Lime Down
Solar Park

Design Principles and Parameters

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1 Introduction

1.1 Overview of the Scheme

1.1.1 Lime Down Solar Park (the Scheme) comprises the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating station together with associated development. The Scheme is a Nationally Significant Infrastructure Project (NSIP) pursuant to sub-sections 14(1)(a) and 15(1) and (2) of the Planning Act 2008 (PA 2008), being an onshore generating station in England with a capacity exceeding 50 megawatts (MW). As such, the decision whether to grant development consent will be made by the Secretary of State for Energy Security and Net Zero.

1.1.2 The Scheme comprises a solar PV electricity generating station of over 50 megawatts (MW) and associated development comprising Battery Energy Storage System (BESS) Area, substations, grid connection infrastructure and other infrastructure integral to the construction, operation and maintenance, and decommissioning phases.

1.1.3 The solar PV electricity generating station and BESS Area are located within five land parcels referred to as Lime Down A, B, C, D and E (Solar PV Sites). Grid connection infrastructure is located within the Cable Route Corridor, which is where the Grid Connection Cables would be located to connect the Solar PV Sites to the National Grid at the Existing National Grid Melksham Substation, as well as connecting each of the Solar PV Sites.

1.1.4 The Scheme also includes Highways Improvements Areas where sections of the highway network will contain localised improvements to support the movement of construction vehicles along construction vehicle routes.

1.1.5 A full description of the Scheme is included in **Environmental Statement (ES) Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]** and shown in **ES Volume 2, Figure 3-1: Indicative Site Layout Plan [EN010168/APP/6.2].** The Scheme location and the Order Limits are shown in **ES Volume 2, Figure 1-2: The Order Limits [EN010168/APP/6.2]**.

1.1.6 The Scheme is being developed by Lime Down Solar Park Limited, which is a subsidiary of Island Green Power's UK group holding company, Island Green Power Limited.

1.2 Purpose of this Document

1.2.1 This document sets out the design principles and parameters by which the Scheme has been designed and the Environmental Impact Assessment has been undertaken. The design principles have informed the parameters

set out in this document. The parameters contained within this document are secured by Requirement 5 in the **Draft DCO [EN010168/APP/3.1]** and apply to the detailed design of the Scheme, post consent.

1.2.2 This document should be read alongside the **Design Approach Document [EN010168/APP/7.3]** and **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**.

1.2.3 The spatial extent of the Scheme (the 'Order Limits') is shown on the **Works Plans [EN010168/APP/2.3]** submitted as part of the DCO application and secured by Article 3 of the **Draft DCO [EN010168/APP/3.1]**. The Environmental Impact Assessment (EIA) presented in the **ES [EN010168/APP/6.1/6.2/6.3]** has adopted the 'Rochdale Envelope' approach in accordance the Planning Inspectorate's Advice Note Nine: Rochdale Envelope which provides guidance on the degree of flexibility that may be considered appropriate. Accordingly, as set out in **ES Volume 1, Chapter 6: Environmental Impact Assessment Methodology [EN010168/APP/6.1]**, the maximum (and where relevant, minimum) parameters for the elements where flexibility needs to be retained have been assessed under the Rochdale Envelope approach. The approach recognises that the worst-case parameter for one technical assessment may differ from another, ensuring that worst case overall impacts are predicted.

1.2.4 It is necessary that there will be some flexibility built into the design of the Scheme when submitting the DCO Application so that the detailed design of the Scheme can be informed by technical considerations, post-consent work, and take advantage of innovation in technology. This is of particular importance in order to maintain flexibility due to the rapid pace of change in solar PV and battery storage technology, whilst maintaining a robust and comprehensive assessment of potential effects.

1.2.5 When the detailed design for the Scheme is submitted for approval to the relevant local planning authorities, those details must accord with the relevant parameters set out in this document.

1.3 Key Design Terminology

1.3.1 A description of the key design terminology used for each Scheme component and set out in Tables 1 to 9 is as follows:

- Location – The location of the specific Scheme component or Works Number as it is assessed in the **ES [EN010168/APP/6.1/6.2/6.3]** and shown on the **Works Plans [EN010168/APP/2.3]**.
- Parameters – The parameters define the envelope within which the Scheme will be developed. This includes the maximum (and where

relevant, minimum) parameters for the elements where flexibility needs to be retained.

- Commitments – Specific elements of the detailed design of Scheme components including considerations such as appearance, materials, colour and alignment.

1.3.2 All heights defined in this document are Above Ground Level (AGL), unless otherwise specified.

1.4 Design Vision

1.4.1 The Applicant developed a design vision and design principles for the Scheme, which were adopted at the outset and have influenced design-based decisions throughout the pre-application process. The Design Vision seeks to *"efficiently deliver low-carbon, renewable energy and make a substantial contribution to the Government's solar deployment target (of 45-47GW by 2030[1]) and legal obligations to deliver net zero and achieve energy security whilst being sensitive to, and exploring opportunities to enhance, the surrounding communities and land uses in Wiltshire".* The **Design Approach Document [EN010168/APP/7.3]** provides further information on the Design Vision.

