

Planning, Design and Access Statement  
**Reactive power absorption substation,  
Livesey Street, Owlerton, Sheffield S6 2DE**

Dated: 22<sup>nd</sup> March 2024

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# 1. Introduction

- 1.1. This Design, Access and Planning Statement has been prepared in support of a planning application made by Green Frog Power (Livesey) Limited to install and operate a reactive power absorption substation at Livesey Street, Owlerton in Sheffield.
- 1.2. The development is required due to National Grids Voltage 2026 tender. The tender has defined 'regions of need', namely London and North England. This tender is to procure reactive power absorption capability, which is highly locational in nature. The development does not generate electricity but helps with much needed grid stability.

## 2. Development overview

2.1. A description of the proposed development, including its construction and operation, is provided in this Design, Access, and Planning Statement.

2.2. The proposed use of the site is for:

*“Change of use for the installation of three air core reactors, switchrooms, with ancillary infrastructure, and associated works including access, internal drives and cable connection to Neepsend Substation for the purpose to supply reactive absorption grid stability to the National grid as part of their Voltage 2026 initiative.”*

2.3. The proposed plan (ref: 248-PP-013 Proposed Plan) illustrates the proposal, as summarised below:

- 3 no Cylindrical air core reactors
- 1 no transformer,
- External air cooled high voltage circuit breakers,
- 1 no. 275kV switchroom/control room
- 1 no. 33kV switchroom
- Internal drives and parking spaces.

- 2.4. The core reactors, transformer, control rooms and ancillary infrastructure are to be located within a secure compound surrounded by a 3m high weld mesh fence with CCTV security cameras.
- 2.5. The site will be accessed via a new crossover access point off Livesey Street. Livesey Street is quiet in nature. Visibility splays of 2.4m x 43m, in accordance with the Manual for Streets requirement for 30mph roads, will be provided from the new access in each direction along Livesey Street.
- 2.6. The point of connection for the proposed development to the electricity grid will be at National Grids Neepsend substation. The substation is opposite the site and a point of connection has been reserved for this grid stability project. The connection is to be installed below ground and will remain a private cable. The cable route is indicated on the plan and permission is being sought as part of this application.

### 3. The application site.

#### 3.1. Site selection

- 3.1.1. This parcel of land was chosen for its proximity to the electricity transmission network without having to travel distances or cross major infrastructure, keeping connection costs to an acceptable level, and the effectiveness drops sharply when distance is increased from Neepsend substation.
- 3.1.2. The application site is located behind Owlerton Stadium. The Stadium is an established greyhound racetrack as well as hosting speedway bike events. The land is largely laid to hardstanding with an area of grass and sand to walk dogs, maintenance compound area and a spoil heap with arisings from the compound and stadium.
- 3.1.3 The area is currently used to accommodate event haulage vehicles as well as an area to use as a bike compound when racing events are being held. The site is also laid to hardstanding following highways using it as a site compound area when undertaking local highway improvement works.
- 3.1.4. The application site is located in Flood Zone 2, as designated by the Environment Agency; A flood Risk Assessment accompanies the planning application.
- 3.1.5. It achieves separation distances of 400 m to the west and 415 m to the northeast from the closest residential properties.
- 3.1.6. Existing self-seeded shrub vegetation to the northern edge will be removed due to it being within a high voltage electricity compound. The boundary to the site will be fenced with a 3m high security fence with associated security systems.
- 3.1.7. This combination of factors means that the application site represents an excellent option for Sheffield and Northern England, helping to improve the security of electricity supply for local residents and businesses.

### 3.2. Site and surroundings

- 3.2.1. The site of the proposed reactive absorption high voltage compound sits 3 miles north of the center of Sheffield City Centre in an area called Owlerton. The site is located directly north of the National Grid Neepsend substation in which it will be connecting. The location of the site is shown overleaf in Figure one.
- 3.2.2. The development site will be accessed via Livesey Street. A new crossover access will be formed to allow for large construction vehicles to enter and it will be left in place for the end use. During operations there will be minimal traffic movements.
- 3.2.3. The site is roughly rectangular in shape and bounded by Livesey Street to the south and east. To the west is the established Owlerton Stadium and to the north is a carpark to a confectionery business. Three quarters of the site is laid to hardstanding and an area of grass and sand is used to walk the dogs before races. There is also a maintenance compound area which is used by the stadium and an area of spoil which is arising from the stadium and hardstanding area of the site. The site is bounded to the south and east by a concrete panel fence, clad in timber and to the north by a metal palisade security fence.
- 3.2.4. To the east of the Peniston Road (A61) the area of Owlerton and Neepsend is populated with industrial and commercial uses as well as entertainment and educational facilities, with the River Don and Parkwood Springs beyond. To the west are the residential areas of Hillsborough.



