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

Response to Further Information Request

Prepared by

Entrust Professional Services Limited

July 2017

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1 Introduction

1.1 In response to the Request for Further Information for Planning Ref: 2017/0624 - Hunshelf Battery Energy Storage, dated 21st June 2017, the enclosed document will address the queries raised, which it is hoped to the satisfaction of the Planning Authority and will further confirm that the proposal is considered acceptable.

1.2 The Applicant has already submitted a very comprehensive suite of planning documents including: Planning Statement, Greenbelt Statement, LVIA, Drainage Scheme, GIS, Swept Path, Transport and Access information, Plans and Drawings. Further, the Applicant has engaged extensively with the local community in speaking with the Ward Councillors and speaking with the Parish Council on a number of occasions. The Applicant has made significant design changes to accommodate the feedback received from the Parish Council to try to achieve a proposal which is completely acceptable to the local community. In the absence of a single objection, the Applicant believes that this has been successfully achieved.

1.3 This report will provide an updated brief description of the technology in section 2, clarity on planning policy in section 3 and answers to your technical queries in section 4. A query raised in relation to NPG not being able to undertake this proposal under law is clarified in section 5 and the reasons why the proposed location is the sequentially preferable location in the area surrounding the Hunshelf sub-station is set out in section 6 and finally a conclusion is set out in section 6.

2 Hunshelf Battery Energy Storage System (BESS)

2.1 As discussed previously in the Planning Statement and Greenbelt Statement submitted as part of the planning application, energy storage systems offer the opportunity to store surplus electricity for use at times of high demand, thus they can help ensure security of electricity supply in the UK and reduce the cost of operating UK electricity infrastructure. As conventional coal-fired power stations continue to be taken offline and the amount of renewable generation increases, there is a growing demand for energy storage services, such as for this proposal.

2.2 This proposal at Hunshelf Primary Sub-station would form a critical part of the UK's overall power network as we transition to an electricity generation fleet that includes a much greater proportion of renewable generation. The application site particularly lends itself to providing this type of system as it is located adjacent to a suitable grid connection point (Hunshelf Grid substation) that has spare capacity and that serves domestic consumers and businesses in the area as well as nationally.

2.3 The network operator NPG has confirmed that the Hunshelf Energy Storage System can be connected into the local network and has entered into a lease agreement with the applicant. As such this development is deemed essential infrastructure on an optimally located site and it would clearly be of significant interest in terms of ensuring the future security of UK electricity supplies. This proposal is the most efficient technology available to fill this essential role as the nation transitions to a low- carbon economy. This proposal supports the UK in meeting its carbon reduction commitments by supporting the move to low carbon generation, such as wind and solar in a policy context.

3 Planning Policy on Energy Storage

LPA Comment: 'With regards to the Very Special Circumstances, I still have some concerns as follows: The report refers to EN-1 however, this policy document relates to NSIP's which this application would not fall under. Further, although the report references

storage it does not provide specific support or guidance for battery storage projects. I do accept that there is some helpful information in EN-1 which would be material, however, there is not sufficient guidance or support in relation to Battery Storage for me to rely on this. You also reference a number of other documents relating to energy and infrastructure and the 2016 budget speech. However, the fact that this has not yet translated to Planning Policy means that I cannot afford these significant weight'.

3.1 The National Planning Policy Framework (NPPF) is the most important material consideration in the determination of this application. Paragraph 91 of the NPPF specifically indicates that the wider environmental benefits associated with increased production of energy from renewable sources is an example of the very special circumstances required to justify renewable energy projects in the Green Belt. Supporting the transition to a low carbon future and encouraging the development of renewable energy is also set out as a Core Planning Principle in Paragraph 17 of the NPPF. This proposal is considered a low carbon energy development.

3.2 Within the Barnsley Core Strategy there is considerable policy support for this proposal; 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. Policy CSP 6 deals with renewable energy development. The policy is a significant material consideration as the Proposed Development enables an increase in renewable energy in the national grid.

3.3 The NPPF states in paragraph 98 that planning has a key role in supporting the delivery of renewable and low carbon energy and associated infrastructure. When determining planning applications, it states that local planning authorities should not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions. Authorities are advised to approve applications if the impacts are (or can be made) acceptable.

3.4 Of the 5 functions of Greenbelt the proposal has a minor impact on openness, as it does not impact on the most important function which is to prevent urban sprawl - the location of the proposed development is dictated by its function and need to be located adjacent to an existing electrical substation. The proposed compound is minimal in scale and takes up a very small portion of a wider landscape and would be located in the same land holding as an existing electricity sub-station and associated pylons. It would also not form an isolated development, as its location would be seen in context of the sub-station and associated infrastructure within the sub-station site.

