

One Earth Solar Farm

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Outline Landscape and Ecology Management Plan

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1. Introduction

1.1 Structure

1.1.1 This Outline Landscape and Ecology Management Plan (OLEMP) has been prepared to support the Development Consent Order (DCO) application for One Earth Solar Farm (hereafter referred to as 'Proposed Development') on behalf of One Earth Solar Farm Limited (hereafter referred to as 'the Applicant'). This OLEMP includes:

- > Purpose and objectives of this OLEMP (Section 1);
- > National Legislation, Policy, and Guidance relevant to this OLEMP (**Section 2**);
- > Overview of existing landscape features across the Order Limits (**Section 3**);
- > Landscape and Ecology Strategy (**Section 4**);
- > Management Prescriptions for existing and proposed vegetation (**Section 5**);
- > Provision for Permissive Paths (**Section 6**); and
- > Pre and post construction monitoring (**Section 7**).

1.1.2 This OLEMP sets out the short and long-term practices that will be implemented to establish, monitor, and manage landscape and ecology mitigation and enhancement (biodiversity net gain) measures embedded in the design. The terminology used in this document is defined in the **Glossary of Terms and Abbreviations [EN010159/APP/7.17]**.

1.1.3 This document has been updated at Deadline 5. The document references have not been updated from the original submission. Please refer to the **Guide to the Application [EN010159/APP/1.3]** for the list of current versions of documents.

1.2 The Proposed Development

1.2.1 The Proposed Development comprises the construction, operation and maintenance, and decommissioning of a solar photo-voltaic (PV) array electricity generating facility. The project includes solar PV panels, Battery Energy Storage Systems (BESS), onsite substations and associated grid connection infrastructure which will allow for the generation and export of electricity to the proposed National Grid High Marnham Substation. The Applicant has secured a connection agreement with National Grid which will allow export and import of up to 740 megawatts (MW) of electricity to the National Grid High Marnham Substation.

- 1.2.2 The Proposed Development will be situated within the 'Order Limits'. The Site, a collective term for all land within the Order limits, is depicted on the **Site Location Plan [EN010159/APP/2.1]**. Approximately 945 ha is proposed to be used for solar panels and associated infrastructure with the remaining 464 ha to be used for landscape and ecology mitigation and enhancement.
- 1.2.3 Key components include:
- > Solar PV panel area: The portion of the Order Limits where Solar PV Panels, and associated infrastructure will be located;
 - > Battery Energy Storage Systems (BESS) and Substations: areas identified as locations for two project substations and two BESS sites;
 - > Habitat Management Areas: Areas of habitat management comprising landscape and biodiversity enhancement measures; habitat creation and management, including earthworks, landscaping, means of enclosure, and laying and construction of drainage infrastructure;
 - > Grid Connection Corridor: The area in which the 400kV Grid Connection Cables will be installed between the two On-Site Substations and the new National Grid High Marnham Substation; and
 - > Site Accesses: Land required to facilitate access to the Site, including new access routes or improvements to existing ones for better visibility splays.
- 1.2.4 The Site is located within the county areas of both Lincolnshire and Nottinghamshire, and at district level falls within three separate district councils, namely West Lindsey, Bassetlaw, and Newark and Sherwood.
- 1.2.5 The maximum extent of land that could be occupied by each element of the Proposed Development is shown on the **Works Plan [EN010159/APP/2.3]**. The Landscape Mitigation Plan, provided in **Appendix A**, shows the vegetation that is likely to be planted as part of the Proposed Development as part of the wider mitigation and enhancement strategy.
- 1.2.6 Further details on the Proposed Development can be found in **ES Volume 1, Chapter 5: The Description of the Proposed Development [EN010159/APP/6.5]**.

1.3 Purpose of the Outline Landscape and Ecological Management Plan

Purpose

- 1.3.1 The Proposed Development has been designed, as far as is practicable, to avoid or reduce effects on landscape, heritage, and biodiversity features through the implementation and provision of planting, species-specific mitigation, and habitat creation and enhancement. It also delivers new and enhanced well-connected

habitats that are designed to offer opportunities for local nature conservation priorities at the landscape scale.