Figure 1 – Site Location



3.2.4. In terms of the surrounding area, the Site is bounded to the:

- north by a car park and Owlerton industrial and commercial estate beyond.
- east by Livesey Street, with Neepsend National Grid Substation and the River Don lying the opposite side of Livesey Street with Parkwood Springs beyond.
- to the west the Site is bounded by the established Owlerton Stadium and associated carpark. Beyond is the arterial Penistone Road and beyond is the residential area of Hillsborough.
- To the south of Livesey Street is Sheffield College/Hillsborough College and beyond is Hoyland Industrial Estate.

3.2.5. To the rear of the stadium and running directly along our western boundary, a access track needs to be maintained for emergency vehicles. This is vital if the stadium has any crowd-related emergencies.

3.2.6. The nearest residential property is located circa 400m to the west and 415m to the northeast. The residential area to the west is bounded by the Penistone Road and to the northeast they are located beyond the Penrith Road Open Space at Shirecliffe.

### 3.3. Proposed development.

#### 3.3.1. National Context - Need for reactive absorption power.

3.3.1.1. Electricity in the UK has historically been generated in large coal-fired and gas fired power stations that have inherent network stabilising qualities. In Sheffield and the wider area of Yorkshire the heavy industry of steelworks and machine manufacturing have mainly closed down and has had an impact on the network. However, as the country transitions to a low carbon economy and strives towards net zero, these technologies are increasingly being replaced by wind and solar. These technologies, whilst renewable, do not possess the same network stabilising qualities as larger power stations. As such there is now a requirement for smaller grid scale stability infrastructure, such as the proposed reactive absorption substation, to bridge the gap and facilitate more renewable energy development on the grid.

3.3.1.2. National Grid is the electricity system operator (ESO) for Great Britain. They are responsible for moving electricity around the country second by second to ensure that the right amount of electricity is where it is needed, thus keeping supply and demand in balance. As part of their function, they must upgrade and prepare the grid network for the transition to renewable energy. As a response to this, National Grid is developing an initiative to stabilise the generation of renewable electricity within the grid, which will save consumers millions of pounds over the coming years – This initiative is referred to as ‘Voltage 2026’ and incorporates infrastructure such as reactive and dynamic absorption transformers proposed at Neepsend substation.

3.3.1.3. Stability has traditionally been supplied as an inherent by-product of synchronous generation from large power stations, mills, or coal mines. As these are being phased out there is an increase supply of power from inverter-based technologies such as wind and solar, this therefore has a decline in inherent stability of the system with greater fluctuation of power

supply entering the grid. The proposed technology will help absorb or inject reactive power to help stabilise the grid.

3.3.1.4. The changing nature of UK's energy supply means voltage management is trickier than ever. Voltage creeps up when power lines are lightly loaded. With the increase of decentralised generation such as solar and wind which supply to specific locations, this means it is becoming more common around the grid. This creates a greater demand for the kind of reactive power absorption and voltage management required by National Grid.

3.3.1.5. The Voltage 2026 tender defines two 'regions of need', namely North England and London. In the region, North England, National Grid has identified a Grid Supply Point (GSP)(substations) which has capacity to house such a connection without the need for significant modifications which would contribute substantial time and cost to the project. The chosen location for this project in North England is the GSP at Neepsend in Sheffield.

### 3.3.2. What is reactive power?

3.3.2.1. Electricity that turns on power to your homes and businesses is what's known as 'active power' — usually measured in Watts (W), kilowatts (kW), megawatts (MW). However, getting that active power around the energy system efficiently, economically, and safely requires something called 'reactive power', which is used to pump active power around the grid. Reactive power is measured in mega volt amps reactive (MVA<sub>r</sub>). It's generated in the same way as active power by large power stations but is fed into the system in a slightly different manner, which leads to limitations on how far it can travel. Reactive power can only be effective locally/regionally – it does not travel far.

3.3.2.2. It's essential to have reactive power on the grid and it is more important to have the right amount. Too much and power lines can become overloaded, which creates volatility on the network and with too little the efficiency decreases. A deviation as small as 5% above or below can

lead to equipment being damaged or large-scale blackouts. National Grid monitors and manages the nationwide voltage level to ensure it remains within the safe limit, and doing this relies on managing reactive power.

- 3.3.3. Green Frog Power have built around thirty small-scale power stations in the UK in the past twelve years, all designed to support the UK's energy system in the face of ever-growing intermittent renewable energy. We at all times employ best available technology, which we install to the most exacting standards as demanded by our institutional investors and City of London bankers. We adhere to the strictest health- and safety-standards throughout construction and operations and ensure that any impacts on local people and the local environment are kept to the absolute minimum.
- 3.3.4. The proposal is to construct a reactive absorptive high voltage compound along with 3no air core reactors, 2no control buildings, associated switchgear and ancillary equipment. The equipment will be at 275kV and feed directly into Neepsend National Grid substation via a private cable into a reserved bay.
- 3.3.5. There are internal access roads designed to take heavy loads, transformers will be located in containment bunds and the rest of the compound will be laid to gravel to aid SUDs.

