



**HELIOS** RENEWABLE  
ENERGY  
PROJECT

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## **Design and Access Statement**

June 2024

# Helios Renewable Energy Project

## Design and Access Statement

Planning Inspectorate Reference: EN010140

Prepared on behalf of Enso Green Holdings D Limited

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## 1. Introduction

- 1.1.1. This Design and Access Statement has been prepared on behalf of Enso Green Holdings D Limited (the 'Applicant') in relation to an application for a Development Consent Order (DCO) for the Helios Renewable Energy Project (the 'Proposed Development'). The application for the DCO (the DCO Application) is submitted to the Planning Inspectorate, that will provide a recommendation on whether to grant a DCO to the Secretary of State (SoS) for Energy Security and Net Zero, who will make a decision pursuant to the Planning Act 2008 (PA 2008).
- 1.1.2. The Proposed Development comprises the installation of ground mounted solar arrays, battery energy storage system (BESS) and associated development comprising grid connection infrastructure and other infrastructure integral to the construction, operation (including maintenance) and decommissioning of the development for the delivery of over 50 megawatts (MW) of electricity. The Proposed Development has a design life of 40 years, after which time it will be decommissioned.
- 1.1.3. The Order Limits for the Proposed Development are located on predominantly agricultural land, generally consisting of fields used for grazing and arable farming, extending to 475ha in size (the 'Site'). The Order Limits include the solar PV arrays, onsite substation, Battery Energy Storage System (BESS) and associated infrastructure and accesses. It is located on land generally bound by the Selby Branch of the East Coast Mainline railway to the west, Common Lane to the north, the A1041 and village of Camblesforth to the east and north-east respectively and Hirst Road, the village of Hirst Courtney and a railway servicing the power station, to the south. Part of the Site is also located directly adjacent the southeast corner of the existing Drax Power Station, via an alignment following the A645. The Site is located wholly within the administrative area of North Yorkshire Council (NYC).

## 1.2. Purpose of this Document

- 1.2.1. This Design and Access Statement (DAS) details the operational design and access of the Proposed Development, setting out how the design responds to its surroundings and achieves its design objectives.

- 1.2.2. Should development consent be granted, the detailed design for the Proposed Development will be submitted for approval to NYC as local planning authority. NYC will assess those details having regard to the principles set out in this Design and Access Statement, the Parameter Plan **[EN010140/APP/6.2.3.2]**, the Works Plan **[EN010140/APP/2.3]** and the Environmental Statement (ES) for the Proposed Development as certified by the Secretary of State (SoS).

## 2. Good Design

### 2.1. Policy Context

- 2.1.1. The Overarching National Policy Statement (NPS) for Energy (EN-1)<sup>1</sup> adopted in January 2024 sets out the Government's policy for the delivery of major energy infrastructure. EN-1 makes clear that there is an urgent need for renewable energy infrastructure of all types to be developed in order to achieve the Government's decarbonisation targets.
- 2.1.2. Section 4.7 of EN-1 sets out criteria for good design for energy infrastructure. Paragraph 4.7.1 emphasises that high quality and inclusive design goes beyond aesthetic considerations, noting that functionality is equally important, including fitness for purpose and sustainability. Paragraph 4.7.2 states that *“Applying “good design” to energy projects should produce sustainable infrastructure sensitive to place, including land-use, and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible”*. It goes on to acknowledge, however, that *“the nature of energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area.”*
- 2.1.3. Paragraph 4.7.3 outlines that policy objectives in the NPSs can be met through the use of good design, for example in terms of siting, use of appropriate technologies, modern methods of construction and sustainable design practices.
- 2.1.4. Paragraph 4.7.5 states that design principles, including national and local design policies and standards, should guide the development from conception to operation. National guidance includes the Design Principles for National Infrastructure published by the National Infrastructure Commission (NIC), the National Design Guide and the National Model Design Code.
- 2.1.5. Paragraph 4.7.6 states that *“Whilst the applicant may not have any or very limited choice in the physical appearance of some energy infrastructure, there may be*

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<sup>1</sup> Department for Energy Security & Net Zero (2024) Overarching National Policy Statement for Energy (EN-1) [online] available at:

<https://assets.publishing.service.gov.uk/media/65bbfdbc709fe1000f637052/overarching-nps-for-energy-en1.pdf>

*opportunities for the applicant to demonstrate good design in terms of siting relative to existing landscape character, land form and vegetation. Furthermore, the design and sensitive use of materials in any associated development such as electricity substations will assist in ensuring that such development contributes to the quality of the area. Applicants should also, so far as is possible, seek to embed opportunities for nature inclusive design within the design process.”*

- 2.1.6. Paragraph 4.7.7 states that *“Applicants must demonstrate in their application documents how the design process was conducted and how the proposed design evolved. Where a number of different designs were considered, applicants should set out the reasons why the favoured choice has been selected.”*
- 2.1.7. Paragraph 4.7.10 states that given the importance which the Planning Act 2008 places on good design and sustainability, *“the Secretary of State needs to be satisfied that energy infrastructure developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable (including taking account of natural hazards such as flooding) as they can be.”*
- 2.1.8. The NPS for Renewable Energy Infrastructure (EN-3)<sup>2</sup> also sets expectations on good design for renewable energy infrastructure and for solar photovoltaic generation. Section 2.5 reiterates the criteria for good design set out in Section 4.7 of EN-1, and states that:
- 2.1.9. *“Proposals for renewable energy infrastructure should demonstrate good design, particularly in respect of landscape and visual amenity, opportunities for co-existence/co-location with other marine and terrestrial uses, and in the design of the project to mitigate impacts such as noise and effects on ecology and heritage.”*
- 2.1.10. Paragraph 2.10.98 provides design guidance for solar: *“Applicants should follow the criteria for good design set out in Section 4.7 of EN-1 when developing projects and will be expected to direct considerable effort towards minimising the landscape and visual impact of solar PV arrays especially within nationally designated landscapes.”*
- 2.1.11. As referred to in EN-1, the National Infrastructure Commission’s ‘Design Principles

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<sup>2</sup> Department for Energy Security & Net Zero (2024) National Policy Statement for Renewable Energy Infrastructure (EN-1) [online] available at:

<https://assets.publishing.service.gov.uk/media/65a7889996a5ec000d731aba/nps-renewable-energy-infrastructure-en3.pdf>



for National Infrastructure'<sup>3</sup> identifies that the purpose of the design process is “to bring together technical and creative expertise to produce infrastructure which provides good value and works well for climate, people and places.” The document sets out four thematic principles to shape the design of nationally significant infrastructure projects. It sets out how each principle should be used to appreciate the wider context, engage meaningfully, and continually measure and improve. The four principles are:

- Climate: Mitigate greenhouse gas emissions and adapt to climate change;
- People: Reflect what society wants and share benefits widely;
- Places: Provide a sense of identity and improve our environment; and
- Value: Achieve multiple benefits and solve problems well.

2.1.12. As set out in EN-1, development should also be guided by local design policies and standards. Selby does not have any local design policies and standards which relate specifically to energy developments, however, the requirements set out in the design policies are of relevance to all types of development. Policy ENV1 of Selby District Local Plan (2005)<sup>4</sup> states that proposals will be permitted where a good quality of development would be achieved. This includes consideration of “*The standard of layout, design and materials in relation to the site and its surroundings and associated landscaping.*” Policy SP19 (Design Quality) of Selby District Core Strategy Local Plan (2013)<sup>5</sup> requires development proposals to “*contribute to enhancing community cohesion by achieving high quality design and have regard to the local character, identity of its surroundings including historic townscapes, settlement patterns and the open countryside.*” The requirements of Policy SP19 of relevance to the Proposed Development are as follows:

- “*Make the best, most efficient use of land without compromising local*

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<sup>3</sup> National Infrastructure Commission – Design Principles for National Infrastructure [online] available at: <https://nic.org.uk/app/uploads/NIC-Design-Principles.pdf>

<sup>4</sup> Selby District Council (2005) Selby District Local Plan [online] available at: <https://www.northyorks.gov.uk/planning-and-conservation/planning-policy/planning-policy-your-local-area/selby-planning-policy/selby-development-plan/selby-district-local-plan-2005>

<sup>5</sup> Selby District Council (2013) Selby District Core Strategy Local Plan [online] available at: [https://www.northyorks.gov.uk/sites/default/files/fileroot/planning\\_migrated/planning\\_policy/CS\\_Adoption\\_Ver\\_OCT\\_2013\\_REDUCED.pdf](https://www.northyorks.gov.uk/sites/default/files/fileroot/planning_migrated/planning_policy/CS_Adoption_Ver_OCT_2013_REDUCED.pdf)

*distinctiveness, character and form;*

- *Positively contribute to an area’s identity and heritage in terms of scale, density and layout;*
- *Create rights of way or improve them to make them more attractive to users, and facilitate sustainable access modes, including public transport, cycling and walking which minimises conflicts;*
- *Incorporate new and existing landscaping as an integral part of the design of schemes, including off-site landscaping for large sites and sites on the edge of settlements where appropriate;*
- *Adopt sustainable construction principles in accordance with Policies SP15 and SP16;*
- *Preventing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water, light or noise pollution or land instability; and*
- *Development schemes should seek to reflect the principles of nationally recognised design benchmarks to ensure that the best quality of design is achieved.”*

2.1.13. Policy SG9 of the emerging Draft Selby Local Plan states that “*all new development should be well designed and beautiful, responding positively to the special character and local distinctiveness of the area*”. The requirements of Policy SG9 of relevance to the Proposed Development are as follows:

- *“Respond to its location in terms of the natural, historic and built environment reflecting important views and landscapes and reinforce the distinctiveness and character of the local area having regard to the existing form, scale, density, layout, building materials and detailing;*
- *Make efficient use of land by not adversely affecting the potential development of a wider area of land which could otherwise be available for development;*
- *Provide connections to existing open spaces, green infrastructure networks and Public Rights of Way outside of the development boundary;*
- *Incorporate multi-functional green infrastructure within sites to provide carbon storage and Sustainable Drainage Systems (SuDS); and*

- *Provide specific and dedicated spaces for wildlife to encourage a more robust and connected network of habitats. Major Development should provide integrated swift or bat bricks and hedgehog holes whilst all development should be brought forward in accordance with Building for Nature Standards or its successor.”*

2.1.14. Design has been a consideration from the outset of the project. This DAS demonstrates how good design has been embedded in the Proposed Development vision and principles, how these have influenced the overall siting and aesthetics of the Proposed Development, how this has been considered and how good design will be taken forward at the detailed design stage.

2.1.15. The DAS also explains how design evolution for the Proposed Development has been an iterative process and has evolved as constraints and opportunities have emerged over time, throughout the various stages of assessment work and consultation.

### 3. The Order Limits and Context

#### 3.1. Introduction

#### 3.2. Order Limits

3.2.1. The Order Limits, which include all land falling within the Site boundary, are shown on the **Location and Order Limits Plan [EN010140/APP/6.2.1.1]** and includes all land falling within the DCO application boundary (the 'Order Limits'). The Order Limits cover an area of 475ha (approximately 1,173.75 acres), located entirely within the host authority area of NYC. A full Site Description is set out in **ES Chapter 3: Site and Development Description [EN010140/APP/6.1.3]**.

3.2.2. As detailed on **ES Figure 3.2: Parameter Plan [EN010140/APP/6.2.3.2]** (included as Figure 3.1 of the DAS), land within the Order Limits comprises the following:

- 'Development Area' – which extends to 392.87ha;
- 'Underground Cable Connection Area' – which extends to 79.82ha; and
- 'Underground Grid Connection Cable Area' – which extends to 2.31ha.



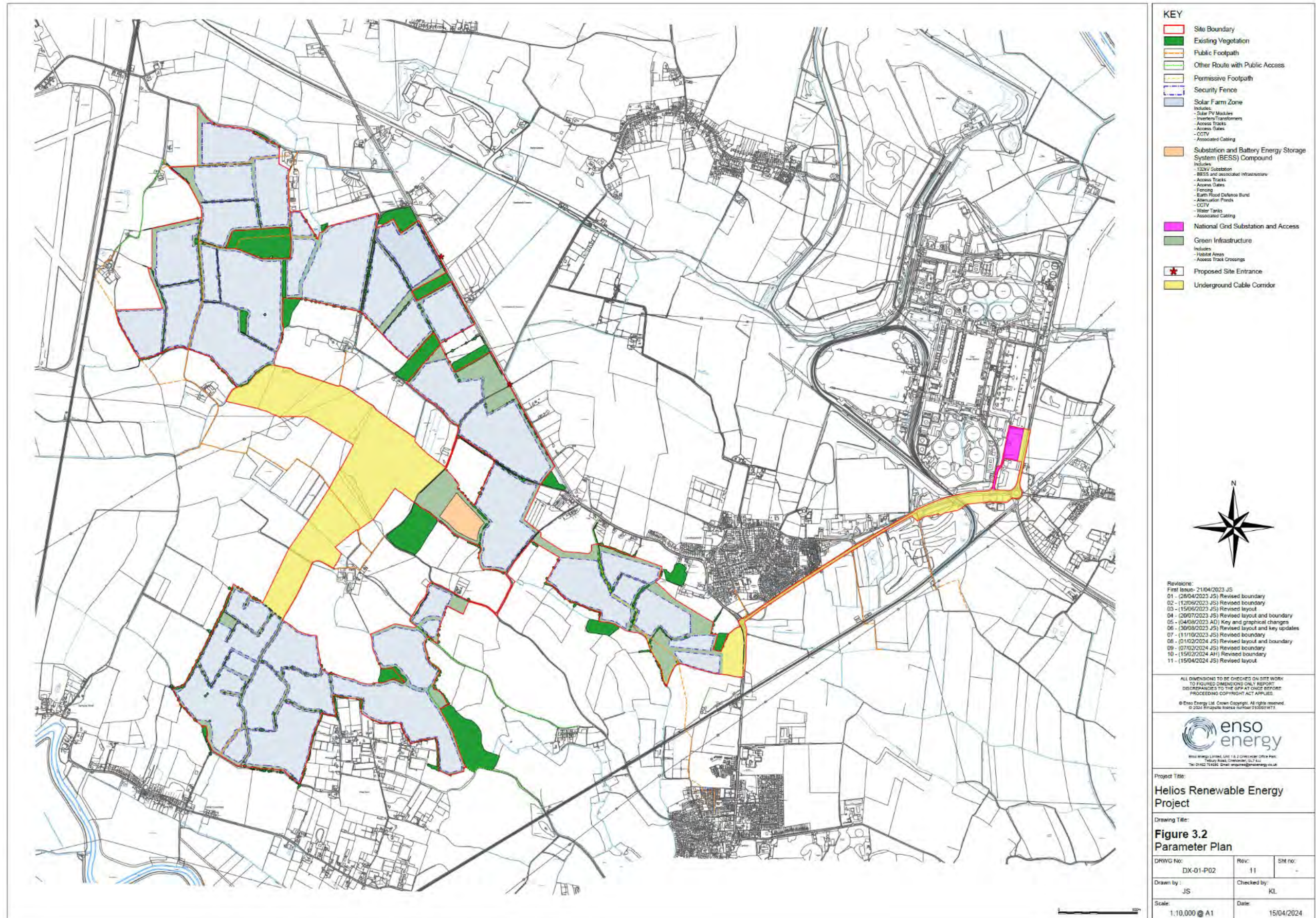


Figure 3.1: Parameter Plan [EN01040/APP/6.2.3.2]



### 3.3. The Site

- 3.3.1. The Development Area is the area within the Order Limits where the solar PV arrays, onsite substation, BESS and associated infrastructure and accesses will be located. During the construction and decommissioning phases, temporary compounds will also be located within this area, including welfare facilities and office units. The Development Area generally comprises agricultural land.
- 3.3.2. The Underground Cable Connection Area is land within the Order Limits where underground cables will transfer electricity generated from the solar PV arrays to the onsite substation and electricity infrastructure. The Underground cable connection area is located within the centre of the Site and comprises agricultural land.
- 3.3.3. The Underground Grid Connection Cable Area is the area within the Order Limits where the underground grid connection cables will be located. These cables transfer the electricity generated on Site to the National Grid Drax 132kV substation located west of the Site, adjacent to the Drax Power Station. The area comprises the A645 road corridor, land beside the A645 road corridor adjacent to the Drax railway, part of the access road to Drax Power Station identified as Station Road, part of New Road, as well as the National Grid Drax 132kV Substation itself.



