East Pye Solar

Design Principles, Parameters and Commitments

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1 Introduction

1.1.1 This document has been prepared on behalf of East Pye Solar Limited ('the Applicant') to set out the design parameters and commitments, which will be secured to inform the detailed design of East Pye Solar (hereafter referred to as the 'Scheme') in relation to the Development Consent Order (DCO) application (the 'DCO Application').

1.1.2 The Scheme comprises the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating station with a total capacity exceeding 100 megawatts (MW) and associated development including a Battery Energy Storage System (BESS), up to three 132 kV Project Substations and up to three 400kV Project Substations, Grid Connection Infrastructure and a new National Grid Substation.

1.1.3 The Scheme would be located within the Order Limits (shown on the **Location Plan [EN0110014/APP/2.1]** and **Works Plan [EN0110014/APP/2.3]** submitted as part of the DCO Application and secured by Article 3 of the **draft DCO [EN0110014/APP/3.1]**). The Order Limits contain all elements of the Scheme comprising the Solar PV Arrays, 132kV and 400kV Project Substations, the National Grid Substation, the BESS, Grid Connection Infrastructure, interconnecting cables within the Cable Route Corridor (CRC), Mitigation and Enhancement Areas and Highway Works. A description of the Order Limits is provided in the **Environmental Statement (ES) Volume 1, Chapter 3 - The Order Limits [EN0110014/APP/6.1.3]**.

1.1.4 The Scheme would allow for the generation and export of over 100MW Alternating Current (AC) of renewable energy, connecting into the National Electricity Transmission System (NETS) overhead line that passes through the Order Limits. As such, the Scheme is a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008.

2 Purpose of the Document

2.1.1 The Environmental Impact Assessment (EIA) for the Scheme has been undertaken based on

2.1.2 the parameters and commitments set out within this document.

2.1.3 The design parameters and commitments set out in **Tables 4.1** to **4.11** would be secured by Requirement 5 in the **draft DCO [EN0110014/APP/3.1]**. These would prescribe the guiding design parameters and commitments of the detailed design of the Scheme post-consent. This document, therefore, forms a control document of the DCO Application.

2.1.4 A degree of flexibility is sought within the design of the Scheme as part of the DCO Application so that the detailed design of the Scheme can be informed by technical considerations, post-consent work and innovation in technology. When the detailed design for the Scheme is submitted for approval to the relevant local planning authorities pursuant to the detailed design approval DCO Requirement, those details must accord with the relevant parameters and commitments set out in this document.

3 Design Principles, Parameters and Commitments

3.1 Introduction

3.1.1 The design parameters and commitments in **Tables 4.1** to **4.11** have been set out in accordance with the description of the Works Numbers of Schedule 1 in the **draft DCO [EN0110014/APP/3.1]**. The spatial extents of each Work Number are set out in the accompanying **Works Plan [EN0110014/APP/2.3]**. Where required, other DCO Application documentation will be secured by Requirements in the draft DCO, such as the **Outline Construction Environmental Management Plan [EN0110014/APP/7.1]** and **Outline Landscape and Ecology Management Plan [EN0110014/APP/7.4]** that set out further details of the design and management measures that will be complied with as part of the construction, operation, maintenance and decommissioning of the Scheme.

3.1.2 The environmental mitigation measures of the construction, operation and maintenance, and decommissioning phases of the Scheme are provided in the **Commitment Register [EN0110014/APP/7.26]**. This signposts where those mitigation measures are to be secured, for example through the inherently limited scope of the Works Plan or through the provisions of the various management plans.

Project Level Design Principles

3.1.3 This document should be read alongside the **Design Approach Document [EN0110014/APP/7.17]** which describes the Scheme's vision and how the IGP and project-level design principles that have been incorporated into the design process to guide decision-making. The Design Approach Document provides an explanation of how design principles have informed the design process of the Scheme.

Design Parameters

3.1.4 Design parameters secure the size (maximum or minimum footprint, width and height above ground level) of different elements of the Scheme. These parameters are the basis of the EIA in alignment with the Rochdale Envelope approach. The Rochdale Envelope approach is described in **ES Volume 1, Chapter 2 - EIA Methodology [EN0110014/APP/6.1.2]**.

Design Commitments

3.1.5 Design commitments secure specific elements of the detailed design such as appearance, materials, type, colour, surfacing and offsets and are relied upon within the ES as embedded mitigation. These design commitments for the Scheme are set out below in **Table 4.1** to **Table 4.11**.

4 The Design Parameters and Commitments

4.1 Work No. 1

4.1.1 The extent of works defined by Work No. 1 as set out in Schedule 1 of the **draft DCO [EN0110014/APP/3.1]** and shown on the **Works Plan [EN0110014/APP/2.3]**.

4.1.2 **Work No. 1** – a ground mounted solar photovoltaic generating station with a gross electrical output capacity of over 100 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.

and associated development within the meaning of section 115(2) of the 2008 Act.

Table 4.1: Work No.1

Scheme Component	Parameter/Commitment	Description
Solar PV Modules and Mounting Structures	Single Axis Tracker Panels Parameters	• Maximum height at greatest inclination: 4.5m. • Maximum height at horizontal alignment: 2.5m. • Minimum height/clearance above ground level (at greatest inclination): 0.4m. • Minimum separation distance between solar modules: 2.5m. • Maximum separation distance between solar module centrelines: 15m.
	Fixed Panels Parameters	• Maximum height of solar module: 3.5m. • Minimum height/clearance above ground level: 0.4m. • Minimum separation distance between solar modules: 2.5m. • Maximum separation distance between solar module centrelines: 14m.
	Mounting Structures Parameter	• Maximum depth of piled mounting structures 4m below ground level.
	Single Axis Tracker / Fixed Panels Commitments	For the Solar PV Modules (Work No.1(a)), the following minimum offset distances will be applied to the following features: • Main river, watercourse or ditch (including Internal Drainage Board (IDB) drains): 10m. • All badger setts: 30m. • Hedgerows: 10m. • Individual trees, groups of trees and non-Ancient Woodland: 15m. • Veteran and ancient trees: 15x width of tree stem diameter or 5 metres from the edge of the tree's canopy, whichever is greater. • Ancient Woodland: 30m. • Ponds (no Great Crested Newts (GCN)): 30m. • Ponds (with GCN): 50m. • Sites of Scientific Interest (SSSI): 30m. • County Wildlife Sites: 30m. • PRoW: 15m. • Curtilage of residential properties: Minimum of 50m but case by case for residential properties. The Solar PV Panels will be sited no closer than 4m to the perimeter fencing.

