

GREENBELT STATEMENT

**INSTALLATION OF BATTERY ENERGY STORAGE FACILITY
AT
HUNSHELF PRIMARY SUB-STATION
TOFTS LANE
BARNSELY
S36 8WR**

**TOWN & COUNTRY PLANNING ACT 1990 (AS AMENDED)
PLANNING AND COMPULSORY PURCHASE ACT 2004**

May 2017

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EXECUTIVE SUMMARY

The Applicant is proposing a battery energy storage system (BESS) on land at Hunshelf Sub-Station, near Stocksbridge with a capacity of circa 40MW.

This site search assessment report provides an up-to-date comparative analysis of potential sites within the area of search. National Policy Statement for Energy (EN - 1) states that *'it is critical that the UK continues to have secure and reliable supplies of electricity as we make the transition to a low carbon economy.'* It too recognises that a flexible approach to energy generation is required to provide backup supply for intermittent renewable energy which this proposal contributes to.

In accordance with the NPPF and Core Strategy, when read as a whole, this proposal provides the very special circumstances that underpin the case for justifying a grant of planning permission in this case. The very special circumstances clearly outweigh the harm that is caused by the inappropriateness of the development, by definition, in the Greenbelt.

This assessment reaffirms that there are no alternative suitable sites following a sequential approach, which can deliver the development proposal. The subject site is the only site available to the applicant to achieve the fundamental technical requirements which are such a scarce resource not only within the NPG network but in the entire country.

Not providing this energy storage proposal in this area means that Barnsley MBC will miss an opportunity to conform to National Policy Statement for Energy (EN - 1EN-1) which recognises that the development fully conforms to this policy, as it enables the DNO and the National Grid to balance increasing intermittent renewable energy generation and thus contributing to the transition to a low carbon energy market. This proposal is of national significance in terms of achieving energy security.

1. INTRODUCTION

- 1.1 This report considers the site selection process and provides an up-to-date analysis of potential sites within the search area.
- 1.2 The report also assesses the proposal against greenbelt policy to determine if 'Very Special Circumstances' exist to outweigh the harm in terms of openness on the greenbelt.
- 1.3 It explores and affirms that there are no significantly better sites (*i.e.* non-greenbelt land) which could provide a more acceptable alternative location for the proposed development, taking account of consistency with relevant policy and potential constraints to and opportunities for an energy storage development.
- 1.4 The assessment identifies that land at Hunshelf Sub-Station (application site) is the sequentially preferred site when measured against alternative sites identified within the area of search.
- 1.5 The search area for an energy storage development is defined by project viability. The potential for and cost of connection to electricity grid network is a key factor which determines project viability.

2. NEED FOR ENERGY STORAGE

- 2.1 The National Grid has a statutory duty to ensure that the supply of electricity in the United Kingdom remains within certain limits in relation to demand. The balance of supply and demand within the grid, is known as system frequency. Frequency is continuously changing as levels of electricity generation and consumption fluctuate. At times, the generation from baseload power stations is insufficient to meet demand when there are spikes in consumption. There are also times when baseload generation unexpectedly becomes unavailable, with the same effect. Northern Power Grid (NPG), the District Network Operator (DNO) and owner of Hunshelf Primary Sub-station, including the subject Site, which forms part of the 'Operational Land' of the primary sub-station, is in the process of agreeing with the Applicant (subject to planning permission) to procure energy storage services for the operational purposes of Hunshelf Primary Sub-station, in order to aid the sub-station plant and equipment for system balancing purposes. Under EU and UK law DNO's are not permitted to develop energy storage facilities themselves and must procure services from third parties. This legal requirement is based on EU 'Third Package' Regulations, information on slide 4: <https://www.ofgem.gov.uk/ofgem-publications/86247/ws6storageslides111113.pdf>. More specific information can be found at: <https://www.ofgem.gov.uk/gas/wholesale-market/european-market/eu-legislation>.

A major shift is happening in the energy market

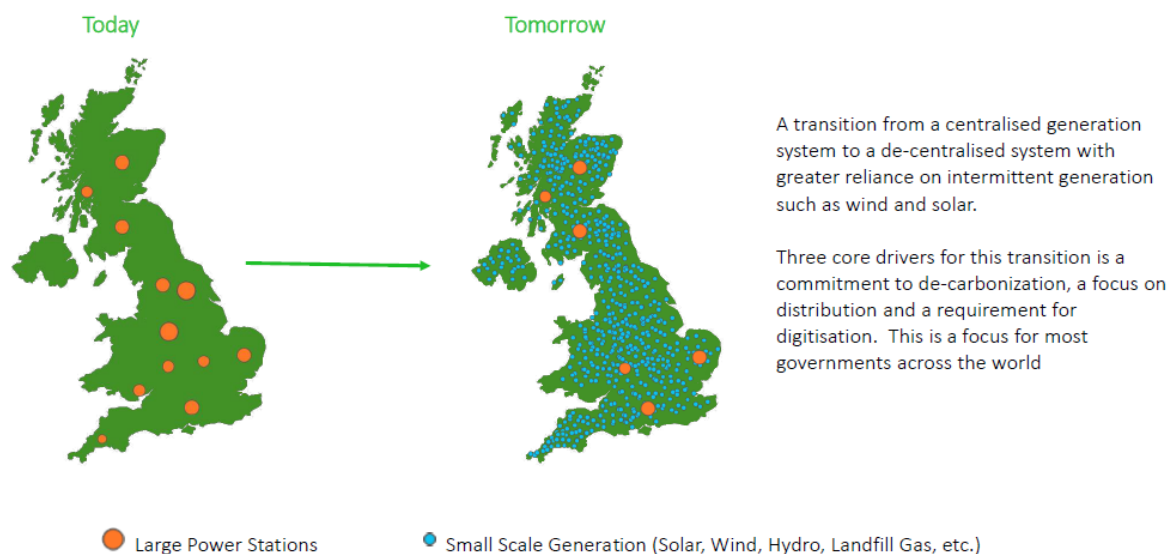


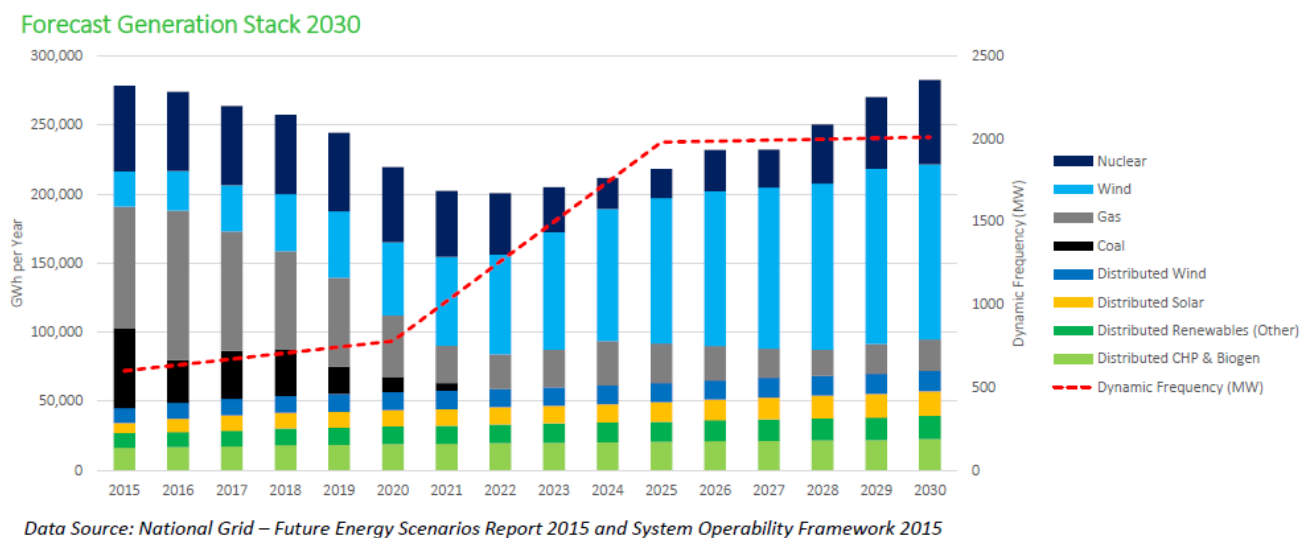
Fig 1: Source National Grid. Changing Energy Market in UK

- 2.2 National Grid defines frequency: "System frequency is a continuously changing variable that is determined and controlled by the second-by-second (real time) balance, between system demand and total generation. If demand is greater than generation, the frequency falls, while if generation is greater than demand, the frequency rises. National Grid has a licence obligation to control frequency within the limits specified in the 'Electricity Supply Regulations, i.e. $\pm 1\%$ of nominal system frequency (50.00Hz) save in abnormal or exceptional circumstances. National Grid must therefore ensure, that, sufficient generation and / or demand is held in automatic readiness to manage all credible circumstances that might result in frequency variations."
- 2.3 In order to avoid the need for rolling blackouts and other extreme demand control measures at these times, the National Grid procures a range of Balancing Services. These include demand response services (where large electricity consumers agree to reduce their consumption during low frequency events), and operating reserve (where distributed standby generators operate only when called on to do so). The rapid increase in solar PV, onshore and offshore wind capacity has

increased the need for frequency response services. Battery Storage can provide this service as these can respond within a fraction of a second to deviations from the target 50Hz frequency and start exporting or importing power, i.e. providing either additional generation or demand.

