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Normanton Energy Reserve

The Development is a 500MW battery energy storage facility able to export 1GWhr of electricity per discharge cycle. The ancillary equipment includes inverters, low voltage transformers, high voltage switchgear, grid transformers, substation, access roads, fencing, CCTV and extensive landscaping.

The Development will connect into the existing 275kV line which passes through the site.



Site location and overview

The site is located to the east of Earl Shilton and the A47.

Approximately 50% of the main site is required for the energy reserve with the other 50% set aside of biodiversity enhancement and landscaping (woodland and wildflower grassland areas).



500MW battery energy storage facility



large belt of woodland planting and a wide wildflower meadow.



Normanton Energy Reserve will have storage generation capacity equivalent to the average annual consumption of around 235,000 homes.

Development components

Battery containers

Containerised battery units will contain batteries, sensors and monitoring systems, heat, ventilation and air conditioning system (HVAC), and fire detection. Modular units arranged in rows.

Inverters/transformers

Batteries require bi-directional inverters to convert electrical voltage and current from Direct to Alternating Current and vice versa to allow its connection with the grid. Transformers are required to step up the voltage. Supergrid transformers are also required to step up and down voltage from high voltage to 275kV.

High voltage switchgear

A HV network is the main infrastructure needed to deliver power between the system and the grid. HV circuit breakers form the main protection and control devices within the network, and will be installed within suitable buildings.

Substation

The site has a 275kV connection which requires 275kV switchgear (busbars, circuit breakers, disconnectors, etc) to connect the system to National Grid's transmission network.

Fencing

We are proposing a palisade fence, painted green, around the perimeter of the compound, up to 2.4m in height.

Access track

The compound will have access tracks, typically 4m in width and constructed of permeable aggregate.

Landscaping

A large belt of woodland planting along the eastern boundary and a wide wildflower meadow to the west.

Grid connection

Exagen has received a grid connection offer from National Grid confirming that a connection is possible into the existing 275kV overhead line crossing the site. A new National Grid substation will be constructed and electricity will be imported and exported via this.

Operation

The energy reserve will begin to import and export electricity following commissioning and being connected to the grid. This activity will continue for a project lifespan of 40 years after which all infrastructure would be decommissioned and removed from the site.

The site will require a full time presence and will result in 12 full time jobs and business rates of £770,000 per year.

Land will be owned by Exagen Group allowing us to deliver permanent significant biodiversity improvements including woodland creation and new and enhanced habitats.

Construction

Timing

Works will commence upon gaining the necessary planning and grid connection approvals. Construction will take approximately 9 months.

Construction access

All construction traffic is proposed to access the site via a new junction onto Earl Shilton Road to the south, providing links to Thurlaston Lane and on to the M1/M69. The proposed route has been designed to specifically minimise traffic on minor roads through local settlements. Vehicle type and routing will be examined moving forward to minimise disruption to the local road network.

Site preparation

This will involve the preparation of the site to receive the delivery of equipment. This may involve the construction of a temporary access track and will involve the preparation of areas for the storage of equipment and the housing of temporary site offices.

Layout and construction

The locations for the battery containers and other infrastructure will be marked out and the concrete bases/ plinths will be installed. The components will then be installed and electrically connected and tested.

Restoration

All areas subject to temporary works including some access tracks and other temporary infrastructure, would be re-instated to a condition in keeping with the quality of the areas before works commenced. All construction waste (largely comprising packaging) will be disposed of in accordance with local regulations.

Local contractors

Local contractors will be used as far as possible in the construction process.