

1 THE PROJECT

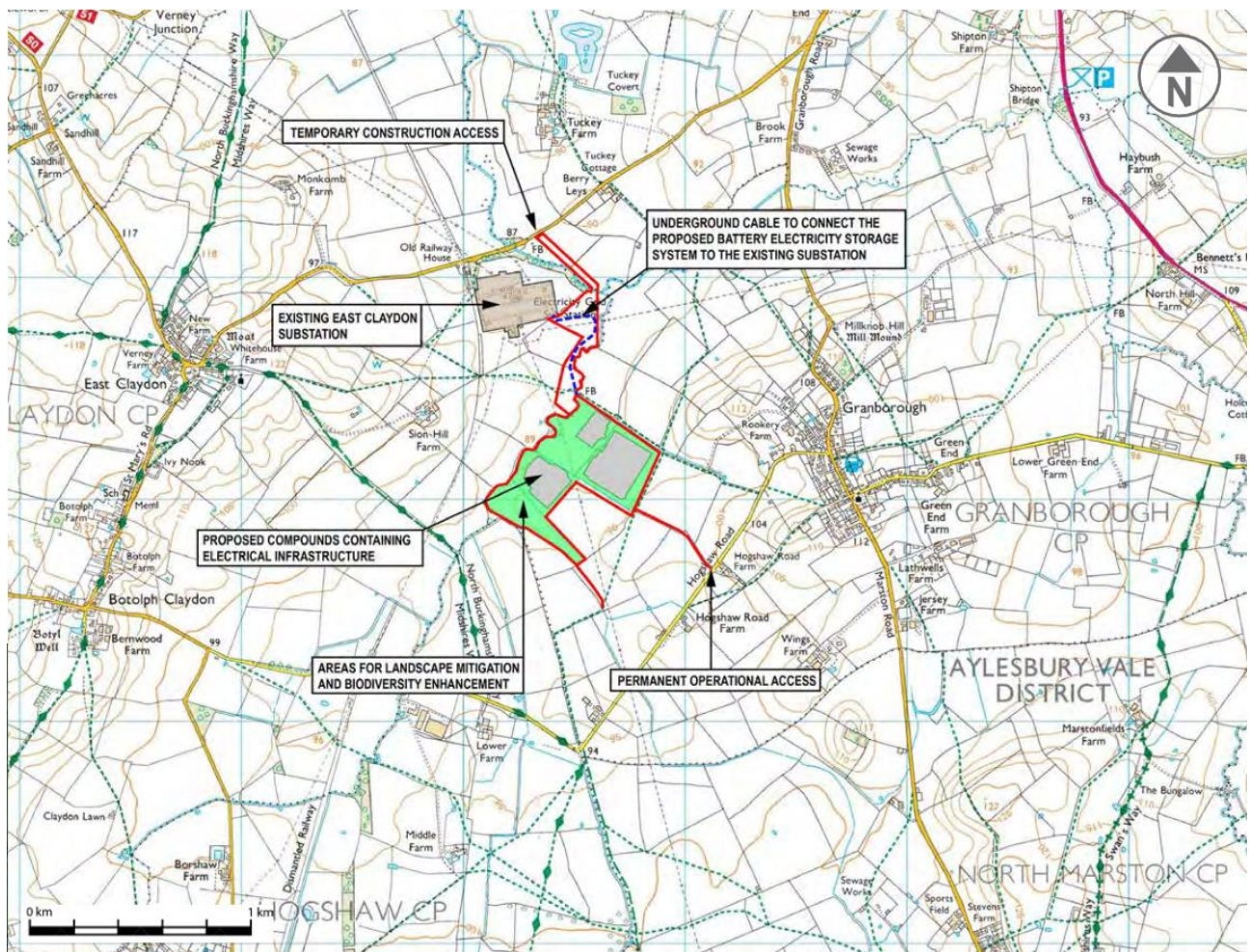
1.1 Introduction

- 1.1.1 This chapter provides a description of the site in terms of its location, history, and surrounding land uses. It also sets the development within the context of surrounding land uses. The chapter includes a description of the Proposed Development for which planning consent is being sought. It provides sufficient information on the Proposed Development to aid the identification and assessment of potential environmental impacts and likely environmental effects across the environmental topic areas addressed by the EIA. The assessments reported within the environmental topic specific volumes have based their assessments on this description of development.
- 1.1.2 Further details on the Proposed Development can be found within the Design & Access Statement (DAS), detailed plans and the Planning Design and Access Statement submitted in support of the planning application

