

Design & Access Statement

Lerwick Greener Grid Park

BESS Grid Stabilisation Facility

February 2023

Statkraft UK LTD

1. Introduction

- 1.1 This Design and Access Statement (DAS) has been produced to accompany the planning application for the Proposed Development of a Battery Energy Storage System (BESS) Standby Solution Backup Unit to support, including fast response and inertia provision to the Grid Supply Point (GSP) substation at Gremista, Lerwick, Shetland.
- 1.2 The DAS describes the design principles which have influenced site selection and layout and explains in more detail the main elements of the Proposed Development.

2. Project Background

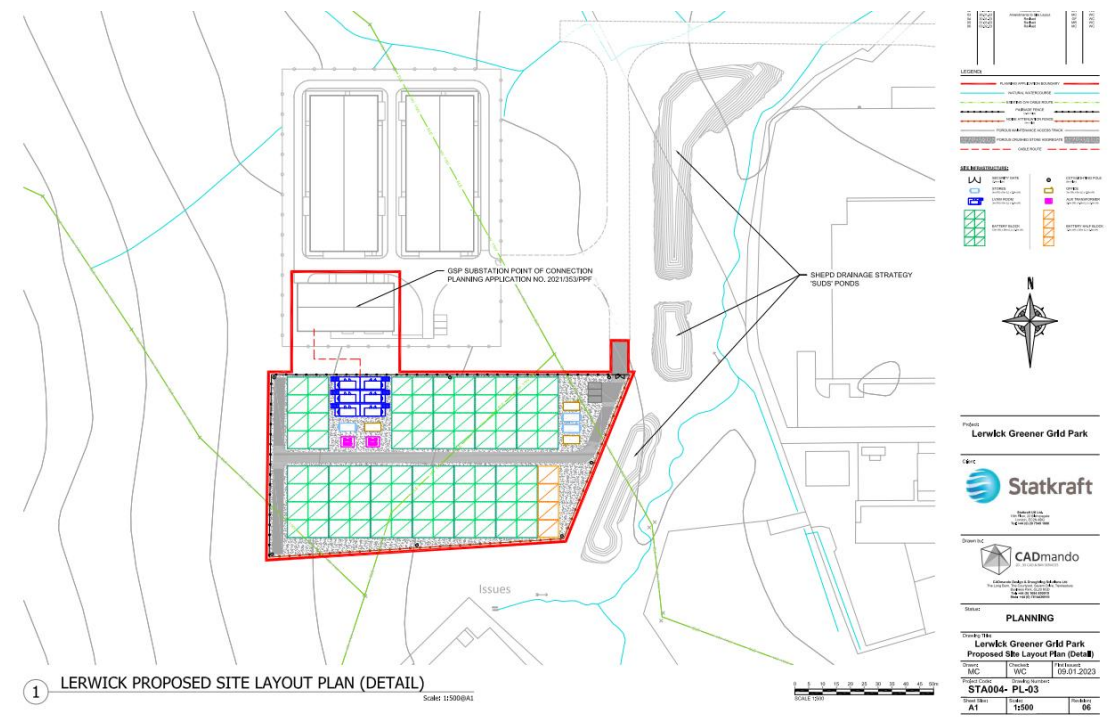
- 2.1 The Proposed Development is to provide a BESS grid standby unit to support the wider whole system proposal for Shetland to construct a 600 MW HVDC link between Shetland and the mainland GB grid. As part of this link, a 132/33 kV GSP (Ref: 2021/353/PPF) is being installed at Gremista to connect the existing island 33 kV distribution network to the new 132 kV Transmission network and the HVDC link back to the mainland. The Proposed BESS will provide essential stabilisation and standby capacity to the network and is a core part of the whole system project.
- 2.2 Prior to the delivery of the new grid supply to the Islands, power supply is met by conventional diesel generators at Lerwick Power Station, exported thermal generation at Sullom Voe Terminal and small wind generations connected to the existing distribution network. As such the benefits of the new system, including the proposed BESS are clear economically, socially and environmentally.