- 2.4 In the graph below the red dotted line illustrates the projected increase in the requirement for Dynamic Frequency (battery energy storage) which the proposed development can contribute towards between 2015 to 2030.

A transitioning energy market – changing generation stack



Decreasing system inertia and loss of flexibility from declining generation from large scale gas and coal, offset by increase in wind, solar and other renewables will increase the requirement for frequency response and other balancing / demand response products

Fig 2: Source National Grid. Requirement for Energy Storage Incl. Demand Response from 200MW in 2015 to 5GW in 2030.

- 2.5 National Grid see substantial benefits in battery energy storage. “The types of services we can get are vast, from providing response services in milliseconds, rather than in seconds, to moving peak demand around. If there is a surplus of energy on a bright, sunny bank holiday when there is not a lot of demand, then it is about storing that, and then reinjecting it on the Monday morning when demand picks. Those sorts of services, from a balancing perspective, including balancing of suppliers, are going to be very valuable to us.”
- 2.6 The UK’s electricity network is split into two halves. The network of assets that suppliers use to feed UK homes and businesses is provided by District Network Operators (DNOs) like Northern PowerGrid. These assets, from Low Voltage to 132kv are like the veins and capillaries supplying blood to your body.
- 2.7 The National Grid is responsible for the transmission infrastructure. This system runs at Extra High Voltage (EHV), at 475kw+. This system is akin to the arteries supplying your major organs with blood and oxygen.
- 2.8 Just as your own body requires a certain blood volume and blood pressure to stay healthy, the National Grid must ensure that there is a.) enough power to maintain UK supplies and b.) that the ‘blood pressure’ does not get too high or too low. To do this the UK’s power regulator Ofgem and the National Grid have created competitive markets for power services from generators and from large users of power. The Capacity Market and Demand Response helps the National Grid to regulate the amount of power on the system and frequency response services such as Enhanced

Frequency Response (EFR) and Firm Frequency Response (FFR) help to regulate the 'blood pressure' to 50Hz. These services are available for energy storage developments such as this proposal.

- 2.9 The reason that the system needs to be regulated at all is that there is now a mismatch between how much power is being generated, when it is being used and how it is being generated. In the past large coal and other fossil fuel power stations acted like the body's heart, sending power down the lines to the extremities. Nowadays, the influx of intermittent renewable generation such as wind turbines and solar farms has led to problems and congestion on the grid. Power is now going backwards, UP the grid, called reverse power flow, and, the power is not being generated when and where it is necessarily needed.
- 2.10 Battery Energy Storage Systems (BESS) are one technology providing solutions for both Frequency Response and Capacity Markets, used to secure these services by the National Grid, on behalf of the public at large. Existing coal fired and gas power stations and diesel generators are also part of this process, but at a high 'carbon cost'. BESS are considered to be low carbon sources of energy as they allow greater supply of intermittent renewable energy to be stored and released on the local and national grid network, which has strong policy support at a national and local level.
- 2.11 Batteries can combine responses to several different services, layering these up like a cake, which optimises the benefits. Batteries can also relieve congestion in local networks by charging at times of peak generation and low demand, for example on a hot summer's day when the solar PV parks are generating at full capacity but no one has their electric heating, tumble dryers or kettles on. By relieving this congestion batteries prevent the need for expensive and unsightly reinforcement works by DNOs or the National Grid which can take 3 to 4 years. Significantly the proposed development helps reduce or eliminate reinforcement of Hunshelf Primary sub-station such as the construction of more pylon lines and thus helping to protect the qualities of the greenbelt in the years to come.
- 2.12 In terms of the proposal for 40MW of battery energy storage as is proposed here, the capacity, in this instance; 40MW is proposed because this is the available capacity at the substation and the DNO; NPG would only consider consenting to developments that used all of the capacity on its land to maximise energy storage availability. There are also commercial considerations when balancing the connection voltage and the associated costs with the potential scale of the development. Estimates for the amount of storage required to balance the national grid by 2020 vary massively. The National Grid EFR tender which was a pilot study last year was for 200MW, with more expected later this year and a general consensus that 2000MW storage may be required by 2020, and estimates up to 1tW needed by 2050. The proposed 40MW whilst not an insignificant amount of energy storage is relatively miniscule in terms of the overall requirement of NPG and the National Grid.

3. POLICY CONTEXT FOR ENERGY STORAGE

- 3.1 National Policy Statement for Energy (EN - 1) states 'it is critical that the UK continues to have secure and reliable supplies of electricity as we make the transition to a low carbon economy.' It too recognises that a flexible approach to energy generation is required to provide backup supply for intermittent renewable energy. Paragraph 3.3.11 of EN-1 states; "...the more renewable generating capacity we have the more generation capacity we will require overall, to provide back-up at times when the availability of intermittent renewable sources is low. Paragraph 3.6.1 continues to state that; 'Fossil fuel power stations played a vital role in providing reliable electricity supplies: they can be operated flexibly in response to changes in supply and demand, and provide diversity in our energy mix. They will continue to play a role in our energy mix as the UK makes the transition to a low carbon economy and until all the coal power stations are decommissioned. Government policy is that BESS must be constructed, and operated, in line with increasingly demanding climate change goals.' EN-1 recognises that the increasing reliance on renewable energy sources by stating 'we need more total electricity capacity than we have now, with a larger proportion being built only or mainly to perform back- up functions.' The proposed development

fully conforms to policy EN-1 as it enables DNO's and the national Grid to balance increasing intermittent renewable energy generation and thus contributing to the transition to a low carbon energy market.

- 3.2 The National Infrastructure Commission's report on "Smart Power" identified energy storage as one of three key technologies that could save consumers £8bn per year. It summarized its findings as "the UK should become a world leader in electricity storage systems". These findings were echoed in the 2016 Budget speech. The Budget also promised that "the government will implement the commission's recommendations, and will work with Ofgem to remove regulatory and policy barriers, positioning the UK to become a world leader in flexibility and smart technologies, including electricity storage" and that "the government will lay the foundations for a smart power revolution, with support for innovation in storage".
- 3.3 Ofgem, the regulator of the electricity market, has taken this up and has declared that "storage is one of the five priority areas we are looking at in a piece of work on flexibility in the energy system" but that "our principle is that the network companies shouldn't own or operate storage". That leaves it to independent developers and customers to realise commercial storage projects. Therefore, the Applicant rather than NPG is proposing to develop this energy storage facility at Hunshelf Primary Sub-station.
- 3.4 In accordance with the thrust of the NPPF the recent publication by the Energy and Climate Change Committee (ECCC) on Low Carbon Network Infrastructure (published 17 June 2016) identified the issues faced by the network associated with the rise of renewable energy and that 'variable generation could be managed by storing electricity at times of peak supply for use at times of peak demand'. Storage in an economical sense provides an answer to the expansion of variable renewables and helps to 'balance the system'.
- 3.5 The ECCC document states, 'storage technologies should be deployed at scale as soon as possible. We support network utilisation of storage: this helps balance the system, and provides storage operators with a revenue stream that encourages its development'.

PLANNING POLICY FRAMEWORK

National Planning Policy Framework (NPPF)

- 3.6 The NPPF sets out a broad framework for plan making and decision taking at the local level. It must be considered in the preparation of local and neighbourhood plans and is a key material consideration in planning decisions.
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- 3.8 The NPPF states that the purpose of the planning system is to contribute to the achievement of sustainable development in its three dimensions; economic, social and environmental. Central to the NPPF is a presumption in favour of sustainable development, "*which should be seen as the golden thread running through both plan-making and decision-taking*". For decision taking this means (paragraph 14):
- *Approving proposals that accord with the development plan without delay; and*
 - *Where the development plan is absent, silent or relevant policies are out of date, granting permission unless;*
 - *any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the NPPF; or*
 - *specific policies in the framework indicate development should be restricted.*

- 3.9 Paragraph 17 of the NPPF sets out the core principles of national policy. Of relevance to this application, it states that planning should *“proactively drive and support sustainable economic development”* in order to meet the country’s development needs, including infrastructure.
- 3.10 The principles state that planning decisions should *“always seek to secure high quality design and a good standard of amenity”* for existing and future users, respect the varying character of different areas, and promote the vitality of urban centres.
- 3.11 Paragraph 17 goes on to state that planning decisions should seek to reduce pollution, reuse previously developed land, protect heritage assets and *“support the transition to a low carbon future.”* This is directly relevant to the proposal as it will contribute to a reduction in fossil fuel usage by storing energy, of which part is renewable energy and thus pollution, use of existing land within the boundary of a sub-station, has no detrimental impact on any heritage asset and supports our transition to a low carbon future.
- 3.12 Paragraph 79 in relation to Green Belt, states that the fundamental aim is to prevent urban sprawl. This proposal is located within the ‘operational land’ of Hunshelf Primary Sub-station and does not constitute ‘urban sprawl’ due to its small foot print within a sub-station boundary location. Please refer to section 3.27 of this document in relation to Green Belt.
- 3.13 Paragraph 87 states that proposals should only be permitted in ‘very special circumstances’ within Greenbelt. This is discussed in more detail in Section 3.29 of this document.
- 3.14 Paragraph 90 includes engineering operations (subject proposal) as not inappropriate development in Green Belt, provided they preserve the openness of the Green Belt.
- 3.15 Paragraph 97 establishes support for the transition to a low carbon economy and the delivery of renewable energy generation capacity, including the infrastructure required to support that delivery which is directly relevant to this proposal.
- 3.16 Paragraph 120 states that *“to prevent unacceptable risks from pollution...planning policies and decisions should ensure that new development is appropriate to its location.”*
- 3.17 Paragraph 123 sets out aims for planning decisions to avoid *“significant adverse”* impacts on health and quality and life, as a result of noise and other adverse impacts, and seeks to mitigate such impacts through the use of planning conditions.