1.2 Site Description

- 1.2.1 The following section presents a summary of the location of the site, existing site conditions and existing site context. A description of the key features and designations associated with the site and surrounding environment are discussed in ES Volume 1 Chapter 3: Site Selection and Alternatives.
- 1.2.2 The site is irregular in shape and is centred around National Grid Reference (NGR) SP 75557 25324. The site is mainly flat and level and located on land to the South of East Claydon National Grid substation and between the settlements of Granborough and East Claydon in the county of Buckinghamshire.
- 1.2.3 Nearby residential properties are located at Granborough adjacent to Hogshaw Road some 500m to the west of the site, and at Hogshaw Road immediately opposite the proposed site access. East Claydon substation is some 75m distance at closest point, Sion Hill farm is circa 415m to the east.
- 1.2.4 The site is accessed from the south by an access onto Hogshaw Road. Two public rights of way (PRoW) sit adjacent to the site (GRA/2/1 and GRA 2/2), one bounding the site to the north and the other running to the east of the proposal site boundary, these two PRoW routes intersect near to the northeastern corner of the proposal site.
- 1.2.5 The site comprises a collection of agricultural fields, predominantly in use for arable farming.
- 1.2.6 The site location and extent of site boundaries are shown in Drawing No. SL261_L_X_LP_01 and below in Figure 2.1. The site area extends to 33.2 hectares in total.

Figure 2.1 Site Location Plan



Site Context

- 1.2.7 The Proposed Development site is agricultural land which is not subject to any environmental designations.
- 1.2.8 The Site does not lie within a nationally designated landscape area. The local area is currently affected by electrical infrastructure associated with the nearby National Grid substation, including overhead lines.
- 1.2.9 Overall the site is not considered to have high environmental sensitivity.

Local Environmental Context

- 1.2.10 The following environmental considerations were reviewed as part of the design evolution of the Proposed Development with regards to establishing site environmental constraints and opportunities. These are also displayed on the Figure 2.1

Figure 2.1 Surrounding Site Context



Land Use and Soils

- 1.2.11 The site currently comprises agricultural land predominantly used for arable farming. An Agricultural Land Classification (ALC) survey of the site has been undertaken (ES Volume 11, Appendix 11.1) which identified the presence of Grade 3b across the site. Therefore completely avoiding any Best and Most Versatile (BMV) land.
- 1.2.12 The soils on-site are described as comprising a mixture of heavy silty clay loam and silty clay. Soil wetness is the main factor at the site which dictates Agricultural Land Classification grade. For further information, see ES Volume 11.

Air Quality

- 1.2.13 There are no designated Air Quality Management Areas (AQMAs) in the vicinity of the site.

Archaeology and Heritage

- 1.2.14 The site does not contain any designated heritage assets (World Heritage sites, Scheduled Monuments, Registered Parks and Gardens, Registered Historic Battlefields or Historic Wreck sites) or any Listed Buildings. It is also not located within a Conservation Area. However, within one of the fields on the Site there are two Archaeological Notification Areas designated by Buckinghamshire County Council, one related to a Roman road, the other a Roman pottery scatter. For further information see ES Volume 6 (Built Heritage) and Volume 7 (Archaeology).

Ecology and Biodiversity

- 1.2.15 There are no statutory or non statutory designations affecting the site and there are no such designations within 2km of the site boundary. The Site lies within the Natural England

Impact Risk Zone of two statutorily designated sites (Sheephouse Wood Site of Special Scientific Interest (SSSI), and Finmere Wood SSSI). These sites are located 4.6km and 4.3km south-east respectively.

- 1.2.16 The Site comprises arable farmland bordered by neutral grassland margins and hedgerows. A small pond surrounded by scrub is present in the east of the Site and a stream bordered by a line of trees is present to the west. The arable fields and modified grassland are of low ecological value, with its value at site level only. The neutral grassland margins are generally narrow and species-poor; due to the poor species composition and limited extent of these margins they are considered to be of site value as well.
- 1.2.17 Several hedgerows are present across the Site. These were typically of low species richness although a short section along the southern boundary a higher species diversity. Native hedgerows qualify as a Habitat of Principal Importance as listed on the Natural Environment and Rural Communities (NERC) Act (2006) and those present on Site are of local value.
- 1.2.18 A small stream flows adjacent to the western boundary, supporting limited aquatic vegetation. This habitat is considered to be of local value. A small pond surrounded by scrub is present on the eastern boundary and is also considered to be of local value.
- 1.2.19 Further information on ecology and biodiversity site context is provided within ES Volume 3

Ground Conditions

- 1.2.20 The site comprises undeveloped agricultural land. According to the British Geological Survey (BGS) online viewer the site is underlain by the Mudstone of the Weymouth Member. Superficial deposits of Alluvium (Clay, Silt, Sand and Gravel) are anticipated to overlie the Weymouth Member along the line of the Claydon Brook. No artificial ground is located on the Site the nearest being at the Claydon National Grid substation to the north west which is underlain by artificial ground.
- 1.2.21 The Site is identified as being within a Minerals Safeguarding Area on the Buckinghamshire Minerals and Waste Local Plan proposals map. Further information on ground condition context is provided within ES Volume 10.

Noise

- 1.2.22 Main sources of noise within the site at present relate to its arable use and machinery associated with this and from the nearby National Grid substation. Further information is provided within ES Volume 2.