1.5 Design Principles

1.5.1 Island Green Power (IGP) has prepared a series of company-wide 'global' design principles ('global design principles'). These global design principles aim to ensure that all IGP projects deliver direct benefits to communities, enhance biodiversity, control any adverse effects on the local environment throughout the lifecycle of the project, and help tackle climate change by harnessing and storing renewable energy. The **Design Approach Document [EN010168/APP/7.3]** sets out IGP's global design principles.

1.5.2 In addition to the global design principles, Scheme specific design principles design principles were adopted to provide a framework for development of the design in the pre-application stage and were informed by national and local planning policy and guidance, the outcome of non-statutory and statutory consultation, the local context of the Scheme and environmental surveys and assessments. The design principles have informed the development of the parameters and commitments set out in this document.

1.5.3 The Scheme specific design principles are set out in Table 1-1.

[1] The solar deployment target as set out in the Government's Clean Power 2030 Action Plan.

Table 1-1 Scheme Specific Design Principles

No.	Scheme Specific Design Principle
1	The design of the Scheme will be 'Landscape Led' and give due weight to the intrinsic character and beauty of the surrounding countryside.
2	Adherence to the mitigation hierarchy to reduce impacts and control any adverse effects on the environment throughout the lifecycle of the Scheme from construction through to operation and maintenance and decommissioning.
3	The Scheme will deliver a minimum 10% net gain for biodiversity through strategic habitat creation and enhancement measures.
4	The Scheme design will retain a degree of flexibility to enable it to adapt over time, be functional and fit for purpose, and respond to innovative and new technologies as well as building resilience to climate change.
5	The Scheme will be carefully designed to minimise where practicable impacts on amenity from air quality, traffic and noise effects and safeguard the health and safety of local residents by securing suitable control measures during construction, operation and maintenance and decommissioning of the Scheme.
6	The Scheme will protect the water environment by adhering to good pollution control practice and be resilient from flooding both now and in the future and not increase the risk of flooding elsewhere.
7	The design of the Scheme will be sensitive to above and below ground heritage assets and their setting, by locating infrastructure at a suitable distance and through appropriate landscape screening.
8	The Scheme will be sensitive to existing land uses where practicable and maximise opportunities to strengthen green and blue infrastructure.
9	The Scheme will seek to minimise the effects of the development on Public Rights of Way by incorporating measures to maintain, and where practicable, explore opportunities to improve the local footpath network.

2 Design Parameters and Commitments

2.1.1 Set out within Section 2 are the design parameters and commitments for the Scheme, with individual tables provided for each works number. The tables below should be read in conjunction with the following:

- **Draft DCO [EN010168/APP/3.1]**;
- **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**;
- **ES Volume 1, Chapter 9: Ecology and Biodiversity [EN010168/APP/6.1]**;
- **Outline Landscape and Ecological Management Plan [EN010168/APP/7.18]**; and
- **Outline Battery Safety Management Plan [EN010168/APP/7.21]**.

2.1.2 The development of the design parameters and commitments has been informed by the design principles, set out in Table 1-1 of this document.

2.2 Work No.1 Design Parameters and Commitments

2.2.1 **Work No. 1** – a ground mounted solar photovoltaic generating station with a gross electrical output capacity of over 50 megawatts including –

a) solar modules fitted to mounting structures;

b) DC electrical cabling and combiner DC boxes;

c) 33 kV sub-distribution switch rooms, conversion units including inverters, transformers, switchgear, and monitoring and control systems; and

d) electrical and communications cabling connecting Work No. 1(c) to Work Nos. 3A and 3B.

Table 2-1 Work No.1 Design Parameters and Commitments

Scheme Component	Parameter or Commitment	Design Detail
Ground mounted solar photovoltaic generating station (Work No. 1)	Location	Work No. 1 must be located within the corresponding numbered area shown on the **Works Plans [EN010168/APP/2.3]**.
	Area	The maximum area of land occupied by the Solar PV infrastructure, and shown on the **Works Plans [EN010168/APP/2.3]**, is: • Lime Down A – 94.3 ha • Lime Down B – 70 ha • Lime Down C – 241 ha

Scheme Component	Parameter or Commitment	Design Detail
		• Lime Down D – 212.5 ha • Lime Down E – 131.3 ha
	Design Parameter	The following minimum offsets from the Scheme will be incorporated into Work No. 1, (with the exception of Work No. 1(d)): • Ditches – 8 m • Other ditches with signs of water vole, ponds where Great Crested Newt (GCN) are absent, 'outlying' or 'annexe' badger sett, or individual trees – 10 m • All woodland, hedgerows, lines of trees and designated sites in addition to some minor watercourses depending on their ecological value– 15 m • Main or subsidiary badger setts – 30 m • Ponds with confirmed evidence of GCN, or where the presence of GCN has been assumed – 50 m • Public Rights of Way – 15m each side from the centreline • Residential curtilages – 50m
Solar Modules and Mounting Structures (Work No. 1(a))	Design Parameter	Solar PV Panels will be secured via metal posts driven into ground to an approximate depth of 1.5 m to 4 m (dependent on ground conditions). In areas where archaeological protection is required, concrete feet or other non-ground penetrative techniques will be used.
	Solar PV Panel and Mounting Structure Commitment	The Solar PV Panels will be bifacial monocrystalline panels comprising two layers of toughened, low reflectivity glass. The Solar PV Panels will be either black or dark blue. The Solar PV Mounting Structures will comprise a metal frame holding the solar panels in rows.
Tracking Solar PV Tables (Option A) (Work No. 1(a))	Option A Parameter	Solar PV Panels will have a minimum clearance of 0.4 m AGL at maximum tilt (+/- 60 degrees).