NATIONAL PLANNING PRACTICE GUIDANCE – RENEWABLE AND LOW CARBON ENERGY

- 3.18 The National Planning Practice Guidance (NPPG) provides a comprehensive suite of guidance documents including a ‘Renewable and low carbon energy’ and ‘Climate Change’. The NPPG supersedes almost all guidance previously in place, including the DCLG’s Planning Practice Guidance for Renewable and Low Carbon Energy.
- 3.19 In relation to renewable and low carbon energy the NPPG states *“planning has an important role in the delivery of new renewable and low carbon energy infrastructure in locations where the local environment impact is acceptable”*.
- 3.20 The proposed battery storage facility does not comprise renewable energy generation here but rather stores energy, which is considered low carbon energy infrastructure. As the proportion of renewable energy contributing to the national grid increases, the requirement for balancing services such as battery storage increases. This is because of the high degree of intermittency of technologies such as wind and solar. This proposal is considered to be a low carbon energy development and the NPPG has relevance to this proposal, and it is considered that the proposed development contributes towards the broad aims of NPPG:ID5 Renewable and Low Carbon Energy and therefore carries their support.

DEVELOPMENT PLAN

- 3.21 Section 38(6) of the Planning and Compulsory Purchase Act 2004, requires that Applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise. The adopted development plan of relevance to this proposal comprises the Barnsley Core Strategy (February 2010) and the saved policies of the UDP (December 2000).

BARNsLEY CORE STRATEGY (FEBRUARY 2010)

- 3.22 Policy CSP 1 deals with climate change. It states that development will be expected to reduce and mitigate the impact of growth on the environment and carbon emissions. Of particular relevance, it states that development will be expected to *"harness the opportunities that growth, and its associated energy demands, brings to increase the efficient use of resources."*
- 3.23 Policy CSP 6 deals with renewable energy development. The policy alongside the supporting text indicates that such development will be supported where it will not result in significantly harmful effects. The policy is relevant to the proposed development because the supply of renewable energy increases the National Grid's requirements for balancing services.
- 3.24 Policy CSP 26 deals with highway improvements required for new developments. It is considered that this may be dealt with by way of a condition of the grant of planning permission.
- 3.25 Policy CSP 36 deals with biodiversity and geodiversity. It states that development will be expected to conserve and enhance the biodiversity and geological features of the borough by protecting and improving habitats, species and sites of ecological value. This proposal incorporates a number of biodiversity enhancement measures outlined in Section 3.51 of this document.
- 3.26 Policy 37 deals with landscape character and requires development to retain and enhance the character and distinctiveness of the individual landscape character area in which it is located.
- 3.27 Policy CSP 42 deals with infrastructure and planning obligations. Of relevance, it states that development must be supported by appropriate physical, social and economic infrastructure.
- 3.28 Policy CSP 34 deals with protection of Green Belt. It states that in order to protect the countryside and open land around built up areas the extent of the Green Belt will be safeguarded and remain unchanged. It goes on to state that proposals will only be allowed in very special circumstances. This is considered in Section 3.27 below.

Saved Policies of the UDP (December 2000)

- 3.29 Of relevance to the proposed development, Policy GS2 of the UDP states that *"the Council will continue to reclaim and improve derelict, disused, degraded and under used land."* It states that priority for the development of such land will be given especially for industrial, commercial or housing purposes. The Site is considered disused land within Hunshelf Primary Sub-station ownership boundary and not a pristine undisturbed greenbelt landscape.

GREEN BELT

Principle of Development

- 3.30 Within the Green Belt, Policy CSP34 of the Local Plan and paragraphs 89 & 90 of the NPPF set out forms of development which are not inappropriate within the Green Belt. The proposal does not fall within the relevant forms of development and, as such, represents inappropriate development, which is harmful to the Green Belt. Therefore, very special circumstances to outweigh potential harm to the Green Belt by reason of inappropriateness and any other harm must be demonstrated to justify the application's approval.

Very Special Circumstances

- 3.31 The UK's electricity network faces tough challenges to deliver the Government's target of reducing carbon emissions. Currently reducing emissions is achieved through the decommissioning of carbon intensive plants (i.e. coal fuelled power stations) and continuing to deliver low carbon generation i.e. offshore wind. However, these subsequent supplies, whilst carbon reducing is placing increasing demand for additional flexibility and reserve supplies to be provided.
- 3.32 In response to the requirement for increased flexibility for local demand this proposal seeks planning permission for Frequency Response services (FR) for the National Grid (using batteries) and in addition to provide reserve electricity for Northern PowerGrid (NPG) at Hunshelf Primary Sub-station. FR is a new service required by National Grid to help balance the frequency fluctuations on the grid system (when there is high generation of power but low demand or low generation of power and high demand).
- 3.33 This type of facility can respond to services that National Grid and NPG requires in meeting supply shortages and frequency balancing services. The proposed service is designed to provide frequency response and flexible back-up electrical power at very short notice. Unlike traditional power stations, the Efficient Frequency Response Service would be operated to respond very rapidly to frequency calls and peaks in energy demand.
- 3.34 The reasons describe how the proposed project will provide the need for efficient and flexible supply to meet peak energy demands within the local power network. How it would not only change the way that the power system operates, but would encourage the development of renewable energy whilst enhancing the reliability of supply in a demanding market.
- 3.35 The development would secure power supply to the local area, avoid potential risks of power interruptions as well as bring with it economic and environmental benefits.

Impact on the Greenbelt

- 3.36 Paragraph 88 of the NPPF states that in considering any planning application, LPA's should ensure that substantial weight is given to any harm to the Green Belt. Furthermore, 'very special circumstances' will not exist unless the potential harm to the Green Belt by reason of 'inappropriateness', and any other harm, is clearly outweighed by other considerations. Therefore, whilst the proposal is by definition inappropriate development in the Green Belt, if it can be demonstrated that other considerations exist which outweigh the harm (both from inappropriateness and other harm), very special circumstances may exist.
- 3.37 The Green Belt serves five purposes as defined in the NPPF. They are:
- To check the unrestricted sprawl of large built up areas;
 - To prevent neighbouring towns from merging into one another;
 - To assist in safeguarding the countryside from encroachment;
 - To preserve the setting and special character of historic towns; and
 - To assist in urban regeneration, by encouraging the recycling of derelict and other urban land.
- 3.38 Regarding the first and second purpose the site is located in an open area of the countryside (excluding the existing substation and associated pylons and powerlines) would not attract additional development to locate with or beside it. The site does not form part of a large built up area and, therefore the development would not encourage sprawl or cause the merging of towns; particularly as the site is surrounded by open fields.
- 3.39 Regarding the third purpose, this proposal would develop the site although it is within the boundary of a substation and any development within the Green Belt would impact upon its openness and as the proposed scheme is inappropriate development by definition, it would not safeguard the countryside from encroachment. However, the proposed development is located in an existing utility site and in the countryside to be of a sufficient distance from sensitive receptors, including residential properties.

- 3.40 The site is not within an historic town or adjacent to any historic assets therefore satisfying the fourth purpose site.
- 3.41 The fifth purpose encourages urban regeneration and the recycling of derelict land. The land is not derelict land and is located in a rural location outside of existing urban development boundaries, although arguably dis-used land within a substation compound.
- 3.42 The proposal does not satisfy the third purpose of including land within the Green Belt and would have a greater impact upon openness and permanence. Therefore, in order to be considered acceptable, very special circumstances need to be demonstrated which is now discussed;

Impact on the Highway and Access

- 3.43 Access to the facility will be via Tofts Lane. Provision has been made for both pedestrian and vehicular access when required. Construction traffic will access the site via Tofts Lane. There is sufficient space within the substation to achieve acceptable vehicular movements and turning during construction.