**Plate 1: View of the Site and Drax Power Station**

### 3.4. Site Surroundings

- 3.4.1. Selby is the principal settlement within the area in the vicinity of the Site. A number of smaller settlements are dispersed throughout the area, including Camblesforth, Hirst Courtney, Temple Hirst, Carlton, Drax, Barlow and Burn. The industrial complexes of Drax and (the partially demolished) Eggborough Power Station form prominent features in the surrounding area. The Burn airfield (former RAF Burn, also referred to as Selby airfield) is located to the west of the Site.



**Plate 2: View of an agricultural field within the Site**

- 3.4.3. The Site contains 44 fields, as shown on **ES Figure 3.1: Field Boundaries Plan [EN010140/APP/6.2.3.1]**. The main part of the Site sits within a wider area of land bounded to the north-east by the A1041, to the west by agricultural fields between the Site and the Selby Branch of the East Coast Mainline railway further west, and to the south by agricultural fields and agricultural development fronting Hirst Road. The surrounding landscape is characterised by large, irregular-shaped fields delineated by partially denuded hedgerows or drainage ditches. Occasional woodland blocks and tree belts are also present, but the landscape is primarily flat

and open.

- 3.4.4. Transport routes are a notable feature in the vicinity of the Site. In addition to the Selby Branch of the East Coast Mainline railway to the west of the Site, the M62 motorway and A63 extend on east – west alignments beyond the southern and northern extents of the Site, respectively. Public Rights of Way (‘PRoW’) cross the Site and the wider landscape, often following farm tracks or rural lanes. The Trans Pennine Trail long distance walking and cycling route extends south from Selby and in close proximity to the western and southern parts of the Site boundary.
- 3.4.5. For information on the surrounding historic, landscape, and environmental statutory and non-statutory designated sites, please refer to **Chapter 6: Cultural Heritage [EN010140/APP/6.1.6]**, **Chapter 7: Landscape and Views [EN010140/APP/6.1.7]**, and **Chapter 8: Biodiversity [EN010140/APP/6.1.8]** of the ES.
- 3.4.6. For further details on context and how this has influenced site selection, please refer to **Appendix 4: Alternative Site Assessment [EN010140/APP/7.1.5]** of the **Planning Statement (PS)**.

## 4. Design Approach

### 4.1. Introduction

4.1.1. This section details the design principles for each of the Works, which comprise the Proposed Development. It sets out how the Proposed Development has addressed the Site context in respect of its use, location, materials, appearance, landscaping and access.

### 4.2. NIC Design Principles

4.2.1. The NIC Design Principles<sup>6</sup> have been used to shape the Proposed Development's Project Objectives.

- Climate – Mitigate greenhouse gas emissions and adapt to climate change.
- People – Reflect what society wants and share benefits widely.
- Places – Provide a sense of identity and improve our environment.
- Value – Achieve multiple benefits and solve problems well.

### 4.3. Vision and Objectives

4.3.1. The Applicant's vision for the Proposed Development is to:

*“Deliver renewable electricity, which will assist in tackling the climate emergency and help the UK Government meet its target for net zero emissions by 2050. In doing so, to reduce the UK's reliance on foreign energy supplies.”*

4.3.2. The vision is underpinned by eight Project Objectives, which have acted as a set of decision-making reference points and have informed the design process up to the point of DCO application. These objectives, set out below, have been shaped by the NIC Design Principles discussed above. While many of the Proposed Development's Objectives simultaneously address multiple NIC Design Principles, Principle 4: Value, is not explicitly addressed through a single Project Objective. Instead, its aim of achieving multiple benefits and solving problems generally underpins the Vision and Objectives of the Proposed Development more broadly and is an overarching

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<sup>6</sup> National Infrastructure Commission (2020) Design Principles for National Infrastructure [online] available at: <https://nic.org.uk/studies-reports/design-principles-for-national-infrastructure/>

aim for the project.

### **Objective 1: Generate Renewable Energy**

- 4.3.3. The primary objective of the Proposed Development is to generate a substantial capacity of renewable energy to the National Electricity Transmission System. In doing so, it positively contributes to the UK's delivery of net zero by 2050.
- 4.3.4. This Objective meets NIC Design Principle 1: Climate.

### **Objective 2: Landscape**

- 4.3.5. The second objective is for the Proposed Development to be sensitively integrated into its landscape setting, and to avoid and minimise adverse landscape and visual effects where possible.
- 4.3.6. The design of the Proposed Development has been informed by the Landscape and Visual Impact Assessment, as presented in **ES Chapter 7 Landscape and Views [EN010140/APP/6.1.7]**. This demonstrates how the landscape strategy and design of the Proposed Development has been prepared to mitigate the impact of the Proposed Development on the surrounding context, particularly landowners. This includes the extensive use of hedgerows and woodland and scrubland to shield development, but also reinforce the existing landscape. This is shown on **ES Figure 3.16: Landscape Strategy Plan [EN010140/APP/6.2.3.16]**.
- 4.3.7. Objective 2 primarily relates to NIC Design Principle 3: Place.

### **Objective 3: Biodiversity**

- 4.3.8. The Proposed Development should seek opportunities to enhance biodiversity through the protection and enhancement of existing green infrastructure and through the creation of new habitat. Through enhancement and habitat creation, the Proposed Development will deliver a project-wide Biodiversity Net Gain of 55.70% in Habitat Units, 61.11% in Hedgerow Units and 9.05% in Watercourse Units.
- 4.3.9. The design of the Proposed Development has been informed by the assessment of potential significant effects on ecological and ornithological features, including species-specific surveys and assessments, as presented in **ES Chapter 8 Biodiversity [EN010140/APP/6.1.8]**. The design of the Proposed Development



includes embedded mitigation to avoid or reduce the potential for adverse ecological impacts, including retaining identified higher value habitat features such as hedgerows, ditches, watercourses and woodlands, and focusing the large majority of the built development proposals within lower ecological value agricultural land. Additionally, sensitive and higher value ecological features outside the Site have been protected within the design through the use of buffer zones and other safeguarding measures. The Landscape Strategy also includes extensive embedded habitat creation which will diversify and strengthen the biodiversity interest of the Proposed Development and neighbouring areas, as discussed in **ES Chapter 7 Landscape and Views [EN010140/APP/6.1.7]** and shown on **ES Figure 3.16: Landscape Strategy Plan [EN010140/APP/6.2.3.16]**. The **outline Landscape and Ecological Management Plan (oLEMP) [EN010140/APP/6.3.7.9]** sets out how the Landscape Strategy translates into the establishment and management for the various vegetation/habitats types and features of the Site.

4.3.10. Objective 3 relates to NIC Objectives 1-3, Climate, People and Place.

#### **Objective 4: Water Environment**

4.3.11. The Proposed Development should be resilient to flooding now and into the future, and should not increase risk of flooding elsewhere. The Proposed Development should not contribute to the contamination of the water environment.

4.3.12. As set out in **ES Chapter 9 Water Environment [EN010140/APP/6.1.9]**, the Proposed Development has been designed to be safe in the fluvial 'design flood' without increasing flood risk elsewhere. Design mitigation measures include the appropriate sequential design of the Site to avoid (as far as possible) areas of elevated flood risk and incorporation of flood resilience and resistance measures so that the equipment can remain operational during times of elevated flood risk. This includes the integration of an earth bund to protect the on-site substation and BESS and the stow position of solar panels and inverter units being located above the design flood level. Pollution prevention measures, surface water management measures and appropriate design of watercourse crossings are also proposed. The detailed design of the embedded mitigation measures regarding flood risk have been informed by the results of the Environment Agency (EA) approved site-specific flood model.

4.3.13. As described within the **Flood Risk Assessment [EN010140/APP/7.5]**, the drainage strategy for the BESS Compound has been designed to ensure that in the highly unlikely event of a battery fire, any potential contaminants in firewater can be contained and not contribute to the contamination of the broader water environment. This is achieved through the earth bund, which in addition to containing surface water, will be lined within an impermeable liner to negate surface water infiltration into the groundwater network. Penstocks on the outfalls from the surface water drainage system to the ditch/watercourse network would contain runoff in the event of a fire. If contamination is found to be present, the contaminated water would be tankered away for offsite treatment and disposal.

4.3.14. Objective 4 relates to NIC Objectives 1-3, Climate, People and Place.

#### **Objective 5: Heritage**

4.3.15. The Proposed Development should be sensitive to heritage assets and their setting.

4.3.16. The design of the Proposed Development has evolved to reduce potential effects upon listed heritage assets, as set out in **ES Chapter 6 Cultural Heritage [EN010140/APP/6.1.6]**. The Solar Farm Zone, as shown on **ES Figure 3.2 Parameter Plan [EN010140/APP/6.2.3.2]** (included as Figure 3.1 of the DAS), was moved further away from sensitive heritage receptors, alongside the creation of more substantial landscape buffer zones. Additionally, the on-site substation and BESS compound have been placed in a central position in the Site, well-screened from surrounding assets by both the earth bund and landscaping, further eliminating any potential views from identified designated heritage assets. Interpretation boards will be provided on Site, which will inform pedestrians about the Proposed Development and may describe the archaeological context of the area.

4.3.17. Objective 5 relates to NIC Objectives 2 and 3, People and Place.

#### **Objective 6: Community**

4.3.18. The Proposed Development has been designed to be sensitive to any residential dwellings, settlements and PRowS with regard to visual impact, noise and lighting. Where practicable the existing network of PRowS will be enhanced to improve accessibility and public amenity use.

- 4.3.19. As set out above under Objective 2: Landscape, the landscape strategy design of the Proposed Development has been designed to mitigate the impact of the Proposed Development on the surrounding context, including the local community. **ES Chapter 11 Noise and Vibration [EN010140/APP/6.1.11]** describes how the Proposed Development has been designed to ensure that acoustic effects at sensitive receptors are minimised through the optimal location of noise generating plan throughout the Site. The **Statutory Nuisances Statement [EN010140/APP/7.7]** sets out the mitigation measures to ensure that artificial lighting does not interfere with the wellbeing, comfort or enjoyment of nearby dwellings, including the minimisation of the use of lighting to that required for safe site operations during construction, and directing lighting towards the Site and away from boundaries during construction, operation and decommissioning.
- 4.3.20. As set out in **ES Chapter 10 Transport and Access [EN010140/APP/6.1.10]**, it is anticipated that access to the existing PRowS will be maintained through all phases of the Proposed Development. The Proposed Development will also provide additional, permissive footpaths during the operational lifetime of the Proposed Development, so as to formalise access routes between PRowS on Site and therefore encourage use of the Site by pedestrians, cyclists and equestrians.
- 4.3.21. As set out above under Objective 5: Heritage, Interpretative Boards will be provided on Site, which will provide the opportunity for local residents to engage with the Proposed Development and the context of the local area.
- 4.3.22. Objective 6 primarily addresses NIC Objective 1, People.

#### **Objective 7: Land Use**

- 4.3.23. The Proposed Development should be sensitive to the existing land quality, for example by minimising impacts on land that is considered Best and Most Versatile (BMV) Agricultural Land. Where the use of BMV land cannot be avoided, disturbance should be minimised through locating structures which require the creation of hardstanding away from this land, and through 'no dig' solutions. The Proposed Development should not contribute to the contamination of land.
- 4.3.24. **Appendix 4: Alternative Site Assessment [EN010140/APP/7.1.5] of the PS** demonstrates the necessity to select a site on BMV land. This is due to the majority of land within 5km of the grid connection point being identified as either Grade 1 or

2 agricultural land (BMV). The Site Selection Mapping [EN010140/APP/6.3.4.1] indicates that within a 5km radius from the grid connection area, 78.78% of land is either Grade 1 or Grade 2. Areas identified as Grade 3 agricultural land are largely occupied by approved solar farms [2021/0788/EIA and 023/0128/EIA] or other committed development. The design and layout of the Proposed Development have been influenced by land quality in order to minimise impact on BMV land, as set out in **ES Chapter 14 Soils and Agricultural Land [EN010140/APP/6.1.14]**. The **Outline Soil Management Plan (oSMP) [EN010140/APP/6.3.14.3]** sets out how soil disturbance will be minimised through the implementation of best practice measures.

4.3.25. As set out above under Objective 4: Water Environment, the drainage strategy for the BESS Compound has been designed to contain contaminants in firewater in the event of a battery fire.

4.3.26. Objective 7 relates to NIC Objectives 1-3, Climate, People and Place.

#### **Objective 8: Transport and Access**

4.3.27. The Proposed Development should provide safe access and minimise impact on the local highway network.

4.3.28. **ES Chapter 10 Transport and Access [EN010140/APP/6.1.10]** describes how the construction traffic route has been designed to utilise the most appropriate roads available, avoid designated or protected areas, height and weight restrictions and residential areas. Access locations will remain the same for the operational phase, where very little day to day traffic is expected. As set out above under Objective 6: Community, the Proposed Development has been designed such that access to PRowS will be maintained, and additional permissive footpaths will be provided.

4.3.29. Objective 8 relates to NIC Objectives 2 and 3, People and Place.

## 5. Outline Design Principles

### 5.1. Introduction

5.1.1. This section sets out the guiding principles for the detailed design of the Proposed Development and is secured by a requirement in the draft DCO. Assuming the application for development consent is granted, the detailed design for the Proposed Development will be submitted for approval to NYC as the relevant local planning authority. NYC will assess those details having regard to the principles set out in this document and the ES for the Proposed Development as certified by the SoS.

### 5.2. Use

5.2.1. The main element of the proposal is the installation of ground mounted solar arrays. An operational lifespan of 40 years would be sought linked to the first export date from the development.

5.2.2. The detailed design of the Proposed Development will follow a successful competitive tender process. This is to allow for flexibility to accommodate changes in technological advancements. In order to maintain flexibility in the design and layout at this stage in the process, the assessment of the Proposed Development has been carried out in accordance with NPS EN-1 and has adopted the Rochdale Envelope approach, as described in the *PINS Advice Note Nine: Rochdale Envelope* (July 2018).

5.2.3. In this regard, the Applicant proposes the inclusion of a requirement for the detailed design of the Proposed Development to be submitted and approved in writing by the relevant planning authority before development commences. The purpose of the submission would be to:

- Clarify the construction and operational sequencing of the development;
- Demonstrate compliance with the requirements included in the DCO; and
- Demonstrate that the final detailed design remains within the parameters of the design principles set out in this DAS.

5.2.4. The draft DCO submitted with the application includes the following Requirement:



### Detailed design approval

(1) No phase of the authorised development may commence until details of—

- (a) the layout;
- (b) scale;
- (c) proposed finished ground levels;
- (d) external appearance;
- (e) hard surfacing materials;
- (f) vehicular and pedestrian access, parking and circulation areas;
- (g) refuse or other storage units, signs and lighting;
- (h) drainage, water, power and communications cables and pipelines;
- (i) programme for landscaping works; and
- (j) fencing,

relating to that phase have been submitted to and approved in writing by the local planning authority.