3.5 Character of the area - the proposed development would preserve the character of the wider Green Belt area. It would be located within the operational land of the DNO namely NPG with the associated energy infrastructure which it would be viewed in relation to and the land would be fully restored back to its existing use after the 25-year period. As demonstrated in the LVIA, no significant visual impacts will occur from this proposal. Since the application was submitted, at the request of the Parish Council, the Applicant has proposed to further reduce the height of the proposal by removing the 602mm concrete foundations and proposing the semi-mature tree species requested by the Parish Council to further reduce any visual impacts and reduce its impact on the openness of the surrounding area from the outset of the development.

3.6 Having regard to the limited size of the built infrastructure proposed along with the limited area of the intended compound, its position within the sub-station ownership boundary along with the extensive landscape mitigation proposed, the temporary extent of construction works and 25 year temporary lifespan of the working installation, along with

the electricity infrastructure resilience opportunity and associated environmental benefits of retaining excess electricity in storage, that the proposals afford to the wider Barnsley area, it is considered the very special circumstances exist to mitigate the very minimum impact the development would have upon the openness of the green belt in this instance. It is respectfully requested that a condition be required for the removal of the installation and re-instatement once the life 25-year temporary life expectancy of the installation has expired, ensuring that in the long term there will be no adverse impact on the openness of the site.

4 Technical Queries

LPA Comment: 'At 3.11 you reference that the alternative to battery storage would be expensive network reinforcement. You also reference at paragraph 4.11 that the site has been identified for battery storage. Please can this be confirmed by the NPG?'

4.1 The link below is the most useful and relevant link in relation to what NPG are currently undertaking in relation to energy storage on their network.

http://www.networkrevolution.co.uk/network-trials/electrical-energy-storage/

4.2 Please also find attached in Appendix 1, a peer reviewed paper co-authored by NPG that also covers, in more technical detail, how BESS developments can be embedded into DNO networks to reduce reinforcement costs, and how this has been demonstrated to be effective in models of fault conditions. It states in their report that:

'The use of battery storage to enhance the performance of electricity distribution networks is well documented. Strategic deployment of electrical energy storage (EES) can allow the deferral and in some cases can negate the need for high-cost network reinforcement'.

4.3 A relevant example of the work NPG has done in relation to battery energy storage for consumers in Barnsley is found in the link below:
http://www.energisebarnsley.co.uk/battery-storage/

4.4 NPG confirms in its Smart Grid Development Plan that there is a, 'Greater need for embedded storage capacity', that batteries will be used to manage peak load shifting and voltage control and that:

> programmed set points. However, networks of the future are likely to have numerous solutions deployed at different locations; i.e. Enhanced Automatic Voltage Control (EAVC) and energy storage could be located at the primary substation, distribution substation and on the low-voltage feeders; while Demand Side Response (DSR) customers could be engaged on the high-voltage and the low-voltage networks. This means that a local response to a local issue might not be the optimum solution and it might be more appropriate to despatch a solution further upstream on the network or a combination of solutions. This requires an integrated approach and we are developing and

LPA Comment: 'At 4.20 you refer to confirmation from NPG that 12 were eliminated following confirmation from the NPG that they didn't have the spare capacity. Again this needs to be confirmed'.

4.5 Following confirmation from NPG a further 12 substation sites 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. A recent request has been made to NPG following receipt of the Request for Further Information and following on from the call between the LPA, Applicant and Agent regarding these queries, however, the Applicant advised that NPG are a third party in this instance, they are not a project partner and have no influence, responsibility or involvement in this project outside of their role as a DNO in which the development will be connected into serve and as Landlord for the lease of land.

LPA Comment: 'Para 4.22 – please provide location plans / aerial images to demonstrate this'.

4.6 This query relates to paragraph 4.22 Greenbelt Statement, which stated that, 'Following survey analysis Stella North and Stella South were considered not possible due to insufficient space availability'. The Land Registry imagery and GIS Constraints maps below show how congested the 2 sub-station sites are and it is confirmed again that that there is insufficient space for the proposed development at either Stella North or Stella South Sub-stations.