Scheme Component	Parameter/Commitment	Description
		The Single Axis Tracker panels will be aligned in north south rows, and incline to the east or west up to a maximum inclination of 60 degrees from horizontal. The Fixed panels will be aligned in east west rows, and slope towards the south at a fixed slope of 10 to 35 degrees from horizontal. The lowest edge of the Solar PV Panels will be set at a minimum of 0.4m above ground level. Where Solar PV Panels are situated in areas of 'low' to 'high' surface water flood risk, the Solar PV Panels will be raised higher where practicable, or the use of Single Axis Tracker panels will be considered.
	Mounting Structures Commitments	The Mounting Structures would likely be made of either anodised aluminium alloy or galvanised steel and would have a rough matt finish. If archaeological protection is required, concrete feet or other non-ground penetrative techniques will be used to secure the Mounting Structures. All electrical infrastructure associated with the panels (excluding cabling) will be elevated by the Mounting Structures so that it is no less than 300mm above the 1 in 100 (1%) Annual Exceedance Probability (AEP) flood level; or, where this is not possible, as high as practicable.
	Solar Module Commitments	The Solar PV Modules will be a dark colour, for example, either black or dark blue. The Solar PV Panel technology will be bifacial panels. All Solar PV Panels will be per-and polyfluoroalkyl substances (PFAS) free.
DC Electrical Boxes	Parameters	• Maximum width: 0.55m. • Maximum length: 0.65m • Maximum height: 0.26m
	Commitments	Where a DC electrical box is required, it would sit on a Mounting Structure.
Integrated Conversion Units/33kV Sub-Distribution Switch Rooms	Parameters	• Maximum length: 18m. • Maximum width: 5m. • Maximum height: 3.5m.

Scheme Component	Parameter/Commitment	Description
		A concrete foundation slab, strips or footings for each of the Integrated Conversion Units/33kV Sub-Distribution Switch Rooms and a levelling layer of aggregate with a maximum depth of 1m or a concrete plinth set atop the topsoil where non-ground-penetrative works are necessary.
	Commitments	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 practicable within the landscape. Integrated Conversion Units/33kV Sub-Distribution Switch Rooms will be located in Flood Zone 1 and away from areas of surface water flooding, as far as practicable. Surface water runoff of Integrated Conversion Units/33kV Sub-Distribution Switch Rooms will be managed via a filter drain around the perimeter or permeable aggregate surface with underlying sub-base, with appropriate overflow outlet, if required, should infiltration testing confirm that rates are too low to facilitate infiltration drainage as a stand-alone solution.
Standalone Conversion Units (comprising inverters, transformers, switchgear, and monitoring and control systems)	Parameters	The maximum parameters of an Inverter will be 9m in length by 6.5m in width and 3.5m in height. The maximum parameters of a Transformer will be 6.5m in length by 5.5m in width and 3.5m in height. The maximum parameters of a Switchgear will be 6.5m in length by 2.5m in width and 3.5m in height. A concrete foundation slab, strips or footings for each of the Standalone Conversion Units and a levelling layer of aggregate with a maximum depth of 1m or a concrete plinth set atop the topsoil where non-ground-penetrative works are necessary.
	Commitments	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 practicable within the landscape. Conversion Units will be located in Flood Zone 1 and away from areas of surface water flooding, as far as practicable. Surface water runoff of Standalone Conversion Units will be managed via a filter drain around the perimeter or permeable aggregate surface with underlying sub-base, with appropriate overflow outlet,

Scheme Component	Parameter/Commitment	Description
		if required, should infiltration testing confirm that rates are too low to facilitate infiltration drainage as a stand-alone solution.
Electrical Cabling and Communications (Low and High Voltage)	Parameters	Low voltage (DC electrical cables, communication cables and low voltage AC cables) cable trench dimensions: • Maximum width of trenches: 1.6m. • Maximum depth of trenches: 1.2m. Interconnecting cable (high voltage cables between 33kV and 400kV) trench dimensions: • Maximum width of trenches: 7m. • Maximum depth of trenches: 2m. Joint bays will link sections of underground cables. These will be a minimum of 250m to a maximum of 500m apart. The dimensions of these will be determined by how many electrical circuits will be in the joint bay. A joint bay would be up to 20m long and up to 7m wide and 3m deep. Fibre communications chambers will be provided between every 500m to 2,000m. Fibre communications chamber would be approximately 1.5m in length, 1m wide and 1.5m deep.
	Commitments	Solar PV Panels will be connected with 33kV, 132kV and 400kV cables and lower voltage cables to suit the detailed design. Cabling will be above ground between the Solar PV Panels which will be fixed to the Mounting Structures where non-ground-penetrative works are required. Cabling between the Mounting Structures and Conversion Units/33kV Sub-Distribution Swich Rooms will be buried within underground trenches, or a trenchless technique will be used, or cables will be suspended where non-ground-penetrative works are required. Cabling between the Conversion Units/33kV Sub-distribution Swich Rooms and the Substations will be buried within underground trenches, or a trenchless technique will be used, or cables will be suspended where non-ground-penetrative works are required.