3.3.6. The development consists of the following;

- 3 x cylindrical air core reactors. These are 5m in diameter and 10m in height and have a safety separation of 4m.
- A security fence will run along the perimeter of the main compound and entry will be provided by gates. The fence will be to a height of 3 m.
- CCTV cameras will be situated at strategic points along the fence line and will sit atop of poles that are 6 m in height. Up to two security cameras will be situated at the top of each pole.
- 1 x 275kV switchroom and control building. This will be 39m x 12m in footprint, with an eaves height of 7m and ridge height of 8.5m.
- 1 x 33kV switchroom and LVAC room. This will be 32m x 9m in footprint, with an eaves height of 5m and a ridge height of 6m
- 1 x transformer. This will be approx. and subject to technical design. We anticipate it will be 9 m tall with a footprint of approximately 8 m x 6 m and housed within an bund 19 m x 12 m.
- All associated internal drives and maintenance vehicle parking areas.

3.3.7. The equipment is to be operated 24 hours, 7 days a week with zero emissions and very low noise levels from the transformer and reactors.

3.3.8. The site is to be unmanned during operation and operated remotely with only rare maintenance visits. Given the compound is unmanned there is no requirement for permanent lighting: the only lighting would be task lighting operated by the site engineer in low light. This avoids unnecessary light pollution.

### 3.4. Grid Connection

- 3.4.1. The grid connection for the proposed development would be installed below ground and will be a private cable. Accordingly, planning permission is being sought for this element of the scheme, and it has been included within the planning application boundary. National Grid have reserved a connection at Neepsend substation specifically for this development.

### 3.5. Construction and Operation

3.5.1. In summary, the construction sequence is anticipated to include:

- Enabling Works: initial site clearance, laying of permeable geotechnical membrane, such as Terram. The permeable hard surfacing and access track would then be built up on top of this membrane using hardcore aggregates.
- Main construction phase: laying of support foundations, transformer bunds and construction of switchgear buildings and the installation of the energy related components (e.g. transformer, reactors, switchgear etc), which would also arrive at the site pre-fabricated;
- Finishing phase: installation of fencing, completion of all electrical engineering connections works.

#### Construction phase

3.5.2. The construction phase would be limited in duration and is anticipated to last circa 12-15 months.

3.5.3. Peak HGV trips are anticipated to occur during the 'enabling works' when the aggregate is imported to site to form the compound and access track. Construction would take place over 5.5 days per week and the enabling works are anticipated to take circa 6-8 months. Once all construction works are completed the installation of heavy equipment would be undertaken over a month period. These will be carefully managed by an external heavy haulage specialist contractors.

3.5.4. The proposed development comprises specialist construction techniques & materials and is not anticipated to generate a significant number of daily construction vehicle movements. Therefore, the temporary construction phase is unlikely to result in a detrimental impact on the local highway network.

## Operational phase

3.5.5. During the operational phase, the proposed development would be controlled remotely as the facility is fully automated. It would only be necessary for a maintenance engineer to visit the Site on an occasional basis (i.e. weekly routine maintenance visit). As such the operational phase of the project would not generate any significant traffic impacts



## 4. Planning Policy

### 4.1. National Planning Policy

- 4.1.1. Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires all planning applications to be determined in accordance with the Development Plan unless material considerations indicate otherwise. According to Section 38(3) of the Act, the development plan consists of adopted Local Development Documents (LDDs).
- 4.1.2. Developments of National Significance Infrastructure Projects (NSIP) (England and Wales) Regulations 2016, Amended 1 April 2019. In Regulation 4 it states that a generating station is within regulation if generating up to 350MW. This will mean that the primary route for planning decisions on storage applications will now be made by Local Planning Authorities under the Town and Country Planning Act 1990. Although this is a substation it does not generate electricity, but provides stability services.
- 4.1.3. Central Government have published the Framework which sets out the Government's planning policies for England and how these are expected to be applied and subsequently published "Planning Practice Guidance" including for renewables and low carbon energy, which is also material. The Framework and Planning Practice Guidance are material consideration in planning decisions.
- 4.1.4. The National Planning Policy Framework (NPPF) carries a presumption in favour of sustainable development and states that proposals that accord with the development plan should be approved.
- 4.1.5. Paragraph 8c of the NPPF notes that a key part of achieving sustainable development is "mitigating and adapting to climate change, including moving to a low carbon economy". The definition of 'renewable and low carbon energy' is provided in the Glossary to the NPPF. This states, "Low carbon technologies are those that can help reduce emissions (compared to conventional use of fossil fuels)". This includes electricity generated by zero carbon/carbon neutral sources, which explicitly supports the country's transition to a low carbon economy.