Operational Phase

- 3.44 Due to the nature of the facility, once installed, there would be minimal on-site activity required during the plant life-cycle. The facility would be remotely controlled / monitored and operatives would visit the site on an adhoc basis. Parking and space for vehicular turning during the operational phase of the development has been accommodated within the application site.

Construction Phase

- 3.45 Construction of the facility is anticipated to take 3 months. The maximum number of traffic movements of construction vehicles in any one day will be circa 15 Heavy Duty Vehicles (HDVs) however this is the peak and will be confined to the civils phase of the project.
- 3.46 The deliveries (and staff) will be directed to the construction compound. Equipment will be stored in the construction laydown area until it is required within the construction site, however much of the equipment will arrive pre-assembled and be installed directly on arrival.

Impacts on the Landscape

- 3.47 The site benefits from a very low theoretical visibility of circa. 500m due to its low height of circa 3m, undulating topography of the area and natural screening. Apart from several public footpaths which from a lack of tracks would indicate low usage has a minimal impact on any sensitive receptors. The existing location is not pristine countryside owing to the adjoining substation and associated powerlines and pylons. There is substantial landscaping proposed, including the introduction of semi-mature trees to surround and screen the enclosure from the outset of the development (by semi-mature tree planting) and will in some respect improve the exiting appearance by screening views of the existing substation when travelling in a north-west to south-east direction along Tofts Lane. The original proposal to locate the development in front of the existing sub-station and to completely screen both existing and proposed developments by vegetation was rejected by the landowner NPG due to the existence of HV cabling underneath the ground there.
- 3.48 The site is within Hunshelf substation ownership boundary and the proposal is in keeping with the existing infrastructure there in terms of scale and height, excluding pylons and HV lines. Further the site is a very small footprint in the overall landscape.
- 3.49 A landscape and visual impact assessment (LVIA) has been prepared in support of this application. The Landscape Assessment identifies and assesses the proposals against the key characteristics of the landscape character areas relevant to the proposed development.

- 3.50 The nearest residential dwelling is in excess of 500m away. By reason of separation distance, design and existing and proposed vegetation, the proposed development will not have an adverse effect on the visual amenity of residents and will almost immediately become fully screened.
- 3.51 The Site is discretely located and is not significantly visible from public highways or public footpaths apart from those immediately located beside the site. The proposed development will be painted in a recessive colour such as British Racing Green and the containers will be approximately 3.0 m high. A double row band of native trees will be planted around the perimeter of the fence 50/50 deciduous and evergreen to take account of seasonality in a non-uniform manner to appear natural and to avoid it appearing as a suburban type hedge which, almost immediately established after construction, will almost entirely screen it from the surrounding area apart from the site entrance.
- 3.52 It is important to note that integrating this proposal onto the DNO network, means that, expensive network reinforcement can be avoided. Network reinforcement is where whole sections of an electricity line is replaced with bigger cables, pylons or substations which are modified and expanded to cope with the extra demand's. Battery developments help DNO's by reducing the need for this expensive reinforcement and this damage to the greenbelt landscape in future years.

Impacts on Biodiversity

- 3.53 Biodiversity enhancements are proposed (bird boxes, hedgehog boxes, insect houses and stag beetle houses) to help encourage local wildlife onto site, as the proposal is benign with no moving parts and is perfectly compatible for use by local wildlife. In proposing such landscaping and biodiversity measures, great care and respect has been given to the site's rural and greenbelt location to ensure that there are no significant adverse landscape and biodiversity impacts arising from this proposal.

Design and Layout

- 3.54 Section 7 of the NPPF seeks to ensure that all new developments are of the highest quality design and they should take account of local character and distinctiveness, and make a positive contribution to the street scene.
- 3.55 The battery containers and building will be painted in a recessive colour such as British Racing Green and the containers will be approximately 3m high. A double row band of 3m high native trees will be planted around the perimeter of the fence 50/50 deciduous and evergreen to take account of seasonality in a non-uniform manner to avoid appearing as a suburban hedge which, almost immediately established following construction, will almost entirely screen it (apart from site entrance) from the surrounding area.
- 3.56 The design of the proposal (all external components) owing to its colouring and landscaping is of a high standard appearance even though it is designed with functionality in mind. The size and scale of the proposed building would be no higher than the adjacent substation, therefore it would not be visually intrusive or detrimentally harmful to the areas character. It will arguably improve the appearance of the substation by the landscaping screening when viewed from the west.
- 3.57 With regards to the location a key selection criteria were applied and considered. In order for the proposed batteries to operate effectively the site is key - it needs to be close to GSP or BSP substations that;
- have the electrical capacity to export and import electricity without creating large voltage swings and
 - is on land that was both suitable and available to be developed with a willing landowner.

The proposed site meets these requirements.

- 3.1 A variety and amount of energy infrastructure is already located in rural and Green Belt areas. Power stations, overhead electricity lines and their towers (pylons), substations and above ground

installations associated with pipelines, are situated in these locations where necessary to deliver reliable, secure electricity and gas supplies to virtually all of the country.

Impact on Neighbouring Amenity/Noise and Health

- 3.2 Policy CSP6 states applicants are required to provide evidence to demonstrate that the renewable energy benefits arising from the proposed development outweighs the impacts on local amenities, including environmental and landscape impacts, impact on the historic environment and impact on the amenities of local residents.
- 3.3 In terms of battery hazards and their impacts to human health it is stated that there are no major risks associated with the batteries as they are a self-standing system and will be remotely operated, maintenance checks will be carried out regularly and access will only be granted to specialized personnel. The batteries being proposed are Li-Ion batteries, not NiCd or high temperature batteries - it is the latter kind which can be harmful to the environment and human health, as they emit cadmium or acidic electrolytes.
- 3.4 The batteries proposed are a registered technology in the UK to ensure they comply with the Act on Control of hazardous substances. The batteries are transported in line with the UN definitions for dangerous goods and follow the recommendations for Li-Ion batteries and BSS EN 62281:2013. The battery systems are also installed according to CDM, Health and Safety regulations.
- 3.5 The proposed battery suppliers are OHSAS 18001 certified, and will they therefore ensure that site health regulations apply and incorporate standard protection mechanisms. The proposed battery suppliers will also ensure all Island test are performed under IEC 1547. With these batteries, there are no electromagnetic problems as the inverters and PCS have been tested against IEC 61000-6-2 and IEC 61000-6-4 and the systems vastly exceed the requirements.
- 3.6 Noise levels are tested according to EN3744:11 and a value of 66.4dBA sound pressure level at 10m is attributed to each MVPS (inverter and transformer unit). The batteries are silent. With the MVPS contained within a building noise level will not exceed the evening background noise levels and given that the closest residential properties are in excess of 400m away, means that there will be a resultant negligible impact.
- 3.7 In the event of a fire, hydrochloric acid, carbon monoxide and carbon dioxide might arise if the electrolyte is in contact with water; therefore water-free fire extinguishing gases are used.
- 3.8 In light of the above it is considered that there are no unacceptable impacts on residential amenity.

Very Special Circumstances Conclusion

- 3.9 The proposed development meets the need for a flexible and decentralised energy generating facility. It accords with the Government's national planning policy including the NPPF and EN-1 by means of providing electricity generation capacity to support the shift towards a low carbon, reliable electricity supply. This development would prevent local power interruptions including blackouts for example in Barnsley and would therefore contribute to the rural economy by means of electricity. Environmental gains would also be achieved without causing a detrimental impact on the setting of the wider landscape or on biodiversity. There would be no detrimental highway impacts and there would be no detrimental harm upon the amenity of nearby residents or the wider area in general.
- 3.10 A variety and amount of energy infrastructure is already located in rural and Green Belt areas. Power stations, overhead electricity lines and their towers (pylons), substations, above ground installations associated with pipelines and there is a close-by wind turbine, are situated in these locations where necessary to deliver reliable, secure electricity and gas supplies to virtually all of the country and to the adjoining built up areas that greenbelts were designated to prevent encroachment into.
- 3.11 It is important to note that integrating this proposal onto the DNO network, means that, expensive network reinforcement can be avoided in this Greenbelt. Network reinforcement is where whole

sections of an electricity line is replaced with bigger cables, pylons or substations which are modified and expanded to cope with the extra demand's. Battery developments help DNO's by reducing the need for this expensive reinforcement and this damage to the greenbelt landscape in future which would otherwise be required in the absence of energy storage proposals such as this one at Hunshelf sub-station.