Scheme Component	Parameter or Commitment	Design Detail
		Solar PV Panels will have a maximum height of 4.5 m AGL at maximum tilt (+/- 60 degrees). The maximum height when Solar PV Panels are horizontal will be 2.5 m AGL (0 degrees). Separation distance between rows will be a minimum of 2.5m at the closest point when horizontal.
	Option A Commitment	Solar PV Panels will be aligned in north-south rows. The panels will rotate to the east and west and tilt up to a maximum inclination of 60° from horizontal.
Fixed Solar PV Tables (Option B) (Work No. 1(a))	Option B Parameter	Solar PV Panels will have a minimum clearance of 0.4 m no less than 0.6 m above the 0.1% Annual Exceedance Probability (AEP) flood level. The maximum height of fixed Solar PV Panels will be 3.5 m AGL. Solar PV Panels will be positioned in rows with a minimum separation distance of 2.5 m at the closest point.
	Option B Commitment	Solar PV Panels will be aligned in east-west rows of Solar PV Tables. The Solar PV Panels will be secured to fixed south facing Solar PV Tables with a fixed tilt angle of between +10 degrees to +35 degrees from horizontal.
33 kV Sub-Distribution Switch Rooms, Conversion Units including inverters, transformers, switchgear, and monitoring and control systems (Work No. 1 (c))	33 kV Sub-Distribution Switch Room / Integrated Conversion Units Parameter	The maximum dimensions for 33 kV Sub-distribution Switch Rooms and Conversion Units will be 15 m in length by 5 m in width, with a maximum height of 3.5 m. A concrete foundation slab, strips or footings up to 16 m by 6 m and a levelling layer of aggregate with a maximum depth of 0.8 m, or a concrete plinth set onto the topsoil where non-ground penetrative works are required. Conversion Units / 33 kV Sub-distribution Switch Rooms will be elevated by mounting structures so that they are no less than 0.6 m above the 0.1% Annual Exceedance Probability (AEP) flood level or where this is not possible as high as practicable

Scheme Component	Parameter or Commitment	Design Detail
	Conversion Unit / 33 kV Sub-distribution Switch Room Commitment	The Conversion Units / 33 kV Sub-distribution Switch Rooms will be housed in a metal container will be externally finished to be in keeping with the prevailing surrounding environment. The exact colour will be subject to manufacturer specifications and will be carefully selected in subdued, non-reflective tones to sit as discreetly as possible within the landscape.
	Standalone Conversion Unit Parameters	A concrete foundation slab, strips or footings up to a metre greater than the maximum dimension of the relevant piece of equipment and a levelling layer of aggregate with a maximum depth of 1m, or a concrete plinth set onto the topsoil where non-ground penetrative works are required. Standalone inverters, transformers and switchgear will be elevated by mounting structures so that they are no less than 0.6 m above the 0.1% Annual Exceedance Probability (AEP) flood level or where this is not possible as high as practicable.
	Standalone Conversion Unit Commitment	The equipment will be externally finished to be in keeping with the prevailing surrounding environment. The exact colour will be subject to manufacturer specifications and will be carefully selected in subdued, non-reflective tones to sit as discreetly as possible within the landscape
Inverters	Inverters Parameter	The maximum dimensions of the inverters will be 9 m in length by 6.5 m in width with a maximum height of 3.5 m.
Transformers	Transformers Parameter	The maximum dimensions of the transformers will be 6.5 m in length by 5.5 m in width with a maximum height of 3.5 m.
Switchgear	Switchgear Parameter	The maximum dimensions of the inverters will be 6.5 m in length by 2.5 m in width with a maximum height of 3.5 m.
Electrical and communications cabling connecting	Electrical and Communications Cabling Parameter	The maximum dimensions of the cable trench are up to 1.6 m in width and up to 1.2 m depth.

Scheme Component	Parameter or Commitment	Design Detail
Work No.1 (c) to Work No.s 3A and 3B (work 1(d))	Cabling Commitment	Solar PV Sites will be connected with 33 kV, 1.8 kV, 400 V and lower voltage control cables to suit the detailed design.
Temporary horizontal directional drilling pits. if trenchless technique used for Work No. 1.	Directional drilling pits parameter	Maximum dimensions will be 25m by 25 m.

2.3 Work No.2 Design Parameters and Commitments

2.3.1 **Work No. 2** – an energy storage facility comprising –

a) battery energy storage system units each containing fire protection systems and components;

b) a structure protecting the battery energy storage cells comprised in Work No. 2(a) and ancillary equipment, being either one container or multiple containers joined to each other, mounted or reinforced concrete foundation slab or concrete piling;

c) interconnection units including heating, ventilation and air conditioning, liquid cooling systems and temperature management either housed within the containers comprised in Work No. 2(b), attached to the side or top of each of the containers, or located separate from but near to each of the containers;

d) conversion units including inverters, transformers, switchgear and energy management system;

e) monitoring and control systems housed within a container with Work No. 2(c) or located separately in its own container or control room;

f) electrical cabling including electric cables connecting Work No. 2 to Work No. 3A;

g) bunded impermeable surface or other form of containment system to manage surface water drainage;

h) water storage facility for the purposes of firefighting water supply; and

i) bunded impermeable surface or other form of containment system and associated infrastructure to contain used firewater.