(2) The details submitted must accord with—

- (a) the location plan;
- (b) the works plan;
- (c) the principles and assessments set out in the environmental statement; and
- (d) the design approach document, or such variation thereof as may be approved by the local planning authority pursuant to requirement 17.

(3) The authorised development must be carried out in accordance with the approved details.

5.2.5. Therefore, the DCO secures that the final details will be in accordance with this DAS. The details will be tailored to the relevant phase of works and will be submitted in accordance with the relevant triggers in the above Requirement (i.e. prior to commencement of a “phase”). The number of phases will be determined by the undertaker prior to commencement of the DCO and notified to NYC under Requirement 3 of Schedule 2 of the DCO [EN010140/APP/3.1]; at this stage it is expected that the National Grid extension works (Work No. 6 and 6A) will be the responsibility of National Grid planning.



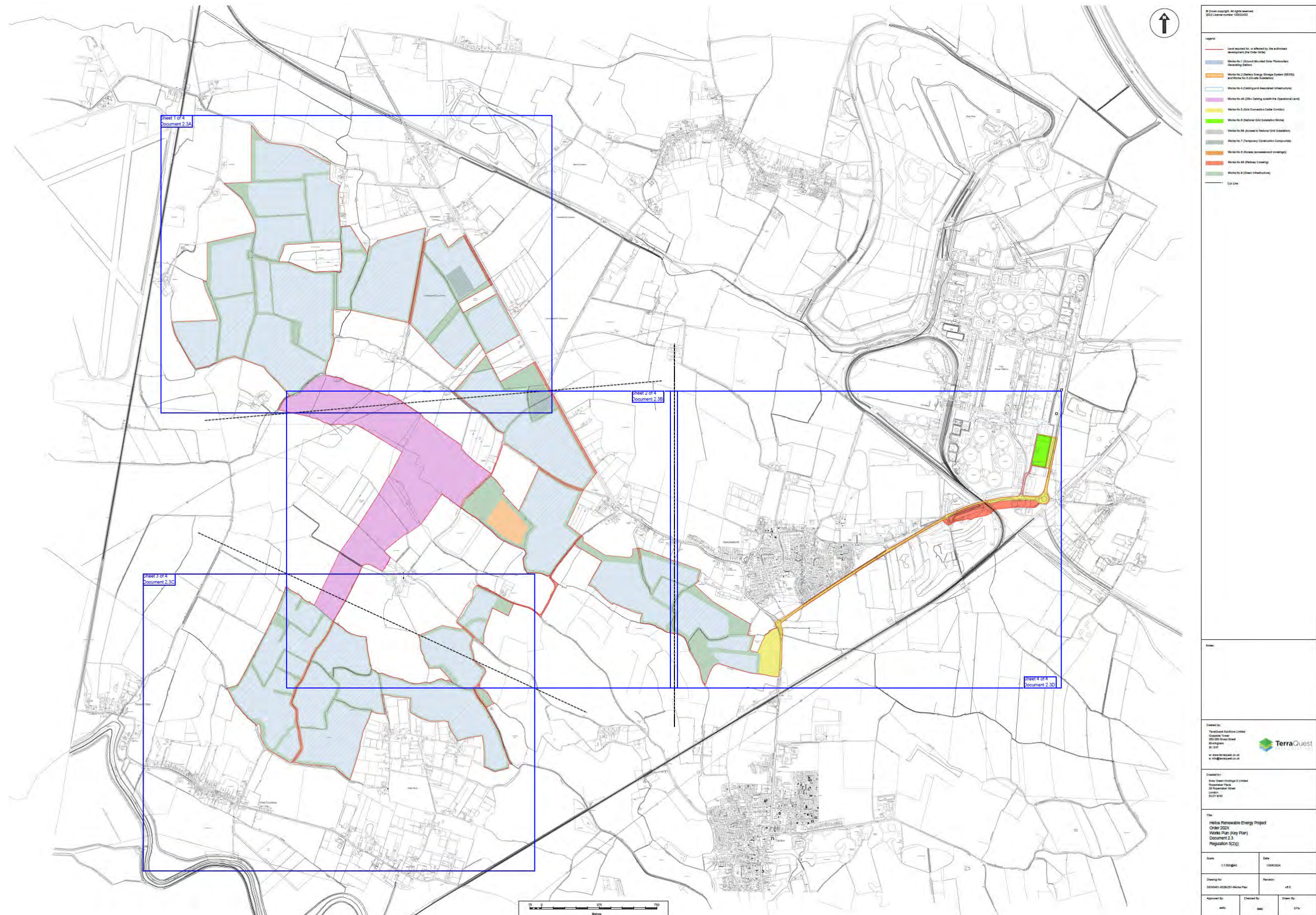


Figure 4.1: Works Plan [EN010140/APP/2.3] (Sheet 0 of 4: Key Plan)



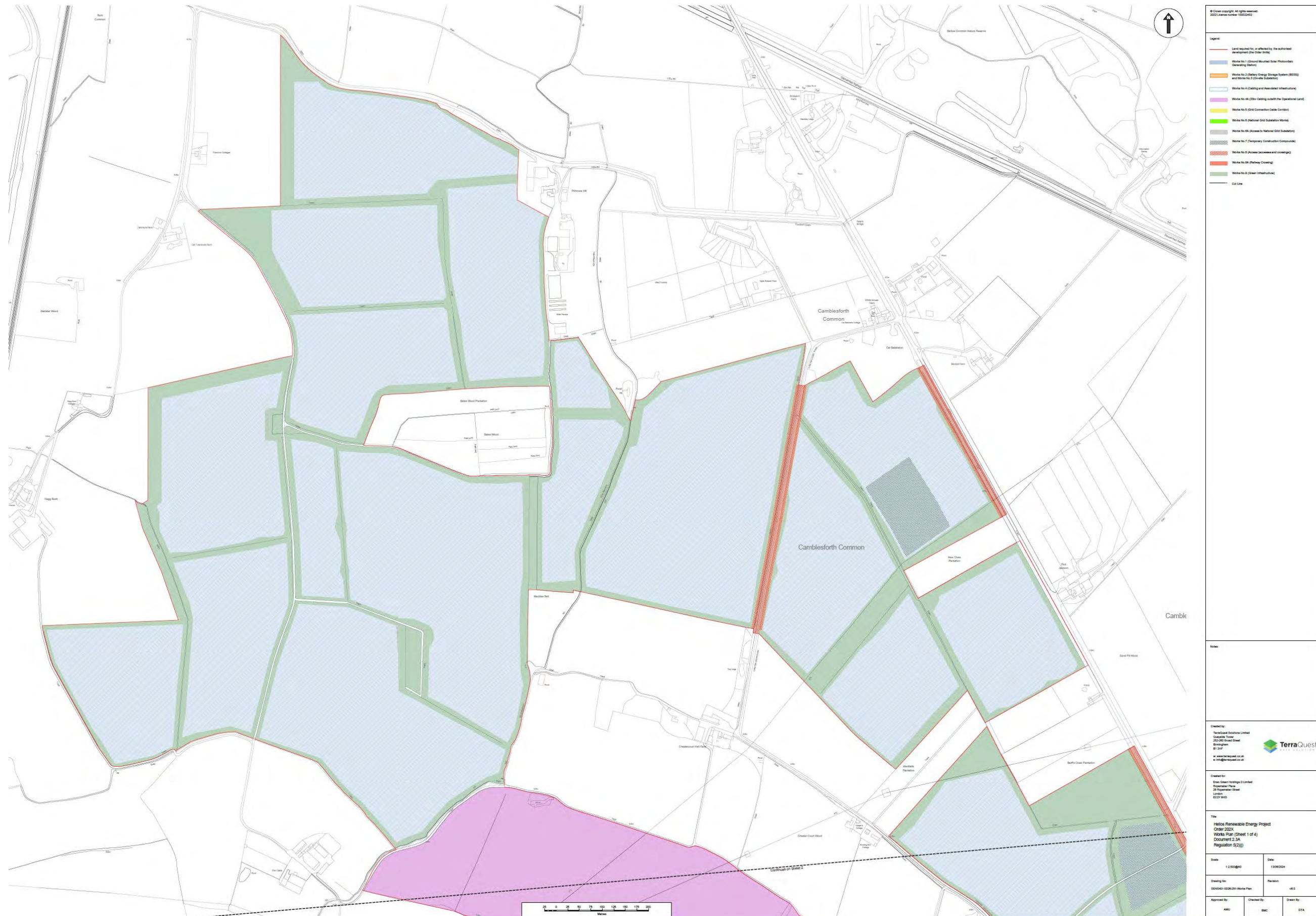


Figure 4.1: Works Plan [EN010140/APP/2.3] (Sheet 1 of 4)



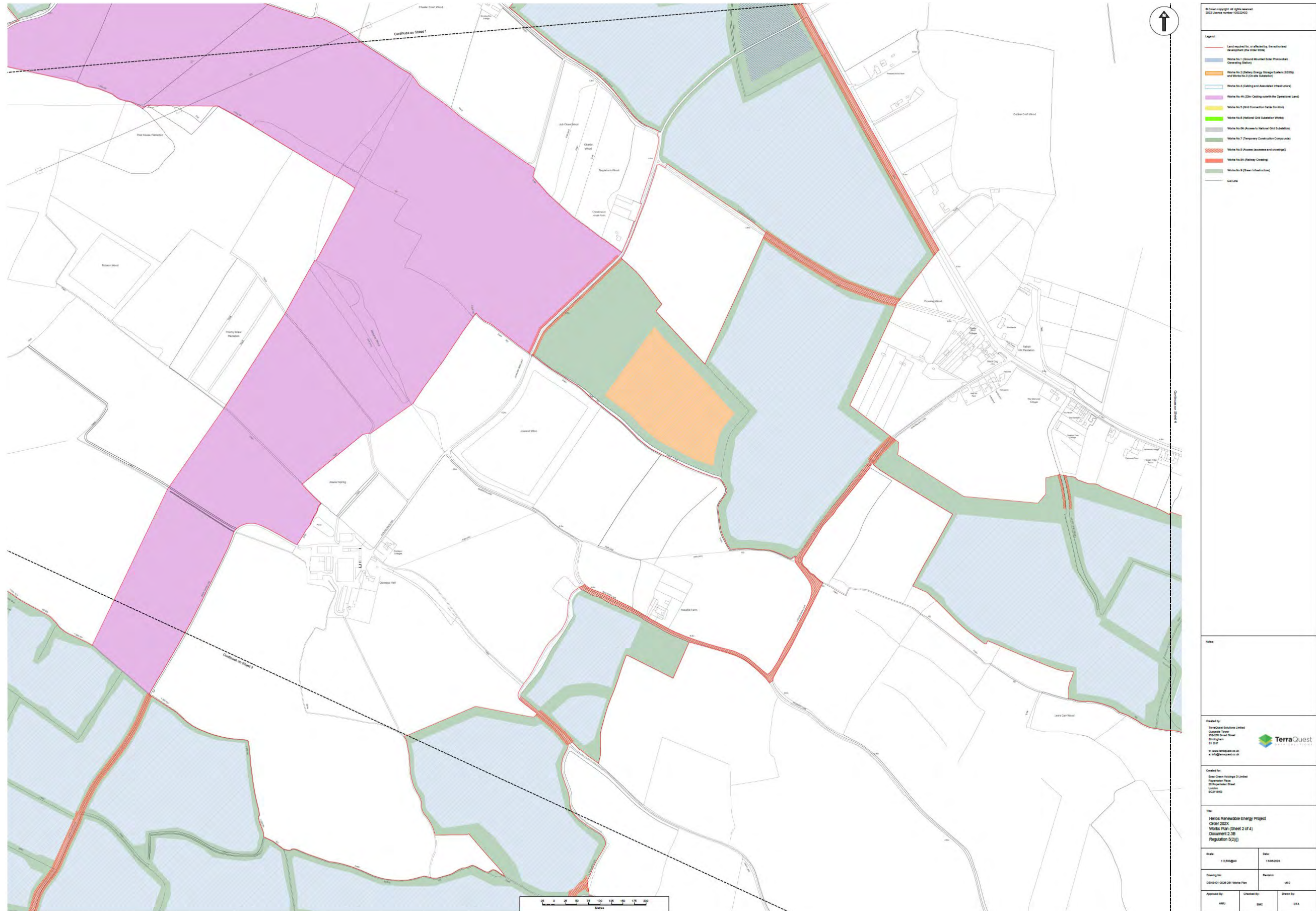


Figure 4.1: Works Plan [EN010140/APP/2.3] (Sheet 2 of 4)



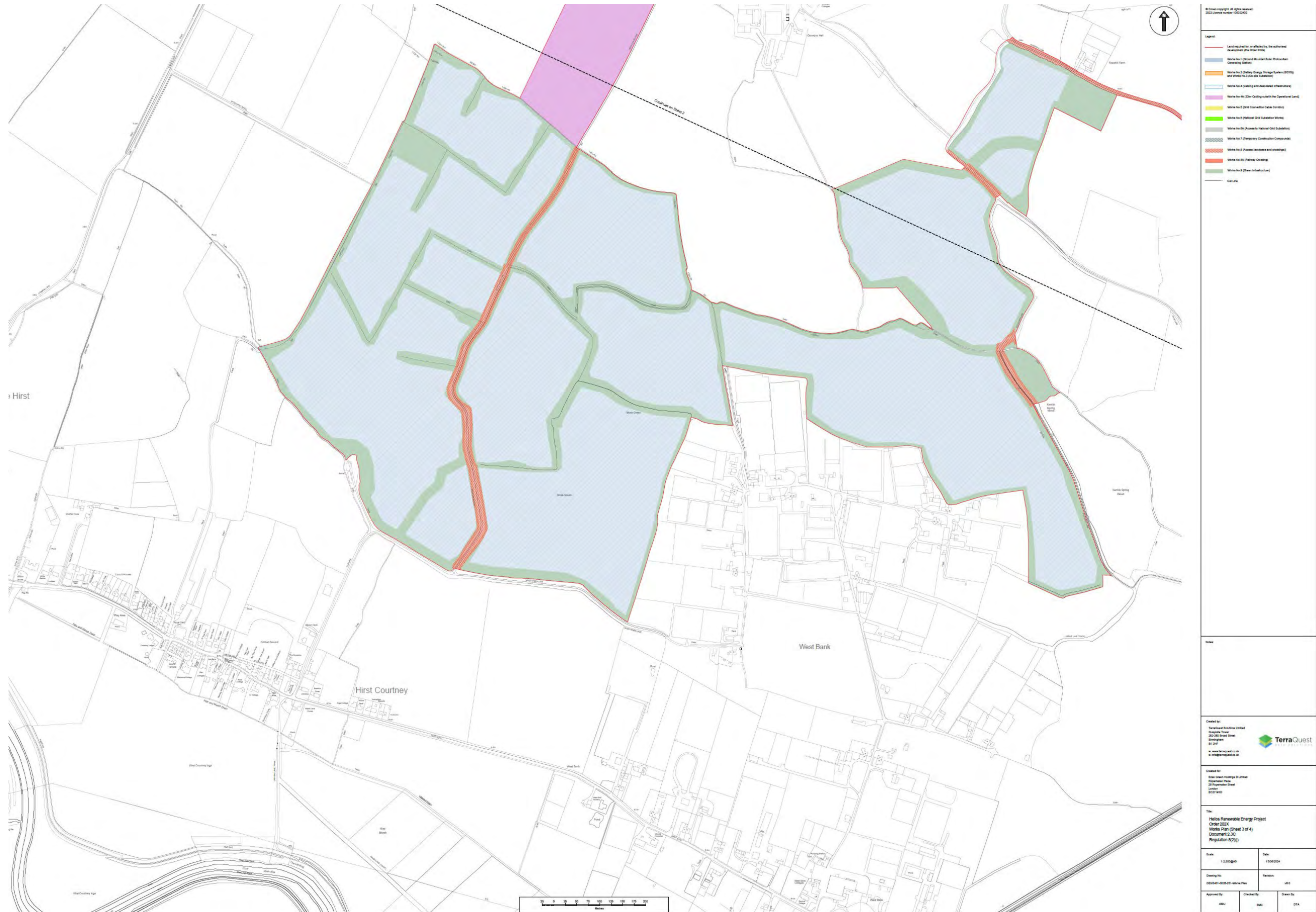


Figure 4.1: Works Plan [EN010140/APP/2.3] (Sheet 3 of 4)



