Hightown Drove Battery Energy Storage System (BESS)

Reach Parish Meeting

6th May 2025

GRENERGY

Our Team

- **Founded in 2007, Grenergy Renewables has grown into a global independent power producer (IPP) and entered the UK market in 2020.**

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Background to UK Energy

- **The UK is facing a climate and energy security crisis leading to an essential need for clean, cheap and abundant electricity.**

- **Climate:** Target for the electricity system by zero carbon by 2030.
- **Cost:** The UK now spends over £250 million per month on importing electricity and has the highest electricity prices in Europe.
- **Demand:** UK electricity demand is expected to double by 2050.

Solution

- Renewable generation – Energy derived from natural sources that are constantly replenished such as solar and wind power.

Grid Challenges

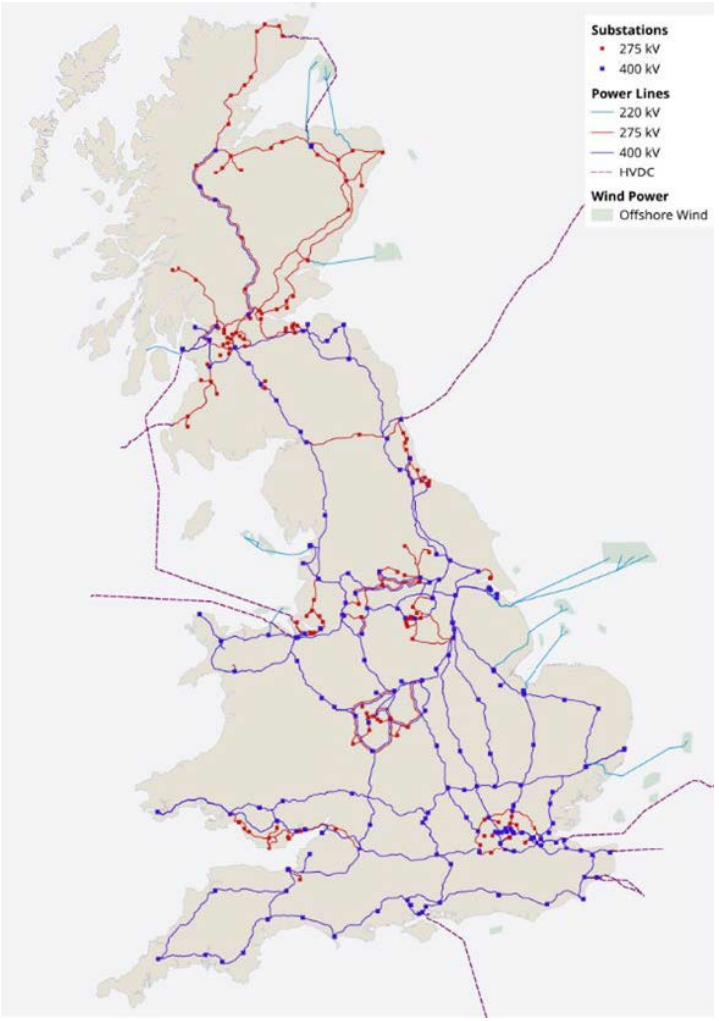
- **Renewable generation and storage projects are restricted by limited points of connection to the grid network.**

- **Points of connection**
  - locating a site is limited to where a physical connection can be made into the electricity network - either at substations or overhead lines

- **Capacity**
  - Due to aging infrastructure and significant capacity demand, new connections points are few and far between without significant upgrade works (substation or overhead line rebuilds)

- **Time**
  - lengthy delays are common-place to connect projects

- **Curtailment**
  - Where multiple technologies in the same region are proposed, the connections are constrained to avoid overloading the network which costs millions to the UK public



Battery Energy Storage Systems (BESS)

- **Battery Energy Storage Systems (BESS), are devices that enable energy from renewables, like solar and wind, to be stored and then released when the power is needed most.**

Operational Modes

- **Energy arbitrage:** Enables power from renewable generation to be stored and released with peak demand.
- **Frequency response:** Manages network frequency, a service formally provided by fossil fuel power.
- **Capacity market:** Emergency events to keep lights on.

The UK Government anticipates we need 27 GW of BESS by 2030 to keep up with renewable installation.