3. The Proposed Development

- 3.1 The Proposed Development is proposed to be installed on industrial land within Black Hill Industrial Estate, allocated LK006 within Lerwick Harbour Authority ownership. The proposed site location for the BESS is immediately south of the GSP which is currently under construction. The Proposed Development will sit on a platform to be constructed immediately south of the GSP. The platform was granted planning permission by the Council in January 2023 (Ref. 2022/260/PPF). The platform consent addresses all earthworks and associated environmental matters and will deliver a level development platform upon which the Proposed Development will sit.
- 3.2 The platform will be delivered in advance of site start for the Proposed Development. It is intended that the Proposed Development will utilise the approved temporary construction compounds and laydown areas from the GSP and platform works and agreements are in place to that effect, between operators.
- 3.3 The Proposed Development is shown in **Figure 3.1** and comprises:
- > Installation of 11 no. of BESS Blocks (i.e. each measuring 15m wide by 26m in length by 3.8m high); and 1 no. of BESS Half Block (i.e. measuring 7.5m wide by 26m in length by 3.8m high). Total export capacity of up to 50MW.

- > 3 no. of 'Stores' container-type structure measuring 3m wide by 6m in length by 2.6m high. These are used for the general storage of spare parts for Operational and Maintenance (O&M) purposes. Material of the structure will be powder-coated steel and to be coloured olive green (RAL 6003).
- > 3 no. of 'Office' container-type structure measuring 3m wide by 6m in length by 2.6m high. These are used as site offices. Material of the structure will be powder-coated steel and to be coloured olive green (RAL 6003).
- > 6 no. of LV/MV Rooms, each measuring 3m wide by 6m in length by 5.5m high. These structures are clustered close together and raised 2m above ground via poles and with a platform served by stairs for access. It is raised 2m above ground to enable ease of cabling storage and access beneath the structures without needing to create a basement level. These structures are mainly to store essential electrical equipment. Material of the structure will be powder-coated steel and to be coloured olive green (RAL 6003).
- > Palisade perimeter fencing at maximum 3.4m high and to be located along the northern and western boundary. Associated double-door gates at 3.4m high located to the north-eastern corner of the site. Material of the structure will be powder-coated steel and to be coloured olive green (RAL 6003).
- > Noise attenuation perimeter fencing at maximum 4m high and to be located along the eastern and southern boundary. Material of the structure will be of either composite material or powder-coated metal and to be coloured olive green (RAL 6003).
- > Underground cable connection between the BESS and the GSP; and
- > Associated hard landscaping and ancillary works.

Figure 3.1: Proposed Site Layout



3.4

Individual BESS units are proposed as 26m by 15m and approximately 3.8m in height.