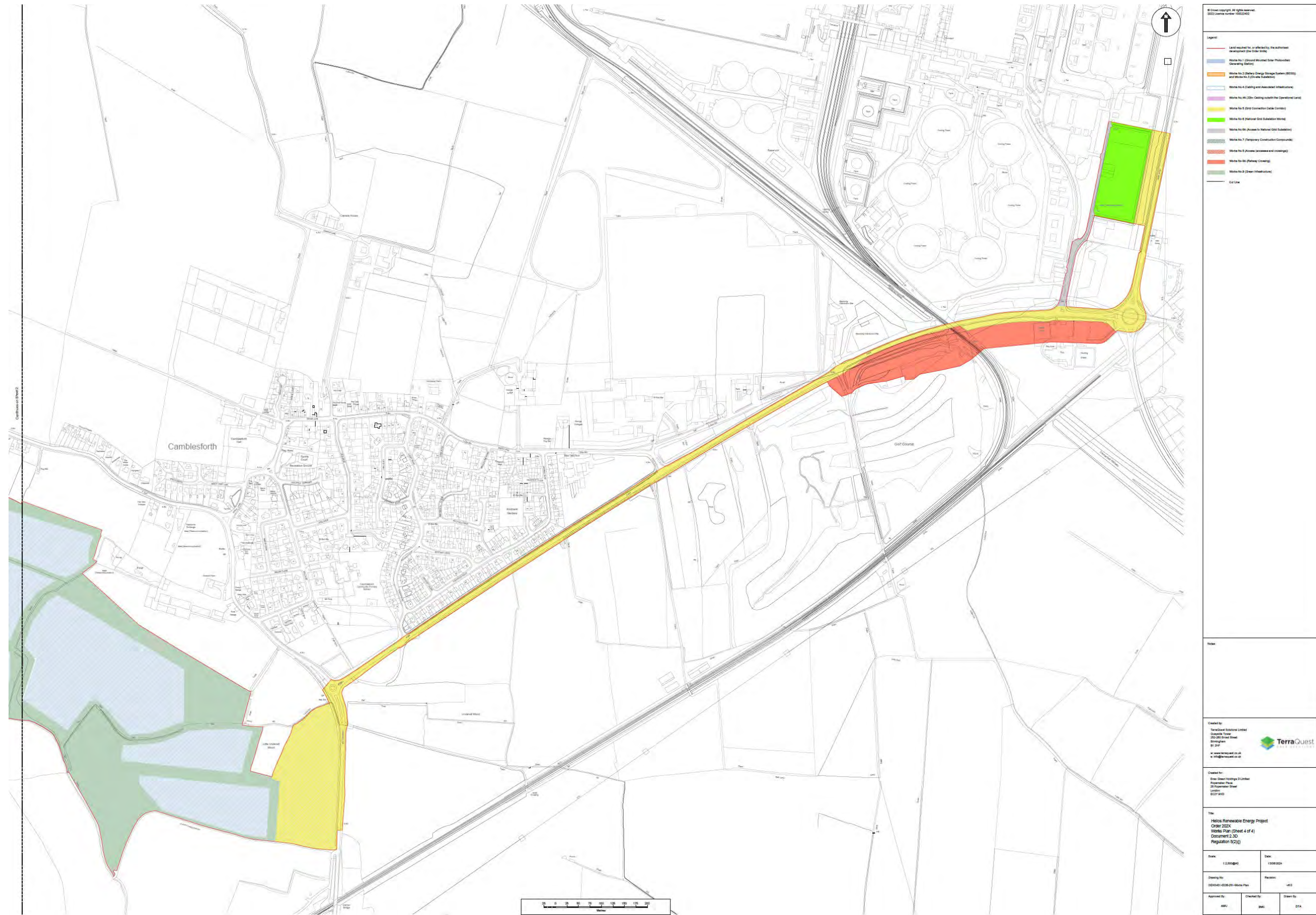


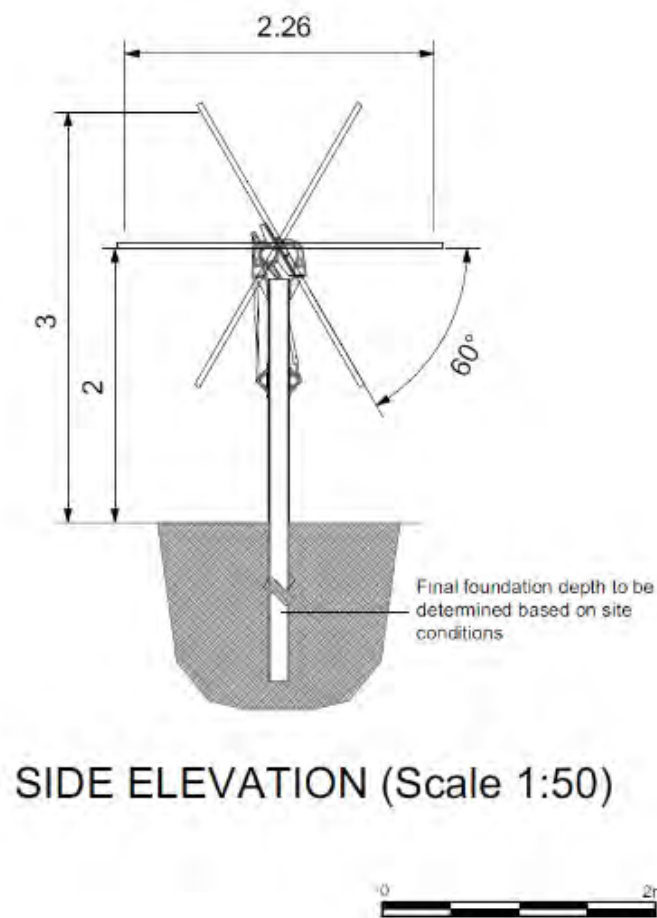
Figure 4.1: Works Plan [EN010140/APP/2.3] (Sheet 4 of 4)

### 5.3. The Works

#### Works No. 1 – A Ground Mounted Solar Photovoltaic Generating Station comprising:

- a) Solar panels fitted to mounting structures;
- b) Balance of solar plant;

and associated development within the meaning of Section 115(2) of the 2008 Act comprising Works No. 2 to 9.



**Figure 4.2: Solar PV Panel Side Elevation (Extracted from Solar PV Panel Elevations [EN010140/APP/6.2.3.4])**

5.3.1. The design principles of the solar modules are:

- All solar panels will be located within the Work No .1 area as defined on Figure 4.1 and on the **Works Plan [EN010140/APP/2.3]**;
- The solar PV modules will be ground mounted to a piled metal frame of anodized

aluminium alloy or galvanized steel with rough matte finish;

- The framework posts will be pile driven, up to a maximum depth of 2.3m below ground level;
- The panels will utilise a Single Access Tracker ('SAT') system, oriented north-south and will tilt east-west.
- The maximum top height of the arrays will be 3.0m AGL;
- The minimum height of the lowest part of the arrays will be 0.9m AGL;
- The rows of solar PV tables will have a minimum separation distance of 2m;
- Solar panels will be made of silicon glass and include an anti-reflective coating;
- Biodiversity would be promoted within and around the arrays; and
- Planting and ecological works incorporating the biodiversity objectives and management prescriptions in accordance with the Outline LEMP.

**Works No. 2 – Battery Energy Storage System (BESS) comprising:**

- a) Battery energy storage system units;
- b) Auxiliary transformers and associated bunding;
- c) Power conversion system units including inverters, switchgear, transformers and ancillary equipment;
- d) Containers or enclosures housing all or any of Work Nos. 2(b) and (c) and ancillary equipment sitting on a concrete foundation on a gravel sub-base;
- e) Monitoring and control systems;
- f) Heating, ventilation and air conditioning systems;
- g) Fire safety infrastructure including water storage in tanks or other containers, drainage and water containment features, bunding and associated infrastructure; and
- h) Containers or similar structures to house control room, office and welfare facilities, and storage.



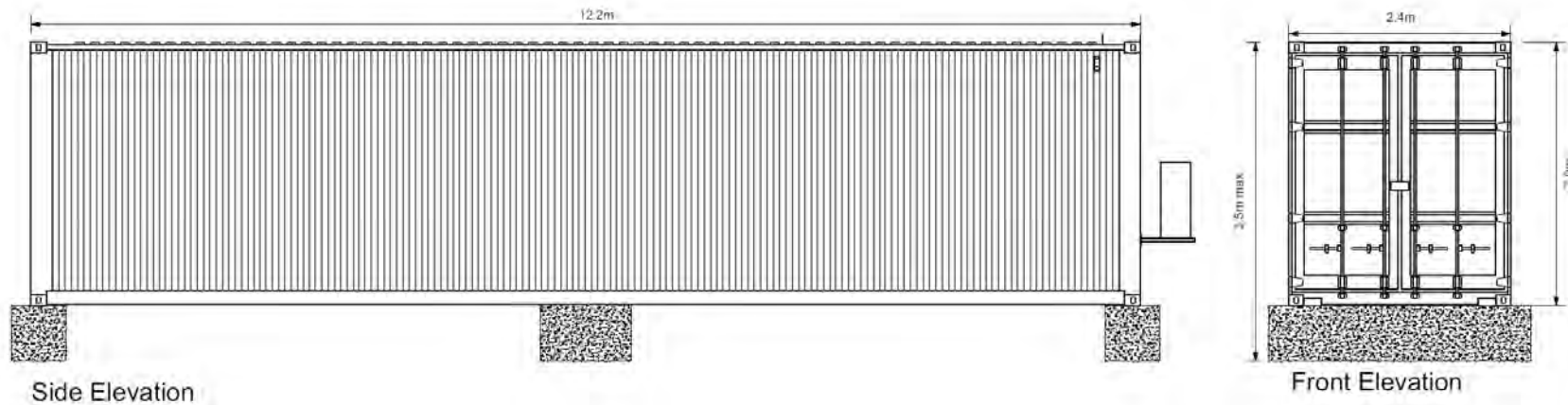


Figure 4.3: BESS Container Front and Side Elevation (Extracted from BESS Battery Container Elevations [EN010140/APP/6.2.3.7])

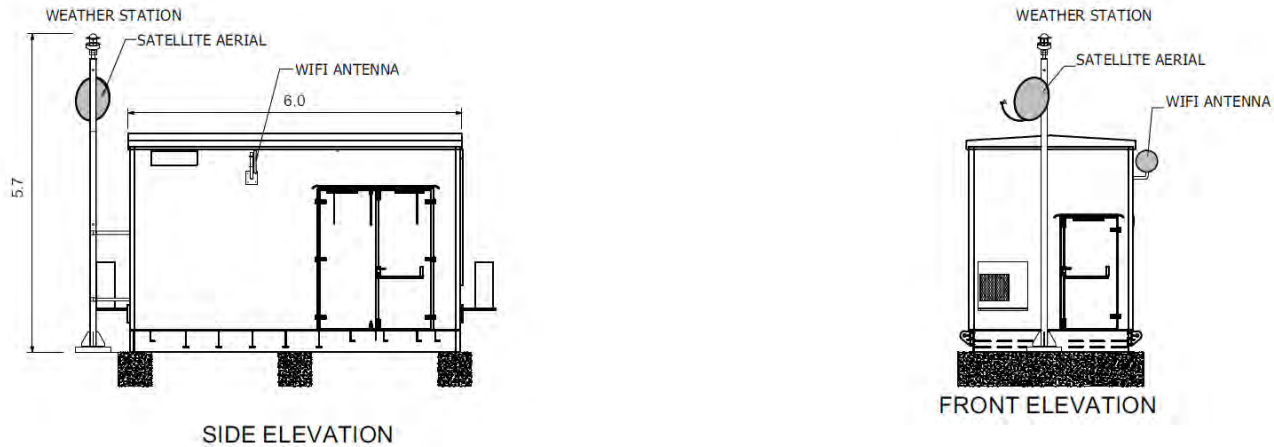


Figure 4.4: BESS Control Room Front and Side Elevation (Extracted from BESS Control Room Elevations [EN010140/APP/6.2.3.8])

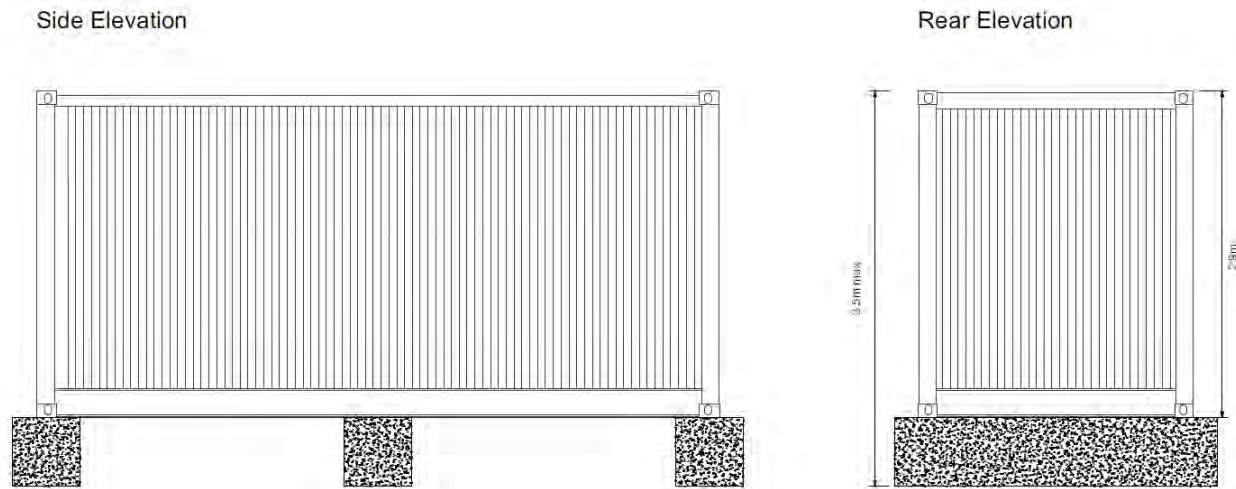


Figure 4.5: BESS Inverter/Transformer Side and Rear Elevations (Extracted from BESS Inverter/Transformer [EN010140/APP/6.2.3.9])