- 4.2.2 The planning system should support the transition to a low carbon future in a changing climate and support renewable and low carbon energy and associated infrastructure (paragraph 157).
- 4.1.7. In considering how best to meet the challenge of climate change, the NPPF states in paragraph 163 that when determining planning applications for renewable and low carbon energy, local planning authorities should not require applicants to demonstrate the overall need for low carbon energy and should approve applications if impacts are (or can be made) acceptable.
- 4.1.8. Paragraph 180 of the NPPF notes development should contribute to and enhance the natural environment, At 180(c) minimizing impacts on and providing net gains for biodiversity and at 180(f) carries a presumption in favour of remediating and mitigating degraded, derelict and unstable land, where appropriate.
- 4.1.9. At paragraph 185 of the NPPF, plans will protect and enhance biodiversity and geodiversity. It goes on to say at paragraph 186, Local Authorities should look to have impacts adequately mitigated and that the primary objective is to conserve or enhance biodiversity in and around developments, as well as enhance public access to nature.

## 4.2. Planning Practice Guidance for Renewable and Low Carbon Energy

- 4.2.1. This online guidance highlights that Increasing the amount of energy from renewable and low carbon technologies will help to make sure the UK has a secure energy supply, reduce greenhouse gas emissions to slow down climate change and stimulate investment in new jobs and businesses. The PPG states that planning has an important role in the delivery of new low carbon infrastructure in locations where the local environmental impact is acceptable.
- 4.2.2 Considerations for renewable energy technologies that can affect their siting include proximity of grid connection infrastructure and site size.
- 4.2.3. The potential effects of this proposed development on the environment have been assessed by independent specialists and summarized throughout this document. These studies indicate that the effects of the proposed development on the receiving environment would not be significant. The potential benefits of the proposal in terms of security of energy supply and action to combat climate change are notable.
- 4.2.4 With major power stations closing down and with the push for a low carbon energy system to meet Net zero targets, the electrical system is becoming unstable. This development is being developed in response to National Grids need for reactive power to help support and stabilize the electrical system from future fall over and blackout events.

#### 4.3. Need for EIA

4.3.1. The Town and Country Planning (Environmental Impact Assessment) Regulations 20172 define EIA development as either:

- Schedule 1 development; or
- Schedule 2 development likely to have significant effects on the environment by virtue of factors such as its nature, size or location.

4.3.2. Transformer compound development is not listed in Schedule 1 of the regulations.

4.3.3. There is also no express threshold for transformer substations to be considered as Schedule 2 development under the EIA Regulations. However, a development area threshold of 0.5 ha is applied to category 3 (a) industrial installations for the production of electricity. The development exceeds the Schedule 2 area threshold of 0.5 hectares and, as such, whether the development is EIA development or not depends on an assessment against the screening selection criteria, as set out in Schedule 3 of the EIA Regulations, which comprise:

- Characteristics of the development.
- Location of the development; and
- Characteristics of the potential impact.

4.3.4. PPG paragraph 18, states that EIA will only apply to a small proportion of projects and only those which are likely to have significant effects.

4.3.5. The key question is whether or not the project would be likely to give rise to significant effects on the receiving environment, taking into account the selection criteria in Schedule 3. Whilst applications for grid stability developments have only been forthcoming recently, given their simplistic nature, small footprints, low vertical extents, and limited noise effects they have not generally triggered EIA.

4.3.6. The anticipated effects arising from the development, as detailed in this Planning Statement are not sufficient to trigger the requirement for an EIA and hence the planning application is not accompanied by an Environmental Statement (ES).

#### 4.4. Planning History

4.4.1. There have been numerous applications since 2000 in conjunction with Owlerton Sports Stadium. There are too many here to list.

4.4.2. There is one application associated within our development footprint.

- 17/01940/FUL – Use of land to rear of stadium for temporary storage of vehicles. This was granted conditionally in July 2017:

## 4.5. Local Planning Policy

### Sheffield Core Strategy.

- 4.5.1. Sheffield Local Plan (SLP) comprises the Sheffield Core Strategy (SCS) (Adopted March 2009). The Council are currently preparing a new local plan which will be called the 'Sheffield Plan'
- 4.5.2. The Core Strategy provides the overall spatial strategy for the Framework. The Core Strategy is split not two parts, and it sets out the overall vision for the city until 2026.
- Part 1 – **Context, vision, objectives, and Spatial Strategy** how Sheffield has evolved to date.
  - Part 2 – **Spatial Policies** sets out how the vision is taken forward.
- 4.5.3. At 2.1 It states that Sheffield is at a turning point and the Sheffield Development Framework is to help shape the city's continuing evolution.
- 4.5.4. At 2.2 it goes on to say Sheffield's success was due to local natural resources for making iron and steel which has made the city world renown. As a result, heavy industry from steel and manufacturing formed an important part of the economy. Over the final two decades, closure of major steelworks and related manufacturing and engineering businesses led to a serious loss of jobs. The city took early action to tackle these challenges and redevelopment took place as well as introducing the Supertram network.
- 4.5.5. At 2.10 it states, *A potential new strand in the city's development is emerging in response to the urgent global challenge of combating climate change. Arising in part from the city's green reputation....*

## Challenges for the future

4.5.6. Sheffield Development Framework supports the next phases of the city's regeneration and has highlighted challenges that need to be addressed. Some of these are.