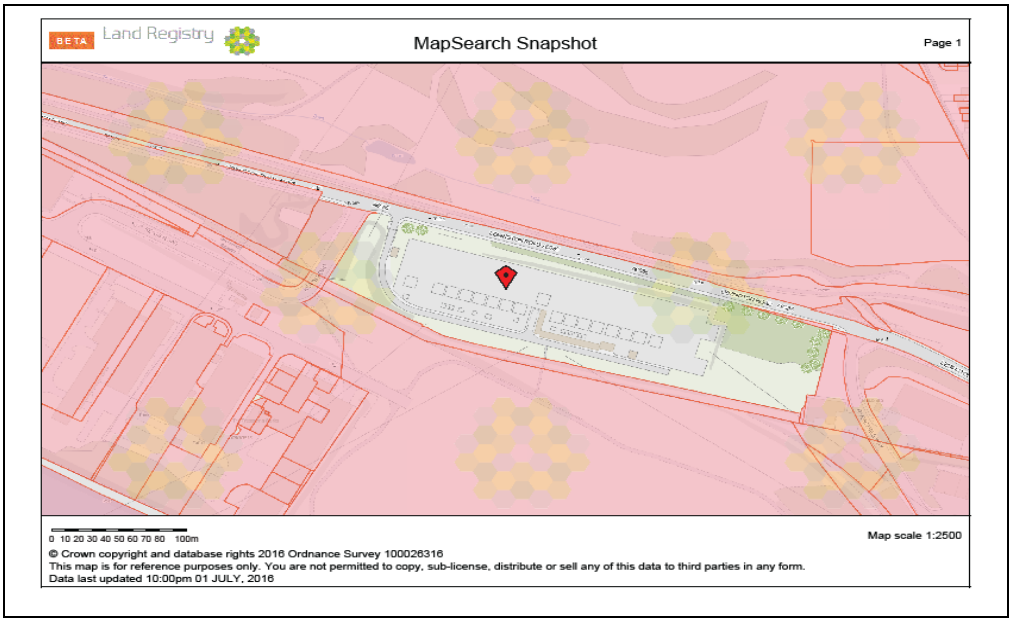


Figure 1: Stella North

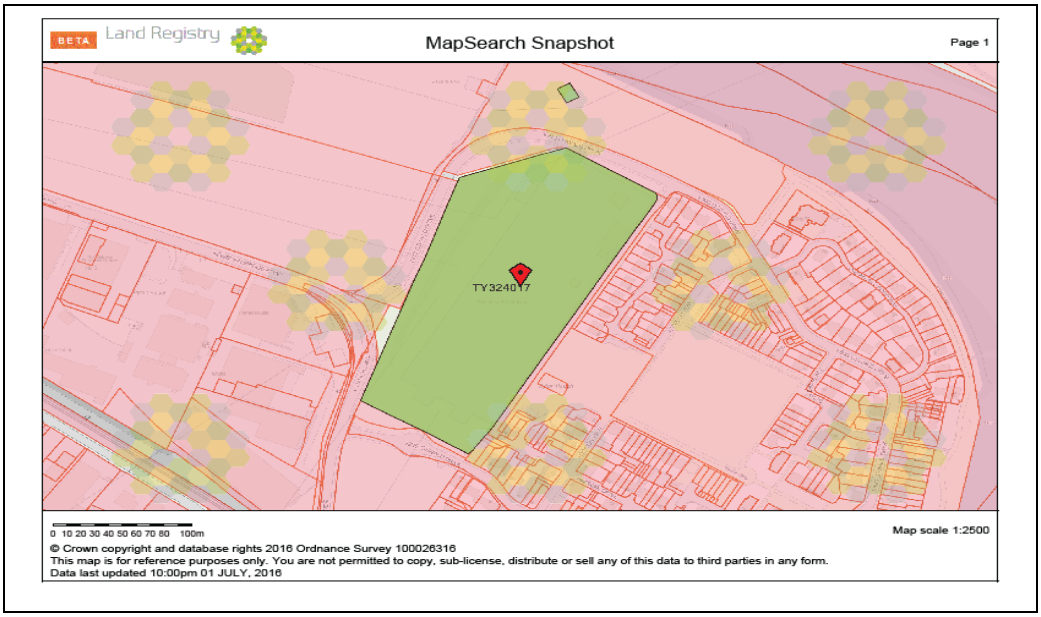


Figure 2: Stella South

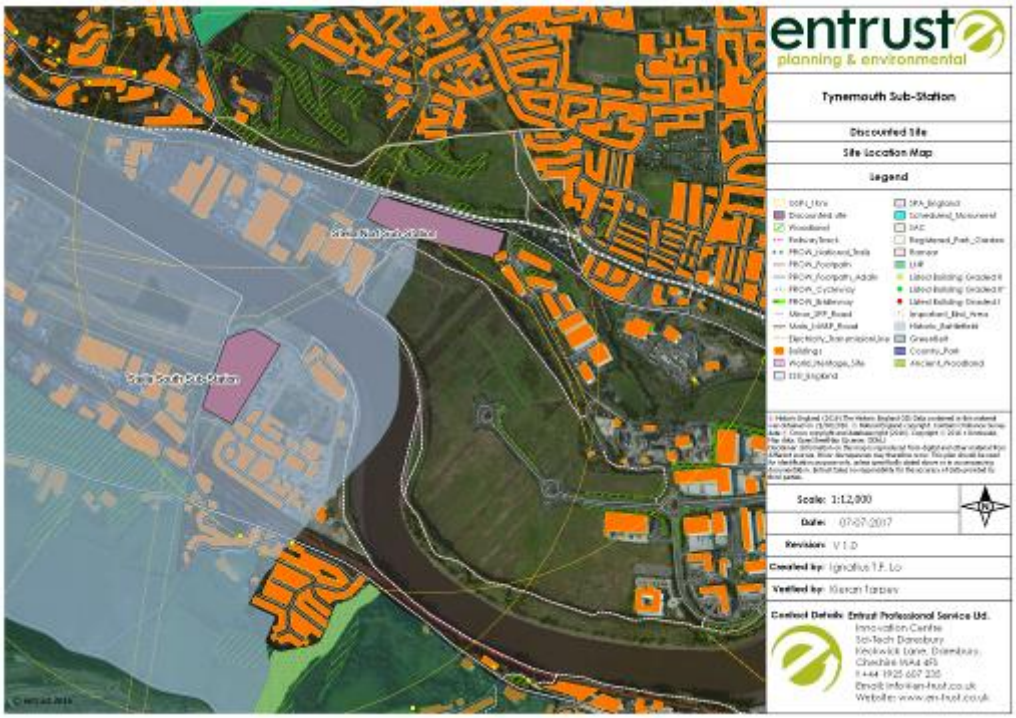


Figure 3: Stella North & South

LPA Comment: '4.23 – can this be confirmed / evidence provided to support the statement?'

4.7 This query relates to paragraph 4.23 Greenbelt Statement, which stated that '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'.

4.8 Please find confirmation below from NPG, furnished by the Applicant in the strictest confidence:

Ms. Laura Rafferty-Trow
Spectrum Real Estate
56a Wheelgate
Malton
YO17 7HP

Dear Ms. Laura Rafferty-Trow

BUDGET ESTIMATE FOR THE PROVISION OF AN ELECTRICITY CONNECTION AT Land by East Howle, Ferryhill, DL17 8RZ BY Northern Powergrid (Northeast) Limited

Thank you for asking us to provide you with this Budget Estimate for a BESS connection at Land by East Howle, Ferryhill, DL17 8RZ, with an import/export capacity of 20MW.

This Budget Estimate is:

1. Calculated by making assumptions about the work we will need to do to provide the Connection, based on similar work we have carried out in the past. Those assumptions are set out in the Appendix to this letter;
1. Based on the information you have given to us;
2. Not based on a site visit or on any analysis or technical studies of our electricity distribution network; and
3. Provided for guidance purposes only in order to help you understand the likely cost of the Connection.

Consequently, this letter does not constitute an offer to provide the Connection and the information contained in it should only be used as an indication of the potential cost of the Connection.

The Budget Estimate for the Connection

We estimate that the cost of providing the Connection will be in the region of:

Price of works	£4,600,000.00
VAT at 20%	£920,000.00
Total cost	£5,520,000.00

I hope that this Budget Estimate meets with your requirements but, if you have any questions about the Budget Estimate or the work involved, please contact me by telephone or e-mail using the details at the top of this letter.

Yours sincerely

Martin Bell
Commercial Engineer

LPA Comment: '4.28 – The fact that there are 4 other sub-stations more suitable in planning terms is a key weakness in the case, particularly as they are being progressed for alternative storage schemes. I need evidence to be provided as to why these are unavailable and why this site is needed in addition to the storage created by other projects on these sites. Accepting the point you have made about the commercial sensitivity of these schemes it may be possible for us to accept assurance from the NGP in this regard?'.

4.9 This query relates to paragraph 4.28 Greenbelt Statement, which stated that '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. Therefore, there is no alternative viable location other than the subject site at Hunshelf Primary Sub-station'.