Transport and Access

- 1.2.23 The site is accessed from the south by an access onto Hogshaw Road, two public rights of way (PRoW) sit adjacent to the site (GRA/2/1 and GRA 2/2), one bounding the site to the north and the other running to the east of the proposal site boundary, these two PRoW routes intersect near to the northeastern corner of the proposal site. For further information see Volume 8 of the ES.

Water Resources and Flood Risk

- 1.2.24 The EA Flood Map for Planning, which is available online, indicates that the majority of the site is located within Flood Zone 1, which is land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding. The western and southern portions of the site are located in Flood Zone 2 and 3. Flood Zone 3 is an area whereby the annual

- 1.2.25 probability of flooding from fluvial sources is classified as 1 in 100 or greater. Flood Zone 2 is an area whereby the annual probability of flooding from fluvial sources is classified as between 1 in 100 and 1 in 1,000.
- 1.2.26 The EA surface water map indicates that a portion of the site is at a 'Very Low' risk of surface water flooding. Areas of 'Low' to 'High' risk are identified along the northern boundary, western boundary and southern portion of the site.
- 1.2.27 There are no hydrologically connected no designated sensitive areas e.g. Special Area of Conservation (SAC), Special Protection Area (SPA) or Site of Special Scientific Interest (SSSI) within 1km of the site. Further information on site context with regard to water and flood risk is provided within ES Volume 4.

Landscape and Visual Amenity

- 1.2.28 The Site and its immediate surroundings do not lie within a designated landscape. It lies within the Hogshaw Claylands Landscape Character Area, a gently sloping bowl of low ground in mixed agricultural use, sparsely settled. Landscape quality has been determined as Low to Medium (largely due to the adverse influence of the East Claydon Substation and the transmission lines which radiate from it).
- 1.2.29 The main sensitive receptors will be users of the PRoW network which passes close to the Site, although typically views from within the base of the valley are very limited due to intervening tree and hedge cover. Further detail on landscape and visual context is provided within ES Volume 5.

1.3 Description of the Proposed Development

Purpose

- 1.3.1 BESS facilities provide a means of allowing electricity from the grid to be imported and stored at times of low demand/high generation, which can then be exported back into the grid at times of higher demand / system stress.
- 1.3.2 System frequency is also 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. If the transmission system is not maintained within the required frequency tolerance, system stress can result in widespread power supply issues and damage to network infrastructure.
- 1.3.3 Battery storage is a key part of this energy strategy and provides NG with balancing services to help accommodate the increasing level of renewable energy generation.
- 1.3.4 By importing excess renewable energy from the grid and storing it, batteries can capture energy that would otherwise be lost / unutilised. In respect of their storage ability, batteries offer opportunities to support the intermittent nature of renewables by storing the excess energy they produce and importing it back into the grid when demand requires.
- 1.3.5 During situations when primary power sources (e.g. traditional power stations) are interrupted, BESSs can bridge the gap in production, thus avoiding potential blackouts. It should be noted that the UK electricity network is wholly interconnected and issues in one geographic location can have far reaching implications on the network. Accordingly, BESSs offer additional capacity to deal with system stress and any variations in grid frequency at both a local and national level.
- 1.3.6 As has been recognised by National Grid's System Operability Framework (SOF): "Faster response is more effective and so less response is needed if speed can be increased."

BESSs are able to respond more rapidly than other types of balancing services, as they have no start-up delays. As such BESSs can balance the real-time requirements of the national grid more efficiently.

Proposed Development

The Proposed Development comprises the development of a 500 megawatt (MW) Battery Energy Storage System (BESS), connected directly to the National Grid, with associated infrastructure including access, drainage and landscaping.

The Proposed Development comprises sound insulated lithium ion battery units housed within 888 shipping containers which have been modified to accommodate batteries with 37 inverter houses with a biodiverse roof and outdoor transformers (see Appendix 2.1). The containers will be approximately 12m long, 2.4m wide and 2.9m high. There will also be 7 switch and control units of approximately 13m length, 5m width and 3.9m in height. Each Inverter House would be designed to have the characteristics of small agricultural buildings and would typically be less than 5m to ridge, appearing similar to small commercial chicken houses rather than tall storage barns, the inverter houses will also support a biodiverse roof comprising sedum planting.

1.3.7 The Proposed Development includes the following components:

- The development would include a substation compound comprising transformers, busbars and other equipment of up to 9m in height;
- The whole facility would be enclosed within a mesh security fence of up to 2.4m in height, with the substation compound enclosed in a palisade fence of similar height;
- Temporary construction haul road from East Claydon Road which will be in use during the construction and enabling phase of the Proposed Development. The construction route will be formed using ground protection matting. On completion of the construction and enabling phase the ground protection matting will be removed, the access stopped up and land will be reinstated to its existing agricultural use.
- High voltage underground cable connecting the development to the National Grid East Claydon substation to the north west.
- Extensive landscaping and Biodiversity Net Gain (BNG) enhancement through new woodland, new hedgerow, wildflower grassland and new native shrub planting, and provision of attenuation ponds;
- Landscaping and habitat creation will be included in the development proposals to compensate for any loss of habitats on the site.
- 5.5m wide crushed stone access track to the development site from Hogshaw Road, extending across the development site up to the substation;
- Loose permeable gravel around the battery units and buildings;
- Crushed stone access tracks throughout the site, dissecting the areas of loose permeable gravel and providing access between rows of battery containers;
- Storage containers providing welfare facilities;
- Storage containers providing spare parts storage;

The masterplan layout for the proposed BESS Facility is shown at Appendix 2.1, with figure below (2.2) illustrating the container design which will house the battery units. Figure (2.3) provides an illustration of inverter building design and figure (2.4) a control room building.