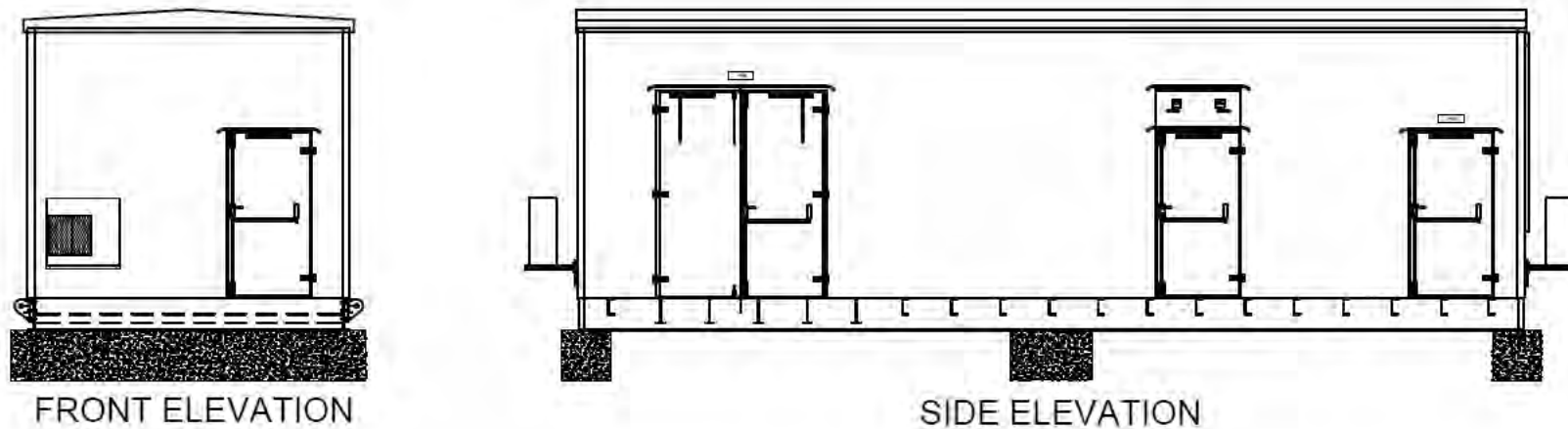


Figure 4.6: BESS Switchroom Front and Side Elevations (Extracted from BESS Switchroom [EN010140/APP/6.2.3.10])

5.3.2. The design principles of the energy storage facility are:

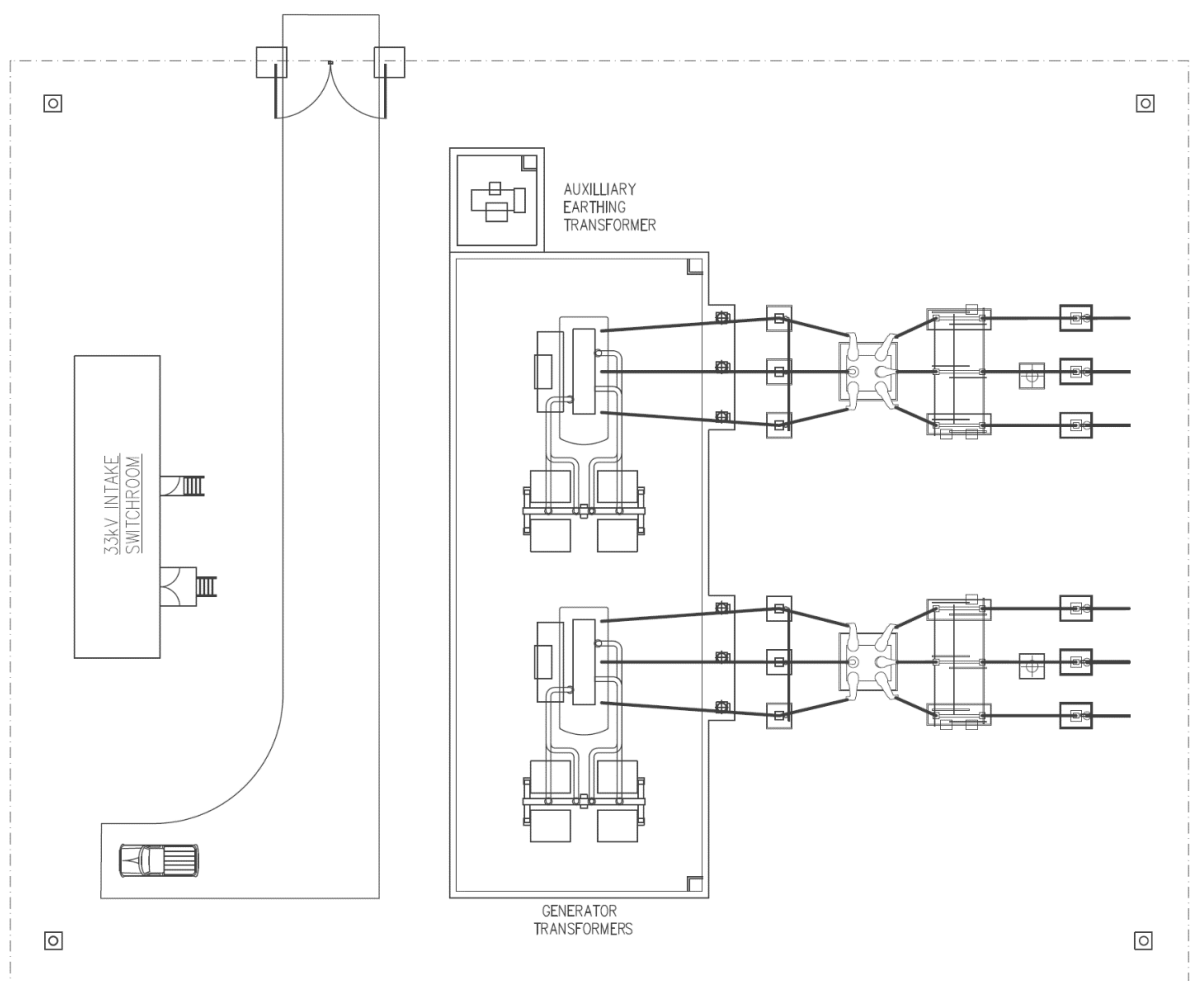
- The energy storage compound will be located within area designated for Works No.2 and No.3 as shown on Figure 4.1 and on the **Works Plan [EN010140/APP/2.3]**;
- The compound will include battery containers of up to 12.2m in length x 2.4m in width x 3.5m in height, including concrete supports 600mm in height, as shown on **ES Figure 3.7: BESS Battery Container Elevations [EN010140/APP/6.2.3.7]** in the ES;
- The compound will include a control room (including a weather station, wifi antenna and satellite aerial) of up to 6m in length x 3m in width x 5.7m in height, as shown on Figure 4.4 and on **ES Figure 3.8: BESS Control Room Elevations [EN010140/APP/6.2.3.8]** in the ES;
- The compound will include inverter-transformers of up to 6.1m in length x 2.4m in width x 3.5m in height, including supports 600mm in height, as shown on Figure 4.5 and on **ES Figure 3.9: BESS Inverter/Transformer [EN010140/APP/6.2.3.9]** in the ES;
- The compound will include a switchroom of up to 11.7m in length x 4m in length x 3.8m in height, as shown on Figure 4.6 and on **ES Figure 3.10: BESS Switchroom [EN010140/APP/6.2.3.10]** in the ES.
- Infrastructure within the compound will be no higher than 6m;
- The compound will be surrounded by a flood defence earth bund raised at least 600mm above the fluvial ‘credible maximum scenario sensitivity test’ flood level to protect the equipment from inundation;
- The design of BESS includes a number of design elements to both prevent, detect and control a fire should one occur, as set out in **ES Appendix 3.1: Outline BESS Safety Management Plan [EN010140/APP/6.3.3.1]** and the **Site Specific Risk Engagement Document (SSRED) [EN010140/APP/7.4]**.

**Works No. 3 – On-site Substation comprising:**

- a) Substation, switch room buildings, concrete foundations and ancillary equipment including reactive power units;
- b) Power conversion system units including inverters, switchgear, transformers and ancillary equipment;



- c) Control building housing offices, storage containers and space, welfare facilities, waste storage within a fenced compound, car parking;
- d) Monitoring and control systems;
- e) 132 kilovolt harmonic filter compound;
- f) Electrical cables;
- g) Deluge system including water tanks and fire suppression, and drainage and water containment features and associated infrastructure; and
- h) Access gates and tracks, security palisade fencing and bunding.



**Figure 4.7: Substation Layout (Extracted from 132kV Substation [EN010140/APP/6.2.3.6])**

5.3.3. The design principles of the on-site substation are:

- The substation will be located within area designated for Works No.2 and No.3 as shown on Figure 4.1 and on the **Works Plan [EN010140/APP/2.3]**;

- The substation will comprise an earthing transformer, surge arresters, earth switch, circuit breaker, 33kV intake switch room and generator transformers;
- The component of the greatest height within the substation is the generator transformer, standing approximately 6.5m high, as shown on Figure 4.7 and on **ES Figure 3.6: 132 kV Substation [EN010140/APP/6.2.3.6]**.

**Works No. 4 – Cabling and Associated Infrastructure comprising:**

- a) Electrical cables up to 33 kilovolt connecting Work No. 1 and Work No. 2 to Work No. 3;
- b) Electrical cables up to 132 kilovolt connecting Work No. 3 to Work No. 6;
- c) Fencing, gates, boundary treatment and other means of enclosure;
- d) Improvement, maintenance and use of existing private tracks;
- e) Laying down of internal access tracks, ramps, means of access, footpaths, permissive paths, roads, including the laying and construction of drainage infrastructure, signage and information boards;
- f) Works for the provision of security and monitoring measures such as CCTV columns, lighting, cameras, weather stations, communications infrastructure, and perimeter fencing;
- g) Landscaping and biodiversity mitigation and enhancement measures including planting; and
- h) Works required for crossing, moving, re-routing or over/undergrounding of existing utility assets (including water, gas, sewer pipes, electricity distribution/transmission cabling, telecommunications etc.).

**Works No. 4A – 33kv Cabling outwith the Operational Land comprising:**

- a) Electrical cables up to 33 kilovolt connecting Work No. 1 and Work No. 2 to Work No. 3;
- b) Fencing, gates, boundary treatment and other means of enclosure;
- c) Laying down of internal access tracks, ramps, means of access, footpaths, roads, including the laying and construction of drainage infrastructure, signage and information boards; and
- d) Works required for crossing, moving, re-routing or over/undergrounding of

existing utility assets (including water, gas, sewer pipes, electricity distribution/transmission cabling, telecommunications etc.).

5.3.4. The design principles of the cabling are as follows:

- The electrical cabling will be located within the limits of deviation of Work No. 4 and Work No. 4A as shown on Figure 4.1 and on the **Works Plan [EN010140/APP/2.3]**;
- The 33kV cables will be buried underground in a trench typically up to 1.5m wide with a minimum depth of 0.9m;
- The 132kV cables will be buried underground in a trench typically up to 1.5m wide with a minimum depth of 0.9m;
- Cables will cross existing below-ground utility infrastructure at 90 degrees (perpendicular) to the alignment of the utility infrastructure;
- Cable crossings will be at least 600mm above or below the existing below ground utility infrastructure;
- Trenchless drilling methods may be required within the Solar Farm Zone to cross beneath existing belowground utility infrastructure and watercourses. Trenchless methods will have a maximum working width of 30m.

**Works No. 5 – Grid Connection Cable Corridor comprising:**

- a) Electrical cables up to 132 kilovolt connecting Work No. 3 to Work No. 6;
- b) Fencing, gates, boundary treatment and other means of enclosure;
- c) Laying down of internal access tracks, ramps, means of access, footpaths, roads, including the laying and construction of drainage infrastructure, signage and information boards; and
- d) Works required for crossing, moving, re-routing or over/undergrounding of existing utility assets (including water, gas, sewer pipes, electricity distribution/transmission cabling, telecommunications etc.).

5.3.5. The design principles of the grid connection cable corridor are as follows:

- The electrical cabling will be located within the limits of deviation of Work No. 5 as shown on Figure 4.1 and on the **Works Plan [EN010140/APP/2.3]**;
- The 132kV cables will be buried underground in a trench typically up to 1.5m wide

with a minimum depth of 0.9m.

**Works No. 6 – National Grid Substation Works comprising:**

- a) a compound for electrical works necessary for the onwards transmission of electricity containing, but not limited to, cable switchgear and electrical equipment including power transformers, reactive compensation equipment, filters, cooling equipment, control and welfare buildings, lightning rods, internal roads, security fencing, and other associated equipment, structures and buildings including noise-attenuation works;
- b) electrical cables; and
- c) 132 kilovolt connection bay located at the National Grid Drax 132kV Substation including all associated electrical equipment and civil works necessary to enable the onward transmission of electricity.

**Works No. 6A – Access to National Grid Substation comprising:**

- a) access to the National Grid substation for the construction, operation, maintenance and decommissioning of Work No. 6.

5.3.6. The design principles of the works to the National Grid Substation are as follows:

- The works to the National Grid Substation will be located within the limits of deviation of Works No. 6 and 6A as shown on Figure 4.1 and on the **Works Plan [EN010140/APP/2.3]**.

**Works No. 7 – Temporary Construction Compounds comprising:**

- a) Works to excavate and store soil, clear vegetation and obstacles, level, shape and prepare surface for construction compounds to be installed, and civils investigations and works to reinforce ground with weight-bearing support infrastructure;
- b) Creation of temporary construction compounds, laydown and working areas;
- c) Storage of equipment and materials including waste skips;
- d) Areas of hardstanding, car parking, site and welfare offices, canteens and workshops, area for download and turning, security infrastructure, site drainage and waste management infrastructure, and electricity, water, waste-water and telecommunications connections; and

- e) Works required for crossing, moving, re-routing or over/undergrounding of existing utility assets (including water, gas, sewer pipes, electricity distribution/transmission cabling, telecommunications etc.).

5.3.7. There are no design principles established for this temporary infrastructure.

**Works No. 8 – Access (highway accesses and crossings) comprising:**

- a) Creation of accesses from or across the public highway;
- b) Visibility splays;
- c) Works to widen and surface the public highway; and
- d) Installation of temporary traffic lights or facilities for manned traffic management.

5.3.8. The design principles of the means of access are as follows:

- The access works will be located within the Work No. 8 as shown on Figure 4.1 and on the **Works Plan [EN010140/APP/2.3]**;
- Vehicular access to the Site during the construction and decommissioning phases of the Proposed Development will be taken from two points on the A1041 at the eastern boundary of the Site, as shown on **ES Figure 3.2: Parameter Plan [EN010140/APP/6.2.3.2]**;
- Although not yet determined, access to the grid connection cable corridor is anticipated from the A645;
- During the operational phase, vehicular access will be limited to maintenance visits and is anticipated to remain from the M62/A645/A1041 via the access/egress points identified previously;
- Internal access tracks will cover a width of up to 6m and be constructed of permeable aggregate to enable drainage;
- Passing places will be provided to enable HGVs to pass, the location of these will be confirmed along the tracks;
- Access to existing PRoW will be maintained through all phases of the Proposed Development. Should temporary diversion be required to ensure the safety of PRoW users, these will be for a short period during construction and decommissioning.