4.10 Regarding the sequential analysis undertaken by the Applicant which the LPA refers to, the proposal is a relatively new technology in the UK and from our own research 15% of consented energy storage developments within the UK are within Greenbelt, owing to the fact that a large part of our energy network, which travels between our towns and cities is within greenbelt whether or not we agree that it should be the case. Hunshelf Primary Sub-station is a critical point in the nation's electricity network which requires energy storage and it is not economically viable to connect into this substation outside the Greenbelt as detailed In the Greenbelt Statement submitted as part of the planning application.

4.11 Out of the circa 13 consented energy storage applications in Greenbelt throughout Great Britain, only one other application conducted a sequential site analysis of an entire DNO Network. In other's a sequential site search was only carried out in relation to a specific sub-station rather than to an entire DNO network. Other applications did not have any sequential analysis. The Applicant conducted a very comprehensive sequential analysis on the NPG Network which is probably the largest DNO network in the entire country. The Applicant's sequential site search followed from previous similar sequential searches for wind and solar projects, however energy storage systems are far less flexible in terms of siting compared with wind and solar technologies. From reviewing all the other consented energy storage projects in the country, it is without doubt that the Applicant's sequential approach is the most thorough to date.

4.12 It is important to note that the NPPG introduced a sequential approach to site selection, however this is just one of many factors to be considered in the decision-making process. Others which should be had in due regard include:

- Reduction of CO2 emissions
- Increasing renewable energy
- Improving energy security
- Temporary nature of the proposal
- Limited landscape and visual impacts
- Significant landscaping and biodiversity enhancements

4.13 Regarding the 4 other sub-stations that are not available, which it is clarified that the Greenbelt statement did not in fact state that the other 4 locations were already earmarked for energy storage projects, rather for other generation projects or other uses as the Applicant is not aware of its intended use.

4.14 Regarding the first site: Tynemouth is unavailable as confirmed by NPG below:

From: Wilkinson, David [mailto:David.Wilkinson@northernpowergrid.com]
Sent: 21 November 2016 14:26
To: 'Laura Rafferty-Trow'
Cc: Kirke, Howard
Subject: RE: [EXTERNAL] RE: [EXTERNAL] RE: [EXTERNAL] RE: [EXTERNAL] RE: [EXTERNAL] FW: Meeting and way forwards

Hello again Laura
This is a Grid site and we have no rights to sublet. I regret I am unable to help you here.
Kind regards,
David.

David W Wilkinson MRICS
Property Manager

Northern Powergrid New York Road Shiremoor NE27 0LP
Office: 0191 2294231
Mobile: 07889 264938
david.wilkinson@northernpowergrid.com
www.northernpowergrid.com

From: Laura Rafferty-Trow [mailto:laura@specrealestate.com]
Sent: 21 November 2016 12:42
To: Wilkinson, David
Cc: Kirke, Howard
Subject: [EXTERNAL] RE: [EXTERNAL] RE: [EXTERNAL] RE: [EXTERNAL] RE: [EXTERNAL] FW: Meeting and way forwards

Hi David/ Howard,
Catherine is on with reviewing the document and if she hasn't reverted already will do so soon.
I'm very interested in doing this on more sites. Would Tynemouth be a suitable next project. Looks to have available space and potential grid wise?