Figure 2.2: BESS Containers

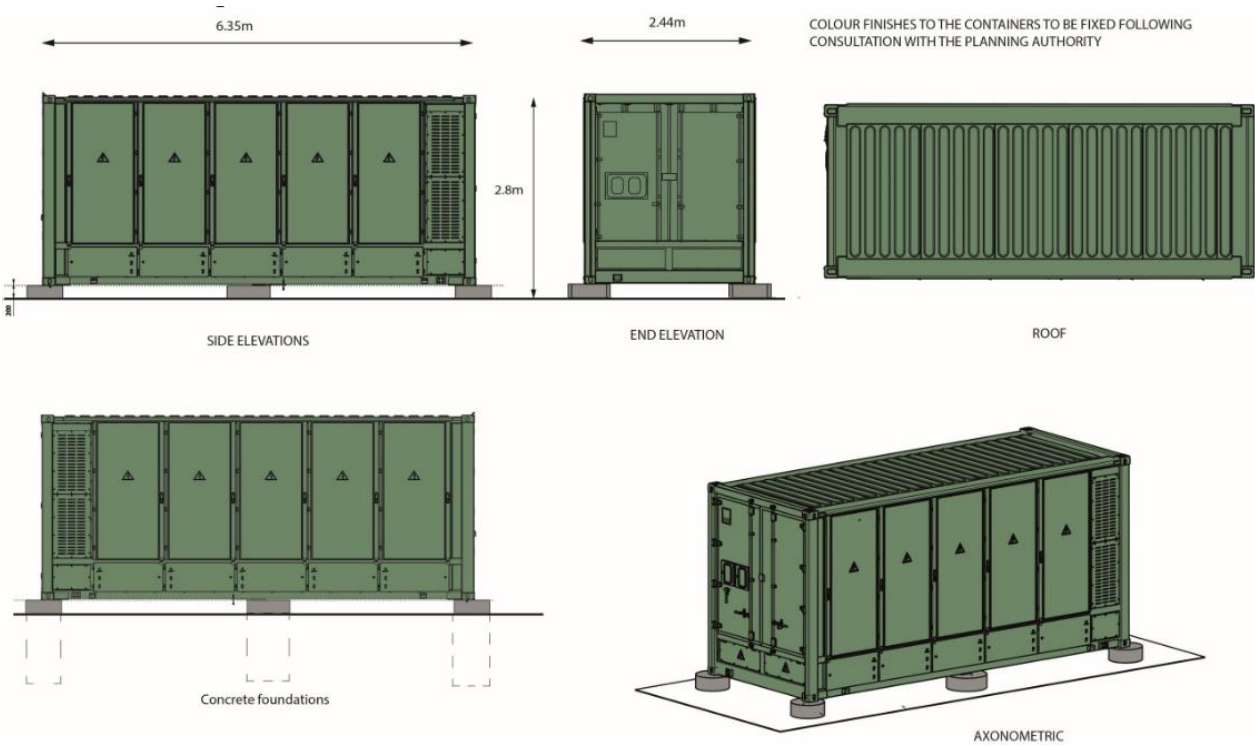


Figure 2.3: Inverter Building