Scheme Component	Parameter/Commitment	Description
		High voltage cables will be routed alongside the access tracks and/or use existing gaps in hedgerows where practicable to minimise hedgerow loss. Where practicable, cabling will not be routed along PRoW. Fibre communications chambers will be located in hard surfaces or located at field boundaries, as far as practicable.
Fencing and Security	Parameters	Maximum height of fencing will be 2.5m around individual fields or groups of fields. Conversion Units/33kV Sub-Distribution Switch Rooms: Palisade fence will be a maximum height of 3m above ground level. Standalone Conversion Units: Palisade fence will be a maximum height of 3m above ground level. Closed circuit television (CCTV) camera poles with a maximum height of 3m.
	Commitments	Fencing around Solar PV Arrays will be a 'deer fence' consisting of wire mesh and wooden or metal posts. 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. CCTV cameras will be mounted on galvanised steel poles and utilise night vision technology.
Drilling Pits (where trenchless technique used for Work No.1)	Parameters	Maximum dimensions of directional drilling pit will be 25m by 25m. Maximum height of equipment and structures of directional drilling pit: 6m.
	Commitments	For the trenchless crossing of features, both launch and reception pits will be a minimum distance of 10m from main rivers, watercourse or ditch (including IDB drains), 10m from hedgerows, 15m of individual trees and groups of trees and 30m from County Wildlife Sites/SSSI. Groundcover will consist of hardcore aggregate, or track matting, with soil protection measures. Launch and reception pits backfilled and reinstated following installation of the cables.

4.2 Work No.2

4.2.1 The extent of works defined by Work No. 2 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.2.2 **Work No. 2** – an energy storage facility comprising:

(a) battery energy storage system units each containing combustible concentration reduction system, fire protection systems or thermal runaway propagation prevention system and components;

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

(c) interconnection units including heating, ventilation and air conditioning or 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 electrical 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 and hydrant network for the purposes of firefighting water supply;

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

(j) acoustic barriers.

Table 4.2: Work No.2

Scheme Component	Parameter/Commitment	Description
BESS Enclosure (including monitoring and control systems)/Compounds Parameters	Parameters	Maximum compound area of up to 6.5 hectares (ha). Container dimensions will be up to a maximum height of 3.5m. The BESS Control Building will be up to a maximum 6m in length, 2.5m in width and maximum height of 3.5m. Cable trenches will be up to 1.2m in depth and 1.6m wide. The foundations for the BESS Units will either be a reinforced concrete base to a maximum depth of 1m, or, if a piling solution is required, piles to a maximum depth of 12m below ground level with a 1m pile cap.
	Commitments	BESS Containers/Compound will be a minimum of 200m from residential properties. External finishing 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 practicable within the landscape. Final BESS design and layout will have been validated through mandatory Large Scale Fire Testing (LSFT) and rigorous consequence modelling to minimise the requirement for any Fire and Rescue Service intervention in a thermal runaway incident. LSFT must establish minimum equipment spacing distances that demonstrate there is no fire propagation to adjacent BESS Enclosures or Energy Storage System (ESS) equipment. Testing requirements will comply with National Fire Chief's Council and/or the National Fire Protection Association NFPA 855 standards and guidelines relevant at the time of detailed design. The BESS system selected at detailed design will comply with the BESS safety requirements set out in Section 3.1 of the **Outline Battery Safety Management Plan [EN0110014/APP/7.5**] which covers Safe BESS design, Battery System Enclosures and Detection and Suppression Systems.

Scheme Component	Parameter/Commitment	Description
		Cabling between BESS Enclosures and other infrastructure within the BESS Compound will either be above ground in cable trays or laid in a trench. The BESS Compound surfacing will include a levelled platform where the BESS equipment will be placed on. Each BESS Unit will sit on a concrete base. The BESS Compound will be served by a sustainable drainage network designed to the 1% AEP event plus 45% climate change allowance. The BESS Compound will consist of a bunded impermeable surface or other form of containment system to manage surface water drainage. The BESS Compound will include a bunded impermeable surface or other form of containment system and associated infrastructure to contain used firewater.
Standalone Conversion Units (comprising inverters, transformers, switchgear, and energy management system).	Parameters	The maximum parameters of an Inverter will be 9m in length by 6.5m in width and 3.5m in height. The maximum parameters of a Transformer will be 6.5m in length by 5.5m in width and 3.5m in height. The maximum parameters of a Switchgear will be 6.5m in length by 2.5m in width and 3.5m in height. A concrete foundation slab, strips or footings up to 1m 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.
	Commitments	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 practicable within the landscape. Standalone Conversion Units will be located in Flood Zone 1 and away from areas of surface water flooding, as far as practicable.

Scheme Component	Parameter/Commitment	Description
		Surface water runoff of Standalone Conversion Units will be managed via a filter drain around the perimeter or permeable aggregate surface with underlying sub-base, with appropriate overflow outlet, if required, should infiltration testing confirm that rates are too low to facilitate infiltration drainage as a stand-alone solution.
Water Storage Facility	Parameters	Where above ground, tanks will be a maximum height of 3.5m and supported on structural concrete slab foundations which will be to a maximum depth of 1m.
	Commitments	Water storage will either be in panel tanks, or cylindrical steel tanks, above or below ground.
Electrical Cabling	Parameters	Containers will be connected with 33kV, 132kV and 400kV cables. Low voltage cable (DC electrical cables, communication cables and low voltage AC cables) trench dimensions: • Maximum width of trenches: 1.6m. • Maximum depth of trenches: 1.2m. Interconnecting cable (high voltage cables between 33kV and 400kV) trench dimensions: • Maximum width of trenches: 7m. • Maximum depth of trenches: 2m.
	Commitments	High voltage cables will be routed alongside the access tracks and/or use existing gaps in hedgerows where practicable to minimise hedgerow loss.
Internal Access Track	Parameter	Access required for permanent operation and maintenance access will be a minimum of 4.5m in width up to a maximum of 6m in width. The maximum width of BESS access will be 8m at passing places.
	Commitments	Within the BESS Compound, internal access track constructed of impermeable surface over a levelling layer of substrate. Where access tracks are located in areas of Flood Zones 2 or 3 and/or significant 'low' to 'high surface water flow routes/flood risk areas, access tracks to be kept at existing ground level so as to not impeded floodplain storage or flood flow routes.