Figure 4: Tynemouth

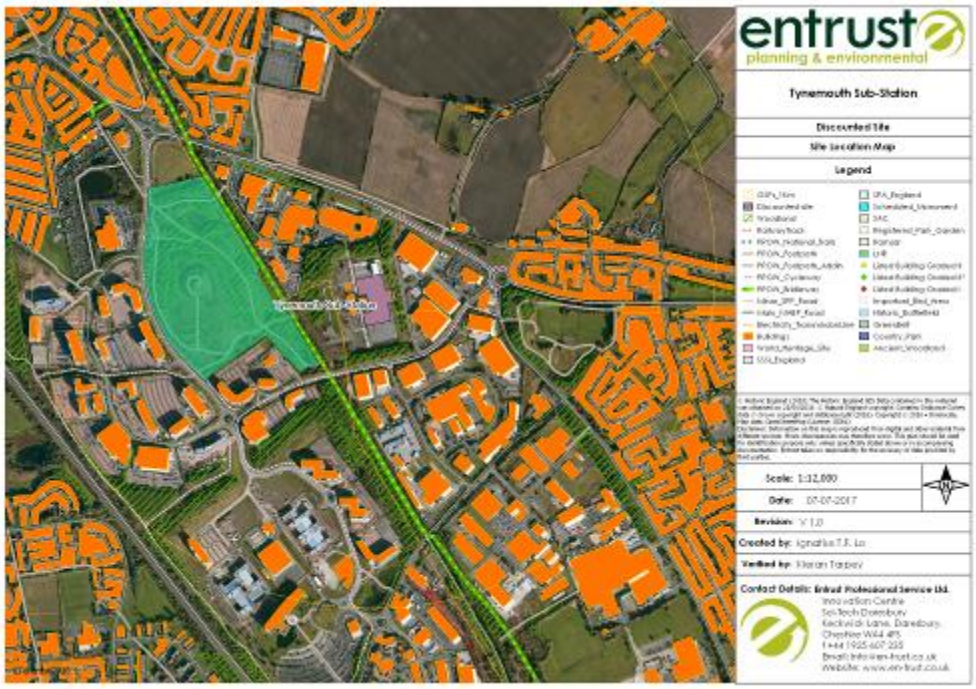


Figure 5: Tynemouth

Substation	Co-ords	Postcode	Title Number	Plan	Space?	Voltage DS	Voltage US	Constraints	SToW Threshold (mws)	RPF (MVA)	Suppllies Bulk					
TYNEMOUTH	55.0247,-1.49934	NE270QG	TY240414		YES	132kv	NG	None	49.48	240	CHIRTON GRANGE	FLATWORTH	GOSFORTH 33kV			

Thanks,
Laura

4.15 Regarding the second site: Osbaldwick, it is confirmed that this sub-station is unavailable as it does not have sufficient space, most of the site is owned by National Grid and not NPG and as such the Applicant cannot connect into this sub-station.

Figure 6: Osbaldwick

Figure 7: Osbaldwick

4.16 Regarding the third site: Elland, similarly it is confirmed that there is no space available for the proposed development as all of the congested site is used for operational purposes, as shown below.

Figure 8: Elland

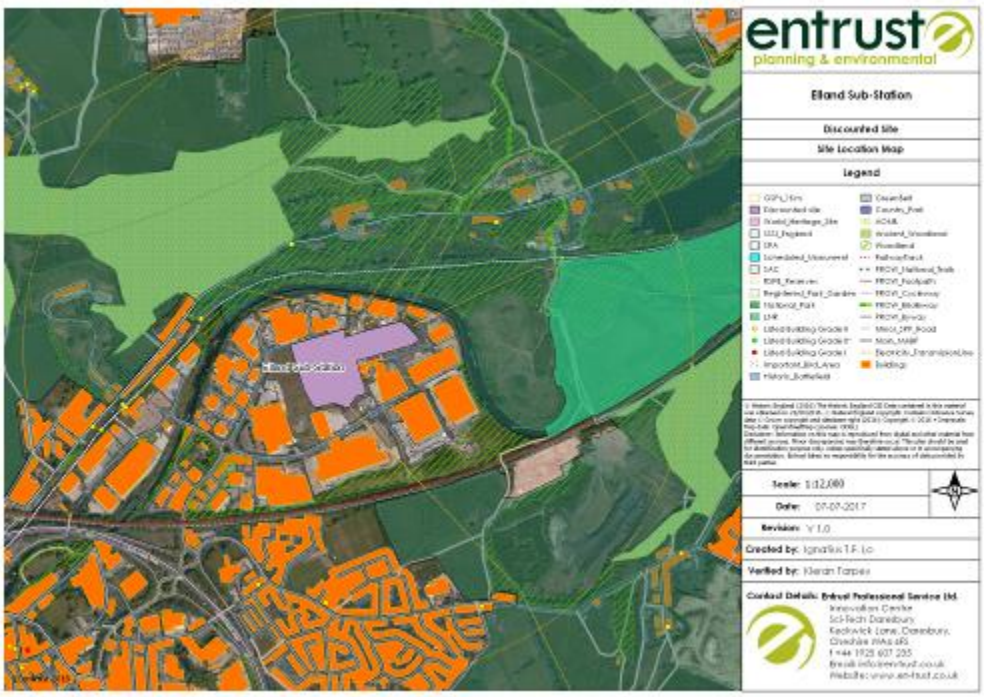


Figure 9: Elland

4.17 Regarding the fourth Sub-station Kirkstall, as stated in the Greenbelt Statement, the applicant was advised by NPG that this sub-station is not available for the proposed development. A recent request has been made to NPG following receipt of the Request for Further Information and following on from the call between the LPA, Applicant and Agent regarding this, however, the Applicant advised that NPG are a third party in this instance, they are not a project partner and have no influence, responsibility or involvement in this project outside of their role as a DNO in which the development will be connected into serve and as Landlord for the lease of land. NPG are not obliged to provide such specific confidential information regarding their network.