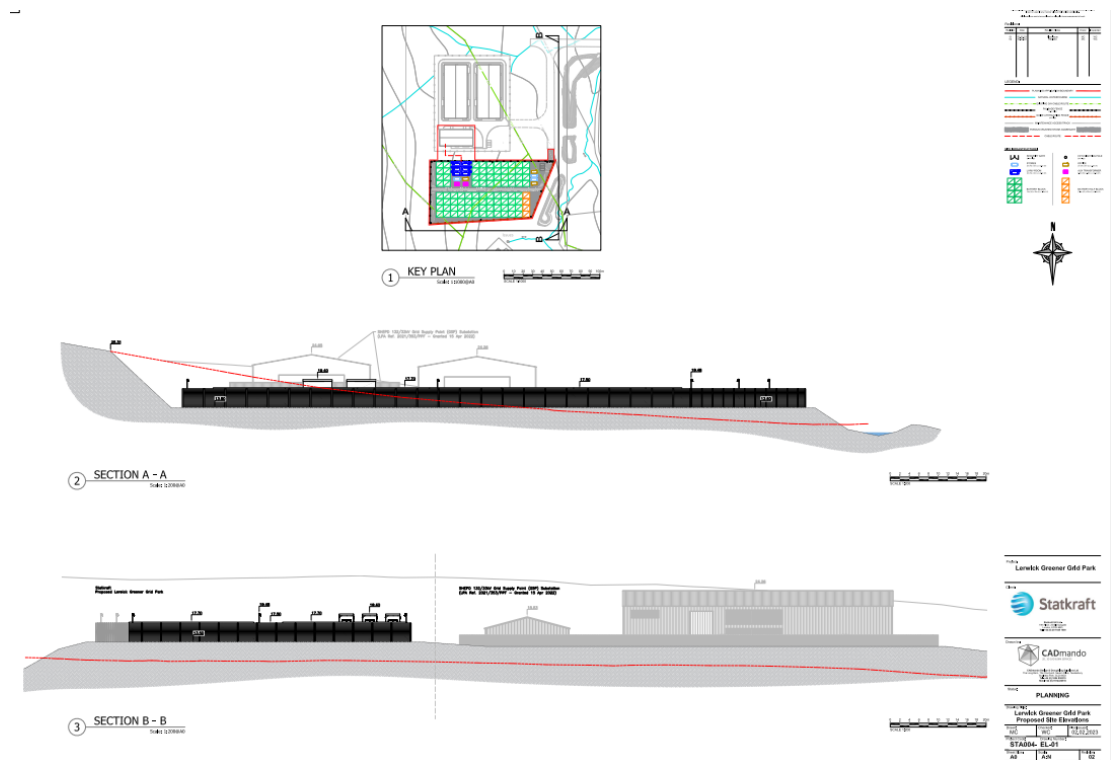
Figure 3.2: Example BESS Layout

EXAMPLE OF POTENTIAL LAYOUT



- 3.5 The design of the BESS has been developed in order to maximise the number of BESS units on site, to enable future capacity expansion and enhanced stabilisation for the Islands in due course. The current application seeks consent within the layout proposed for operation up to 50 MW. Should additional capacity be sought in the future this will be progressed via a Section 36 Application (The Electricity Act) to Scottish Ministers.
- 3.6 The site boundary treatment comprises noise attenuating fencing of 4m high on the south and eastern boundaries. Palisade fencing of 3.4m high to the west and north are to be provided. No noise attenuating fencing is required to the west and north boundaries as set out in the submitted Noise Impact Assessment.