4.3 Work No. 3

4.3.1 The extent of works defined by Work No. 3 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.3.2 **Work No. 3** – works in connection with onsite substation including:

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

(i) an up to 400kV 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, 2 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 132kV 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, 2 and 3B;

(iv) maintenance compound;

(v) electrical cabling; and

(vi) earthworks, including soil stripping and site levelling.

Table 4.3: Work No.3

Scheme Component	Parameter/Commitment	Description
400kV Substations		
400kV Substations	Parameters	Project Substation in BESS Site: maximum compound area up to 3ha. Project Substation in Sub-Site 5A: maximum compound area up to 3.5ha. Project Substation in Sub-Site 1B: maximum compound area up to 1.1ha. Project Substations in BESS Site, Sub-Site 5A and Sub-Site 1B: maximum height up to 13m to the top of the busbars.
	Commitments	For the 400kV Project Substations, the following minimum offset distances will be applied to the following features: • Main river, watercourse or ditch (including IDB drains): 10m. • All badger setts: 30m. • Hedgerows: 10m. • Individual trees, groups of trees and non-Ancient Woodland: 15m. • Veteran and ancient trees: 15x width of tree stem diameter or 5m from the edge of the tree's canopy, whichever is greater. • Ancient Woodland: 30m. • Ponds (no GCN): 30m. • Ponds (with GCN): 50m. • SSSI: 30m. • County Wildlife Sites: 30m. • PRoW: 15m. • Curtilage of residential properties: Minimum of 50m but case by case for residential properties. The Project Substation compounds will be served by a sustainable drainage network designed to the 1% AEP event plus 45% climate change allowance.

Scheme Component	Parameter/Commitment	Description
Buildings including; Relay Rooms/33kV Switch Room /Ancillary/Offices/Control/Stores/Site Facilities	Parameters	Maximum dimensions of 7m by 19m and maximum height of 4.2m.
	Commitments	External finishing/materials to be in keeping with the prevailing surrounding environment. The exact materials/colour will be agreed with the relevant planning authority prior to construction but will be carefully selected to sit as discreetly as practicable within the landscape.
Foundations	Parameters	Depending on ground conditions, either a raft foundation or piles to a maximum depth of 12m below ground level with a 1m pile cap.
Electrical Cabling	Parameters	Low voltage cable (DC electrical cables, communication cables and low voltage AC cables) trench dimensions: • Maximum width of trenches: 1.6m. • Maximum depth of trenches: 1.2m. Interconnecting cable (high voltage cables between 33kV and 400kV) / Grid Connection Cables trench dimensions: • Maximum width of trenches: 7m. • Maximum depth of trenches: 2m.
	Commitments	The electricity generated by the Solar PV Panels and/or stored by the BESS would be exported from or imported to the Project Substation to the National Grid Substation via underground Grid Connection Cables. The voltage of the Grid Connection Cables would be 400kV.
132kV Substations		
132kV Substations	Parameters	Project Substation in Sub-Site 4B: maximum compound area up to 0.5ha. Project Substation in Sub-Site 7F: maximum compound area up to 0.75ha. Project Substation in Sub-Site 10C: maximum compound area up to 0.5ha.

Scheme Component	Parameter/Commitment	Description
		Project Substations in Sub-Site 4B, Sub-Site 7F and Sub-Site 10C: maximum height up to 7m to the top of the busbars.
	Commitments	The Project Substation Compounds will be served by a sustainable drainage network designed to the 1% AEP event plus 45% climate change allowance. For the 132kV Project Substations, the following minimum offset distances will be applied to the following features: • Main river, watercourse or ditch (including IDB) drains: 10m. • All badger setts: 30m. • Hedgerows: 10m. • Individual trees, groups of trees and non-Ancient Woodland: 15m. • Veteran and ancient trees: 15x width of tree stem diameter or 5m from the edge of the tree's canopy, whichever is greater. • Ancient Woodland: 30m. • Ponds (no GCN): 30m. • Ponds (with GCN): 50m. • SSSI: 30m. • County Wildlife Sites: 30m. • PRoW: 15m. • Curtilage of residential properties: Minimum of 50m but case by case for residential properties.
Buildings including; Relay Rooms/33kV Switch Room /Ancillary/Offices/Control/Stores/Site Facilities	Parameters	Maximum dimensions of 7m in width by 19m in length and maximum height of 4.2m.
	Commitments	External finishing/materials to be in keeping with the prevailing surrounding environment. The exact materials/colour will be agreed with the relevant planning authority prior to construction but will be carefully selected to sit as discreetly as practicable within the landscape.
Foundations	Parameters	Depending on ground conditions, either a raft foundation or piles to a maximum depth of 10m below ground level with a 1m pile cap.
Electrical Cabling	Parameters	Low voltage cable (DC electrical cables, communication cables and low voltage AC cables) trench dimensions:

Scheme Component	Parameter/Commitment	Description
		• Maximum width of trenches: 1.6m. • Maximum depth of trenches: 1.2m. Interconnecting cable (high voltage cables between 33kV and 400kV) trench dimensions: • Maximum width of trenches: 7m. • Maximum depth of trenches: 2m.
	Commitments	The electricity generated by the Solar PV Panels and/or stored by the BESS would be exported from or imported to the Project Substation to the National Grid Substation via underground Grid Connection Cables.

4.4 Work No. 4

4.4.1 The extent of works defined by Work No. 4 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.4.2 **Work No. 4** – works in connection with a new National Grid substation including:

(a) **Work No. 4A** – a new National Grid substation with works comprising:

(i) a new 400kV AIS substation consisting of four feeder bays, one coupler bay, one section bay, reactive power units and the Applicant's generation bay. This also includes typical substation infrastructure in line with good working practice and standards, including control building or container relay rooms with associated offices, storage and welfare facilities; and monitoring and control systems for Work Nos. 1, 2, 3 and 6; and

(ii) electrical cabling.