4.18 The applicant advised that it is not incumbent on any developer to demonstrate that their development in the Green Belt could not possibly exist in any other location nationally or regionally, to meet the Special Circumstances test, as demonstrated by the precedent of Stratera/South Staffs 16/00747/FULL. This was also confirmed in a High Court Ruling (*R (Wildie) v Wakefield Metropolitan BC* [2013] EWHC 2769 (Admin), Stephen Morris QC).

4.19 BESS developments are needed across the grid, as previously mentioned in the Green Belt Statement. Due to its distributed nature an imbalance on one area of the grid has knock on upstream and downstream effects. BESS developments can be used to balance Local, DNO network demand and load spikes, but also provide National Grid balancing services. This is detailed in Chapter 2 (specifically 2.12) of the Greenbelt Statement.

4.20 The national need for this infrastructure identified in our report can only be met by distributed projects connected in close proximity to sub stations. Due to the need to site substations close to population centres, this necessarily brings these developments into conflict with Green Belts. We have selected this site due to the presence of the sub station. It is incidental that the site is in the Green Belt. It is not that we wish to develop in the Green Belt, per se, but that we wish to provide energy storage services for the existing sub-station namely Hunshelf.

4.21 From discussions with the LPA regarding the visual impact and also due to the lack of local and parish council objections to the proposed development, it would not create and significant 'harm' to the Green Belt. The applicant is, therefore, respectfully requesting that there is not a disproportionate weight placed on a technical justification and accompanying evidence, some of which may not be unobtainable. According to Planning Appeal: PPA – 400 – 2075, such information is not needed to demonstrate the need to locate the development upon the appeal site. The Appeal also concurs that BESS developments are consistent with UK and Scottish Governmental Energy & Planning Policies.

4.22 According to NPPF Paragraph 98, 'When determining planning applications, local planning authorities should: not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; approve the application18 if its impacts are (or can be made) acceptable…'

4.23 Although energy infrastructure is inappropriate development by definition, in the Green Belt, under NPPF Paragraph 88, the substantial weight given to the harm to the Green Belt when considering any application for such development while taking into account, in relation to renewable and linear infrastructure, should be restricted to the extent to which its physical characteristics are such that it has limited or no impact on the fundamental purposes of the Green Belt designation.

4.24 We believe that the form of the development and the suggested landscape and environmental mitigation measures proposed outweigh any minimal 'harm' to the openness of the Green Belt at this location, with particular reference to the adjacent, existing sub station. This development would not add to or create unrestricted urban sprawl, nor is it infill or in any way contributing to conurbation forming, it does not affect the setting of any historic villages or heritage assets and it does contribute to urban regeneration by virtue of its facilitating role in enabling micro generation at scale and smart grids. Therefore it has little, minimal or no impact on the purposes of the Green Belt designation at this location and the benefits by far outweigh the 'harm'. As such the Special Circumstances **ARE** demonstrated. Detailed technical justifications are not required to meet the Special Circumstances criteria, in line with Statera/South Staffs

16/00747/FULL.

5 NPG – Energy Storage

5.1 In relation to a query that arouse during a previous phone call between the applicant, agent and LPA, it is confirmed that NPG are not permitted to undertake this proposal and this was contained within the Green Belt Statement submitted as part of this planning application under par. 2.1 which states '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'. As the site is confirmed as being operational land for the purposes of NPG, it has permitted development rights as a statutory undertaker to construct the proposal without the requirement for planning permission.