Table 2-2 Work No.2 Design Parameters and Commitments

Scheme Component	Parameter or Commitment	Design Detail
BESS Area (Work No. 2)	Location	Work No. 2 must be located within the corresponding numbered area shown on the **Works Plans [EN010168/APP/2.3]**.
	Area	The maximum area for the BESS compound will be 5.5 ha.
	Design Parameter	The BESS foundation will have a maximum depth of 4m. The maximum height of the palisade fencing around the BESS compound will be 3 m.
	Design Commitment	Refer to the **Outline Battery Safety Management Plan [EN010168/APP/7.21]** for design commitments.
A structure protecting the battery energy storage cells comprised in Work No. 2(a) and ancillary equipment, being either one container or multiple containers joined to each other, mounted or reinforced concrete foundation slab or concrete piling (Work No. 2(b));	BESS Container Parameter	Each BESS battery container will have a maximum height of 4.5 m (comprising 3.5 m BESS Containers and 1 m silencers). The Scheme is anticipated to include approximately 270 BESS Containers. The precise number of BESS Containers will depend upon the level of power capacity of energy storage that the Scheme will require.
	BESS Container Commitment	BESS Containers will have installed fire safety infrastructure in accordance with National Fire Chiefs Council (NFCC) and National Fire Protection Association (NFPA) 855 requirements. The BESS Containers will be mounted on concrete foundations, although other types of foundations such as compacted gravel, metal pile, or ground screw pile may be used depending on ground conditions. Externally finished to be in keeping with the prevailing surrounding environment. The exact colour will be subject to manufacturer specifications and agreed with the relevant planning authority prior to construction but will be carefully selected in subdued, non-reflective tones to sit as discreetly as possible within the landscape

Scheme Component	Parameter or Commitment	Design Detail
		Refer to the **Outline Battery Safety Management Plan [EN010168/APP/7.21]**.
Conversion Units (Work No. 2(d))	Integrated Conversion Unit Parameter	The maximum dimensions of the conversion units are 15 m in length, 5 m in width with a maximum height of 3.5 m.
	Conversion Unit Commitments	The Conversion Units will be connected to inverters, transformers and switchgear which may be integrated into a single container or as standalone components.
	Standalone Conversion Unit Parameters	A concrete foundation slab, strips or footings up to a metre greater than the maximum dimension of the relevant piece of equipment and a levelling layer of aggregate with a maximum depth of 1m, or a concrete plinth set onto the topsoil where non-ground penetrative works are required. Standalone inverters, transformers and switchgear will be elevated by mounting structures so that they are no less than 0.6 m above the 0.1% Annual Exceedance Probability (AEP) flood level or where this is not possible as high as practicable
Inverters	Inverters Parameter	The maximum dimensions of the inverters will be 9 m in length by 6.5 m in width with a maximum height of 3.5 m.
Transformers	Transformers Parameter	The maximum dimensions of the transformers will be 6.5 m in length by 5.5 m in width with a maximum height of 3.5 m.
Switchgear	Switchgear Parameter	The maximum dimensions of the inverters will be 6.5 m in length by 2.5 m in width with a maximum height of 3.5 m.
Monitoring and control systems housed within a container with Work No. 2(c) or located separately in its own container or control room (Work No. 2(e))	Monitoring and control system parameter	The monitoring and control system would be no larger than the BESS container.
Electrical cabling including electric cables connection Work No. 2	Electrical cabling Parameter	The indicative on-site cable trenching dimensions will be up to 1.6 m in width and up to 1.2 m in depth.

Scheme Component	Parameter or Commitment	Design Detail
to Work No. 3A (Work No. 2(f))	Electrical cabling Commitment	Cabling will either be above ground in cable trays or laid underground in a trench. On site components such as Solar PV Panels, Conversion Units and BESS Containers will be connected with 33 kV, 1.8 kV, 400 V and lower voltage control cables to suit the detailed design.
Temporary horizontal directional drilling pits if trenchless technique used for Work No 2	Directional drilling pits parameter	Maximum dimensions of 25 m by 25m.
Fire suppression system (Work No. 2(a))	Fire suppression system commitment	Refer to the **Outline Battery Safety Management Plan [EN010168/APP/7.21]** for further details.
Water storage facility for the purposes of firefighting water supply (Work No. 2(h)).	Water storage facility commitment	Water storage will either be in sectional steel panel tanks, or cylindrical steel tanks, above or below ground. Where above ground, tanks will be supported on structural concrete slab foundations which will be to a maximum depth of 1.0 m. Refer to the **Outline Battery Safety Management Plan [EN010168/APP/7.21]** for further details.
Used firewater containment structures and infrastructure (Work No. 2(i))	Firewater containment structures commitment	Refer to the **Outline Battery Safety Management Plan [EN010168/APP/7.21]** for further details.
Parking	Location	Parking bays will be provided at the BESS Area.