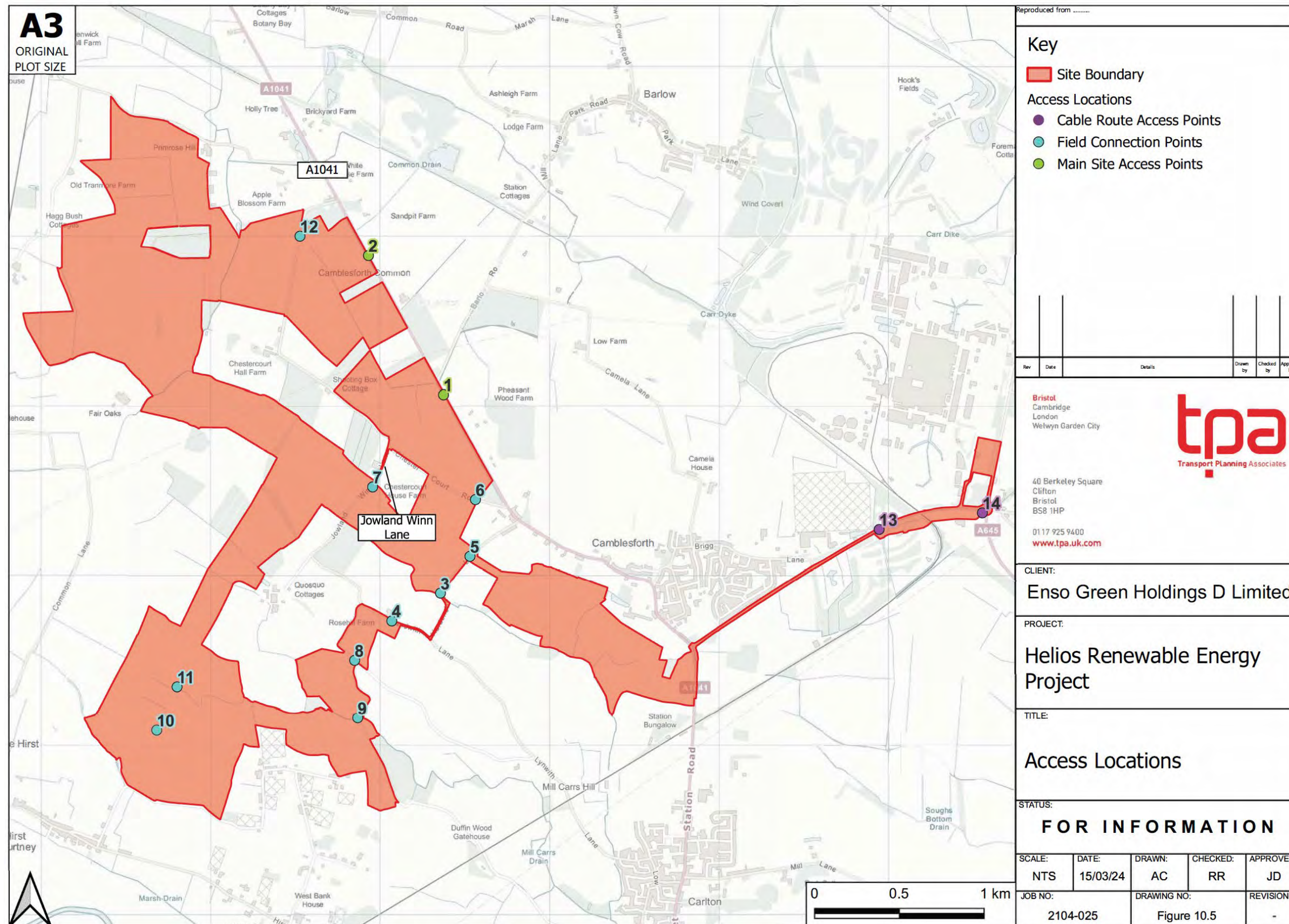


Figure 4.8: Access Locations [EN010140/APP/6.2.10.5]



**Works No. 8A – Railway Crossing comprising:**

- a) Electrical cables up to 132 kilovolt connecting Work No. 3 to Work No. 6;
- b) Works required for crossing the railway using trenchless installation techniques; and
- c) Works required for crossing, moving, re-routing or over/undergrounding of existing utility assets (including water, gas, sewer pipes, electricity distribution/transmission cabling, telecommunications etc.).

5.3.9. The design principles of the railway crossing are as follows:

- The railway crossing works will be located within the Work No. 8A as shown on Figure 4.1 and on the **Works Plan [EN010140/APP/2.3]**;
- The width and depth of this trenchless approach is expected to be 1.2m wide and up to 10m deep;
- The contractor will establish a 50m x 50m working compound on each side of the working sections of the trenchless methods.

**Works No. 9 – Green Infrastructure comprising:**

- a) Soft landscaping and planting, including tree and hedgerow planting;
- b) Habitat creation management including earthworks, landscaping, means of enclosure and the laying and construction of drainage infrastructure; and
- c) Laying down of permissive paths, signage and information boards.

5.3.10. The design principles of the landscape and ecological enhancements are as follows:

- The green infrastructure will be located within the Work No. 9 as shown on Figure 4.1 and on the **Works Plan [EN010140/APP/2.3]**;
- The existing hedgerows, woodland, ditches and ponds within the Site will be retained, with the exception of small breaks for new access tracks, security fencing and cable routing;
- Any hedgerow or watercourse crossings will be kept to a minimum width. Where a cable route crosses a hedgerow, the hedgerow will be reinstated after construction.



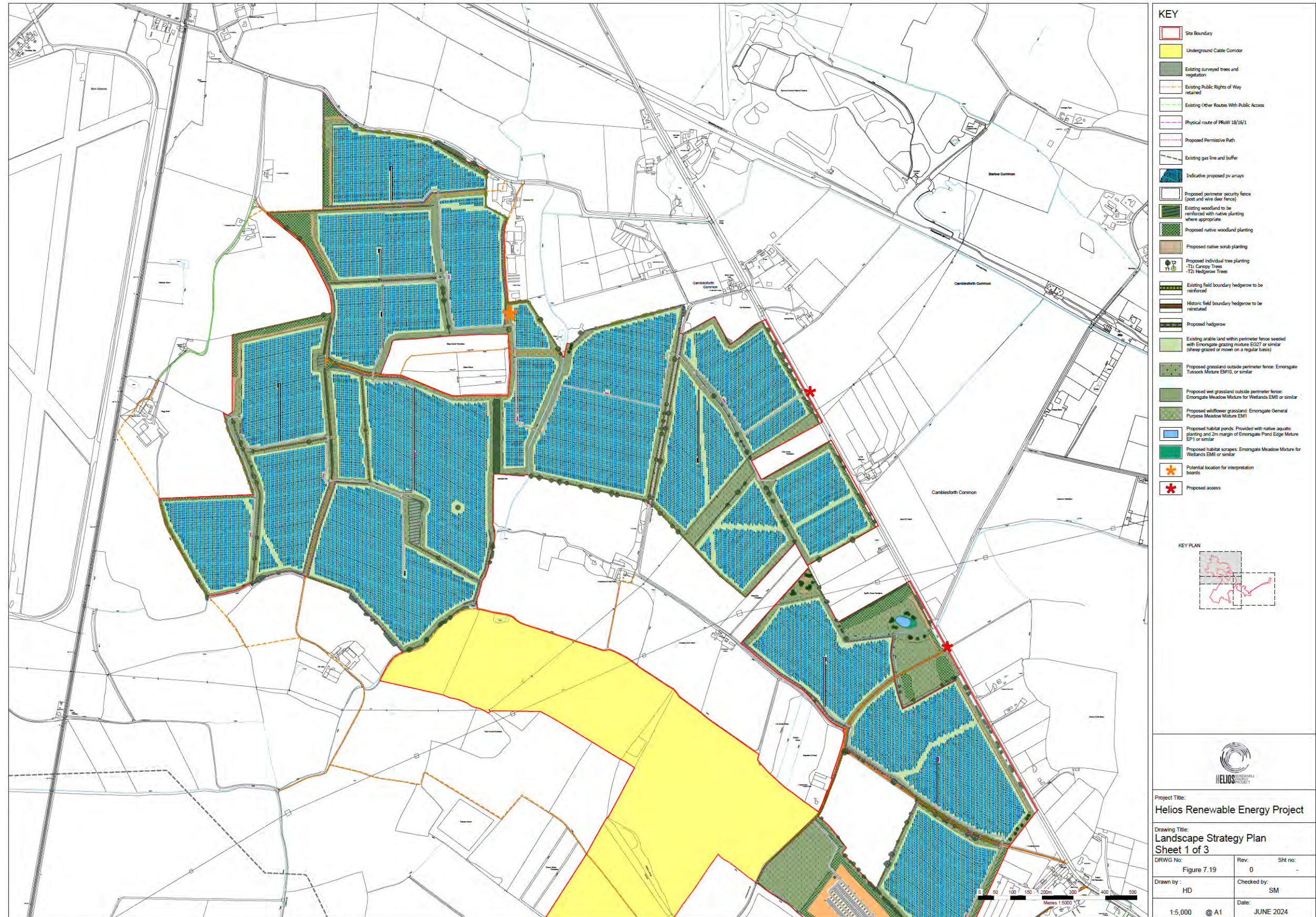


Figure 4.9: Landscape Strategy Plan [EN010140/APP/6.2.7.19]  
(Sheet 1 of 3)



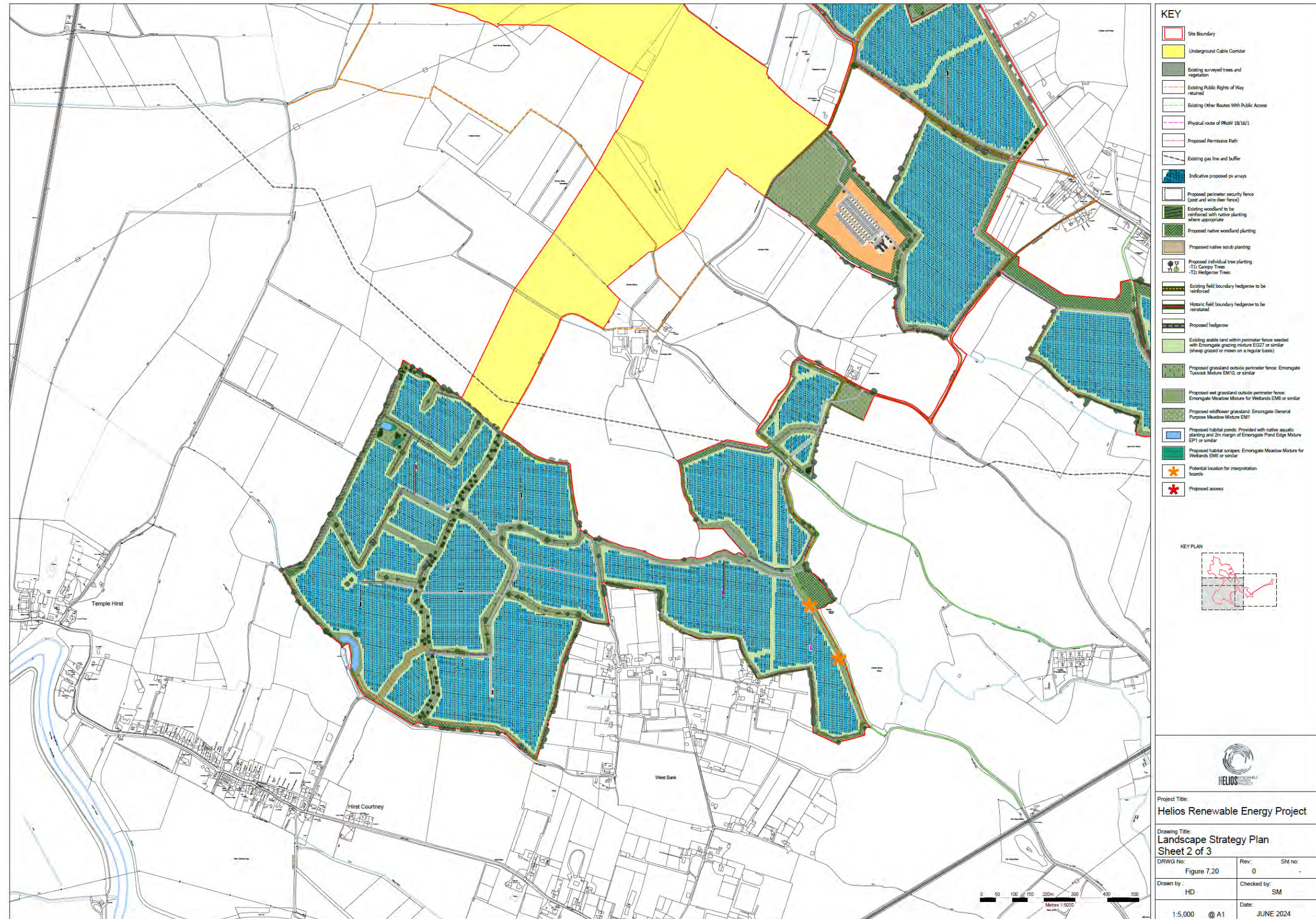


Figure 4.9: Landscape Strategy Plan [EN010140/APP/6.2.7.20]  
(Sheet 2 of 3)



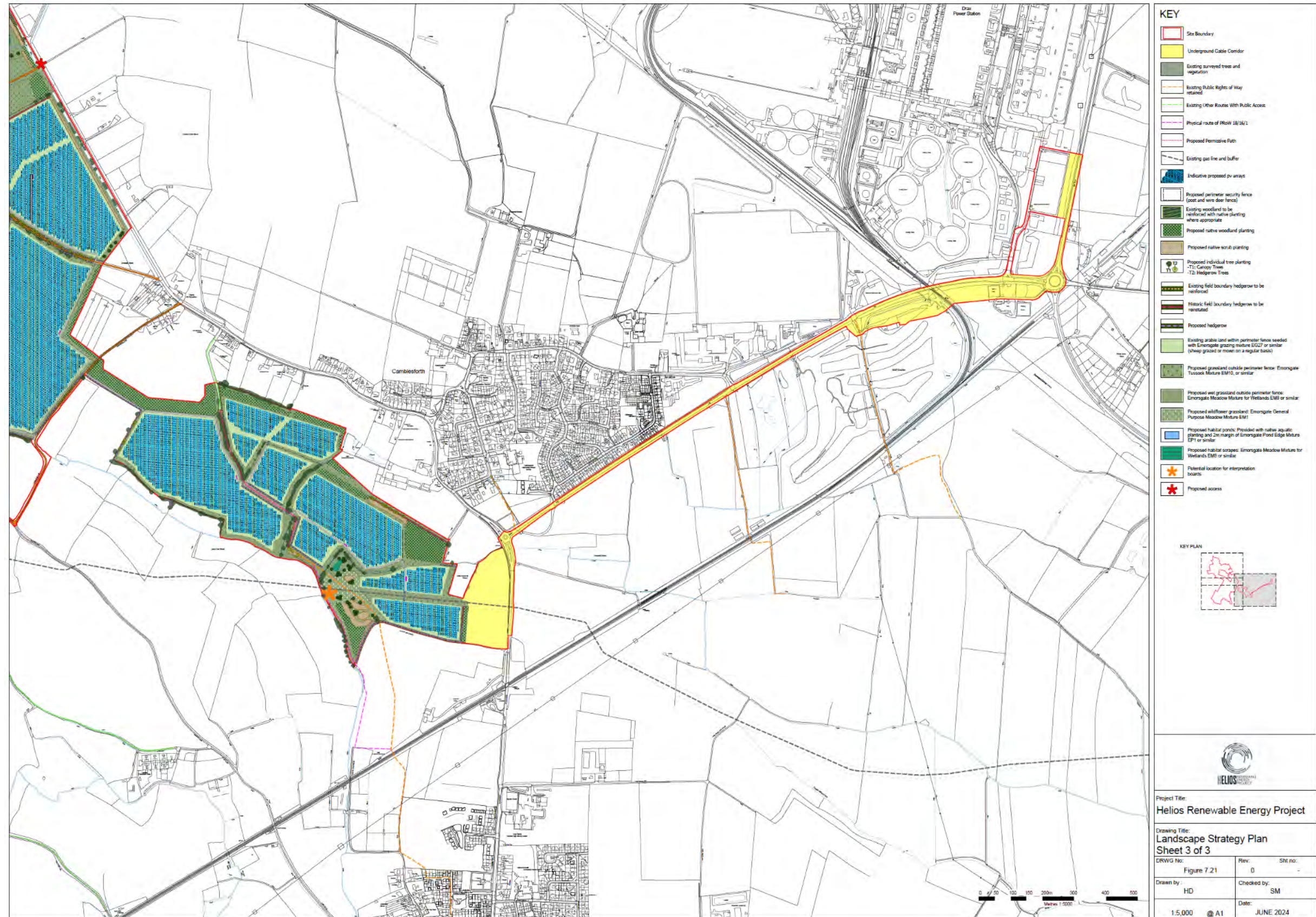


Figure 4.9: Landscape Strategy Plan [EN010140/APP/6.2.7.21]  
(Sheet 3 of 3)



### Further Associated Development

5.3.11. Further associated development in connection with the construction of Work Nos. 1 to 9 includes:

- a) Roads, ramps, watercourse and other temporary crossings, vehicular and pedestrian means of access including creation of temporary accesses, new tracks and paths, widening upgrades alterations and improvements of existing roads tracks and paths (including the installation of temporary traffic lights, visibility splays, banksmen or other measures to manage traffic);
- b) Fencing, gates, boundary treatments and other means of enclosure;
- c) Bunds, embankments, trenching and swales;
- d) Provision of temporary and permanent ecological and environmental mitigation and compensation works, including landscaping works and habitat creation;
- e) Working sites in connection with the construction of the authorised development including construction lay down areas, compounds, and spoil storage and associated control measures;
- f) Works to the existing irrigation system and works to alter the position and extent of such irrigation system;
- g) Surface water drainage systems, storm water attenuation systems including storage basins, oil water separators, including channelling and culverting and works to existing drainage networks as well as areas of potential flood compensation;
- h) Electrical, gas, water, foul water drainage and telecommunications infrastructure connections diversions and works to alter the position of such services and utilities connections;
- i) Works to alter the course of or otherwise interfere with non-navigable rivers, streams or watercourses, and the temporary stopping up of watercourses for installation of culverts, drainage and other features to cross watercourses;
- j) Site establishments and preparation works including site clearance (including vegetation removal, demolition of existing buildings and structure), earthworks (including soil stripping and storage and site levelling) and excavations, the



alteration of the position of services and utilities and works for the protection of buildings and land;

- k) Works for the benefit or protection of land affected by authorised development;
- l) Works of restoration;
- m) Tunnelling, boring and drilling works; and
- n) Such other works as may be necessary or expedient for the purposes of or in connection with the relevant part of the authorised development.