- 3.12 It is considered that due to the location of the proposal within the boundary of Hunshelf Primary Sub-station, an existing utility site, the very nature of the proposal which is low level in height and due to its benign nature, which is to provide essential balancing and frequency services for the substation and the need for rolling blackouts to be avoided in future.
- 3.13 Bearing in mind the above factors, it is considered that the various national and local benefits arising as a result of the proposed development and the locational requirements for such a development, as outlined above, demonstrate that in this case Very Special Circumstance exist to justify the location of the proposed development.
- 3.14 The impact on openness must also be balanced against the identified benefits and other impacts of the proposed development when considering whether 'Very Special Circumstances' exist sufficient to justify the proposed development.
- 3.15 In terms of openness the Applicant seeks planning permission for a period of 25 years, at which time the site will be fully restored to its current state. It has been accepted in previous Planning Inspectorate rulings in relation to solar PV developments, that this period of time is in fact considered 'temporary' and meets the requirement for avoidance of 'permanence' in terms of Greenbelt guidance and policy.
- 3.16 The NPPG has introduced a sequential approach toward site selection. However, this is just one consideration and the NPPG reinforces that other considerations are important such as: solar farms are temporary, the need to limit visual impact, minimise impact on heritage assets and promote biodiversity. The proposed solar park meets these requirements also.
- 3.17 Taken as a whole, the above provides the very special circumstances that underpin the case for justifying a grant of planning permission in this case. The very special circumstances clearly outweigh the harm that is caused by the inappropriateness of the development, by definition, the harm to openness arising from the proposed buildings.
- 3.18 The application is therefore considered to warrant approval complying with policies CSP34 of the Barnsley Core Strategy and the National Planning Policy Framework.

4. SITE SELECTION PROCESS

- 4.1 This report now discusses the site selection process when considering alternative sites which could viably accommodate the development within the Northern PowerGrid (NPG) District Network.
- 4.2 Each DNO is obliged to ensure it has sufficient flexibility in terms of generation and supply to meet its future demands, mandated by the National Grid, therefore whilst NPG is not permitted to develop energy storage for its network itself, it must facilitate energy storage development where possible, as suitable locations from an import/export capacity perspective are rare throughout its network and indeed throughout the UK.
- 4.3 Each DNO operates across a different geographical area and has a different set of problems associated with each network, for example wind farms in Scotland and solar PV in the south-west create significant intermittency issues in these geographical areas. Each DNO has a different attitude and approach to accommodating batteries on their own network, but what all DNO's have

in common is that there are only a finite number of 'entry points' that are suitable for Battery Energy Storage Systems (BESS). Most of the DNO's now provide publicly available information on the location and technical details associated with their assets. This information allows developers through supportive policy, to target their applications for connections in areas where it is more likely to be technically feasible.

GENERATION AVAILABILITY MAP

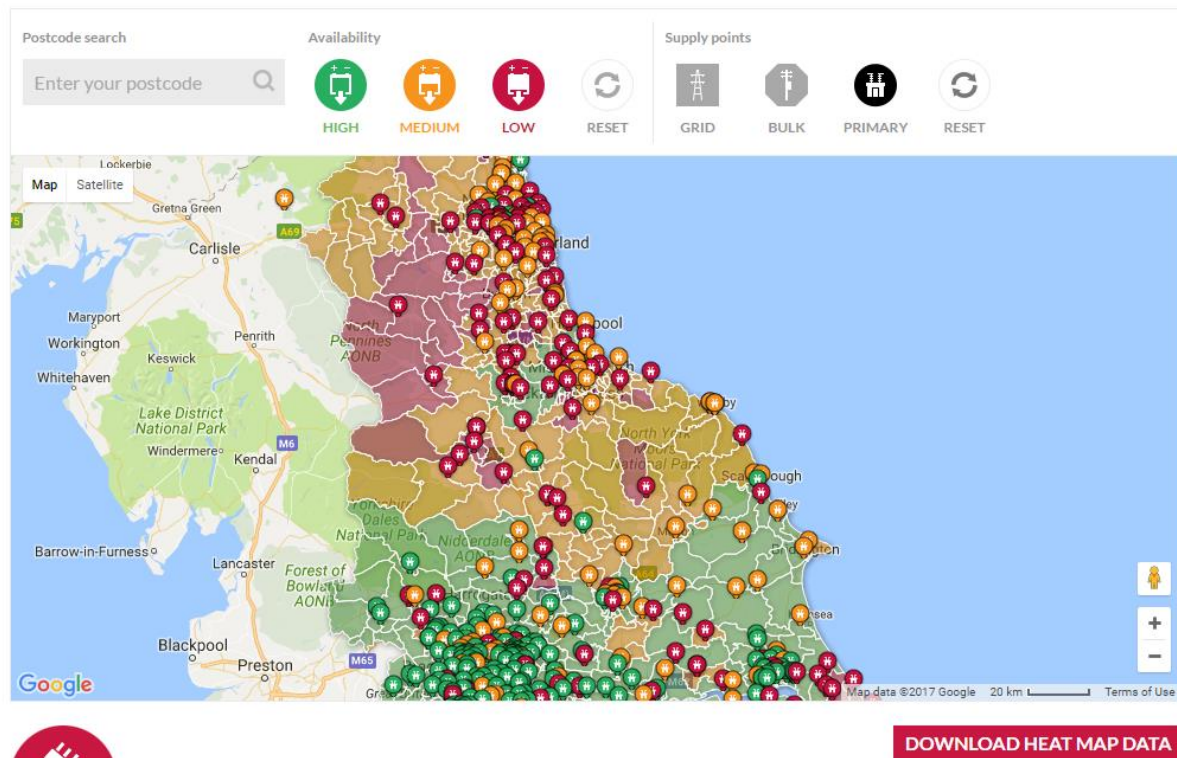


Fig 3: NPG DNO Network

- 4.4 DNO's are moving away from a strictly asset management role towards a District Service Operator (DSO) model, where the Operator would have more control and more authority to regulate its own local network with locally procured capacity and frequency services for;
 - a. Enhanced Monitoring and Planning
 - b. Real Time Reconfiguration
 - c. Commercial Arrangements to Manage Faults
 - d. Active Voltage Management
 - e. Permanent Active Network Management
- 4.5 Once battery energy storage developments are in place they will be available for when the DNO's transition occurs and the corresponding need these services. This is valuable future proofing.
- 4.6 DNO's are currently forbidden from investing in these assets themselves by Ofgem, so the private sector must provide this investment.
- 4.7 To be able to connect a battery energy storage system into the grid it must have a Point of Connection (PoC) that:

- a. is the right connection voltage, i.e. up to 6mws can be accommodated at 11kv. Above this is 33kv, up to about 20MW and so forth.
 - b. there is sufficient reverse power flow capability or demand nearby to accommodate the battery discharging
 - c. there is sufficient voltage 'headroom' to accommodate a battery discharge at sufficient speed to match the frequency response chosen i.e. a 20MW EFR project can go from - 20MW to +20MW (total 40MW swing) in 0.5 seconds.
 - d. sufficient import capacity to recharge the battery
- 4.8 The above criteria mean that projects of this proposed scale (40mws) at Hunshelf must connect to large sub stations – Grid Supply Points (GSPs) or Bulk Supply Points (BSPs). This type of substation is usually located close to a major population centre or conurbation, and, thus, often in or close to Greenbelt designations.
- 4.9 In order for an energy storage project to be developed, the connection to the Grid must be financially and technically viable. The key component in connection viability is distance from the connection point – the further away from the connection point (in this case the strategic substation at Hunshelf), the less viable a project becomes. First, the further away from the connection point the energy storage facility is located, the greater the impact of voltage drop across the cable connecting it to the strategic substation. In turn, this reduces efficiency and increases energy losses and can entirely defeat the purpose of the project, rendering it technically unviable. Secondly, in financial terms, an energy storage facility more than 1km away from its connection point is unaffordable to the initial connections costs and the costs associated with the technical issues explained above. The whole of the 1km radius around the site is within Green Belt. The further away from a substation a development is located, the higher the costs are to connect will be. This is because cable is costed per metre. 33kw triplex cable is roughly £250/m if laid in a soft verge. In the case of the current application at Hunshelf, to locate the site outside of the Greenbelt, the connection route of 1925m would cost and additional £481,250 which makes this location financially unfeasible. There is no available land within 1km of the substation which is outside of the Green Belt. As the strategic substation is in the Green Belt, there is little choice but to locate critical supporting infrastructure in the Green Belt. That being so, as explained throughout this document, it is fortuitous that the application site is ideal in every other respect.
- 4.10 The applicant has worked closely with Northern Power Grid (NPG) to identify sites which have technical feasibility for BESS. When a site is identified and where there is sufficient available operational land, from a willing site owner and in this case NPG and that has sufficient grid capacity results in a technically viable site location. This is always preferable as it keeps the connection costs to a minimum and position's the development as close as possible to the point of need.
- 4.11 NPG identified Hunshelf substation as a potential BESS site. As it was in the Greenbelt the applicant costed up a connection outside of the designation and this was not feasible, see point 4.9, above. This site was suggested by the DNO as it matches the criteria listed in point 4.9 above. A large development at this site would also mean that the capacity is used, avoiding a proliferation of multiple smaller developments.
- 4.12 The case for very special circumstances to support development in the Greenbelt is based on the essential need for BESS systems outlined above and demonstrated through a sequential approach to site identification for sites that are technically and commercially feasible. This is unlike other forms of development such as solar PV or wind farms, in which there are many such developments located throughout the country in Greenbelt, even though there is more flexibility for siting such developments compared to energy storage developments which must be located at or very close to sub-stations for technical and commercial reasons. The commercial cost of locating this proposal outside the greenbelt and connected to Hunshelf as described in section 4.9 is unviable. In relation to the technical reasons, there are a number of technical criteria that need to be met before candidate substations can be considered to have potential to work for this scale of battery

operation (40MW). For both frequency response and fast responding generation services, the closer to centres of dense population the better. Only as a last resort will a proposal be within a greenbelt. For a battery to operate it must import as much as it can export. Obtaining a grid offer where import matches export is much more likely the closer you are to a BSP or GSP substation. For example, existing export grid offers for other renewables in isolated locations will be less likely to match their export offer with the same import. Consideration is also given to voltage swings, whereby if export and import connections are offered in locations away from GSP or BSPs voltage swings are more likely to impact the local area. When next to a GSP and BSP substation such as in this instance, voltage swings are less likely to affect the local area because you are next to a supply point and export and import fluctuations are easier to deal with.