- **Challenge 6 - Promoting health and well-being for all.** ....*The challenge is to design environments that promote safety, health and a sense of well-being for all.*
- **Challenge 11 - Sustainable design and development.** ....*The challenge is to help, through the development process, to achieve the potential for reducing greenhouse gases and the impacts of climate change.*
- **Challenge 12 – Sustainable use of natural resources.** ....*The challenge is to help ensure that the physical environment is safe and healthy, that land is used efficiently and waste is minimised, recycled and processed sustainably.*

4.5.7. At 2.29 the City Strategy sets out five big ambitions for Sheffield's transformation over the next ten years, One of these ambitions is for Sheffield to be an attractive and sustainable, low-carbon city.

4.5.8. Chapter 3 – Sets out the Spatial Vision for the Sheffield Development Framework and has two recurring themes, transformation and sustainability. One of the visions is *“respect the global environment, by reducing the city's impact on climate change...”*

4.5.9. As set out above, Challenge 11 sets out the following objectives

- *S11.1 - Developments laid out, designed and constructed to minimise carbon emissions and other harmful impacts on the climate and local environment.....*
- *S11.2 - Renewable energy (including solar and wind power and biomass) generated in a variety of schemes and by new buildings, and in excess of regional targets.*
- *S11.3 - The impact of flooding decreased by reducing surface run-off: not developing in locations where flood risk is unacceptable, but where development cannot be avoided and the probability of flooding is high. Implementing appropriate mitigation measures.*



4.5.10. These objectives help Sheffield to achieve its ambition to become a sustainable, low-carbon city and to accord with the priority for action in the UK Sustainable Development Strategy about climate change and energy and to national planning policy on Climate change.

#### Green Corridors and countryside

4.5.11. At 4.28 it states “a network of green corridors, parks, recreational areas and greenspaces will be preserved and enhanced within and close to the urban areas, including links along main river valleys. These will serve a range of purposes including movement of wildlife in the city...”

Chapter 6 policies applicable to development are addressed below.

#### 4.5.12. **Policy CS2 – Business and industrial development on Brownfield and greenfield land**

*“Priority for new business and industry development will be given to previously developed land over greenfield land and locations where it would be accessible by public transport.....”*

4.5.13. The development site is located within the Neepsend industrial area in Sheffield. The site was chosen for its short cable connection into National Grids Neepsend substation. The land is previously developed and easily accessible for heavy haulage vehicles.

#### 4.5.14. **Policy CS10 – Business and industry in the Upper Don Valley.**

Employment uses will be maintained and promoted in the North Neepsend/Hillfoot Riverside and Wadsley Bridge areas, including improvements to access and the local environment....

At 6.33 states that Environmental improvements will be brought about through negotiation and co-operation with developers and landowners as development take place and funding associated with economic regeneration and initiatives as the Upper Don Walk.

4.5.15. The development site has never been developed and has always been used as ancillary to the adjacent stadium. Over its lifetime it has been used as a speedway pit area, event haulage parking area and a space to store maintenance vehicles. Although the development end use does not generate employment, during construction and connections phase it will provide employment for many skilled people. The end use will help Sheffield become

a low carbon city and provide stability to the electrical network to prevent blackouts and outages and give energy stability to homes and businesses.

Chapter 11 policies applicable to development are addressed below.

**4.5.16. Policy CS63 – Responses to Climate Change.**

*Action to reduce the city's impact on climate change will include:*

*d. Designing development to increase energy efficiency and reduce energy consumption and carbon emissions; and*

*e. Promoting developments that generate renewable energy.*

*Action to adapt expected climate change will include;*

*g. locating and designing development to eliminate unacceptable flood risk.*

*h. giving preference to development of previously developed land where this is sustainably located*

*I adopting sustainable drainage systems;*

*J encouraging environments that promote biodiversity, including the city's Green Network.*

4.5.17. In response to National Grids Voltage 2026 initiative, Northern England, in particular the substation at Neepsend where a electrical connection has been reserved. Due to power stations shutting down and the increase of renewables the network requires reactive absorption transformers to provide stability to the network in this region. This support will encourage the use of more renewables and to reach its net-zero targets.