#### **5.4. Outline Landscape and Ecological Management Plan**

5.4.1. The Proposed Development presents considerable opportunity for landscape and biodiversity mitigation and enhancement. Alongside the **ES Chapter 7 Landscape and Views [EN010140/APP/6.1.7]** and **ES Figure 3.16: Landscape Strategy Plan [EN010140/APP/6.2.3.16]** (included as Figure 4.9 of the DAS), the **oLEMP [EN010140/APP/6.3.7.9]** discusses the Landscape and Biodiversity proposal in detail. The purpose of the oLEMP is to establish the overarching principles for the promotion of a sensitive management approach that protects, manages and enhances the Site for the benefit of habitats, landscape character and visual amenity in the long-term, and which protects/safeguards it during construction/installation works.

5.4.2. The main aims for the landscape management and maintenance of the Site, informed by the Landscape Management Considerations within published Landscape Character Assessments, are as follows:

- Ensure new development is sensitively located to allow for green infrastructure, a contribution to biodiversity and maintaining long views;
- Diversify habitats in arable areas by creating a grassland habitat network, field margins, waterside buffers, etc. This will further help to diversify habitats for insects and birds;
- Protect and improve public enjoyment of the landscape by retaining and improving the existing network of public rights of way;
- Restore and enhance wetland habitats, including the introduction of emergent species;

- Create new woodlands to complement the existing woodland pattern and provide valuable habitats for wildlife and local corridors for biodiversity;
- Enhance existing hedgerows and reinstate where possible to maintain landscape structure; and
- New development should be sited to take advantage of existing screening and in order to retain more open, long views.

5.4.3. Prior to commencement of each phase of the authorised development, a LEMP covering that phase of authorised development and in accordance with the oLEMP would be submitted to and approved by the local planning authority. The detailed LEMPs will be produced by way of a DCO requirement.

## 5.5. Operational Lifespan

5.5.1. The Proposed Development has an operational lifespan of 40 years, starting from the date of final commissioning.

5.5.2. Once operational, the activities on Site are expected to consist of maintenance activities such as servicing of plant and equipment, including solar panels, inverters, transformers, energy storage facility, and substation compound, and vegetation management. Movement within the Site is likely to be minimal and undertaken by quad bike or small farm utility vehicles as outlined within the oLEMP [EN010140/APP/6.3.7.9].

## 5.6. Statutory Undertakers

5.6.1. The provision of easements for the existing services that traverse the Site are incorporated into the layout design (see **ES Figure 3.3 Indicative Design [EN010140/APP/6.2.3.3]**). No arrays will be erected within the agreed easements, allowing access to the statutory undertakers at all times. Whereby internal access tracks cross any existing underground services the crossing method will be agreed with the asset owner in advance including the agreement of Risk Assessments and Method Statements.

## 5.7. Access

5.7.1. An **Outline Construction Traffic Management Plan [EN010140/APP/6.3.5.2]** accompanies the application.

- 5.7.2. **ES Chapter 10 Transport and Access [EN010140/APP/6.1.10]** sets out the locations of the proposed access points and the routes to access the Site. Access to the Proposed Development during the construction, operational and decommissioning phases is proposed from the A1041 (S), an improved existing access, and from the A1041 (N), a new access point.
- 5.7.3. A summary of the construction vehicle route to both accesses is set out below:
- M62 J36 exit→A614→A645→A14041 Bawtry Road→Access 1 and Access 2
- 5.7.4. Vehicles will exit from the M62 via Junction 36. If vehicles arrive from the east, they will take the first exit of the roundabout onto the A614, if arrival is planned from the west, vehicles will take the third exit onto the A614, continue across the motorway bridge and then take the first exit of the second roundabout to continue onto the A614.
- 5.7.5. From here, vehicles will continue onto the A614 roundabout with Rawcliffe Road taking the second exit to stay on the A614 for approximately 1.3km. At the A614/A645 roundabout, vehicles will take the second exit onto the A645 heading northwest for approximately 4.6km until arriving at the roundabout of the A645 with New Road.
- 5.7.6. Vehicles will take the 1st exit to stay on the A645 heading south west towards Camblesforth. Approximately 2km southwest of the roundabout, vehicles will encounter the roundabout with the A1041. Vehicles will take the second exit onto the A4041.
- 5.7.7. From here, the first access point is approximately 2.2km northwest of this roundabout, and the second access point is approximately 2.8km northwest.
- 5.7.8. Further information on the construction traffic routes is set out in the **Transport Assessment [EN010140/APP/7.6]**.
- 5.7.9. Two access points for the construction of the cable route are proposed along the A645, located at Drax Golf Club and Drax Sports and Social Club.

## **5.8. Decommissioning**

- 5.8.1. Following cessation of energy generation and exportation at the Site, all PV modules, mounting structure, cabling, inverters and transformers will be removed and

recycled, or disposed of in accordance with good practice and market conditions at that time. The decommissioning of the Site is anticipated to take approximately 12 months.

- 5.8.2. The mitigation measures for the Proposed Development's decommissioning phase will be set out in **ES Appendix 5.3: outline Decommissioning Environmental Management Plan (oDEMP) [EN010140/APP/6.3.5.3]**, which will be secured through DCO requirement and will be agreed with NYC in advance of the commencement of decommissioning.

## 5.9. Requirements

- 5.9.1. The application includes various outline management plans and documents that are intended to be detailed and finalised post-consent and there would be secured through the discharge of various proposed requirements.

- 5.9.2. The draft Development Consent Order **[EN010140/APP/3.1]** sets out the suggested requirements, which cover:

- Time limit to implement development (5 years);
- Expiry of development consent;
- Decommissioning and restoration;
- Construction hours;
- Phases of authorised development – The authorised development must not be commenced until a written scheme setting out the proposed phases of construction of the authorised development has been submitted to and approved by the local planning authority;
- Detailed Design Approval – No phase of the authorised development may commence until details relating to that phase have been submitted to and approved in writing by the local planning authority. Details (comprising layout, scale, proposed finished ground levels, external appearance, hard surfacing materials, vehicular and parking access, parking and circulation areas, refuse or other storage units, signs and lighting, drainage, water, power and communications cables and pipelines, programme for landscaping works and fencing) must accord with the Location Plan, the Works Plan, and the principles and assessments set out in the ES.

- No phase of authorised development may commence until the following has been submitted to and approved by the local planning authority:
  - Construction Environmental Management Plan (CEMP);
  - Construction Traffic Management Plan (CTMP);
  - Operational Environmental Management Plan (OEMP);
  - Soil Resource Management Plan;
  - Landscape and Ecological Management Plan (LEMP);
  - Public Rights of Way Management Plan;
  - Written details of all proposed permanent and temporary fences, walls or other means of enclosure of the connection works; and
  - Written scheme of investigation ,substantially in accordance with the Outline Archaeological Management Strategy.
- Battery Fire Safety Management Plan - Must be submitted to and approved by the local planning authority prior to the commencement of Work No. 2.



## 6. Design Evolution

### 6.1. Introduction

- 6.1.1. The design and extent of the Proposed Development has been subject to an iterative process involving the Applicant, the design team and the environmental consultant team. The design has also been informed by considering feedback from consultation with stakeholders and statutory consultees, host authorities, local communities, local residents and through the EIA scoping and Statutory Consultation process.
- 6.1.2. This section presents a summary of the design evolution of the Proposed Development from the preliminary Site boundary as presented in the request for a **Scoping Opinion [EN010140/APP/6.3.2.2]** in June 2022, to the point of submission in July 2024. It describes the main design changes associated with the solar array sites, supporting landscaping and ecological mitigation design, substation design, and the development of the cable routes. A more detailed description of these stages is set out in **ES Chapter 4: Alternatives and Design Evolution [EN010140/APP/6.1.4]**.

### 6.2. Evolution of the Site Boundary

- 6.2.1. The Site boundary submitted with the Scoping Opinion in June 2022 has undergone a staged series of amendments in response to environmental constraints, technical considerations and potential impacts on nearby residents and landowners. These amendments are set out in Table 5.1 below and illustrated in **ES Figure 4.2 Design Evolution Plan [EN010140/APP/6.2.4.2]** (included as Figure 5.1 of the DAS).
- 6.2.2. Changes to the Site boundary have been driven by the Project Objectives, as set out in Section 4.3 of this Statement. The Site boundary has been amended at several stages of the preparation process in order to reduce potential impacts on surrounding residential receptors, to meet Objective 6 (Community). By reducing the potential visual impacts of the Proposed Development, these amendments also contribute to meeting Objective 2 (Landscape). Several amendments have been to the Site boundary to improve access, addressing Objective 8 (Transport and Access).



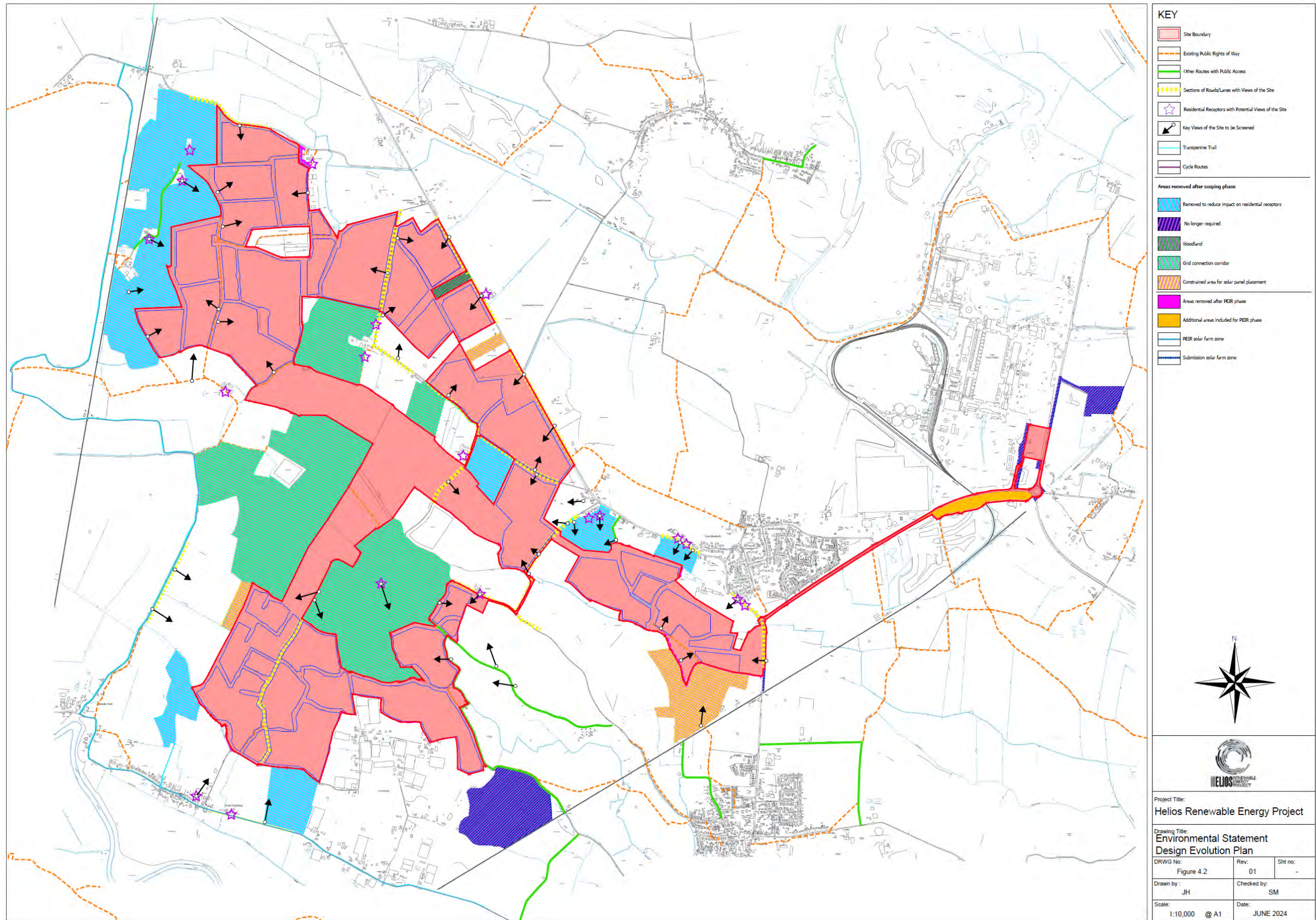


Figure 5.1: Design Evolution Plan [EN010140/APP/6.2.4.2]



**Table 5.1: Red Line Boundary Changes**

Stage	Dates	Summary of Changes
Scoping Opinion	June 2022	Preliminary site boundary presented, which covered an area of 757.46ha.
Changes to the Scoping Opinion Red Line Boundary in preparation of the PEIR	April 2022 – March 2023	<p><u>Landscape, Visual and Residential Amenity</u></p> <ul style="list-style-type: none"> <li>• Where potential views from adjacent properties have been identified, the Site boundary has been pulled back from these properties to reduce the potential effects to visual amenity of receptors on the north side of Hirst Courtney and in the south and western fringes of Camblesforth and along the north western boundary towards Burn.</li> <li>• The Site boundary around Hagg Bush and Tranmoor Cottages was pulled back in response to non-statutory consultation feedback and visibility lines from the residents minimising the landscape impact from these particular residential receptors.</li> </ul> <p><u>Noise</u></p> <ul style="list-style-type: none"> <li>• Due to the low level of noise emitted by the Proposed Development when operational, noise impacts on residential properties are not considered to be significant and therefore no amendments to the Site boundary were made in response to potential noise effects.</li> </ul> <p><u>Underground Grid Connection Cable</u></p> <ul style="list-style-type: none"> <li>• In the eastern section, the Site area was extended in response to a more accurate understanding of where the cable connection route would possibly be placed. The cable connection was directed down the highway with the option to utilise third party land to allow for the use of trenchless methods under the railway.</li> </ul> <p><u>Underground Cable Connection</u></p> <ul style="list-style-type: none"> <li>• The underground cable connection corridor was reduced in area in response to a more accurate understanding of where the cable connection would be located. Two areas of land were removed, located to the northwest and southeast of the retained cable connection corridor.</li> </ul>