Figure 3.3: Proposed Boundary Treatment Elevations



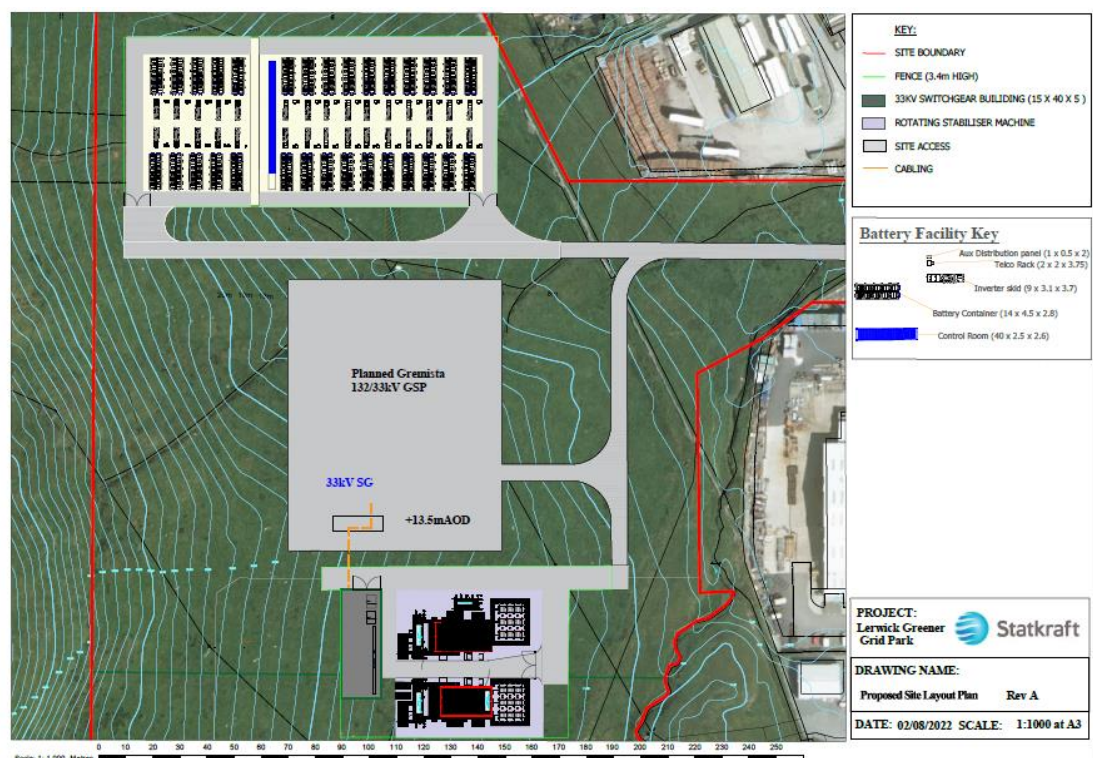
4. Design Principles

- 4.1 Given the technical nature of the Proposed Development, the design principles of the proposals have been largely technical driven. Legislation and standards drive BESS design and functionality and safety are key considerations. Notwithstanding this, certain design principles were adopted to ensure the proposal is sensitively sited and designed within the landscape and wider area, which includes other business and industrial users, residential properties and agriculture.

Siting

- 4.2 The site selection process was driven by the need to link directly to the GSP. A dual site Grid Stabilisation project was initially progressed and formed the basis of initial consultations and the PAN. This proposal included synchronous condensers housed in Energy Management Buildings alongside the battery energy storage modules and inverters, and therefore required a larger footprint. As a result land to the north of the GSP was also included within the PAN scope.

Figure 4.1: Original Layout – Dual site



- 4.3 Following further assessment of the project requirement and functionality, the need for the synchronous condensers and associated buildings and equipment was scoped out. As a result, the BESS modules and supporting infrastructure were redesigned such that the required capacity – now and future – can be accommodated on the single southern site, on the platform being delivered by the contractors constructing the GSP.

Design

- 4.4 A number of design solutions were explored for the southern platform site to optimise layout, capacity and appearance, alongwith addressing potential noise concerns and ensuring optimal aesthetic finishing to site boundaries. Drainage on site has been addressed via the platform application and utilises a combined SUDs system with the GSP.
- 4.5 The following figures show the simplified design evolution process.

Figure 4.2: Indicative Layout November 2022

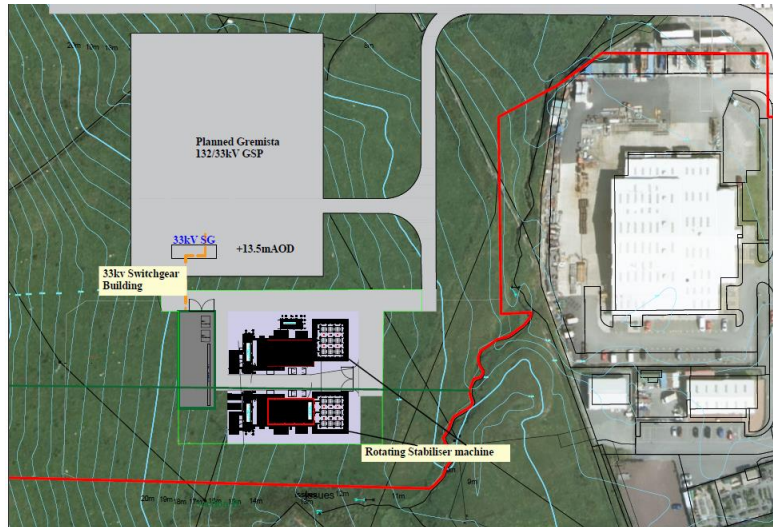
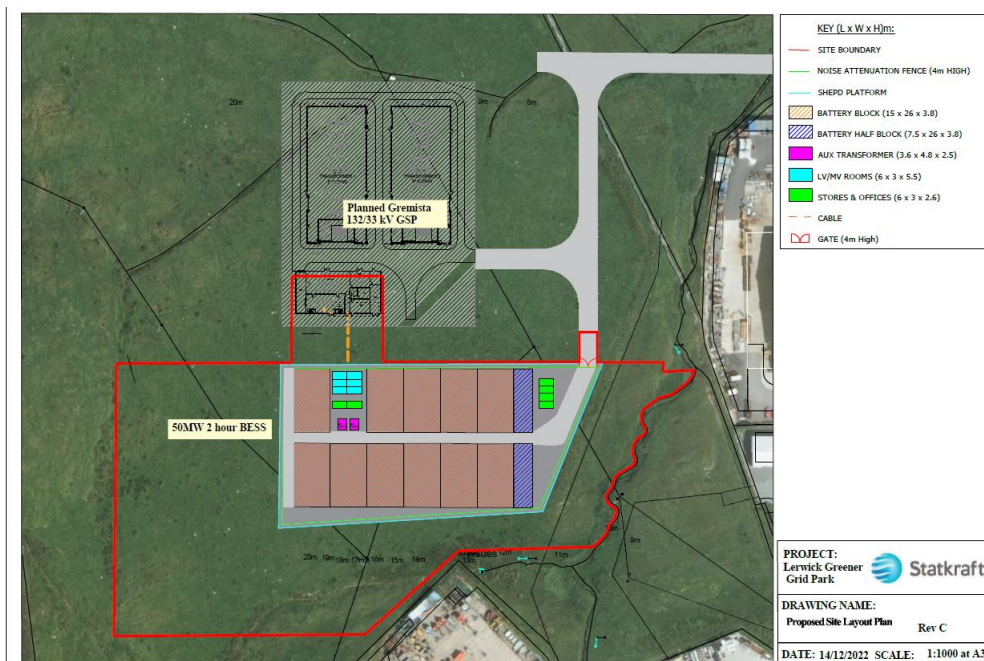