The development site is currently laid to hardstanding and the proposed scheme proposes to reduce this area to aid SUDs. Although the site is located in Flood Zone 2 the development is located on previously developed land and sustainably located.

The current site is lacking quality biodiversity and due to the nature of the high voltage compound, landscaping will become a hinderance and difficult to maintain.

**4.5.18. CS64 Climate Change, Resources and sustainable design of developments.**

At 11.4 It goes on to say, new development provides an opportunity for reducing energy consumption and enabling more efficient use of energy, both of which are important for reducing carbon emissions..... It accords with the RSS and YH2 in future proofing the city against climate change.

*All developments will be required to;*

*c. - minimise the impact on existing renewable energy installations, and produce energy to compensate for any loss in generation from existing installations as a result of the development.*

At 11.8 it goes on to say that green roofs could be used as a sustainable drainage technique to minimise surface water run-off and therefore help to reduce the risk of flooding.

4.5.19. Although the proposal is not a renewable project it is a significant project to help stabilise the grid by providing reactive absorption. Reactive power is required to push renewable energy around the system to avoid blackouts and outages. This therefore compensates in the overall carbon emissions.

The development site is currently laid to hardstanding and the proposed scheme proposes to reduce this area to aid SUDs. Although the site is located in Flood Zone 2 the development is located on previously developed land and sustainably located.

**4.5.20. CS65 Renewable energy and carbon reduction.**

At 11.11, Large-scale grid-connected renewable energy installations will play an important part in exceeding the capacity targets set in this policy. 11.13 goes on to say that on or near-site generation has the advantages of not requiring transmission (a source of energy loss) and of being less conspicuous. They also help provide a secure supply of energy....

4.5.21. The development is required due to National Grids Voltage 2026 tender. The tender has defined 'regions of need', namely London and North England. This tender is to procure reactive power absorption capability, which is highly locational in nature.

Although the proposal is not a renewable project it is a significant project to help stabilise the grid by providing reactive absorption. Reactive power is required to push renewable energy around the system to avoid blackouts and outages. This therefore compensates in the overall carbon emissions.

#### 4.5.22. CS67 Flood Risk Management

*The extent and impact of flooding will be reduced by:*

- a. Requiring that all developments significantly limit surface water run-off*
- b. Requiring the use of sustainable drainage systems or sustainable drainage techniques on all sites where feasible and practicable*
- f. not increasing and, where possible, reducing the building footprint in areas of developed functional floodplain.*
- k. ensuring any highly vulnerable uses are not located in areas at risk of flooding*
- l. ensuring safe access to and from an area with a low probability of flooding.*

*Where an overriding case remains for developing in a zone with high probability of flooding development will be permitted only if:*

- n. the lower floor levels of any other development with vulnerable equipment would remain dry in the event of flooding; and*
- o. the building would be resilient to flood damage; and*
- p. adequate on and off site flood protection measures would be provided*

As indicated by the Flood Report the site is at risk of flooding but is classed as essential infrastructure. It confirms that all essential electrical equipment should be situated 600mm above existing floor levels. See flood report accompanying this application

Chapter 12 policies applicable to development are addressed below.