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		<p><u>Access</u></p> <ul style="list-style-type: none"> <li>The full width of Hardenshaw Lane was incorporated to the redline boundary, utilising the full width of the existing track, whereby previously the redline had only included the tarmacked track. This change provides better site access for construction, operational, and decommissioning vehicles.</li> </ul>
	March 2023 – April 2023	<p><u>Access</u></p> <ul style="list-style-type: none"> <li>Jowland Winn Lane track (junction and a length of the road) and the ditch at Hardenshaw Lane were incorporated into the Site to improve access to the Site and allow for the potential need to widen these access points for abnormal loads.</li> <li>A further area along Stockwith Lane was incorporated into the Site boundary in order to provide flexibility to be able to widen the existing culvert to manoeuvre vehicles in this area.</li> </ul> <p><u>Land Rights</u></p> <ul style="list-style-type: none"> <li>A section of Station Road was reviewed to ensure that it avoided the shared access and third-party rights; after this review the area was removed from the Site boundary.</li> </ul>
	April 2023 – June 2023	<p><u>Landscape, Visual and Residential Amenity</u></p> <ul style="list-style-type: none"> <li>The area around Rabbit Hill Plantation was removed from the Site boundary to reduce the visual impact of the Proposed Development on surrounding residential properties.</li> </ul> <p><u>Reduced Land Requirements</u></p> <ul style="list-style-type: none"> <li>A small, wooded area to the east of the proposed Substation was removed from the Site boundary as it was no longer required.</li> </ul>
Changes to the PEIR Red Line Boundary following Statutory Consultation	October 2023 – February 2024	<p><u>Landowner Requests</u></p> <ul style="list-style-type: none"> <li>Following comments received from Landowners the Site Boundary has been decreased to accommodate the Landowner requests, see Figure 4.2 [APPLICATION REF]. Overall the Site area has been reduced to 475ha.</li> </ul>

### 6.3. Design Evolution

- 6.3.1. The design evolution of the Proposed Development has been an iterative process. The proposed design has evolved in response to constraints and opportunities as they have emerged over time, throughout various stages of assessment work and consultation.
- 6.3.2. The section below outlines how the design has evolved in response to environmental constraints. The decision-making process throughout the design evolution has been informed by the eight Project Objectives.

#### **Landscape and Visual**

- 6.3.3. In order to reduce potential impacts on landscape and visual amenity, and therefore to meet Objective 2 (Landscape) and contribute to meeting Objective 6 (Community), the design of the Proposed Development has evolved to include the features detailed below. Several of these design evolution changes contribute to the delivery of multiple objectives, which are outlined below where applicable.
- Proposed security fences will be to a maximum height of 2.1m above ground level and will be constructed from timber post and wire; similar in appearance to forestry fencing of a type to protect new planting from deer browsing. Therefore, not uncharacteristic in a rural environment, reducing the visual impact.
  - The Proposed Development will retain the existing field boundary structure of ditches, hedgerows, trees and woodland blocks, with appropriate offsets to these features, avoiding loss or change to the existing landscape character. The protection and enhancement of these features additionally helps to meet Objective 3 (Biodiversity).
  - Seeding of existing arable fields under and around proposed solar PV panels with appropriate native grassland mixes to enhance biodiversity and support grazing, in keeping with the agricultural character of the area. The continued use of the land for agriculture also contributes to meeting Objective 7 (Land Use).
  - Existing hedgerow field boundaries will be reinforced as part of the Proposed Development, particularly where fragmented, reducing effects on the landscape character. The protection and enhancement of boundary hedgerows additionally helps to meet Objective 3 (Biodiversity).



- The Proposed Development will include the re-establishment of historic field boundary hedgerows that have been lost through agricultural intensification. The re-establishment of these historic features also meets Objective 5: Heritage.
- Wetland/ditch field margins will be enhanced through appropriate native wetland seeding. The enhancement of these features additionally helps to meet Objective 3 (Biodiversity).
- The Proposed Development includes the provision of substantial buffers to settlements and individual properties, reducing the visual impact on nearby built development highlighted in **ES Appendix 4.1 Site Selection Mapping [EN010140/APP/6.3.4.1]**.
- Creation of native woodland shelter belts to reinforce existing woodland habitats and screen views of the Proposed Development, further reducing the visual impact of the Proposed Development. The creation of these woodland areas additionally helps to meet Objective 3 (Biodiversity).
- Consideration of above and below ground utilities such as the gas pipeline and overhead lines onsite, whereby proposed landscape features account for the easements provided in Table 3.1 of **ES Chapter 3 Site and Development Description [EN010140/APP/6.1.3]**.
- Provision of Permissive Paths within the south-eastern part of the Site to formalise access between PRow 18/6/1 and U8106/50 to the south of Camblesforth, improving the local PRow network. This additionally helps to meet Objective 10 (Transport and Access).
- The creation of a series of new habitat areas with a mosaic of native trees, grassland and wetland features to establish new habitats. Wetland features, including habitat ponds and scrapes to be planted with a diverse mix of native aquatic and wetland species providing a betterment to local landscape features. The creation of these new habitat areas additionally helps to meet Objective 3 (Biodiversity).

### **Ecological Enhancement and Biodiversity Net Gain**

- 6.3.4. The Proposed Development has been designed to enhance biodiversity, through the protection and enhancement of existing green infrastructure and through the creation of new habitat, in line with Objective 3 (Biodiversity). The design has evolved in order to reduce potential adverse ecological impacts and to maximise biodiversity gains.

The design evolution changes to meet these aims include:

- Retaining identified higher value habitat features such as hedgerows, ditches, and woodlands;
- Focusing the large majority of the built development proposals within lower ecological value agricultural land;
- Grid connection works will largely comprise of minor excavation impacts to existing arable and developed land (existing tracks, roads and National Grid Drax 132kV Substation). Grid connection works will result in a minor short-term disturbance to a limited amount of semi-natural habitats, mainly associated with trenching works through modified grassland within the Drax Golf Club Course;
- Minor hedgerow removal may be required to enable access; however, where possible, access tracks for the Proposed Development will utilise existing ditch crossing points, existing gaps in hedgerows and existing field entrance gates etc;
- Sensitive, or high value ecological features outside the Site have been protected as part of the design which sets in place buffer zones and other safeguarding measures;
- The provision of 5m 'buffer zones' either side of hedgerows and ditches, which will be subject to habitat creation during the construction phase;
- The Proposed Development has been designed to maintain a stand-off buffer of at least 15m wide between the solar PV layout and broadleaved semi-natural woodlands;
- 30m buffers will be maintained surrounding the on-Site pond and adjacent ponds during the construction process;
- The Proposed Development may require temporary lighting during construction, maintaining dark corridors along boundary habitats including woodland edges and hedgerows; and
- Biodiversity Net Gain ('BNG') will be delivered through habitat enhancement provision, which will include the creation of new habitats of high ecological value, such as meadow grassland and tussocky grassland creation, hedgerow, woodland belt, and scrub planting. Based on the **Landscape Strategy [EN010140/APP/6.2.7.19-23]**, the Proposed Development has been calculated to result in a biodiversity net gain of 55.70% in Habitat Units, 61.11% in

Hedgerow Units and 9.05% in Watercourse Units. Further detail regarding BNG delivery is provided within **Chapter 8 Biodiversity of the ES [EN010140/APP/6.1.8]** and within the **Statutory Biodiversity Metric Calculation Tool [EN010140/APP/6.3.8.11]**.

### **Flood Risk**

6.3.5. The design of the Proposed Development has evolved in response to levels of flood risk across the Site and surrounding area, to ensure that the Proposed Development is resilient to flooding now and in the future. The following design evolution changes contribute to meeting Objective 4 (Water Environment):

- Ancillary control equipment, BESS facility and 132kV Substation are restricted to areas of very low surface water flood risk as shown on **Figure 3.2 Parameter Plan of the ES [EN010140/APP/6.2.3.2]**;
- Solar PV arrays within the areas of elevated flood risk will be rotated to the horizontal position ('the stow position') to ensure the solar PV panels are raised above the flood level during times of flood risk;
- A minimum of a 0.3m freeboard between the fluvial 'design flood' level and the stow position of the solar PV array;
- Solar PV panel supports in flood risk areas will be securely piled into the ground and designed to allow for the effect of flowing water pressures and to be resistant to inundation during a flood events;
- On-Site buildings will have floor levels raised at least 0.3m above existing ground level with appropriate damp proof course protection;
- Suitably designed earth flood defence bunds are proposed around ancillary control equipment, BESS and Substation Compound located in areas of elevated tidal and fluvial flood risk;
- BESS units will be raised 0.3m above ground which provides additional protection from the ingress of surface water;
- On-Site watercourses are retained within the Proposed Development. 7m minimum buffer zone distances have been established from the edge of a bank of any Internal Drainage Board ('IDB') managed ordinary watercourses for all infrastructure (with the exception of fence crossings, culverts and access tracks);
- In line with IDB requirements, the majority of landscape planting will remain

outside of the 7m buffer zone (measured from the top of bank of the ordinary watercourses on the Site). In some areas, to provide a comprehensive landscape scheme sympathetic to existing vegetation, new landscape planting is proposed within 7m of an ordinary watercourse, as demonstrated at Appendix 18 of the **FRA [EN010140/APP/7.5]**. Where this is proposed, an area of at least 7m is kept free of development or landscape planting on the opposite side of the ordinary watercourse to ensure maintenance access to the ordinary watercourse is retained;

- The land will be sown with the appropriate seed mix upon construction of the solar PV panels to reduce the risk of soil erosion, enhance potential for runoff ‘interception losses’ (from infiltration / evapotranspiration) and reduce the overland flows;
- Interception swales will be located at low points across the Site to intercept extreme flows which may already run off-Site; and
- Opportunities are sought within the development parcels for crossings of ordinary watercourses to be formed from single span structures, clear of the watercourse channels, wherever feasible.

### **BESS Compound Design**

- 6.3.6. The design of the BESS compound has evolved since the submission of the PEIR to prevent the Proposed Development from contributing to the contamination of the water environment (Objective 4: Water Environment).
- 6.3.7. The risk of BESS fire and subsequent groundwater and surface water contamination caused by contaminants in firewater/foam was raised by the EA, NYC, North Yorkshire Fire and Rescue, and UKHSA & OHID in their consultation responses. The EA advised that *“Suitable environmental protection measures should be provided including systems for containing and managing water run-off. The applicant should ensure that there are multiple ‘layers of protection’ to prevent the source-pathway-receptor pollution route occurring.”*
- 6.3.8. North Yorkshire Fire and Rescue advised that the National Fire Chiefs Council (NFCC) publication ‘Grid Scale Battery Energy Storage System Planning NFCC BESS’ be used as current best practice guidance in the design and installation of BESS sites. UKHSA & OHID recommended that the BESS be sensitively sited, and



that a fire prevention plan should be prepared, including consideration or mitigation of any impacts from firewater.

- 6.3.9. The design of the BESS compound has been amended to address the concerns relating to the risk of fire and contamination. The updated design is based on a worst-case scenario of a BESS fire requiring 1,900 litres of water per minute for 2 hours, with consideration of additional water volume from rainfall for the purposes of drainage calculations. The design has been amended to account for additional site access, site water supply and drainage.
- 6.3.10. Due to the potential flood risk (identified in **ES Chapter 9 Water Environment [EN010140/APP/6.1.9]**), the compound will be surrounded by an earth bund. The proposed earth bund will sit at least 600mm above the fluvial 'credible maximum scenario sensitivity test' flood level to protect the equipment from inundation, and will extend to a width up to 1m (at the top of the bund).
- 6.3.11. Four water tanks sit at each entrance to the BESS compound for the purpose of firefighting, (shown on **ES Figure 4.3 BESS and Substation Preliminary Drainage Strategy Drawing [EN010140/APP/6.2.4.3]** which will be secured through DCO requirement), up to an elevation of 3.65m above ground level and diameter of up to 3.45m (**ES Figure 4.4 Water Tank Elevations [EN010140/APP/6.2.4.4]**) . The attenuation basins located within the Substation and BESS Compound will have sufficient capacity to hold 228,000 litres of fire water (1,900 litres per minute for two hours) and accommodate a 1-in-100 year storm event plus 30% allowance for climate change. The presence of a flood bund around the entire Substation and BESS Compound would contain any runoff within the bunded area in event of a fire/ storm event.
- 6.3.12. In order to ensure potentially contaminated water does not leach into the underlying aquifer, the BESS compound will be lined with an impermeable liner. Three attenuation basins (**ES Figure 4.3 BESS and Substation Preliminary Drainage Strategy Drawing [EN010140/APP/6.2.4.3]**), will collect the runoff water from the impermeable liner, to ensure that flood risk is not increased elsewhere, before the clean water is discharged to existing drains via penstock valves<sup>7</sup>. If water within the attenuation basins is identified as being contaminated, it will be removed from the Site using tankers for off-site treatment and disposal (this will be secured through

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<sup>7</sup> A sluice or water gates that control the flow of water.

DCO requirement).

- 6.3.13. The design of the on-site substation and BESS compound has taken the NFCC Guidance into account, particularly around access, where it recommends that there should be *“at least 2 separate access points to the site to account for opposite wind conditions/direction”*. As such as the compound features a separate east and west entry and exit point.

### **Heritage**

- 6.3.14. In order to reduce potential effects on heritage assets and their setting, several cultural heritage receptors within vicinity of the Site have been considered as the landscaping proposals and placement of solar infrastructure have evolved, as set out in **Chapter 6 Cultural Heritage of the ES [EN010140/APP/6.1.6]**. Where sensitive features are present, the design has been amended to incorporate landscaping which will provide screening to the solar infrastructure. The design also includes the reinstatement of several historic field boundaries, reducing the potential effects on the setting of cultural heritage receptors. This will support the Proposed Development in meeting Objective 5 (Heritage).

## 7. Detailed Design Process

- 7.1.1. The design of the Proposed Development cannot be finalised until the tendering process for the design has been completed and the detailed design has been approved in advance of the Proposed Development commencing (or first phase thereof). This DAS provides a framework and guidance for the detailed design.
- 7.1.2. Should consent be granted, detailed design will need to be approved by the local planning authority in accordance with the design approach set out within this DAS and other documentation submitted as part of the DCO such as the **Works Plan [EN010140/APP/2.3]**, **Parameter Plan [EN010140/APP/6.2.3.2]** and **oLEMP [EN010140/APP/6.3.7.9]**.

## 8. Conclusions

- 8.1.1. The approach to design of the Proposed Development has followed that set out within the NIC Design Principles. Based on these Principles, the project has adopted its own Design Principles and Objectives to deliver good design outcomes. These have evolved throughout the DCO application process being informed and refined by consultation feedback and technical studies. The detailed design of the Proposed Development will follow the Design Principles and Objectives.
- 8.1.2. As per the Design Objectives, the design approach has aimed to avoid and reduce adverse impacts wherever possible and to take opportunities to deliver enhancements. The Proposed Development would primarily deliver benefits through its first objective, to generate Renewable Energy. It would additionally provide a number of environmental, social and economic benefits.