(b) **Work No. 4B** – works in connection with the new National Grid substation including:

(i) maintenance compound;

(ii) electrical cabling;

(iii) earthworks, including soil stripping and site levelling;

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

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

(vi) landscaping and biodiversity mitigation and enhancement measures including planting;

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

(viii) temporary public right of way diversions, signage and information boards;

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

(x) acoustic barriers;

(xi) electricity and telecommunications connections; and

(xii) temporary construction laydown areas comprising:

(aa) areas of hardstanding;

(bb) car parking;

(cc) site and welfare offices and workshops;

(dd) security infrastructure, including cameras, perimeter fencing and lighting;

(ee) area to store materials and equipment;

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

(gg) electricity, water, waste water and telecommunications connections.

(c) **Work No. 4C** – works to facilitate temporary construction access and permanent access to Work Nos. 4A and 4B 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.

Table 4.4: Work No.4

Scheme Component	Parameter/Commitment	Description
National Grid Substation	Parameters	Maximum compound area up to 6ha. Maximum height up to 15m to the top of the busbars.
	Commitments	The National Grid Substation Compound will be served by a sustainable drainage network designed to the 1% AEP event plus 45% climate change allowance. 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 practicable within the landscape. For the National Grid Substation, the following minimum offset distances will be applied to the following features: • Main river, watercourse or ditch (including IDB drains): 10m. • All badger setts: 30m. • Hedgerows: 10m. • Individual trees, groups of trees and non-Ancient Woodland: 15m. • Veteran and ancient trees: 15x width of tree stem diameter or 5 metres from the edge of the tree's canopy, whichever is greater. • Ancient Woodland: 30m. • Ponds (no Great Crested Newts (GCN)): 30m. • Ponds (with GCN): 50m. • Sites of Scientific Interest (SSSI): 30m. • County Wildlife Sites: 30m. • PRoW: 15m. • Curtilage of residential properties: Minimum of 50m but case by case for residential properties.
Relay and Control Rooms	Parameters	Maximum dimensions of 7m by 19m and maximum height of 4.2m.
	Commitments	External finishing/materials to be in keeping with the prevailing surrounding environment. The exact materials/colour will be agreed with the relevant planning authority prior to construction but will be carefully selected to sit as discreetly as practicable within the landscape.

Scheme Component	Parameter/Commitment	Description
Foundations	Parameters	Depending on ground conditions, either a raft foundation or piles to a maximum depth of 12m below ground level with a 1m pile cap.
Electrical Cabling	Parameters	Low voltage cable (DC electrical cables, communication cables and low voltage AC cables) trench dimensions: • Maximum width of trenches: 1.6m. • Maximum depth of trenches: 1.2m. Interconnecting cable (high voltage cables between 33kV and 400kV) trench dimensions: • Maximum width of trenches: 7m. • Maximum depth of trenches: 2m.
Fencing, Lighting and Security	Parameters	3m high metal palisade fencing around the compound. The maximum height of CCTV poles will be 4.2m.
	Commitments	External finishing/materials 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 practicable within the landscape.
Access (including permanent internal road)	Parameters	Maximum 8m wide.
	Commitments	Wherever practicable, existing field accesses will be utilised for access between field parcels. Within the National Grid Substation Compound, internal access track will be constructed of impermeable surface over a levelling layer of substrate. Internal access road to the National Grid Substation constructed of hardcore or gravel over a levelling layer of substrate. Whilst this is designed to be permeable, further drainage features such as swales and filter drains will also be incorporated parallel to or downhill of the tracks depending on topography. Depending on the slope, swales will include check dams to prevent the rapid transfer of water downslope.

Scheme Component	Parameter/Commitment	Description
		Where access tracks are located in areas of Flood Zones 2 or 3 and/or significant 'low' to 'high surface water flow routes/flood risk areas, access tracks to be kept at existing ground level so as to not impede floodplain storage or flood flow routes.
Temporary Construction Compound	Parameters	Maximum construction compound area: up to 1.7ha. Temporary portacabins for construction operatives will be up to a height of 4.2m. The maximum height of perimeter fencing will be 3m. The maximum height of CCTV poles will be 4.2m.
	Commitments	Construction compounds to have appropriate drainage systems installed for surface water runoff management.

4.5 Work No. 5

4.5.1 The extent of works defined by Work No. 5 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.5.2 **Work No. 5**: works in connection with a connection to the existing overhead transmission electric line including—

(a) **Work No. 5A** – works to modify, reconfigure, construct and install a new overhead transmission electric line including:

(i) the installation of new gantries;

(ii) the foundations and steelwork to construct new pylons;

(iii) the installation of overhead transmission electric line;

(iv) the installation of conductors, busbars, switchgear and fittings, including downleads and downdroppers at each realigned and new gantry, to facilitate connection from the equipment within Work No. 4A; and

(v) the installation of fibre optic earthwire conductors, with optical fibres terminated in joint boxes.

(b) **Work No. 5B**:

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

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

(iii) landscaping and biodiversity mitigation and enhancement measures including planting;

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

(v) temporary public right of way diversions, signage and information boards;

(vi) creation of accesses from the public highway;

(vii) creation of visibility splays;

(viii) earthworks;

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

(x) acoustic barriers; and

(xi) electricity and telecommunications connections.

(c) **Work No. 5C**:

(i) works in relation to the existing overhead transmission electric line including -

(aa) the realignment of the existing gantries;

(bb) the modification of existing pylons;

(cc) modifications to the existing overhead transmission electric line;

(dd) the temporary diversion of the existing overhead transmission electric line to facilitate the works; and

(ee) laying down of internal access tracks, ramps, bridges, means of access and footpaths.

(ii) temporary construction laydown areas comprising:

(aa) areas of hardstanding;

(bb) car parking;

(cc) site and welfare offices and workshops;

(dd) security infrastructure, including cameras, perimeter fencing and lighting;

(ee) area to store materials and equipment;

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

(gg) electricity, water, waste water and telecommunications connections.

(d) **Work No. 5D—** works including—

(i) the dismantling, modifying and removal of existing overhead transmission electric line and pylons including foundations;

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

(iii) temporary public right of way diversions, signage and information boards.