The Sequential Approach to Choosing the Hunshelf Site Location

- 4.13 This report summarises the site selection process and provides confirmation that there were no sequentially better sites available to accommodate the development proposal within the search area.
- 4.14 The site selection process is guided by development control considerations laid out through the relevant national and local planning policy guidance (*i.e.* a sequential approach) together with the operational needs and requirements of the development proposals, these are presented within Table 1.
- **Stage 1:** Developing appropriate site selection criteria based on European, national, and local planning policy and guidance together with operational and developer considerations guiding the locationary requirements of the development proposal. Stage 1 also involved a preliminary desk based identification of sites including a survey of these sites located within the vicinity of the area of search.
 - **Stage 2:** Staged sieving of sites against criteria in order to identify potential sites that would be available and appropriate for the development proposal;
 - **Stage 3:** Staged sieving of sites against criteria in order to identify potential sites that would be available and appropriate for the development proposal which included criteria to arrive at the highest ranked site numerically (see Appendix 6) taking into consideration the following factors;
 - i. Capability of grid connection;
 - ii. Site size;
 - iii. Land Available by willing land owner;
 - iv. Unsuitable topography;
 - v. Non-greenbelt land;
 - vi. Best and most versatile land;
 - vii. In sensitive areas as defined by EIA regulations;
 - viii. Poor highway infrastructure;
 - ix. Distance to sub-station;
 - x. Flood Zones;
 - xi. Sensitive Human Receptors;
 - xii. Landscape and Visual Considerations; and

xiii. Heritage Considerations.

4.15 In terms of energy storage developments, there is virtually no flexibility in terms of grid capacity availability, site size and land availability. There are so few locations within the entire country where such projects are feasible to be carried forward. The overarching requirements are due to technical and economic viability requirements;

- For a battery to operate, it must be able to import as much as it can export. Obtaining a grid offer where import matches export is much more likely the closer you are to a BSP or GSP substation.
- There must be available import and export grid capacity at a substation which is a rare commodity throughout the UK
- Consideration is also given to voltage swings, whereby if export and import connections are offered in locations away from GSP or BSPs voltage swings are more likely to impact the local area. When next to GSP and BSP substation voltage swings are less likely to affect the local area because you are next to a supply point and export and import fluctuations are easier to deal with
- For BESS energy storage services such as frequency response and fast responding generation services, the closer the installation is to the substation the better
- Land and space availability
- Willing landowner

Defining the Search Area

4.16 Based on the above criteria, a stage 1 full desktop analysis was undertaken last year of the local DNO Network owned and operated by NPG, as each DNO is required by the National Grid to provide reserve electricity, such as this proposal.

4.17 The NPG network consists of 697 sub stations; 21 GSPs, 75 Primary Sub-stations and 602 11kv sub stations.

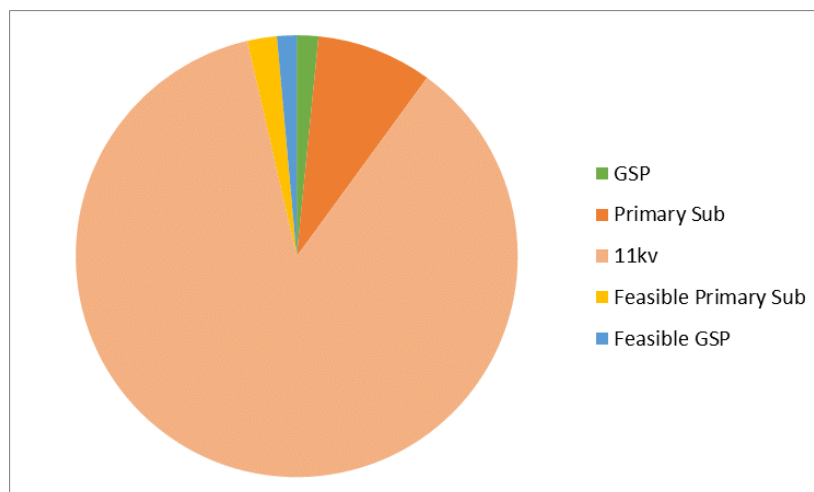


Fig 4: NPG Substation Network

4.18 Following this, a filtering process was then undertaken. The 602 11kv substations were ruled out as a development such as that proposed is not possible on the 11kv network, this immediately removed 86% of sites as not technically feasible for this type of project.

4.19 Of the remaining 95 GSPs and Primary Substations only 21 had spare import/export grid capacity for an energy storage development. These are listed in table 1 below.

Substation	Co-ords	Postcode	Voltage DS
BLYTH 132kV	55.1414,-1.52666	NE22 7BL	132kv
TYNEMOUTH	55.0247,-1.49934	NE27 0QG	132kv
STELLA NORTH	54.9778,-1.7244	NE15 9UE	132kv
STELLA SOUTH	54.9744,-1.73261	NE21 4SQ	132kv
SPENNYMOOR 132kV	54.7064,-1.55666	DH6 5JY	132kv
NORTON 132kV	54.5923,-1.36267	TS21 1EE	132kv
SALTHOLME	54.6056,-1.2386	TS23 4EX	132kv
KNARESBOROUGH	54.0315,-1.48863	HG5 9JQ	132kv
OSBALDWICK	53.9563,-1.02452	YO10 3WA	132kv
Bradford West	53.81,-1.8664	BD15 0BZ	132kv
Kirkstall B	53.8056,-1.59698	LS4 2AL	132kv
Skelton Grange	53.7785,-1.49385	LS10 1RS	132kv
Ferrybridge B	53.721878,- 1.278122	WF11 8RD	132kv
Drax	53.7325,-0.992717	YO8 8PJ	132kv
Creyke Beck	53.8024,-0.414742	HU16 5SB	132kv
Saltend North	53.7426,-0.237956	HU12 8DZ	132kv
Elland	53.6949,-1.82294	HX5 9DN	132kv
West Melton Section 3	53.5012,-1.37675	S63 6EZ	132kv
Keadby	53.5973,-0.750117	DN17 3EL	132kv
Grimsby West	53.566,-0.151181	DN37 9PE	132kv
Hunshelf	53.4955, -1.60442	S36 8WR	132kv

Table 1: Sites with Grid Capacity

- 4.20 Of the remaining 21 substations that have spare capacity, following confirmation from NPG a further 12 had to be eliminated due to voltage and other technical constraints at these substations that NPG confirmed it could not be able to accommodate a BESS due to its own internal technical limiting factors including voltage constraints. As the Applicant does not own or have control over these assets, NPG dictated that these sub-stations were not available for energy storage connection purposes due to its own technical criteria for connection purposes which are under the

control of NPG and the applicant has had to accept confirmation from NPG that this is the case due to its own internal confidential and network security issues.

- 4.21 The list of substations was then carried forward for further analysis in a stage 3 sieving process. The 9 remaining sites that were considered viable are listed below in table 2.

Substation	Co-ords	Postcode	Voltage DS
TYNEMOUTH	55.0247,-1.49934	NE27 0QG	132kv
STELLA NORTH	54.9778,-1.7244	NE15 9UE	132kv
STELLA SOUTH	54.9744,-1.73261	NE21 4SQ	132kv
SPENNYMOOR 132kV	54.7064,-1.55666	DH6 5JY	132kv
SALTHOLME	54.6056,-1.2386	TS23 4EX	132kv
OSBALDWICK	53.9563,-1.02452	YO10 3WA	132kv
Kirkstall B	53.8056,-1.59698	LS4 2AL	132kv
Elland	53.6949,-1.82294	HX5 9DN	132kv
Hunshelf	53.4955, -1.60442	S36 8WR	132kv

Table 2: Sites Suitable for Proposed Development

- 4.22 Following survey analysis Stella North and Stella South were considered not possible due to insufficient space availability at the sub-station. There was no physical space available within or adjacent to these sub-stations which was confirmed in discussions with NPG.
- 4.23 Following receipt of grid connection costs, it was determined that Spennymoor was economically unviable due to the grid connection cost being in the millions of pound's range. This was due to a range of technical factors which included upgrading works and the associated prohibitive costs at the time.
- 4.24 Then following the title investigation of the remaining sites, it was further determined that Saltholme was not possible due to title issues and the leasehold interest there. The DNO at this site does not own the freehold interest in the land and it was decided not to proceed further with this site as it could not obtain a legal interest in a site for locating the proposal and for connection.
- 4.25 This left only 5 remaining sites or <1% of NPG's portfolio of sub-stations. Please see table 3 below.