with Biodiverse Roof

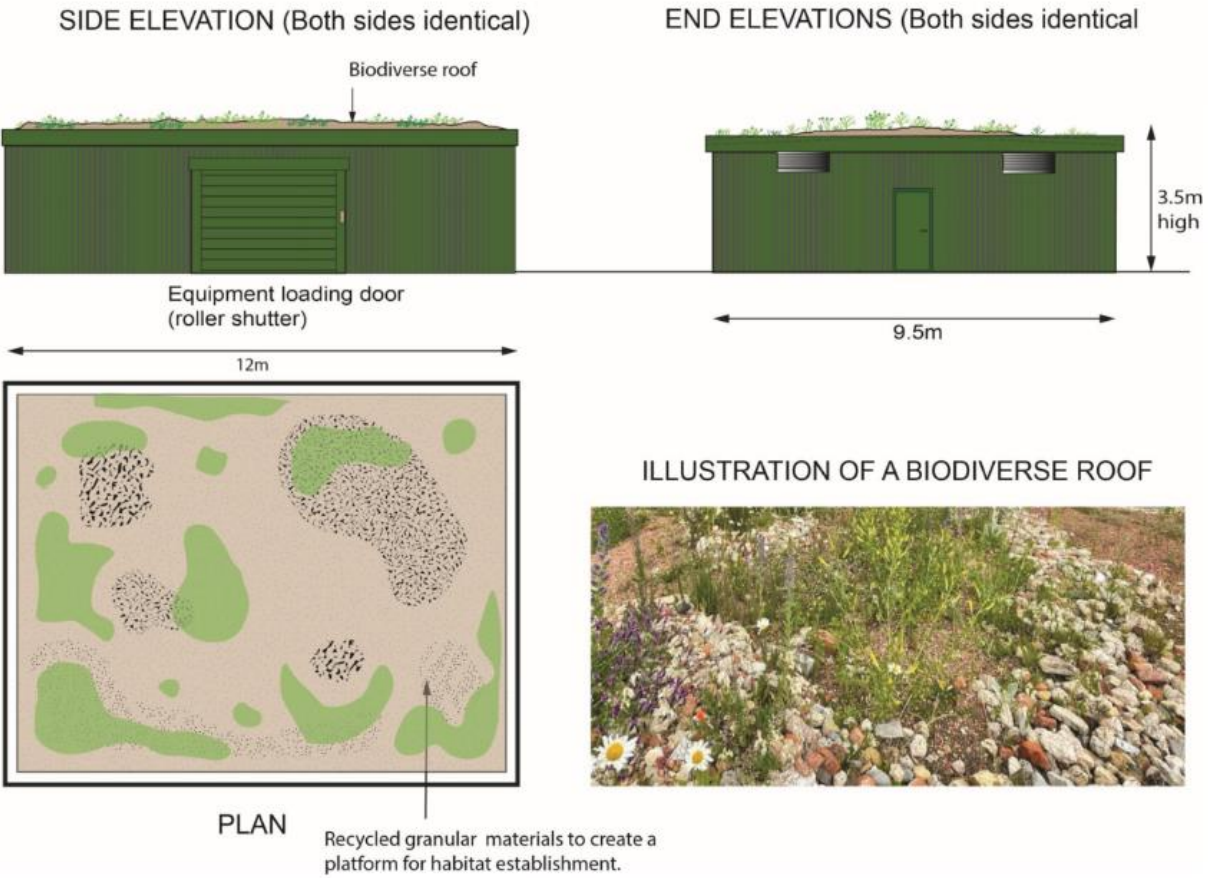
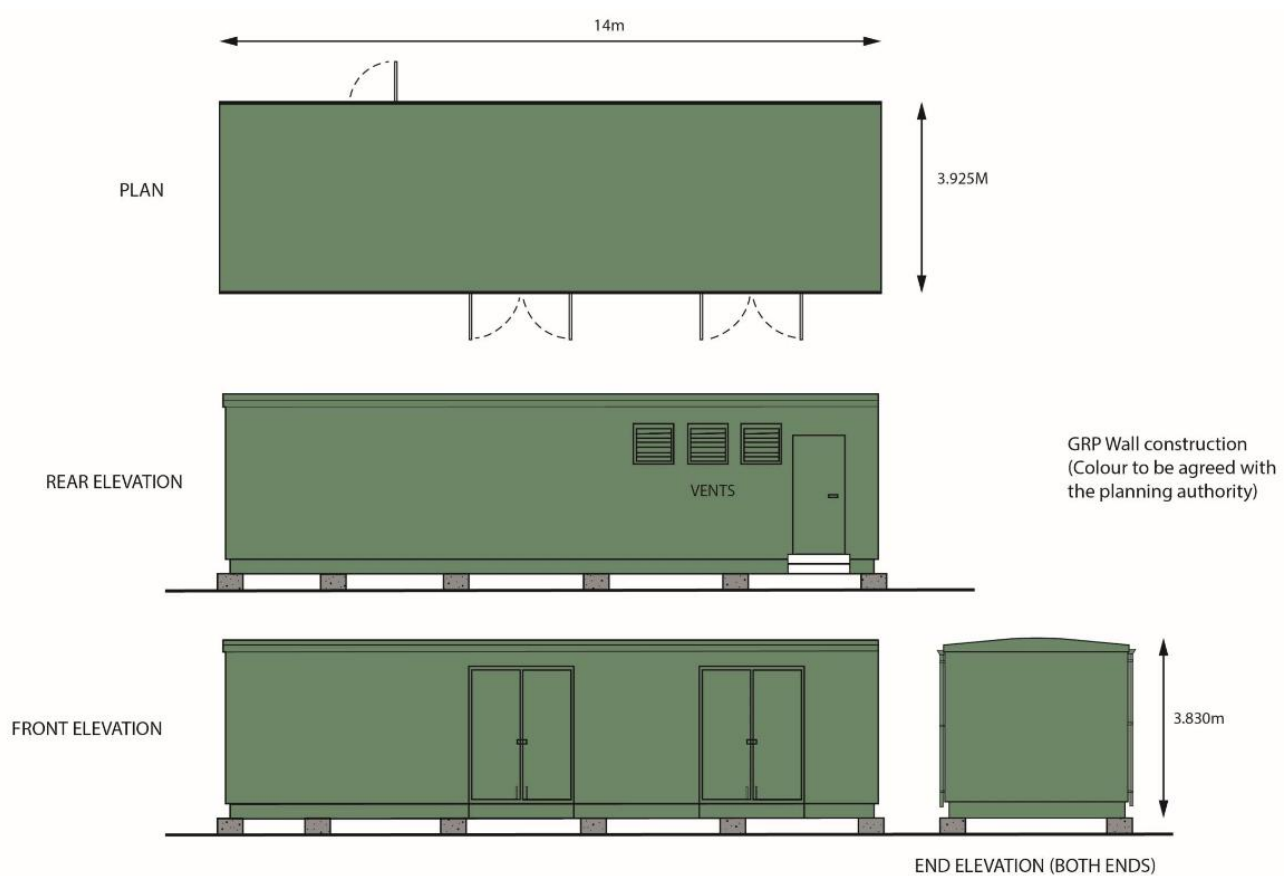