Figure 4.3: Indicative Layout December 2022 (removal of condensers)



4.6

The following principles have been applied during the design of the proposed development:

- > Ensuring the design is safe, efficient, and meets the requirements of whole life operation and maintenance alongside buildability;
- > Minimising the amount of land take and impact on the use of surrounding land;
- > Consideration of any future extensions of existing users of the adjacent industrial area through leaving appropriate space / buffers;
- > Consideration of potential future development of the site, and the area in which the Proposed Development is located;
- > Integration of the Proposed Development into the surrounding landscape and urban context to mitigate potential visual or amenity impacts to an acceptable level;

- > Utilisation of existing access, temporary construction compounds / land; and
 - > Designing a development which is easily and cost effectively maintained in the long term.
- 4.7 In order to minimise visual intrusion, to ensure appropriate fit to the existing landscape, and to reflect the design of the adjoining GSP, the buildings are proposed to coloured olive green (RAL 6003).
- 4.8 The platform is consented and will be completed prior to any works commencing on the Proposed Development. The level of the site is therefore already set and has been designed to optimise the re-use of excavated materials.
- 4.9 The proposed design reflects the industrial and functional nature of the proposed use, whilst seeking to minimise potential visual intrusion from key receptors or viewpoints. The use of colour and layout ensures that the site area and height are optimised relative to the landscape and topography and that the infrastructure does not become a key focal point within the wider locale.
- 4.10 A series of viewpoints have been analysed to assess the visual impact of the Proposed Development via the creation of 3D visual perspectives and views. The following figures provide existing and proposed perspectives and clearly show the minimal visual intrusion arising due to good siting and design practices.