Substation	Co-ords	Postcode	Voltage DS
TYNEMOUTH	55.0247,-1.49934	NE27 0QG	132kv
OSBALDWICK	53.9563,-1.02452	YO10 3WA	132kv
Kirkstall B	53.8056,-1.59698	LS4 2AL	132kv
Elland	53.6949,-1.82294	HX5 9DN	132kv
Hunshelf	53.4955, -1.60442	S36 8WR	132kv

Table 3: 5 Viable Substations for the Proposed Development

4.26 Scoring Matrix

Negative context (low score)	Scoring					Positive context (high score)
						
No grid capacity	Yes/No					Grid capacity (life/death of project)
Size not adequate	Yes/No					Size adequate (life/death of project)
Land not available	Yes/No					Land available (life/death of project)
Unsuitable topography	1	2	3	4	5	Suitable topography
Greenbelt	1	2	3	4	5	Previously developed land / Non-agricultural land
Best and most versatile agricultural land (BMV)	1	2	3	4	5	Poorer quality agricultural and (not BMV)
In sensitive area as defined by EIA Regs	0	2	3	4	5	Not in sensitive area as defined by EIA Regs
Poor highway infrastructure	1	2	3	4	5	Good highway infrastructure
Distance to Sub-station	1	2	3	4	5	Over 300m (non-viable)
Land within flood zone 3 (high risk of flooding)	1	2	3	4	5	Land within Flood Zone 1
Sensitive human receptors	1	2	3	4	5	No sensitive human receptors

						surrounding the site
Development not screened by landscape	1	2	3	4	5	Development site screened by landscape
In proximity to heritage assets with no agreed mitigation	1	2	3	4	5	Not in proximity to heritage assets / In proximity but with agreed mitigation strategy

Table 4: Scoring Matrix

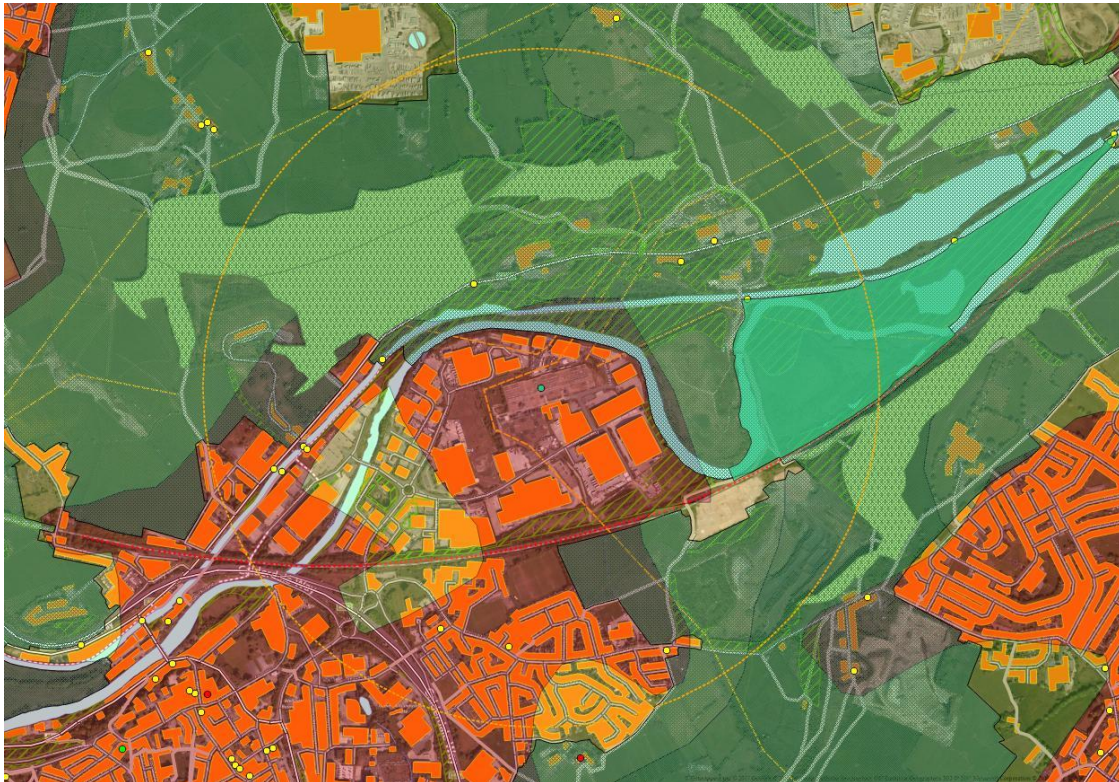
- 4.27 To enable comparison of all the search areas; a numeric system of scoring has been applied to the assessment criteria. This is provided at Appendix 6.
- 4.28 It is confirmed that all 5 sub-stations listed above are indeed technically feasible and all 4 substations apart from Hunshelf are more suitable from a planning perspective as none of the other remaining 4 sites are in a sensitive designation such as an ecological, landscape, heritage or greenbelt designation, however, due to the scarcity of suitable locations (less than 1% of the entire DNO substation network), across such a vast geographical area of the country, all 4 other sites listed in table 3 above are currently at different stages of being progressed for other energy generation projects, in which grid applications have been made and thus are not available to the applicant by NPG that could accommodate this proposal. The Applicant does not have the details for these specific proposals as these are commercially sensitive and confidential agreements between the individual applicants (third parties) and NPG.
- 4.29 In relation to Tynemouth Sub-station, from undertaking a planning search, the most recent planning application of relevance in this assessment was for a thermal oxidation plant (North Tyneside LPA Ref: 13/00401/FUL). This proposal is associated with nuclear fuel and is considered that further import/export capacity is considered to have been possibly applied for at this sub-station for generation of nuclear fuel, however this has not been confirmed due to the sensitive and confidential nature of this matter.
- 4.30 In relation to Osbaldwick Sub-station, from undertaking a planning search within the past 2 years, there is no energy scheme visible. There has been a major housing scheme which may have reduced the capacity of the sub-station (York City Council LPA Ref: 15/00166/FULM, for a scheme of 180 new houses), however this scheme (unless further expansion plans) would not account for non-availability of grid capacity due to other generation purposes. It is likely that the proposal has not yet progressed to the planning stage.
- 4.31 In relation to Kirkstall Sub-station, from undertaking a planning search within the past 2 years in Leeds City Council, there are no energy generation or other significant developments nearby that would explain why there is no capacity at this sub-station for the proposal. It is likely that the proposal has not yet progressed to the planning stage.
- 4.32 In relation to Elland Sub-station, from conducting a planning search of the Calderdale website, there were no applications within the past 2 years for an energy generation or other significant development nearby that would explain why there is no capacity at this sub-station for the proposal. It is likely that the proposal has not yet progressed to the planning stage.

- 4.1 As demonstrated above, given the technical constraints in choosing a suitable site adjacent to a strategic substation, a greenbelt site is necessary for the development. Therefore, there is no alternative viable location other than the subject site at Hunshelf Primary Sub-station. In Appendix 7 is a list of 13 different energy storage developments consented in greenbelt in the country to date. From our detailed analysis of 87 consented energy storage projects to date in total in GB, 15% of the successful projects have been consented within greenbelt land, owing to the scarcity of viable sites in total and owing to the great importance LPA's have attached to this critical infrastructure for maintaining grid stability and for enabling greater grid flexibility due to the continued closure of fossil fuel power stations combined with the greater generation of intermittent low carbon renewable energy generation.
- 4.2 The NPPG introduced a sequential approach toward site selection. However, this is just one consideration and the NPPG reinforces that other considerations are important such as: energy storage developments are temporary, the need to limit visual impact, minimise impact on heritage assets and promote biodiversity. The proposed development meets these requirements also.
- 4.3 It is welcome that the Council has taken a positive approach toward energy storage development and recognises that reducing CO2 emissions, increasing renewable energy and improving energy security are key ambitions in terms of planning and other policy.
- 4.4 This report discusses the site selection process when considering alternative sub-station sites which could technically and viably accommodate the development proposal within the administrative area of the Northern Power Grid DNO network.
- 4.5 Notwithstanding the fact that strategic projects of this nature involve a long-term procurement process, it is acknowledged that the site selection assessment should remain under close review to take account of new policy or any significant changes in circumstances including any change in the status of the development site or other alternative sites. Accordingly, this alternative assessment provides an up-to-date comparative analysis of potential alternative sites identified within the established area of search.
- 4.6 Comparative analysis was undertaken during all stages to identify which sites were considered most favourable. The search area and alternative sites which were considered are illustrated on the Alternative Sites in Appendices 1-6.
- 4.7 This report summarises the site selection process and provides confirmation that there were no sequentially better sites available to accommodate the development proposal within the search area.
- 4.8 The site selection process is guided by development control considerations laid out through the relevant national and local planning policy guidance (*i.e.* a sequential approach) together with the operational needs and requirements of the development proposals.