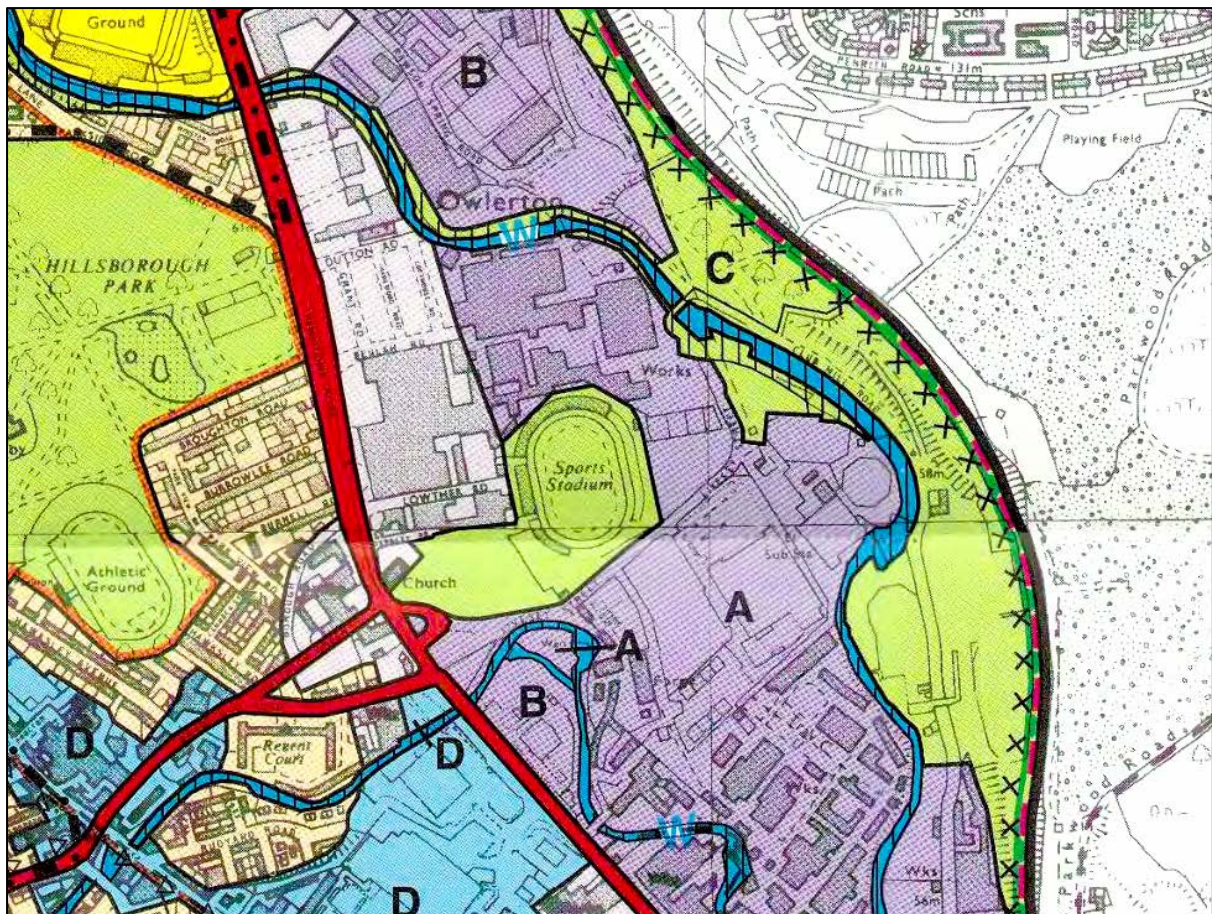
#### 4.5.23. CS73 The strategic green network.

*Within and close to the urban areas, a strategic green network will be maintained and where possible enhanced, which will follow the rivers and streams of the main valleys:*

a. Upper Don.

4.5.24. The current footprint of the development is mainly laid to hardstanding with small pockets of grass and self seeded shrubs. Due to the nature of the high voltage compound, landscaping will be difficult to maintain. The site although near to the River Don, does not have a detrimental impact on this strategic green network.

4.5.25. The plan below was adopted in the Sheffield UDP 1998. It indicates that the land to the east of the sports stadium to be business or industrial.



The emerging Sheffield Plan.

4.5.26. The Sheffield Plan will be the city's new local plan and will guide development in the city until 2038. This plan is currently under consultation; however, this development has considered its ambitions for the next 15 to 20 years.

One of the key aims are:

**Aim 2 – An environmentally sustainable city.**

The Council declared a Climate Emergency in 2019. In response to this, Sheffield is working towards becoming a zero carbon city by 2030 (National target is 2050)

**South Yorkshire Mayoral Combined Authority 2021-2041**

4.5.27. The purpose of this Combined Authority Strategic Economic Plan is to point the way to a prosperous, inclusive and zero carbon future. Our priorities and interventions show how, together we can create a stronger, greener, and fairer economy, which benefits everyone and protects our environment.

## 5. Material Considerations

5.1. This section of the Planning Statement addresses the benefits of battery storage and the need for such facilities in respect of national policy and energy strategies.

5.2. National Planning Policy Framework (NPPF) (December 2023)

5.2.1. The NPPF sets out, under Paragraph 7, that the purpose of the planning system is to contribute to the achievement of sustainable development. Paragraph 8 sets out that there are three overarching objectives to achieve this; an economic objective, a social objective and an environmental objective.

5.2.2. In respect of the proposed development, the three objectives of sustainable development would be delivered as follows:

- Economic objective – the proposed development would provide essential infrastructure necessary for providing reactive stability services to the National Grid for their Voltage 2026 initiative. A stable and secure energy supply is vital to economic growth and as such it is considered that the proposed development will help deliver the economic objective of sustainable development.
- Social objective –the proposed development would help to address the unstable electricity network due to renewables and for the electricity network to be net zero. This will help to ensure stable and secure energy supplies for existing communities and future generations as the UK moves to a low carbon economy.
- Environmental objective – the proposed development provides a method of balancing grid frequency, to support the decarbonisation of the electricity system. In addition, the site itself is of limited ecological value comprising mostly hardstanding, small amount of grass and arisings from the stadium. The proposed development would not result in any significant adverse environmental impacts.

5.2.3. Paragraph 20 of the NPPF sets out that:

5.2.4. ‘Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for:

- infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat)” (emphasis added).