2.4 Work No.3 Design Parameters and Commitments

2.4.1 **Work No. 3** – works in connection with onsite substations including –

a) **Work No. 3A** – a substation with works comprising –

i. an up to 400 kV substation, with associated transformer bays, feeder bays, transformers, switchgear buildings and ancillary equipment including reactive power units;

ii. control building or container relay rooms with associated offices, storage and welfare facilities;

iii. monitoring and control systems for Work Nos. 1 and 3A;

iv. maintenance compound;

v. electrical cabling; and

vi. earthworks, including soil stripping and site levelling.

b) **Work No. 3B** – a substation with works comprising –

i. an up to 132 kV substation, with associated transformer bays, feeder bays, transformers, switchgear buildings and ancillary equipment including reactive power units;

ii. control building or container relay rooms with associated offices, storage and welfare facilities;

iii. monitoring and control systems for Work Nos. 1 and 3B;

iv. maintenance compound;

v. electrical cabling; and

vi. earthworks, including soil stripping and site levelling.

Table 2-3 Work No.3 Design Parameters and Commitments

Scheme Component	Parameter or Commitment	Design Detail
Onsite substations (Work No. 3)	Location	Work No. 3A and 3B must be located within the corresponding numbered areas on the **Works Plans [EN010168/APP/2.3]**.
	Design Parameter	The maximum height of the palisade fencing around the compound is 3 m. The maximum height of deer type wire mesh and wooden post fencing outside of the palisade fencing is 2.5 m.
400 kV Substation (Work No. 3A)		
A substation up to 400 kV, with associated transformer bays, feeder bays, transformers, switchgear buildings and ancillary (Work No. 3A(i))	Location	Located in Lime Down D.
	400 kV substation Parameter	The maximum compound area for the 400 kV substation will be 4.25 ha. The maximum height of the 400 kV substation will be 13 m to the top of the busbars.

Scheme Component	Parameter or Commitment	Design Detail
	400 kV substation Commitment	The electrical infrastructure will not be contained within a building.
Control building or container relay rooms (Work No. 3A(ii))	400kV Relay and Control Rooms Parameter	The maximum dimensions of the 400 kV Relay and Control Rooms will be 12.7 m by 34 m with a maximum height of 4.8 m.
	132 kV Relay and Control Rooms Parameter	The maximum dimensions of the 132 kV Relay and Control Rooms will be 13 m by 13 m with a maximum height of 4.8 m.
	33 kV Switch Room Parameter	The maximum dimensions of the 33 kV Switch Room will be 4.5 m by 18 m with a maximum height of 4.2 m.
	Control building or contained parameter	Foundations will either be concrete base or plinth to a maximum depth of 12.0 m.
	Design commitment	The control buildings will be finished in neutral colours to be in keeping with the prevailing surrounding environment.
Electrical cabling (Work No. 3A(vi))	Electrical cabling Parameter	The open cut cable trench will be up to approximately 1 to 7 m wide. This includes separation distances where multiple cables are running in parallel. To accommodate this, the maximum depth of the trench will be 2 m. Where fields will be returned to agricultural use during operation of the Scheme there will be a minimum cable trench depth of 1.2 m.
	Electrical cabling Commitment	Cables will be rated at 33 kV to 132 kV dependant on their use within the Scheme.
132 kV Substation (Work No. 3B)		
An up to 132 kV substation associated transformer bays, feeder bays, transformers, switchgear buildings and ancillary equipment including reactive power units (Work No. 3B(i))	Location	Located within Lime Down A, Lime Down C, Lime Down D and Lime Down E.
	132 kV substation Parameter	The maximum area for the 132 kV substation is 0.9 ha. The maximum height to the top of the busbars will be 7 m.
	132 kV substation Commitment	The electrical infrastructure will not be contained within a building.
Control building or container relay rooms with associated offices, storage and welfare	Control building or container relay rooms Parameter	The maximum dimensions of the 132 kV Relay and Control Rooms is 5 m by 10 m with a maximum height of 4.2 m.

Scheme Component	Parameter or Commitment	Design Detail
facilities (Work No. 3B(ii))		The maximum dimensions of the 33 kV Switch Room is 4.5 m by 18 m with a maximum height of 4.2 m.
	Control building or container parameter	Foundations will either be concrete base or plinth to a maximum depth of 12 m.
	Design commitment	The control buildings will be finished in neutral colours to be in keeping with the prevailing surrounding environment.
Electrical cabling (Work No. 3B(v))	Electrical cabling Parameter	The open cut cable trench will be 1 to 7 m wide. This includes separation distances where multiple cables are running in parallel. To accommodate this, the maximum depth of the trench will be 2 m. Where fields will be returned to agricultural use during operation of the Scheme there will be a minimum cable trench depth of 1.2 m.
	Electrical cabling Commitment	Cables will be rated at 33 kV to 132 kV dependant on their use within the Scheme.

2.5 Work No.4 Design Parameters and Commitments

2.5.1 **Work No. 4** – works to the National Grid substation to facilitate connection of the authorised development to the National Grid including population of the substation bay –

a) a 400 kV 3-phase 4000 A circuit breaker for control and protection of the outgoing circuit serving the authorised development;

b) a 3-phase set of current transformers for protection of the new outgoing 400 kV feeder circuit and the overlap with the National Grid system;

c) a 3-phase high accuracy metering current and voltage transformer assembly for commercial metering of the connection;

d) a 3-phase 400 kV line disconnector/earth switch for isolation and earthing of the outgoing 400 kV feeder circuit;

e) a 3-phase set of 400 kV high voltage cable sealing ends and cables connecting the National Grid substation with Work No. 5;

f) a 3-phase power quality ready capacitor voltage transformer; and

g) provision of a stand-alone building to house duplicate feeder protection systems, commercial metering systems, protection and

control equipment and user remote control and data acquisition apparatus.

