harm.				the appraisal of Policy CS18, the BESS would accord with the requirements of this development management policy.
DM28	'Trees and Landscaping' identifies that development will be required to include new trees and landscape features where appropriate, which enhance the quality and character of the area, provide connectivity to the strategic green infrastructure network and wildlife corridors and assist in environmental benefits and reducing flood risk.	✓			The soft landscape design illustrates that new landscaping would be created along the northern and eastern boundaries of the Site. This landscape has been designed in improve the quality and character of the area and enhance the neighbouring green infrastructure / corridor and designation. It proposed to introduce trees where opportunities exist noting that some of the land is constrained through existing pipe easements which limit the ability to introduce deep rooted planting in particular locations. The BESS has also been designed to reduce flood risk as demonstrated by other drainage specific policies within this table.
DM29	'Protecting and Enhancing Geodiversity, Biodiversity and Habitats' identifies that development which may affect and designated site, biodiversity or important habitat, species or geological feature must be supported by an up-to-date assessment. Development which directly or indirectly causes significant harm to a Local Wildlife Site (in this instance Lemmington Gut) and / or a protected species / priority habitats should be avoided / mitigated. The policy also identifies that Development which would have an adverse effect on the biodiversity value or connectivity and function of the Wildlife Enhancement Corridor as designated on the Policies Map, will only be permitted where adequate mitigation is secured. Finally that development will be required to protect and enhance habitats and provide net gains in biodiversity.	✓			As identified Ecological Assessment (**Appendix 5-1**) has been prepared in support of the planning application demonstrates that the BESS would not affect designated ecological sites including the neighbouring Local Wildlife Site (in this instance Lemmington Gut) and / or a protected species / priority habitat(s). Through the proposed soft landscaping it has been demonstrated (see the Biodiversity Net Gain Calculation (**Appendix 5-1c**) the BESS would result in a net loss, even through the introduction of soft landscaping. Given the limited scope for additional habitat enhancements on-site, the remaining unites required to achieve a 10% gain are proposed to be secured through an off-site compensation scheme.
MATERIAL CONSIDERATIONS					
NATIONAL PLANNING POLICY FRAMEWORK					
Paras 7 & 8	Sets out that the purpose of the planning system is to contribute to the achievement of sustainable development. There are three dimensions to sustainable development: economic, social and environmental.	✓			In respect of the BESS, the three objectives of sustainable development would be delivered as follows: • Economic objective – the BESS would provide essential infrastructure necessary for assisting NG ESO in managing the Grid (reactive power and

					balancing services). This will ensure a stable and secure energy supply which is vital to economic growth. As such it is considered that the BESS will help deliver the economic objective of sustainable development. • Social objective – as set out in Section 5.0 of this PDAS, the BESS would help to address flexible energy needs of the NG. This will help to ensure stable and secure renewable energy supplies for existing communities and future generations as the UK moves to a low carbon economy, including the shift to the wider use of electric vehicles. The BESS would support renewable energy generation which reduced the need for fossil fuels, thus improving air quality and associated health. • Environmental objective – as set out in Section 5.0 of this PDAS the BESS provides a balancing and reactive power services, to support the decarbonisation of the electricity system. In addition, the Site itself is of limited ecological value comprising grassland, and would not result in any significant adverse environmental impacts. In fact, the landscape and ecological enhancement would also help to protect and enhance the natural environment
Para 11	Identifies that there is a presumption in favour of sustainable development. This includes aligning growth and infrastructure and mitigating climate change. Development proposals that accord with an up-to-date development plan should be approved without delay.	✓			The preceding planning policy assessment has demonstrated that the BESS accords with relevant Development Plan policy. It clearly provides infrastructure which aligns with growth and helps to mitigate climate change. As such, the application should be approved without delay.
Section 6	Sets out the government's commitment to building a strongand competitive economy.	✓			As demonstrated through this table and Section 5.0 of this PDAS the BESS would result a series of beneficial economic effects.
Section 11	Sets out that the effective use of land in meeting need for specific uses should be promoted, whilst protecting and improving the environment and living conditions.	✓			Section 5.0 demonstrates that the BESS has been carefully located and forms the most effective use of land that meets the specific requirements to balance the Grid through a connection to the substation. This appraisal also demonstrates that the environment and living conditions will be protected and enhanced.
Section 14 Para 148	Identifies that the planning system should support the transition to a low carbon future in a changing climate … and support renewable and low carbon energy and associated infrastructure.	✓			The BESS forms 'associated infrastructure' specifically designed to support renewable and low carbon energy generation. The NPPF supports the transition to a low carbon future and therefore the BESS is supported.
Section 14 Para	Confirms that when determining planning applications for renewable and low carbon development, local planning authorities should not require applicants to demonstrate	✓			The BESS supports renewable and low carbon development and the associated contribution to climate change. The NPPF is clear in that this type of development should be supported.

154	the overall need for such a development, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions.				
Sections 15 + 16	Conserving and enhancing the natural and historic environment.	✓			These matters have already been addressed in this table. The BESS has clearly been found to enhance the natural environment.

7.0 SUMMARY AND CONCLUSIONS

7.1.1 This Planning, Design and Access Statement has been prepared by AXIS, on behalf of Balance Power Projects Limited to construct and operate a temporary Battery Energy Storage System associated infrastructure, earthworks, landscaping and access on land adjacent to the Newburn Haugh Industrial Estate, located off Northumberland Road (A6085), Lemington.

7.1.2 The BESS would support the decarbonisation of the energy industry in the UK. The changing nature of the UK's energy requirements is clearly defined in Government energy policy and is supported by the anticipated requirements of the NG. These considerations clearly identify an essential requirement for additional electricity storage capacity to meet demand and support the transition to a low carbon, resilient energy network. The BESS would make an important contribution towards meeting these requirements.

7.1.3 As identified in the preceding sections, the BESS would not give rise to any material detrimental impacts in respect of noise, landscape and visual, traffic, heritage, ecology, flood risk, pollution or amenity.

7.1.4 An assessment of the BESS against relevant planning policy and guidance has demonstrated that it meets the tests of Section 38(6) of the Planning and Compulsory Purchase Act, as it accords with the policies of the statutory Development Plan. In addition, an assessment of relevant material considerations has not revealed any justification for determining the application other than in accordance with the statutory Development Plan, rather it reinforces the logic for doing so.

7.1.5 In conclusion, and based on the findings of this Planning and Design and Access Statement, granting of planning permission can be justified and the BESS supported.

Figures and Appendices