Alleviating network constraints: It's anticipated that batteries could cut curtailment by up to 80% and save around £40 billion by 2050.

Hightown Drove BESS

Grenergy Renewables UK is proposing a Battery Energy Storage System (BESS) site off Hightown Drove, Burwell.

- **Point of Connection:** Burwell Main Electricity Substation
- **Capacity:** 90MW
- **Voltage:** 132,000 volts
- **Site footprint**: Approx. 5ha (2Ha developed land)
- **Homes powered:** 300,000 homes in a single hour
- **Site Location:** Land off Hightown Drove, Burwell.

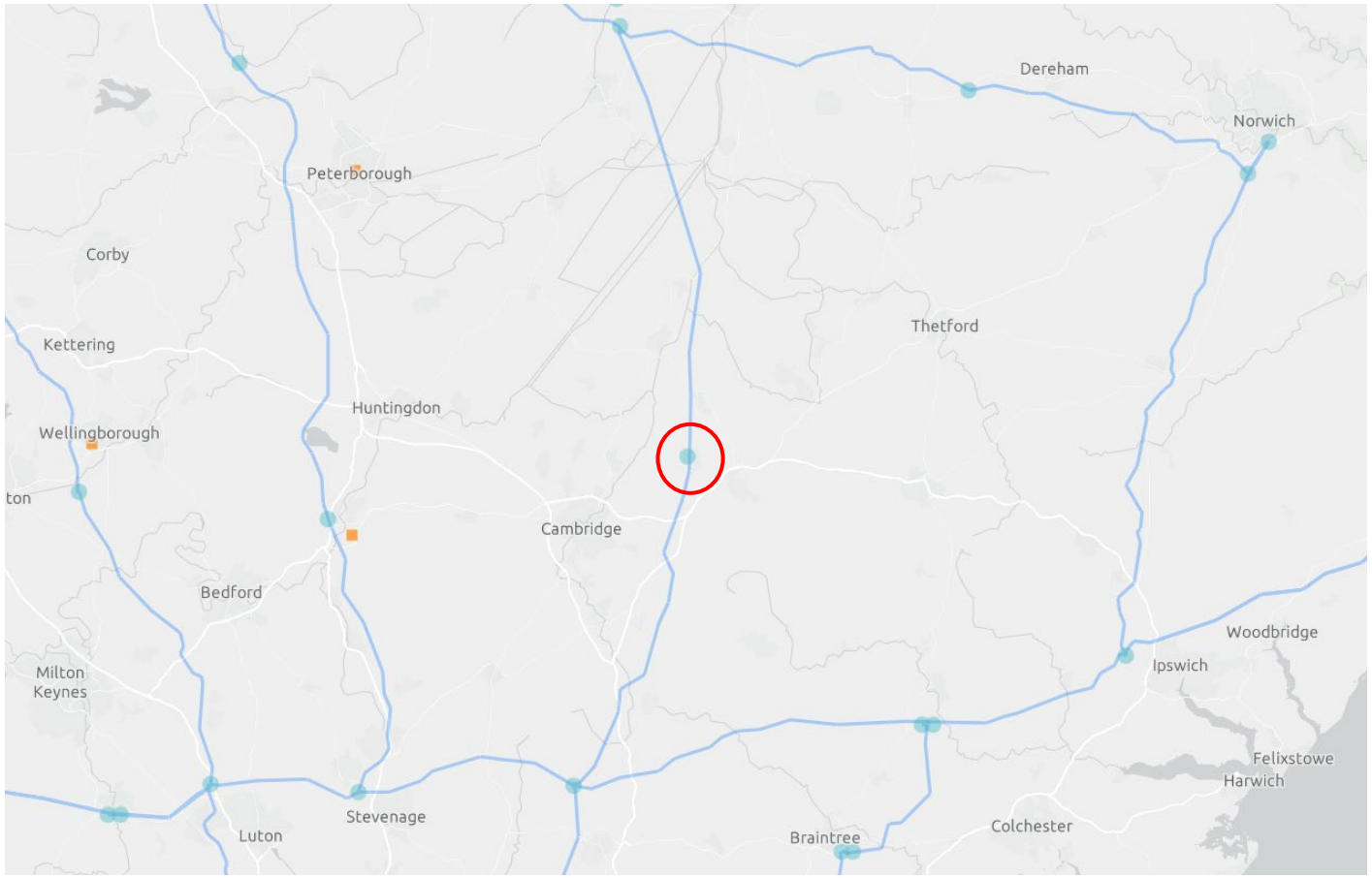
Site Selection

Point of connection:

- **Major substations** – Where the local electricity network steps up to the national network.
- **Locations** – These are limited and often located on the edges of major urban settlements.
- **Viability** – These are the most viable places to connect major embedded capacity into the electricity network as they have space to accommodate new connections.