Figure 2.4 Control Room Building



Appearance

- 1.3.8 The containers proposed have been selected to reduce impact in terms of scale and visibility. The colour of the containers are proposed to be a dark green colour to better blend into surroundings.

Access and Parking

- 1.3.9 The Proposed Development, when operational, will be operated automatically, with limited need for personnel on site. Development traffic will likely comprise occasional maintenance vehicle access for security checks and routine maintenance, primarily by car and van as and when required, from Hogshaw Road.
- 1.3.10 Operational visits are unlikely to involve more than three to four visits per week. A small number of parking spaces are available for occasions on-site for when personnel attend the site.

Operation and Maintenance

- 1.3.11 Due to the nature of the ancillary services provided by the Proposed Development, unlike a traditional power station, the facility needs to respond very rapidly to calls of frequency voltage and reactive power support and peaks in energy demand. It is therefore not possible to forecast any standard hours of operation or operational staff numbers. However, even when in operation, there is minimal on-site activity required during the plant lifecycle. The facility will be unmanned and be remotely controlled / monitored, and operatives will only visit the site on an ad-hoc basis.

1.4 Construction Phase

Programme

- 1.4.1 Construction of the Proposed Development is anticipated to be undertaken over an 18 month construction programme, with approximately 8 to 10 months for civil works and 8 months for commissioning.

Construction Works Overview

- 1.4.2 The construction activities will comprise the following phases:
- Enabling works;
 - Ground civil works;
 - Main civil works;
 - Electrical connection works; and
 - Commissioning
- 1.4.3 The location of where staff will travel in from is unknown at this stage as it will depend on the appointed contractor
- 1.4.4 Construction worker shifts will be scheduled so that workers are not traveling during the network peak hours of 08:00-09:00 and 17:00-18:00.
- 1.4.5 Typical construction plant and equipment to be used will include excavators, drilling rigs, graders and haulage vehicles, mobile and tower cranes, heavy and light goods vehicles.
- 1.4.6 A temporary construction compound will be created to allow for the set down of Heavy Goods Vehicles (HGV) and materials relating to the construction of the site.
- 1.4.7 The cabins and containers are manufactured off site, delivered by HGVs in modules and are rapidly craned into position onto pile foundations, resulting in an efficient build period.
- 1.4.8 The areas within the BESS facility will be fenced off during construction, with no impacts on the usage of nearby PRow during both construction or once operational.
- 1.4.9 The CTMP also restricts the movement of construction related vehicles larger than a car or van to 09:30 to 16:00 Monday to Friday (outside of school term) and 09:30 to 15:00 (during school term). These timings avoid the traditional highway peak hours and help minimise off-site traffic impact. They also avoid the start and end of the school day to minimise the impact on travelling staff and students. Vehicle movements associated with the construction workforce are likely to be concentrated at either end of the 07:00 to 18:00 working hours.
- 1.4.10 Site security will be in place between 17:00 and 07:30 every day.
- 1.4.11 Construction laydown areas would be located within the site boundary.
- 1.4.12 Further information regarding construction phase logistics can be found within the Construction Traffic Management Plan (CTMP) provided within ES Volume 8.