6 Hunshelf Sub-Station - Site Location

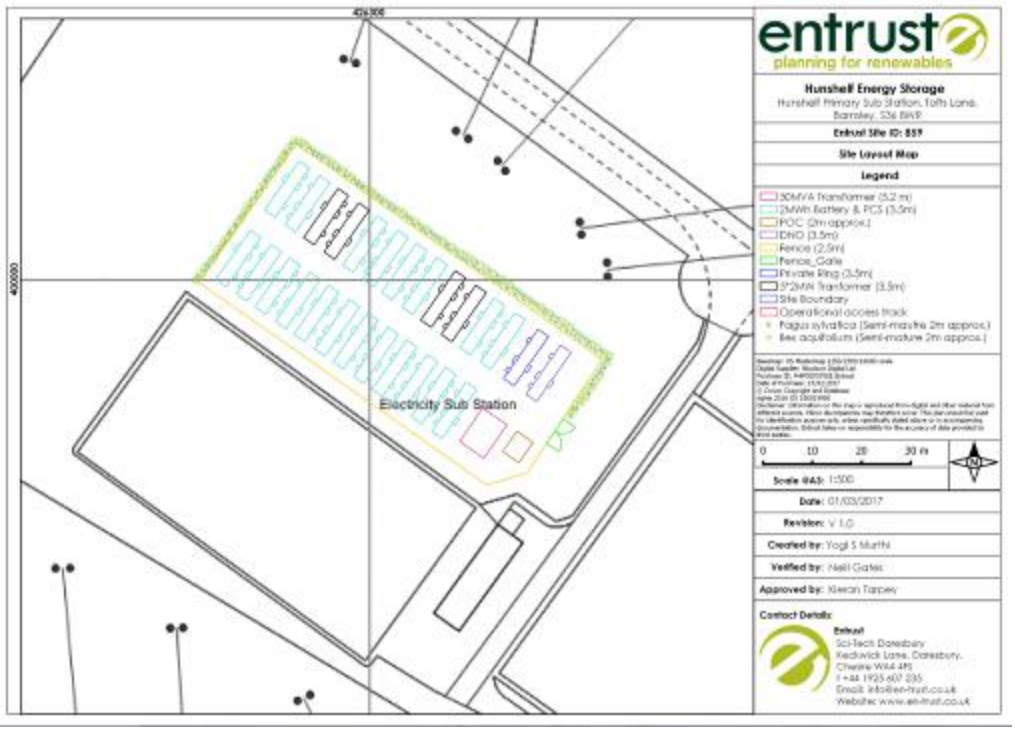
6.1 In terms of a sequential site search for the Hunshelf Primary Sub-station, it is confirmed by the Applicant that the proposed location is the sequentially most preferred location in this part of the borough and within the area of circa. 1km that it would be viable. The proposal needs to be as close as possible to the sub-station (connection point) for technical and economic reasons, set out in the Greenbelt Statement submitted as part of the planning application. The Applicant examined different location options within the substation boundary to improve the existing appearance of the sub-station and the proposed Site is the only feasible solution due to existing underground cabling (see Appendix 2).

6.2 The location of the proposed development is dictated by its function and need to be located adjacent to an existing electrical substation. The proposed compound is minimal in scale and takes up a very small portion of a wider landscape and would be located in the same land holding and within operational land as an existing electricity sub-station and associated pylons – existing utility site. It would also not form an isolated development, as its location would be seen in context of the sub-station and associated infrastructure. Furthermore, the design of the proposed development will ensure a minimal impact on its setting, painted green equipment, substantial semi-mature landscaping with natural species together with biodiversity enhancements proposed would ensure that the openness of the Green Belt is preserved. It would form minimal encroachment on the countryside as it would be located within the operational land of the DNO namely NPG with the associated energy infrastructure which it would be viewed in relation to. Furthermore, the development would be in keeping with the character of the existing land use within the Green Belt and the land would be fully restored back to its agricultural use after the 25-year period.

7 Conclusion

7.1 The proposal is for energy infrastructure that will support a move towards a low carbon renewable energy development which is supported in principle in Policy CSP1 and CSP6 and the National Planning Policy Framework. Whilst the proposal is considered to have some limited impact on openness, it does not conflict with the purposes of the Green Belt and the impact of the proposals on the openness and visual amenity of the Green Belt is not considered to be unacceptable when balanced against the benefits of the development in terms of its contribution to supporting low carbon energy use.

7.2 Having regard to the limited size of the built infrastructure proposed along with the limited area of the intended compound, its position within the sub-station ownership boundary along with the extensive landscape mitigation proposed, the temporary extent of construction works and 25 year temporary lifespan of the working installation, along with the electricity infrastructure resilience opportunity and associated environmental benefits of retaining excess electricity in storage, that the proposals afford to the wider Barnsley area and nationally, it is considered the very special circumstances exist to mitigate the very minimum impact the development would have upon the openness of the green belt in this instance. As such, it is respectfully requested to grant planning permission for this proposal.

Appendix 1: NPG Report on Reinforcement Costs

Appendix 2: Alternative Site Location within Hunshelf Primary Sub-station (rejected by NPG)