2.5.2 As Work No. 4 consists entirely of works to be undertaken by the National Grid within their substation, no specific design parameters can be determined at this stage.

2.6 Work No.5 Design Parameters and Commitments

2.6.1 **Work No. 5** – works in connection with electrical cabling including –

a) **Work No. 5A** – works to lay electrical cables up to 400 kV including –

i. high voltage electrical cables connection Work Nos. 3A and 4;

ii. laying down of access tracks, ramps, footpaths, roads, including the laying and construction of drainage infrastructure, signage and information boards;

iii. joint bays, link boxes, cable ducts, cable protection, joint protection, manholes, marker posts, underground cable marker, tiles and tape, communication chambers, fibre optic cables and lighting and other works associated with cable laying;

iv. tunnelling, boring and drilling works; and

v. temporary construction and decommissioning laydown areas comprising –

- areas of hardstanding, compacted ground or track matting;
- car parking;
- area to store materials and equipment;
- site and welfare offices and workshops;
- security infrastructure, including cameras, perimeter fencing and lighting;
- safety infrastructure to manage traffic when crossing roads or other obstacles;
- site drainage and waste management infrastructure (including sewerage); and
- electricity, water, waste water and telecommunications connections.

b) **Work No. 5B** – works to lay electrical cables up to 132 kV including –

i. high voltage electrical cables up to 132 kV connecting Work Nos. 3A and 3B and Work No. 1(c) to Work Nos. 3A and 3B;

ii. laying down of access tracks, ramps, footpaths, roads, including the laying and construction of drainage infrastructure, signage and information boards;

iii. joint bays, link boxes, cable ducts, cable protection, joint protection, manholes, marker posts, underground cable marker, tiles and tape, communication chambers, fibre optic cables and lighting and other works associated with cable laying;

iv. tunnelling, boring and drilling works; and

v. temporary construction and decommissioning laydown areas comprising –

- areas of hardstanding, compacted ground or track matting;
- car parking;
- area to store materials and equipment;
- site and welfare offices and workshops;
- security infrastructure, including cameras, perimeter fencing and lighting;
- safety infrastructure to manage traffic when crossing roads or other obstacles;
- site drainage and waste management infrastructure (including sewerage); and
- electricity, water, waste water and telecommunications connections.

Table 2-4 Work No.5 Design Parameters and Commitments

Scheme Component	Parameter or Commitment	Design Detail
Works in connection with electrical cabling (Work No. 5)	Location	Work No. 5 must be located within the corresponding numbered area on the **Works Plans [EN010168/APP/2.3]**.
	400 kV cables Parameter	Open cut cable trenches will be approximately 1.7 m wide.

Scheme Component	Parameter or Commitment	Design Detail
Works to lay electrical cables up to 400 kV (Work No. 5A)		Grid connection cables will be installed in a trench up to 2 m deep. Where fields will be returned to agricultural use during operation of the Scheme there will be a minimum cable trench depth of 1.2 m.
	400 kV cables Commitment	The construction working area for installation of the Grid Connection cables will typically be a 25 m wide corridor. This will be widened in places to accommodate required operations (such as the crossing of watercourses, roads, utilities etc.) and narrowed in others, for example to minimise removal of hedgerows. The working width of the Cable Route Corridor will be demarcated by temporary (heras style) fencing where required. The 400 kV Substation and the Existing National Grid Melksham Substation will be connected via a single 400 kV circuit comprised of three buried cables, fibre optic cable, and low voltage control cable.
Works to lay electrical cables up to 132 kV (Work No. 5B)	132 kV cables Parameter	The open cut cable trench will be up to approximately 1 to 7 m wide. This includes separation distances where multiple cables are running in parallel. The depth of the trench will be up to 2m. Where fields will be returned to agricultural use during operation of the Scheme there will be a minimum cable trench depth of 1.2 m.
	132 kV cables Commitment	The working area for installation of the Interconnecting Cables is anticipated to be a 25 m wide corridor. The working area may be widened in places (such as the crossing of watercourses, roads and utilities) and narrowed in others, for example to minimise removal of hedgerows. The working width for the Interconnecting Cables will be demarcated by temporary (heras style) fencing where required.

Scheme Component	Parameter or Commitment	Design Detail
Joint Bays (Work No. 5A(iii) and (Work No. 5B(iii)	Joint Bay Parameter	Joint Bays will be a minimum of 250 m to a maximum of 2 km apart with the dimensions determined by how many sets of cables will be in the jointing bay. A joint bay for six cables / joints will be approximately 20 m long and 6 m wide and approximately 3 m deep.
	Joint Bay Commitment	The base of the joint bay must be level and a concrete pad installed (approximately 150 mm thick with light reinforcement) as a working surface.
Fibre Communication Chambers (Work No. 5A(iii) and (Work No. 5B(iii)	Fibre Communication Chamber Parameter	Fibre communications chambers will typically be installed every 500 to 750 m, but could be every 2000 m apart if required. The excavation for fibre communication chambers will be approximately 1.5 m length, 1 m wide and 1.5 m deep and stand 10 mm-20 mm above ground.
	Fibre Communication Chamber Commitment	These are generally located at field boundaries.
Tunnelling, boring and drilling works (Work No. 5A(iv) and Work No. 5B(iv))	Tunnelling, boring and drilling works Parameter	Horizontal Directional Drilling will include a 25 m x 25 m launch / receptor pit working area.
Parking	Location	Parking bays will be provided at the substations.