Construction Access

- 1.4.13 All construction traffic will route from the strategic road network before routing on more local routes to access the site. The access from the strategic road network will be from the north and the A421.
- 1.4.14 Tracks 5.5m wide will be provided within the site to enable vehicle access to the various areas of the BESS installation. These will be of a sufficient standard for the construction

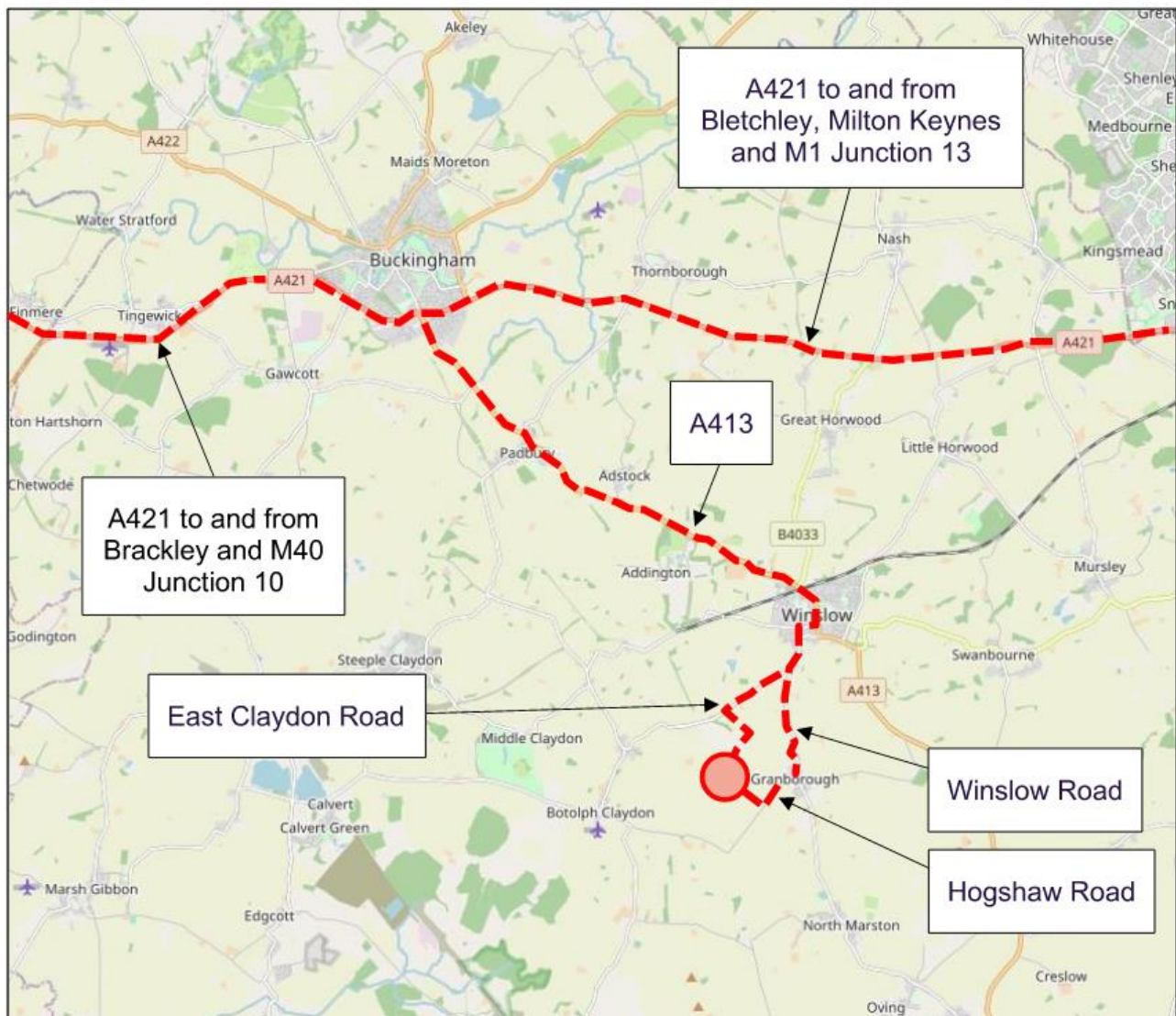
activities and will be retained post construction to allow occasional access for maintenance purposes during the operational stage.

- 1.4.15 Provision of temporary advanced warning signage at junctions and other constraints along the defined access routes to advise drivers to expect additional HGV turning movements between the relevant dates.
- 1.4.16 Height Restriction Barriers (Goal Posts) will be installed where there is a potential for accidental contact with overhead infrastructure. Similarly restricted access areas will be identified and barriered.
- 1.4.17 A temporary reduction in the speed limit from 60mph to 40mph on East Claydon Road between Granborough Road and the construction access.
- 1.4.18 The Proposed Development will be accessed via a Site Security Checkpoint located at the entrance to the construction site. Visitors will need to undertake a Site-Specific Induction, Assessment and Approval, in its absence visitors will always be escorted by a site member.
- 1.4.19 Undertaking a road condition survey at the start and end of the construction period (and monitor between) such that any damage to the local roads associated with the construction traffic can be appropriately repaired.
- 1.4.20 Further information regarding construction access can be found within the Construction Traffic Management Plan (CTMP) provided within ES Volume 8.