Table 4.5: Work No.5

Scheme Component	Parameter/Commitment	Description
New Electricity Pylons and Overhead Line	Parameters	Up to four new pylons (of which three would be associated with the repositioning of existing pylons and up to 1 new pylon). Maximum height of new pylons up to 61m above ground level.
	Commitments	Where the route crosses PRoW, scaffolding and protective netting will be erected to ensure public safety during overhead works.
Potential decommissioning of the existing 400kV overhead line and pylons (temporary works)	Parameters	Up to three existing pylons to be removed (following the repositioned new pylons). Up to one temporary pylon.
Temporary Construction Compound and Internal Access Track	Parameters	Temporary construction compound will be up to 1.7ha. Working width of up to 150m along the alignment of the new and existing overhead lines. An internal access track would be up to a maximum of 6m wide along the existing track from Station Road to the field and would be up to 7m wide from the existing track to the overhead line works. Where passing places are incorporated, these will be up to 12m wide.
	Commitments	Internal access tracks would run directly on the subsoil surface with temporary track matting used where required. Removal of topsoil will be minimised as far as practicable through consideration of the timing and type of construction equipment.

4.6 Work No. 6

4.6.1 The extent of works defined by Work No. 6 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.6.2 **Work No. 6**: works in connection with electrical cabling including:

(a) **Work No. 6A** – works to lay electrical cables up to 400 kV including:

(i) high voltage electrical cables connecting 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, communications chambers, fibre optic cables and lighting and other works associated with cable laying;

(iv) earthworks, tunnelling, boring and drilling works;

(v) temporary public right of way diversions, signage and information boards; and

(vi) temporary construction and decommissioning laydown areas comprising:

(aa) areas of hardstanding, compacted ground or track matting;

(bb) car parking;

(cc) area to store materials and equipment;

(dd) site and welfare offices and workshops;

(ee) security infrastructure, including cameras, perimeter fencing and lighting;

(ff) safety infrastructure to manage traffic when crossing roads or other obstacles;

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

(hh) electricity, water, waste water and telecommunications connections.

(b) **Work No. 6B** – 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, communications chambers, fibre optic cables and lighting and other works associated with cable laying;

(iv) earthworks, tunnelling, boring and drilling works;

(v) temporary public right of way diversions, signage and information boards; and

(vi) temporary construction and decommissioning laydown areas comprising:

(aa) areas of hardstanding, compacted ground or track matting;

(bb) car parking;

(cc) area to store materials and equipment;

(dd) site and welfare offices and workshops;

(ee) security infrastructure, including cameras, perimeter fencing and lighting;

(ff) safety infrastructure to manage traffic when crossing roads or other obstacles;

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

(hh) electricity, water, waste water and telecommunications connections.

Table 4.6: Work No.6

Scheme Component	Parameter/Commitment	Description
Electrical Cabling (up to 400kV) Trenches	Parameters	Maximum width of trenches: 7m (except at joint bays (see parameters for joint bays) or approach to trenchless crossing sections). Maximum depth of trenches: 2m. Minimum cable depth of 1.2m below ground level (where unconstrained by an obstacle) where fields returned to agricultural use. Maximum trench depth below existing buried utilities or apparatus: 2m below existing apparatus.
	Commitments	Construction working width of 25m, demarcated by temporary (heras style) fencing, where required. 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 impacts on hedgerows, trees and ponds. Where manhole covers are required, these will be placed within field margins where reasonably practicable to do so or in other technically suitable locations in consultation with the landowner. If it is not practicable to place the manhole covers in field margins, the area would be clearly fenced or otherwise demarcated to ensure farmers can avoid the manhole covers during normal agricultural operations. Wherever practicable, cabling will not be routed along PRoW.
Electrical Cabling (up to 400kV) Trenchless	Parameters	Individual trenchless bores with a maximum diameter of 1m. Individual trenchless bores with a maximum depth of 12m below ground level, dependent on ground conditions and/or Asset Owner requirements. Minimum cable depth beneath main rivers of 5m below the surveyed bed of main rivers.
	Commitments	Where manhole covers are required, these will be placed within field margins where reasonably practicable to do so or in other technically suitable locations in consultation with the landowner. If it is not practicable to place the manhole covers in field margins,

Scheme Component	Parameter/Commitment	Description
		the area would be clearly fenced or otherwise demarcated to ensure farmers can avoid the manhole covers during normal agricultural operations.
Electrical Cabling (up to 132kV) Trenches	Parameters	Maximum width of trenches: 7m (except at joint bays (see parameters for joint bays) or approach to trenchless crossing sections). Maximum depth of trenches: 2m. Minimum cable depth of 1.2m below ground level (where unconstrained by an obstacle) where fields returned to agricultural use. Maximum trench depth below existing buried utilities or apparatus: 2m below existing apparatus.
	Commitments	Construction working width of 25m, demarcated by temporary (heras style) fencing, where required. 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 impacts on hedgerows, trees and ponds. Where manhole covers are required, these will be placed within field margins where reasonably practicable to do so or in other technically suitable locations in consultation with the landowner. If it is not practicable to place the manhole covers in field margins, the area would be clearly fenced or otherwise demarcated to ensure farmers can avoid the manhole covers during normal agricultural operations. Where practicable, cabling will not be routed along PRoW.
Electrical Cabling (up to 132kV) Trenchless	Parameters	Individual trenchless bores with a maximum diameter of 1m. Individual trenchless bores with a maximum depth of 12m below ground level (except if peat encountered). Minimum cable depth beneath main rivers of 5m below the surveyed bed of main rivers.
	Commitments	Where manhole covers are required, these will be placed within field margins where reasonably practicable to do so or in other technically suitable locations in consultation with the landowner. If it is not practicable to place the manhole covers in field margins,