2.7 Work No.6 Design Parameters and Commitments

2.7.1 **Work No.6** – works including –

a) fencing, gates, boundary treatment and other means of enclosure;

b) works for the provision of security and monitoring measures including CCTV columns, lighting columns and lighting, cameras, weather stations, communication infrastructure, and perimeter fencing;

c) landscaping and biodiversity mitigation and enhancement measures including planting;

d) improvement, maintenance and use of existing private tracks;

e) laying down of internal access tracks, ramps, bridges, means of access and footpaths;

f) temporary footpath diversions, signage and information boards;

g) earthworks;

h) sustainable drainage system ponds, runoff outfalls, general drainage and irrigation infrastructure and improvements or extensions to existing drainage and irrigation systems;

i) acoustic barriers;

j) electricity and telecommunication connections; and

k) secondary temporary construction and decommissioning laydown areas.

Table 2-5 Work No.6 Design Parameters and Commitments

Scheme Component	Parameter or Commitment	Design Detail
(Work No. 6)	Location	Work No.6 must be located within the corresponding numbered area shown on the **Works Plans [EN010168/APP/2.3]**.
Solar PV Sites Perimeter Fencing	Perimeter Fencing Parameter	The maximum height of Solar PV perimeter fencing will be 2.5 m.
	Perimeter Fencing Commitment	Fencing will be directly driven into the ground using a standard post driver. There will be no excavation of foundations. 'Concreting in' of posts will be used in limited circumstances such as corner or tension posts. Fencing will comprise deer wire mesh and wooden post security fence with wooden posts.
Cable Route Corridor Fencing	Cable Route Corridor Fencing Commitment	The working width of the Cable Route Corridor will be demarcated by temporary (heras style) fencing where required.
Interconnection Cable Fencing	Interconnection Cable Fencing Commitment	The working width for the Interconnecting Cables will be demarcated by temporary (heras style) fencing where required.
Acoustic barriers	Acoustic Barrier Parameter	BESS area includes a 2 m bund with a 3 m barrier.
CCTV and monitoring equipment	CCTV and monitoring equipment parameter	The maximum height of CCTV poles will be 3 m
	CCTV and monitoring equipment commitment	The poles will be galvanized steel and will be externally finished to be in keeping with the prevailing surrounding environment. The exact colour will be

Scheme Component	Parameter or Commitment	Design Detail
		subject to manufacturer specifications and will be carefully selected in subdued, non-reflective tones to sit as discreetly as possible within the landscape.
Internal access tracks	BESS Area and Substation Accesses parameter	Maximum 6m wide road (8 m at passing places).
	BESS Area and Substation Accesses commitment	Constructed of asphalt over a levelling layer of substrate. The access points from the public highway and bends in the track would be wider to accommodate abnormal indivisible load turning space.
	Solar PV Access Tracks	Maximum width of 3.5 m (6m at passing places)
	Solar PV Access Tracks commitment	Constructed of hardcore or gravel over a levelling layer of substrate. The access points from the public highway will comprise reinforced concrete.

2.8 Work No.7 Design Parameters and Commitments

2.8.1 **Work No. 7** – temporary construction and decommissioning laydown areas comprising –

a) areas of hardstanding;

b) car parking;

c) site and welfare offices and workshops;

d) security infrastructure, including cameras, perimeter fencing and lighting;

e) area to store materials and equipment;

f) site drainage and waste management infrastructure (including sewerage); and

g) electricity, water, waste water and telecommunication connections.

Table 2-6 Work No.7 Design Parameters and Commitments

Scheme Component	Parameter or Commitment	Design Detail
Temporary construction and decommissioning	Location	Work No. 7 must be located within the corresponding numbered area shown on the **Works Plans [EN010168/APP/2.3].**

Scheme Component	Parameter or Commitment	Design Detail
compounds (Work No. 7)		
Temporary laydown areas	Location	Located across the Solar PV Sites and Cable Route Corridor
	Temporary laydown area	The areas will be secured using heras fencing and security cameras.
Temporary portacabins	Temporary portacabins Parameter	The maximum dimensions for individual units will be 12 m by 3 m with a maximum height of 3 m.
Perimeter fencing	Perimeter fencing Parameter	The maximum height of perimeter fencing will be 3 m.
Site security equipment	Site security equipment scale	The maximum height of CCTV poles will be 3 m.
	Site security design commitment	The poles will be galvanized steel and will be externally finished to be in keeping with the prevailing surrounding environment. The exact colour will be subject to manufacturer specifications and will be carefully selected in subdued, non-reflective tones to sit as discreetly as possible within the landscape.