### 5.3. National Policy Statements

5.3.1. As demonstrated earlier in this report, the relevant National Policy Statements (NPSs) clearly and unambiguously identify the need a low carbon energy system to ensure a flexible and decentralised energy network exists for years to come.

5.3.2. The proposed development would assist in stabilizing the reactive power in the grid and to ensure the UK is able to meet the projected future demands for electricity supply, provide vital support to renewable forms of energy and offer a cleaner, more reliable and faster alternative to energy supply, as existing peaking plants reach the end of their lifetime.

5.3.3. Accordingly, the proposed development would clearly support the message set out in NPSs for energy and would make a vital contribution to ensuring that the UK has an energy system that is fit for the future in place.



#### 5.4. National Policy Statement for Energy (EN-1)

- 5.4.1. The overarching National Policy Statement for Energy (NSP EN-1) sets out national policy for energy infrastructure development in accordance with the Planning Act 2008 definition of a Nationally Significant Infrastructure Projects (NSIPs). The Infrastructure Planning (Electricity Storage facilities) Order 2020 removed all forms of electricity storage, other than pumped hydroelectric storage, from the definition of nationally significant energy generating stations under the Planning Act 2008.
- 5.4.2. The proposed development does not meet this definition but Paragraph 3 of the 'Framework' states that "National Policy Statements form part of the overall framework of national planning policy and are a material consideration on planning applications". At 3.3.4 different types of electricity infrastructure is needed to deliver our energy objectives, this could be generation plants, electricity storage, interconnectors, and electricity networks. But of note here is the start of Paragraph 3.3.6, which states, "There are a number of other technologies which can be used to compensate for the intermittency of renewable generation, such as electricity storage, interconnection and demand-side response, without building additional generation capacity".
- 5.4.3 It goes on to say at 3.3.2, given the changing nature of the energy landscape, we need a diverse mix of electricity infrastructure to meet a net zero consistent system during the transition to 2050 with a wide range of demand, decarbonization, and technology scenarios. 3.3.25 states that renewables has a key role to play in achieving net zero and providing flexibility to the energy system, so that high volumes of low carbon power can be integrated. This intern requires other forms of stability, such as static and dynamic reactive stability to aid the transition.

#### 5.5. National Policy Statement for Renewable Energy Infrastructure (EN-3)

- 5.5.1. EN-3 was also published in July 2011, updated in November 2023 and sets out the national policy for renewable energy projects. EN-3 should be read in conjunction with EN-1.

5.5.2. Similar to EN-1, EN-3 sets out the importance of renewable energy in achieving the Government's ambitious targets for a low carbon transition and to meet Net Zero by 2035.

5.5.3. At 2.1.4 the Secretary of state should consider this NPS and EN-1 together. In particular, EN-1 sets out the governments conclusion that there is a n urgent need for new major electricity infrastructure.

5.5.4. Critical national priority (CNP) infrastructure is defined as national significant low carbon energy. Low carbon means: For electricity grid infrastructure, all new grid projects will contribute towards greater efficiency in constructing, operating, and connecting low carbon infrastructure to the National Electricity transmission system.

## 5.6. Energy White Paper: Powering our Net Zero Future (2020)

5.6.1. The UK Government report sets out several Priority Areas to achieve Net Zero. A low-cost, net zero consistent system is likely to be composed predominantly of wind and solar. But ensuring the system is also reliable, means intermittent renewables need to be complimented by technologies which provide power. It states that the transformation of our energy system will require growing investment to reinforce the energy to system to give it resilience and reliability.

## 6. Conclusion

6.1. This Planning, Design and Access Statement has been prepared by Green Frog Power ( Livesey ) Limited, in support of a full planning application to install and operate a reactive power absorption substation at Livesey Street, Owlerton in Sheffield.

6.2. The development is required due to National Grids Voltage 2026 tender. The tender has defined 'regions of need', namely London and North England. This tender is to procure reactive power absorption capability, which is highly locational in nature. The development does not generate electricity but helps with much needed grid stability.

6.3. The application proposals will contribute towards the urgent national need to deliver innovative ways to manage energy security in three crucial ways: balancing supply and demand as more intermittent renewables come on to the system; balancing the system's frequency, which is increasingly required for the same reason; saving on the wasteful curtailing of renewable energy because the transmission system can't cope.

6.4. The promoters are very experienced in building and operating small power stations: they make every effort to minimise any adverse impacts on the local environment and local people throughout the construction phase and thereafter. Once built the reactive transformer compound will provide a vital service in providing stability to the National Grid network in the North England region.

6.5. In conclusion, the proposed development is in accordance with adopted local plan policies and is strongly supported by government policy, which encourages sustainable development that assists in the transition towards a low-carbon future. For these reasons the Council is requested to grant planning permission at the earliest opportunity.