Site identification factors from a point of connection:

- Proximity
- Commercial viability
- Access
- Planning constraints
- Separation distances



Operational Impacts and Enhancements

- **Ecology** - Onsite enhancements proposed with a minimum local 10% biodiversity net gain
- **Visual** - well screened site, to be further enhanced with onsite hedgerow and tree planting
- **Noise** - Low frequency hum produced by fans. Noise Impact assessment will be carried out to ensure noise is below background sound levels with inclusion of sound attenuation fences
- **Lighting** - No nighttime lighting under normal operation, only in the event of emergency will downward facing lights trigger
- **Drainage** - Onsite attenuation proposed to ensure no impact to local fluvial network
- **Construction** – The site will take around 6-9 months to construct. Once operational, there will be 1-2 visits per week for routine maintenance

Site Design

LEGEND

APPLICATION BOUNDARY

INTERNAL ROAD

SITE ACCESS

SECURITY FENCING

TEMPORARY CONSTRUCTION COMPOUND

POWER STATION

20 ft BESS CONTAINER

SWITCHGEAR BUILDING

MONITORING ROOM/OFFICE

SECURITY GATE

DNO BUILDING

SUBSTATION

CCTV CAMERA

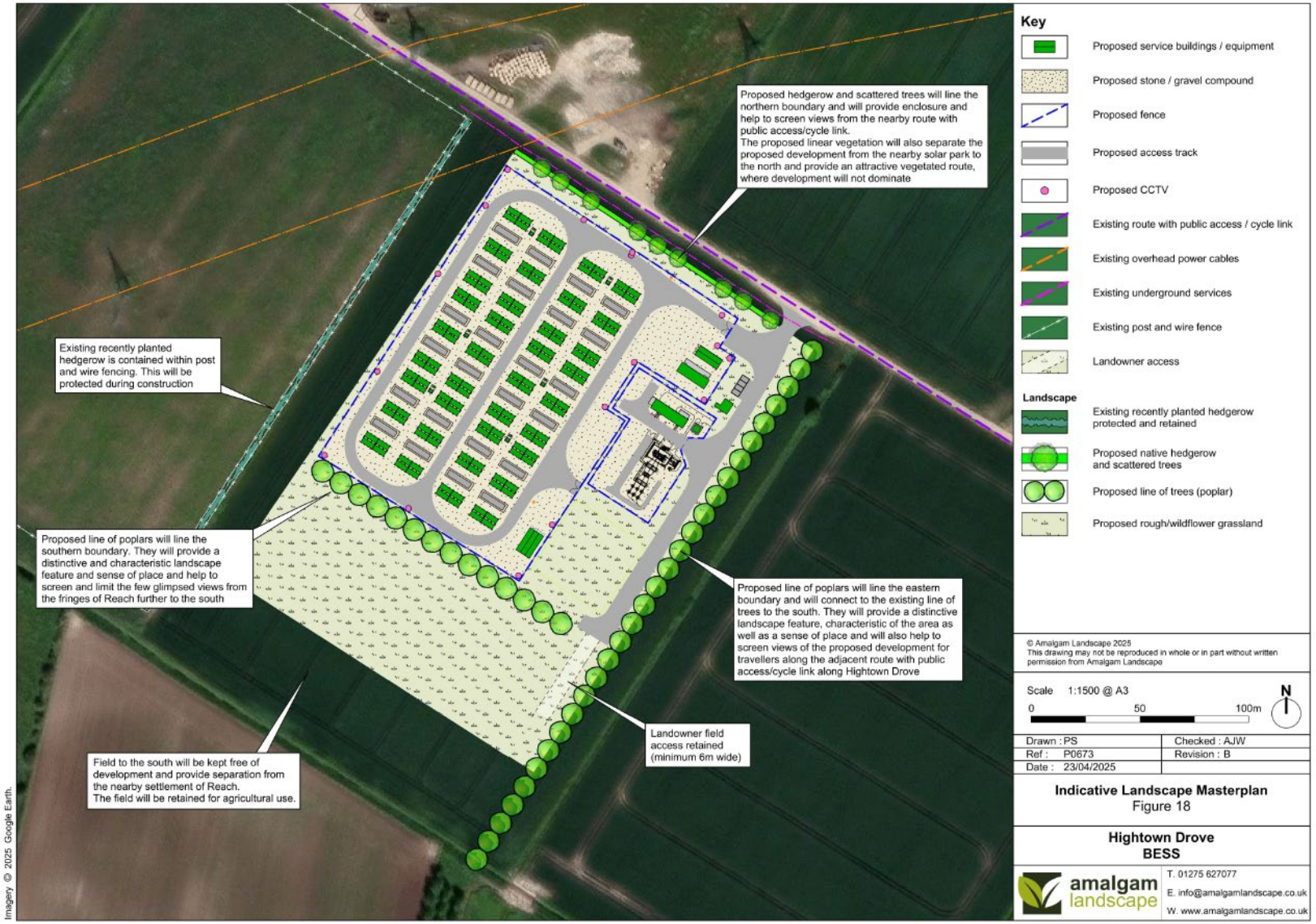
FIRE HYDRANT

PARKING SPACES

SPARES CONTAINER

AUXILIARY TRANSFORMER

Indicative Landscape Plan



Fire Safety

Fire concern at BESS sites stem from the Lithium-ion batteries within the containers. This is the same technology used in smartphones, laptops, pacemakers, electric vehicles and many more devices.

Whilst this is often raised on BESS projects the facts are there are 161 BESS in operation (2600 MW) and there has only ever been one major fire event in the UK (with a further two recent incidents during construction)

Prevention – internal battery management systems with emergency shut-downs

Detection – heat, smoke, gas detection systems – alerting to fire and rescue services

Suppression – aerosol-based fire suppression system within containers designed to extinguish fir before it is able to escalate or spread

Fire service response – prior engagement held with fire and rescue service to explain strategy which is to engage in boundary cooling to stop potential for spread of fire