Figure 4.4: Perspective Viewpoints Site Plan



Figure 4.5: VP1 – Existing and Proposed

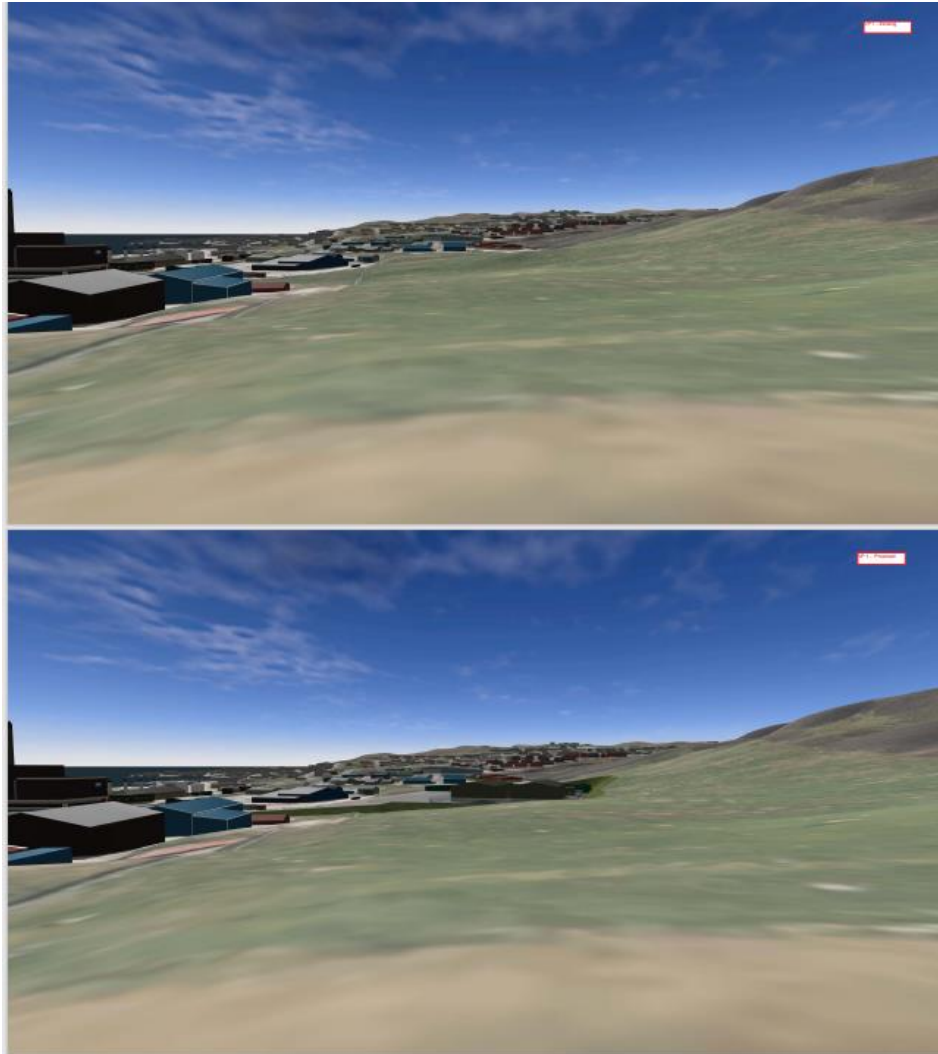


Figure 4.6: 3D Visual 1

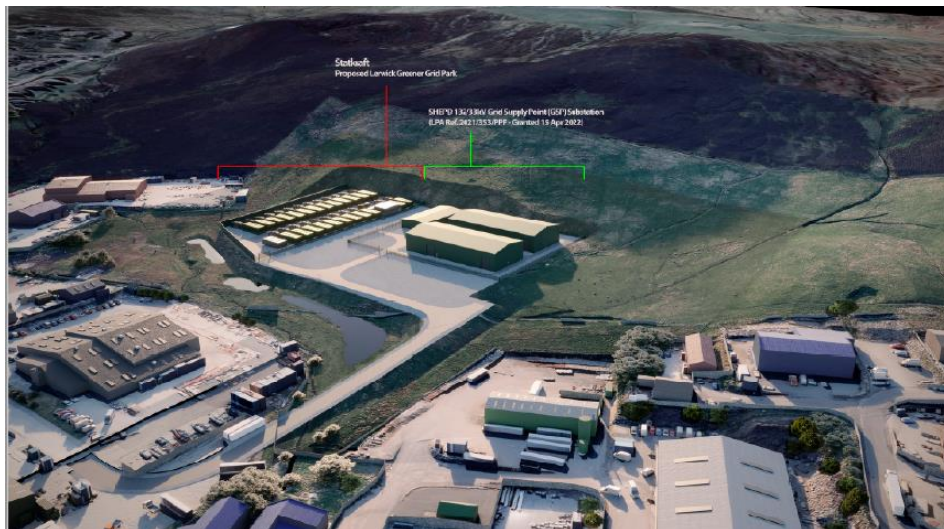


Figure 4.7: VP2 Existing and Proposed

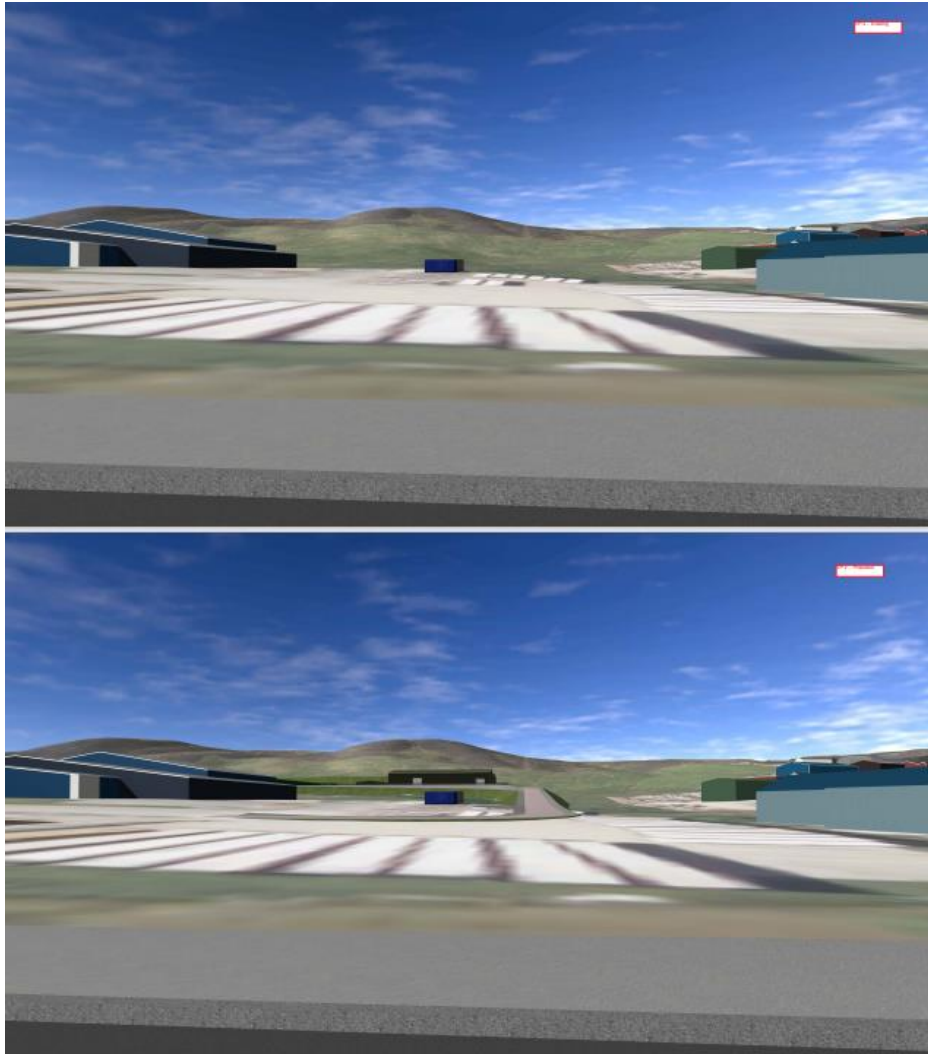


Figure 4.8: 3D Visual 2



Figure 4.9: VP3 Existing and Proposed

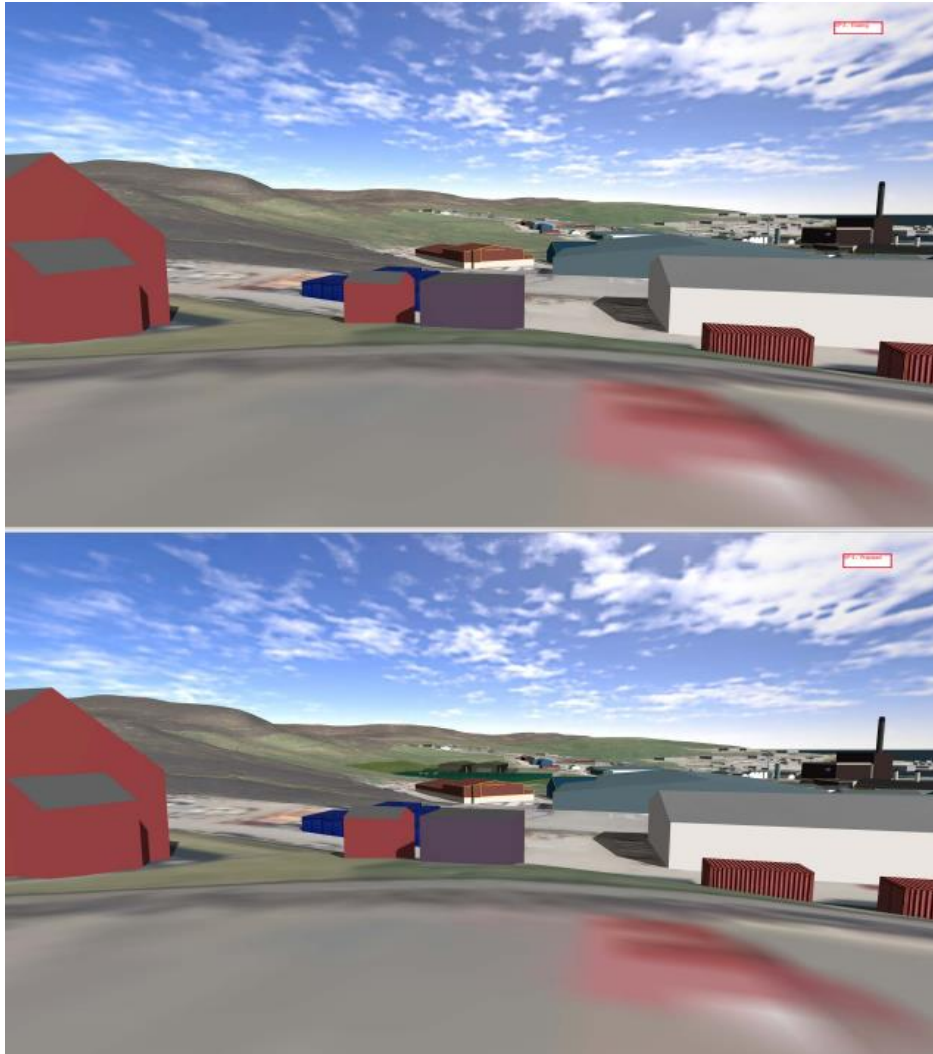


Figure 4.9: 3D Visual 3



Access

- 4.11 The use of existing temporary construction compounds located within the associated GSP development site (and used for the platform construction) minimise further disruption to adjacent sites and contains works within already consented areas. The consideration of traffic impact to deliver infrastructure to site is provided within the Construction Traffic Management Plan (CTMP) that accompanies the application. The use of existing and established construction traffic routes and access points to the wider site helps to minimise adverse effects associated directly with the Proposed Development and the design ensures that the existing internal access roads are utilised and maintained with no further significant effects.
- 4.12 Due to the nature of the Proposed Development, access to members of the public is restricted. Access to the site is limited to authorised persons only, and maintenance requirements are extremely low. During operation, the Greener Grid Park will be unmanned and controlled/monitored remotely. As such there will be no adverse impact on the local transport network and related accessibility once the site is operational.
- 4.13 Three car parking spaces are proposed for the purpose of maintenance visits by staff.

5. Conclusion

- 5.1 The Proposed Development has been carefully considered from a design and layout perspective and would be fit for purpose technically. Consideration of the landscape context and potential effects on surrounding users and other sensitive receptors have driven the design approach alongside the desire to deliver a development which 'fits' with the adjoining associated GSP site.
- 5.2 The Applicant is committed to good quality design and operation in accordance with the principles set out within this document and consider the design solution to be consistent with adopted Development Plan policy, industry best practice and important safety regulations.

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