2.9 Work No.8 Design Parameters and Commitments

2.9.1 **Work No. 8** – works to facilitate access to Work Nos. 1 to 7 and 9 to 10 including –

a) **Work No. 8A** – works to facilitate temporary construction, maintenance and decommissioning access to Work Nos. 1 to 7 and 9 to 10 including –

i. creation of accesses from the public highway;

ii. creation of visibility splays;

iii. works to alter the layout of any street or highway temporarily; and

iv. offsite works adjacent to highways land including those to structures, boundary features, drainage features on private land, in connection with the movement of abnormal indivisible loads.

b) **Work No. 8B** – works to facilitate permanent access to Work Nos. 1 to 6 and 9 to 10 including –

i. creation of accesses from the public highway;

ii. creation of visibility splays;

iii. works to alter the layout of any street or highway permanently; and

iv. offsite works adjacent to highways land including those to structures, boundary features, drainage features on private land, in connection with the movement of abnormal indivisible loads.

Table 2-7 Work No.8 Design Parameters and Commitments

Scheme Component	Parameter or Commitment	Design Detail
Works to facilitate access to Work Nos. 1 to 8 and 9 to 10 (Work No. 8).	Location	Work No. 8A and Work No. 8B must be located within the corresponding numbered area shown on the **Works Plans [EN010168/APP/2.3].**
Solar PV Access Tracks	Solar PV Access Track Parameter	The maximum width of Solar PV access tracks will be 3.5 m. The maximum width of Solar PV access tracks at passing places will be 6 m.
	Solar PV Access Track Commitment	Constructed of hardcore or gravel over a levelling layer of substrate. The access points from the public highway and bends in the track will be wider to accommodate abnormal indivisible load turning space.
BESS and Substation Accesses	BESS and Substation Access Parameter	The maximum width of BESS and Substation accesses will be 6 m. The maximum width of BESS and Substation accesses will be 8 m at passing places.
	BESS and Substation Access Commitment	BESS and Substation accesses will be constructed of asphalt over a levelling layer of substrate. The access points from the public highway will comprise reinforced concrete.

2.10 Work No.9 Design Parameters and Commitments

2.10.1 **Work No. 9** – works to create and maintain habitat management areas, including –

a) fencing, gates, boundary treatment and other means of enclosure;

b) signs, interpretation boards or any other information display board;

c) earth works including bunds, embankments, ponds, trenching and swales;

d) landscaping and biodiversity mitigation and enhancement measures including planting;

e) means of access; and

f) drainage.

Table 2-8 Work No.9 Design Parameters and Commitments

Scheme Component	Parameter or Commitment	Design Detail
Works to create and maintain habitat management areas (Work No. 9)	Location	Work No. 9 must be located within the corresponding numbered area shown on the **Works Plans [EN010168/APP/2.3].**
Fencing	Fencing Parameter	The maximum height of fencing will be 2.5 m.
	Fencing Commitment	Fencing will comprise deer wire mesh and wooden post security fence with wooden posts.
Internal Access Tracks	Internal Access Tracks Parameter	The maximum width of Solar PV access tracks will be 3.5 m. The maximum width of Solar PV access tracks at passing places will be 6 m.
	Internal Access Tracks Commitment	Constructed of hardcore or gravel over a levelling layer of substrate.

2.11 Work No.10 Design Parameters and Commitments

2.11.1 **Work No. 10** – creation of permissive paths including –

a) **Work No. 10A** – creation of permissive paths for the exclusive use of pedestrian users comprising –

i. ramps, bridges and other means of access;

ii. fencing, gates, boundary treatment and other means of enclosure;

iii. signs, interpretation boards or any other information display board; and

iv. landscaping and biodiversity mitigation and enhancement measures including planting.

b) **Work No. 10B** – creation of permissive paths for the exclusive use of pedestrians, cycle and equestrian users comprising –

i. ramps, bridges and other means of access;

ii. fencing, gates, boundary treatment and other means of enclosure;

iii. signs, interpretation boards or any other information display board; and

iv. landscaping and biodiversity mitigation and enhancement measures including planting.

Table 2-9 Work No.10 Design Parameters and Commitments

Scheme Component	Parameter or Commitment	Design Detail
Creation of permissive paths (Work No. 10)	Location	Work No. 10 must be located within the corresponding areas shown on the **Works Plans [EN010168/APP/2.3].**
Permissive Footpath	Location	Permissive paths will be located in Lime Down A, B C, D and E.
	Permissive Footpath Parameter	Parameters for permissive paths: • Minimum usable width for pedestrian access: 2 m • Minimum usable width for cyclist and equestrian access: 3 m • Maximum usable width of all users: 5 m
	Permissive Footpath Commitment	Permissive paths will have a 15 m buffer to any infrastructure associated with the Scheme (with the exception of fencing). Permissive paths will be made from compacted earth planted over with grass.
Gates and enclosure	Gates and enclosure parameter	Where permissive paths are gated, or where bollards or posts are used to prevent vehicular access there will be a minimum clear width between (gate) posts or bollards of 1.2 m for pedestrian access. A minimum clear width between (gate)posts or bollards of 1.45 m for cyclist and equestrian access. A maximum clear width of 1.6 m to prevent vehicular access where bollards or posts used.

Scheme Component	Parameter or Commitment	Design Detail
Fencing	Fencing Parameter	The maximum height of fencing will be 2.5 m.
	Fencing Commitment	Fencing will comprise deer wire mesh and wooden post security fence with wooden posts.