Scheme Component	Parameter/Commitment	Description
		the area would be clearly fenced or otherwise demarcated to ensure farmers can avoid the manhole covers during normal agricultural operations. Where practicable, cabling will not be routed along PRoW.
Link Boxes	Parameters	Link boxes, where required, will be to a minimum depth of 1.2m below ground level. Where manhole covers are required, these will be up to 0.2m above ground. Access, if required, would be via a manhole cover, which would measure up to 2m by 2m.
	Commitments	Where manhole covers are required, these will be placed within field margins where reasonably practicable to do so or in other technically suitable locations in consultation with the landowner. If it is not practicable to place the manhole covers in field margins, the area would be clearly fenced or otherwise demarcated to ensure farmers can avoid the manhole covers during normal agricultural operations.
Joint Bays	Parameters	Joint bays will link sections of underground cables. These will be a minimum of 250m to a maximum of 500m apart. The dimensions of these will be determined by how many electrical circuits will be in the joint bay. A joint bay would be up to 20m long and up to 7m wide and 3m deep.
	Commitments	The base of the joint bay must be level and a concrete pad installed (approximately 150mm thick with light reinforcement) as a working surface.
Fibre Communication Chambers	Parameters	Fibre communications chambers will be provided between every 500m to 2,000m. Fibre communications chambers up to 0.2m above ground. Fibre communications chambers would be 1.5m in length, 1m wide and 1.5m deep.
	Commitments	Located at field boundaries, as far as practicable. Final locations to be determined during detailed design stage.
Directional Drilling Pits (where trenchless technique used in Work No.6)	Parameters	Maximum dimensions of directional drilling pit will be 25m by 25m. Maximum height of equipment and structures of directional drilling pit: 6m.
	Commitments	For the trenchless crossing of features, both launch and reception pits will be a minimum distance of 10m from main rivers, watercourse or ditch (including IDB drains), 10m from hedgerows, 15m of individual trees and groups of trees and 30m from County Wildlife Sites.

Scheme Component	Parameter/Commitment	Description
		Launch and reception pits backfilled and reinstated following installation of the cables.
Temporary Construction Compound	Parameters	Maximum construction compound area: up to 1.7ha. Temporary portacabins for construction operatives will be up to a height of 3m. The maximum height of perimeter fencing will be 3m. The maximum height of CCTV poles will be 3m.
Internal Access Tracks	Parameters	Internal access tracks up to 6m wide (up to 8m wide with passing places) along with suitably sized bends to accommodate turning radius of vehicles.
	Commitments	Wherever practicable, existing field accesses will be utilised for access between field parcels. Where existing access tracks interact with PRoW, access tracks will be widened or segregated appropriately to allow vehicles to pass PRoW users safely. Existing agricultural access tracks will remain accessible for agricultural and woodland management activities throughout the lifetime of the Scheme. Internal access tracks would run directly on the subsoil surface with temporary track matting used where required. Removal of topsoil will be minimised as far as practicable through consideration of the timing and type of construction equipment.

4.7 Work No. 7

4.7.1 The extent of works defined by Work No. 7 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.7.2 **Work No. 7**: - 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 public right of way diversions, signage and information boards;

(g) earthworks, including bunds;

(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 telecommunications connections;

(k) secondary temporary construction and decommissioning laydown areas; and

(l) provision of operational and maintenance buildings.

Table 4.7: Work No.7

Scheme Component	Parameter/Commitment	Description
Electrical Cabling and Communications	Parameters	Low voltage cable (DC electrical cables, communication cables and low voltage AC cables) trench dimensions: • Maximum width of trenches: 1.6m. • Maximum depth of trenches: 1.2m. Interconnecting cable (high voltage cables between 33kV and 400kV) trench dimensions: • Maximum width of trenches: 7m. • Maximum depth of trenches: 2m.
	Commitments	High voltage cables will be routed alongside the access tracks and/or use existing gaps in hedgerows where practicable to minimise hedgerow loss. Where practicable, cabling will not be routed along PRoW. Trenchless techniques within the Sites of the Order Limits, such as horizontal directional drilling (HDD), will be the default option for watercourse crossings (main river and ordinary watercourses) by cables and is the least invasive, most sensitive method, although it may not be suitable or necessary in some locations for ordinary watercourses/diches. In such locations, these crossings will take one of the following forms, which are listed in order of least to most impact and are likely to be appropriate, respectively, for the most to least sensitive features: • Single-span structures that do not interfere with the channel (banksides, bed or water column); • Span structures with in-stream supports or pre-cast structures with natural bed; • Closed culverts with artificial invert; and • Open trench with over-pumping.
Internal Access Tracks	Parameters	Internal access tracks up to 6m wide (up to 8m wide with passing places) along with suitably sized bends to accommodate turning radius of vehicles, including abnormal indivisible load turning space.
	Commitments	Wherever practicable, existing field accesses will be utilised for access between field parcels.

Scheme Component	Parameter/Commitment	Description
		Wherever practicable, existing field access tracks will be used. Where existing access tracks interact with PRoW, access tracks will be widened or segregated appropriately to allow vehicles to pass PRoW users safely. Existing agricultural access tracks will remain accessible for agricultural and habitat management activities throughout the lifetime of the Scheme. Constructed of hardcore or gravel over a levelling layer of substrate. Whilst this is designed to be permeable, further drainage features such as swales and filter drains will also be incorporated parallel to or downhill of the tracks depending on topography. Depending on the slope, swales will include check dams to prevent the rapid transfer of water downslope. Where access tracks are located in areas of Flood Zones 2 or 3 and/or significant 'low' to 'high surface water flow routes/flood risk areas, access tracks to be kept at existing ground level so as to not impeded floodplain storage or flood flow routes.
Acoustic Barrier	Parameter	Maximum height of up to 4m.
Operational and Maintenance Buildings	Parameters	The maximum parameters of Operational and Maintenance Buildings will be up to 3.5m in height, 12m in length and 5m in width.
	Commitments	Up to three operational and maintenance (O&M) buildings across Site 7, with up to one O&M building in each of the other Sites. O&M buildings to be located outside of Flood Zones 2 and 3. To be located in areas of flat topography to minimise any need for earthworks. External finishing 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 practicable within the landscape.