5. CONCLUSION

- 5.1 The specific land take and land characteristics guiding a c.40MW battery energy storage scheme makes the application site the sequentially preferred site within the search area. There are no alternative sites that are sequentially more preferable or available to the applicant.
- 5.2 Key to suitability and viability is grid access (import and export). For a 40MW capacity scheme to be viable where the point of connection is located within or adjacent to a substation.
- 5.3 In accordance with policies and guidance stipulated within the NPPF and NPPG, the 3-stage site search applies the sequential approach, searching for brownfield sites as a matter of preference, followed by non-agricultural land, then agricultural land with greenbelt considered only as a last resort.
- 5.4 Having narrowed the search area, key to the suitability of this particular site was the landowner (NPG) agreeing to provide grid capacity and space within Hunshelf sub-station together with all other planning and environmental considerations not resulting in any significant impacts.
- 5.5 It has been demonstrated in Section 3 that 'Very Special Circumstances' exist for the proposed development to warrant a grant of planning permission.

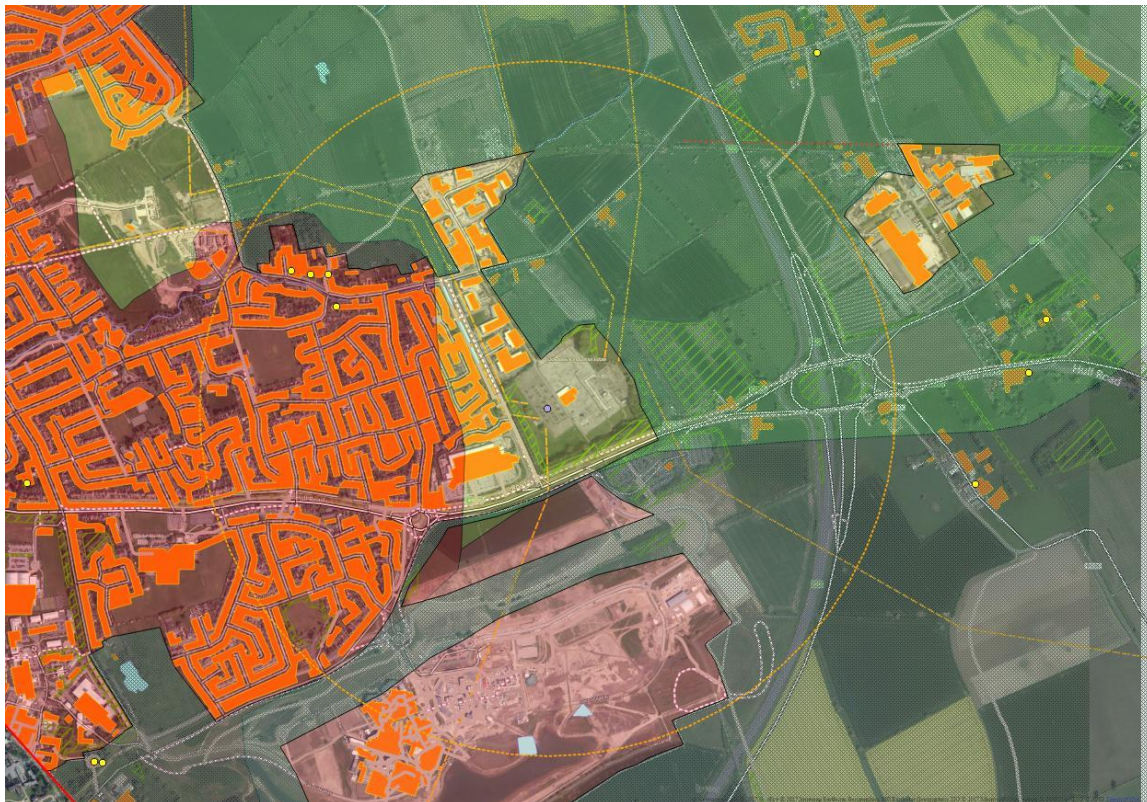
Appendix 1: Elland Sub-Station



Appendix 2: Kirkstall B Sub-Station



Appendix 3: Osbaldwick Sub-Station



Appendix 4: Tynemouth Sub-Station



Appendix 5: Hunshelf Sub-Station



Appendix 6: Alternative Sites Assessment

TABLE 3: ALTERNATIVES MATRIX

Site	Criterion													Total	Outcome
	Grid Capacity	Site size	Topography	Non-Greenbelt	BMV Land	Sensitive Areas	Highway Access	Land Availability	Distance to Sub-station	Flood Risk	Sensitive Areas (EIA Regs)	Landscape Screening	Heritage		
Stage 2)															
Elland Sub-station (No. 1)	N O	5	5	5	5	5	5	N O	5	5	4	4	5	NO	This site has sufficient space, is surrounded by industrial buildings adjacent to greenbelt and close to LNR. From a theoretical perspective, this site is suitable however this site is not available to the applicant due to current development plans with a third-party developer and does not have sufficient grid capacity available.
Kirkall Sub-Station (No. 2)	N O	5	5	5	5	5	5	N O	5	2	4	5	5	NO	This site has sufficient space, is surrounded by a river and close to an LNR. From a theoretical perspective, this site is suitable however this site is not available to the applicant due to current development plans with a third-party developer and does not have sufficient grid capacity available.
Osballdwick Sub-Station (No 3)	N O	5	5	5	5	5	5	N O	5	5	5	4	5	NO	This site has sufficient space, is surrounded by industrial buildings adjacent to greenbelt. From a theoretical perspective, this site is suitable however this site is not available to the applicant due to current development plans with a third-party developer and does not have sufficient grid capacity available.
Tynemouth	N	5	5	5	5	5	5	N	5	5	5	4	5	NO	This site has sufficient space, is

Sub-station (No. 4)	O							O								surrounded by industrial buildings adjacent to greenbelt and close to LNR. From a theoretical perspective, this site is suitable however this site is not available to the applicant due to current development plans with a third-party developer and does not have sufficient grid capacity available.
Hunshel Sub-Station (No. 5)	Y	5	4	1	5	5	3	Y	5	5	5	3	5	41	This site is the only viable site with grid capacity, sufficient space and a willing landowner. It is in Greenbelt however there are no other constraints affecting this site following a sequential analysis.	

Appendix 7: Recent Energy Storage Developments in Greenbelt

Application No.	Site Name	LPA	Postcode	Easting	Northing	Decision
A/16/82779/FULL	Land Adjacent Lily Lane Farm, Bolton Road, Ashton-In-Makerfield	Wigan	WN4 8TL	359317	400718	Granted
16/01725/FULL	Land At Stevenson Farm Southend Arterial Road Nevendon Wickford Essex, SS14 3JH	Basildon	SS14 3JH	572911	191224	Granted
16/03352/FUL	Huntington Water Treatment Works Chester Road Huntington Chester Cheshire CH3 6EA	Cheshire West	CH3 6EA	342454	363094	Granted
3/16/1244/NMA	Rye Meads Sewage Treatment Works Stanstead Abbots Ware Hertfordshire	East Hertfordshire	SG12 8JY	539261	210391	Granted
MO/2016/1168	Milton Court Farm, Milton Court Lane, Dorking, Surrey	Mole Valley	RH4 3LY	515024	149272	Granted
16/03171/1	Rush Green Motors, London Road, Langley	North Hertfordshire	SG4 7PQ	521101	223705	Granted
16/01244/CONS	Virrido Energy Centre, Pilsworth Landfill North Moss Hall Road Heywood	Rochdale	BL9 7JL	383047	409758	No Objection
R16/2478	LAND AT NORTH OF HYDES LANE STRETTON BASKERVILLE WARWICKSHIRE	Rugby	LE10 3EG	441036	292269	Granted
15/02835/FUL	Land North West Of Gozen Lodge Main Road Cotgrave Nottinghamshire	Rushcliffe	NG12 3HQ	464046	336291	Granted
16/24486/FUL	Land Adjoining Meaford Road Barlaston Stoke On Trent Staffordshire	Stafford	ST12 9EE	388745	337218	Granted
SMD/2016/0664	Heywood Grange, Tickhill Lane, Dilhorne, Staffordshire	Staff Moorlands	ST10 2PL	396046	344411	Granted
16/502678/FULL	Capel Grange Farm, Badsell Road, Five Oak Green, Tonbridge	Tunbridge	TN12 6QX	565230	144836	Granted
P16/S2368/FUL	UK A E A, Culham Science Centre, Abingdon	South Oxfordshire	OX14 3DB	453452	195723	Not Determined
16/03167/FUL	Kirkthorpe Hydropower Station, Kirkthorpe Weir, Kirkthorpe, Wakefield	Wakefield	WF1 5SY	435843	421264	Not Determined
2016/1083/SCR	Land To The North Of Pippin Street, Burscough, Lancashire	West Lancs	L40 8TF	342700	411160	Not Determined