Construction Traffic

- 1.4.21 The construction period will include the use of HGVs to bring the equipment onto the site and this will be strictly managed to ensure that vehicle movement is controlled and kept to a minimum. On a day-to-day basis, the largest vehicle that will be used to deliver equipment to the site will be a 16.5m articulated vehicle.
- 1.4.22 The maximum number of daily two-way construction vehicle movements associated with the Application Site is anticipated to be approximately 104 comprising approximately 56 cars / vans and 48 HGVs.
- 1.4.23 The proposed construction traffic route is between the A421 Buckingham Bypass and the site via the A413 London Road, local roads through Winslow, Granborough Road to East Claydon Road and beyond to the main construction access to the site. A second route for the AIL movements and to act as a reserve construction route should the main construction access be blocked for whatever reason will continue via Granborough Road and Winslow Road to Granborough village, and Hogshaw Road to the proposed operational site access. The route of the proposed construction access is shown on Figure 2.5 below and discussed in more detail within ES Volume 8.

Figure 2.5: Construction Transport Route



Parking

- 1.4.24 During construction, a contractors compound will be provided within the site with this intended to accommodate contractor parking, material storage and the majority of turning movements associated with large delivery vehicles.

Construction Drainage

During construction, the building contractor will be responsible for the management and disposal of rainwater runoff generated from the site in its temporary condition. The contractor should develop a formal site management plan to address any pollution management measures and controls necessary.

Construction Waste

- 1.4.25 Waste generated during the construction of the Proposed Development will be re-used and recycled where possible. The overall objective will be to reduce the amount of waste generated during construction works and to sustainably manage any waste that is generated using waste management facilities in closest proximity to the site where possible.

- 1.4.26 Measures will be implemented to reduce the quantity of materials used during the construction of the Proposed Development, including avoiding the stockpiling of construction materials; preventing the overordering of construction materials by carrying out upfront cost analysis works; and storing the construction materials in an appropriate location that will minimise damage to materials.
- 1.4.27 Appropriate waste handling, storage and disposal measures, will be set out within the Construction Environmental Management Plan (CEMP) to be secured by Buckinghamshire Council via a planning condition. This includes measures such as careful handling of material and waste such as lowering rather than dropping items, storing waste materials in appropriate containers to be collected by a waste carrier to a registered waste transfer station and re-using materials where possible.

Landscaping

- 1.4.28 Extensive landscaping and habitat creation is proposed as part of the Proposed Development, as shown in Appendix 2.1 and described in detail within ES Volume 5.

Ecology and Biodiversity

- 1.4.29 A number of ecological enhancements, as set out within ES Volume 6, have been embedded within the design of the Proposed Development, including:
- Proposed native broadleaved woodland planting
 - New native scrub planting
 - Habitat piles
 - Wildflower grassland
 - Enhanced wet meadow
 - Solitary bee habitat
 - Standing piles of deadwood
 - Wildlife ponds
 - Hedgerow planting
 - Proposed Orchard
- 1.4.30 All of which contribute to a significant gain in biodiversity as part of the development, this being an impressive 27.23 increase in biodiversity habitat units (47.32%), and a 17.97 increase in hedgerow units (44.98%).
- 1.4.31 More information regarding ecological enhancements can be found within the Volume 3 of the ES.

Water Resources and Flooding

- 1.4.32 permeable gravel overlying a permeable geotextile membrane of an appropriate standard for construction compounds, haul road and construction accesses and drainage features to maintain land drainage flow).
- 1.4.33 The site consists of the inclusion of approximately 3.5 hectares of impermeable ground cover. In order to offset any potential increase in flood risk there has been the proposed

implementation of an Attenuation Pond – the construction of this drainage feature will be implemented to ensure that the risk of flooding is not increased.

- 1.4.34 Further detail on these measures is included within ES Volume 4.

Crime

- 1.4.35 The facility will be enclosed by 2.5m high security fencing to offer site security and ensure that the equipment is protected from vandalism. Closed Circuit Television (CCTV) units will include infrared capability for use at nighttime. As the facility is unmanned, only limited operational lighting is required.

Waste

- 1.4.36 BESS facilities do not generate significant volumes of waste material during construction or operational phase. The materials anticipated to be required during the operational phase are expected to be limited to maintenance only.
- 1.4.37 The site will be controlled by a Site Waste Management Plan (SWMP), to be secured by condition, which will be submitted to Buckinghamshire Council prior construction phase. A SWMP will assist with the management of any construction waste.
- 1.4.38 An agreement is in place between the Applicant and the lithium-ion battery provider to ensure that at the end of the life of the batteries, as part of any future decommissioning works, the batteries will be recycled in line with appropriate industry standards by the manufacturer.

Decommissioning Phase

- 1.4.39 The Proposed Development is intended to function for a maximum of 40 years. Following this 40-year lifespan, the development will be dismantled and the land will be returned to its original state for agricultural purposes. It is expected that a similar number of vehicle movements as per the construction phase would be required to clear the site, with vehicles following the same construction routing.
- 1.4.40 Once the Proposed Development is no longer in use, the lithium-ion batteries and other infrastructure contained within their containers will be extracted. An outstanding portion of the materials can currently be recycled. As the site will mainly consist of grassland, with minimal foundations, hard surfacing, and heavy infrastructure, restoring the land will be relatively easier to restore compared to a more intrusive developments that require more extensive foundations.