Scheme Component	Parameter/Commitment	Description
		Operational and maintenance buildings to be a minimum distance from the following features: • Main river, watercourse or ditch (including IDB drains): 10m. • All badger setts: 30m. • Hedgerows: 10m. • Individual trees, groups of trees and non-Ancient Woodland: 15m. • Veteran and ancient trees: 15x width of tree stem diameter or 5m from the edge of the tree's canopy, whichever is greater. • Ancient Woodland: 30m. • Ponds (no GCN): 30m. • Ponds (with GCN): 50m. • SSSI: 30m. • County Wildlife Sites: 30m. • PRoW: 15m. • Curtilage of residential properties: Minimum of 50m but case by case for residential properties.
Fencing, Lighting and Security	Parameters	Solar PV Modules and Mounting Structures: Deer fence will be a maximum height of 2.5m above ground level around individual fields or groups of fields. Conversion Units/33kV Sub-Distribution Switch Rooms: Palisade fence will be a maximum height of 3m above ground level. Standalone Conversion Units: Palisade fence will be a maximum height of 3m above ground level. BESS Compound: Palisade fence will be a maximum height of 3m above ground level. Substation Compound: Palisade fence will be a maximum height of 3m above ground level. CCTV camera poles with a maximum height of 3m.
	Commitments	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.

Scheme Component	Parameter/Commitment	Description
		Fencing around Solar PV Arrays will be a 'deer fence' consisting of wire mesh and wooden or metal posts. Vehicular access gates will be of similar construction and height as the perimeter fencing. Wherever practicable, existing gaps in hedgerows will be used to route fencing. The existing agricultural tracks will not be fenced off and will remain accessibly during the operational phase. Colour 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 practicable within the landscape. Pole mounted internal facing CCTV systems will be deployed around the perimeter of the Sites. CCTV cameras will be mounted on galvanised steel poles and utilise night vision technology.

4.8 Work No. 8

4.8.1 The extent of works defined by Work No. 8 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.8.2 **Work No. 8**: 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 telecommunications connections.

Table 4.8: Work No.8

Scheme Component	Parameter/Commitment	Description
Temporary Construction and Decommissioning Compounds	Parameters	BESS Site Construction Compound maximum area: up to 1.7ha. Construction Compound (Sub-Site 5A, Sub-Site 4A, Sub-Site 1B, Sub-Site 2B, Sub-Site 10C) maximum area: up to 1.7ha. Temporary portacabins for construction operatives will be up to a height of 3m. The maximum height of perimeter fencing (heras style) will be 3m. The maximum height of CCTV poles will be 3m.
	Commitments	The areas will be secured using heras style fencing and security cameras. The CCTV 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 practicable within the landscape. Compounds to have appropriate drainage systems installed for surface water runoff management.

4.9 Work No. 9

4.9.1 The extent of works defined by Work No. 9 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.9.2 **Work No. 9**— works to facilitate access to Work Nos. 1 to 8 and 10 and 11 including:

(a) **Work No. 9A** – works to facilitate temporary construction, maintenance and decommissioning access to Work Nos. 1 to 8 and 10 to 11 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. 9B** – works to facilitate permanent access to Work Nos. 1 to 7 and 10 and 11 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 4.9: Work No.9

Scheme Component	Parameter/Commitment	Description
Access Points	Parameters	Access points into the Sites have been designed to accommodate articulated Heavy Good Vehicles (HGV) with a maximum length of 16.5m. The maximum width of Solar PV operational access tracks will be 3.5m. The maximum width of Solar PV access tracks at passing places will be 6m. The minimum width of BESS and Substation access will be 3.5m and up to 6m. The maximum width of BESS and Substation access will be 8m at passing places.
	Commitments	The access points from the public highway will comprise concrete. The access points from the public highway and bends in the track will be wider to accommodate abnormal indivisible load turning space.

4.10 Work No. 10

4.10.1 The extent of works defined by Work No. 10 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.10.2 **Work No. 10** – 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.

4.10.3 The design and implementation of the habitat management is set out in **Outline Landscape and Ecology Management Plan [EN0110014/APP/7.4]**.

Table 4.10: Work No.10

Scheme Component	Parameter/Commitment	Description
Fencing	Parameters	The maximum height of fencing will be 2.5m.
	Commitments	Fencing will comprise deer wire mesh with wooden posts.
Internal Access Tracks	Parameters	The maximum width of Solar PV access tracks will be 3.5m. The maximum width of Solar PV access tracks at passing places will be 6m.
	Commitments	Wherever practicable, existing field accesses will be utilised for access between field parcels. Existing agricultural access tracks will remain accessible for agricultural and woodland management activities throughout the lifetime of the Scheme. Constructed of hardcore or gravel over a levelling layer of substrate. Whilst this is designed to be permeable, further drainage features such as swales and filter drains will also be incorporated parallel to or downhill of the tracks depending on topography. Depending on the slope, swales will include check dams to prevent the rapid transfer of water downslope.

4.11 Work No. 11

4.11.1 The extent of works defined by Work No. 11 as set out in Schedule 1 of the **draft DCO [APP/3.1]** and shown on the **Works Plan [APP/2.3]**.

4.11.2 **Work No. 11 –** creation of permissive paths including:

a) 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;
   (iv) landscaping and biodiversity mitigation and enhancement measures including planting; and
b) provision of community accessible space with pedestrian access.

4.11.3 The design and implementation of the permissive paths is set out in the **Outline Public Rights of Way and Permissive Paths Management Plan [EN0110014/APP/7.8]** and **Outline Landscape and Ecology Management Plan [EN0110014/APP/7.4]**.

Table 4.11: Work No.11

Scheme Component	Parameter/Commitment	Description
Permissive paths	Parameters	Minimum usable width for pedestrian access: 2m.
	Commitments	Permissive paths will have a 15m buffer to any infrastructure (excluding landscaping) associated with the Scheme.
Gates and enclosure	Parameters	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 1.2m for pedestrian access.
Fencing	Parameters	The maximum height of fencing will be 2.5m.
	Commitments	Fencing will comprise deer wire mesh with wooden posts. Fencing location will be considered in context of the wider Scheme and combined with other fencing where practicable.