Contamination – all firewater will flow to a contained attenuation basin with a firewater isolation valve – no potentially contaminated water will leach into the ground

Power Outage in Spain & Portugal

What happened?

- Spain and Portugal experienced a power outage on Monday 28th May which affected 55 million people and lasted over half a day
- 15GW of power was lost in 5 seconds

How did it happen?

- The Spanish grid operator Red Electrica said there were two disconnection events a second apart in the South-West of Spain where a lot of solar power is generated
- This led to a drop in the frequency of the grid
- Red Electrica also suggested that the sudden drop of power may have led to an interconnecter between France and Spain to trip

How can battery storage help?

- Electrical grids need to run at a frequency of 50 Hertz to function
- Batteries can activate within fractions of a second to discharge power to stabilise electricity grids
- In October 2024, the interconnector between Norway and the UK tripped but there were enough BESS assets to inject power into the system and keep the lights on
- The whole story is a real testament to the crucial importance of BESS in our modern grid system

Community Benefit Fund

Grenergy is committed to supporting the communities in which they operate to ensure all projects bring local benefits, through locally sourced workers, community investments and biodiversity enhancement.

Examples of Grenergy initiatives in other countries:

Equal opportunities

Offered gender-focused leadership workshops in Chile

Solar panel installation

Provided technical training and financial support for local communities to install solar panels in Peru

Education

Provided school supplies to children from low-income communities in Colombia

Tree Planting

Planting of native vegetation in Spain to enhance habitat connectivity

Local Employment

Hired local contractors where possible

Next Steps

Grenergy is anticipating to submit a full planning application in May 2025.

Once validated, stakeholders will be able to comment on the application via the East Cambridgeshire District Council planning portal.

Should you have any questions, please get in touch via projectsuk@grenergy.eu

Thank you for listening!

Keep in touch via
projectsuk@grenergy.eu