- 1.3.2 The overarching aim of this OLEMP is to set out the measures and prescriptions for:
- > Embedded mitigation as identified within the Environmental Statement relied upon for the mitigation of adverse environmental effects;
 - > The enhancement of biodiversity, landscape, and green infrastructure value within the Order Limits;
 - > Securing compliance with relevant national and local planning policies; and
 - > Habitat creation and management with the aim of providing ecological enhancements while strengthening green infrastructure within the area.
- 1.3.3 A further purpose of this OLEMP is to secure the measures required to mitigate glint and glare impacts. This mitigation comprises the installation of opaque screens, measuring up to 4m tall, where there is potential for glint and glare to be experienced by people travelling by road or rail. These are shown within the **Glint and Glare Assessment [EN010159/APP/9.34 (rev 01)]** as 'SC1 – SC3 and measure a total length of 1,037m.
- 1.3.4 The **Glint and Glare Assessment [EN010159/APP/7.16]** first submitted with the DCO submission was based on the illustrative masterplan and took an overly precautionary approach by assuming no existing planting is in place. A supplementary **Glint and Glare Assessment [EN010159/APP/9.34 (rev 01)]** that takes account of existing vegetation and buildings was submitted at Deadline 4. At detailed design, the glint and glare assessment will be re-run based on the detailed design for the Proposed Development, and appropriate mitigation confirmed in the LEMP to ensure the effects are not worse than those reported in this assessment. That assessment will take into account existing vegetation and may require some opaque screens in some locations (as shown within the **Glint and Glare Assessment [EN010159/APP/9.34 (rev 01)]**) until hedgerows proposed as part of the Proposed Development are an appropriate height to adequately mitigate any effects. Once the proposed planting provides effective mitigation; the opaque screens will be removed. Wherever practicable, planting proposed to mitigate glint and glare will be planted at the beginning of the construction phase to minimise the duration before SC1-SC3 can be removed.
- 1.3.5 A detailed Landscape and Ecology Management Plan (LEMP) will be provided post consent in accordance with Requirement 8 presented in the Draft DCO (APP-007). The LEMP will link directly to the provision of a Biodiversity Net Gain Strategy (as secured through Requirement 9 of the Draft DCO [APP-007]). The LEMP will provide the overall vision for the proposed development and describe the habitats to be created alongside detailed information on their establishment,

management and monitoring. The LEMP will detail the location and extent of proposed planting by inclusion of planting plans and species lists. The Biodiversity Net Gain Strategy will provide updated calculations of losses and gains based on contemporary survey information and the detailed design. This will be accompanied by a Habitat Management and Monitoring Plan (HMMP), using Natural England's template (or another appropriate format to be agreed with the Steering Group (see paragraph 7.1.16)), which will provide a live document that can be used alongside the LEMP for the implementation of the habitat creation and management measures. The HMMP will record the actions taken annually to each individual habitat parcel and detail any adaptive management measures that may be required should the original approaches to certain habitat types or locations prove difficult to implement on the ground. The HMMP and the associated monitoring reports will make up the materials that will be shared with the local planning authorities to demonstrate progress towards meeting the design as laid out in the LEMP.

Objectives

1.3.6 The primary objectives of this OLEMP are to:

- > Integrate the Proposed Development into its landscape setting, aiming to avoid or minimise adverse effects on the landscape, biodiversity, heritage and visual receptors;
- > Promote the conservation, protection, and enhancement of the physical, natural and historic environment within the Proposed Development and its surroundings, ensuring the landscape measures described in this document are implemented in order to embed the Proposed Development as an integral part of the wider landscape;
- > Diversify the ecological value of existing habitats through initiatives such as hedgerow restoration, riparian corridor management and the creation of an array of diverse habitats, whilst seeking opportunities to compliment the emerging Local Nature Recovery Strategies of Nottinghamshire and Lincolnshire; and
- > Guide the design and management of landscape and biodiversity elements that respond to and enhance the character of the landscape, reinforce local distinctiveness, and strengthen the sense of place.

2. National Legislation, Policy and Guidance

2.1.1 Legislation, planning policy and supporting guidance relevant to the landscape and ecological measures detailed within this OLEMP have been reviewed and embedded within the practices set out. Relevant documents reviewed are as follows:

Legislation

- > Directive 2009/147/EC on the conservation of wild birds (the codified version of Council Directive 79/409/EEC as amended) (Birds Directive) (Ref. 1);
- > Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) (Ref. 2);
- > Regulation (EU) 1143/2014 on the introduction and spread of invasive alien species (Ref. 3);
- > Convention on Biological Diversity (Ref. 4);
- > COP15: Global biodiversity framework (2023) (Ref. 5);
- > Ramsar Convention (Ref. 6);
- > The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref. 7);
- > The Wildlife and Countryside Act 1981 (as amended) (WCA) (Ref. 8);
- > The Countryside and Rights of Way Act 2000 (Ref. 9);
- > The Natural Environment and Rural Communities Act 2006 (NERC) (Ref. 10);
- > The Protection of Badgers Act 1992 (Ref. 11);
- > The Hedgerows Regulations 1997 (Ref. 12);
- > The Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended) (Ref. 13);
- > Animal Welfare Act 2006 (Ref. 14);
- > Salmon and Freshwater Fisheries Act 1975 (Ref. 15);
- > Eels (England and Wales) Regulations 2009 (Ref. 16);
- > The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref. 17); and
- > The European Landscape Convention (2000) (Ref. 18)

National Policy

- > Overarching National Policy Statement (NPS) for Energy (EN-1) (2023) (Ref. 19);
- > NPS for Renewable Energy Infrastructure (EN-3) (2023) (Ref. 20);
- > NPS for Electricity Networks Infrastructure (EN-5) (2023) (Ref. 21);
- > National Planning Policy Framework (NPPF) (2024) (Ref. 22); and
- > Environmental Improvement Plan 2023 (Ref. 23)

Local Policy

- > Newark and Sherwood, Amended Core Strategy Development Plan Document (2019) (Ref. 24);
- > Central Lincolnshire Local Plan (2023) (Ref. 25); and
- > Bassetlaw Local Plan 2020-2038 (2024) (Ref. 26)

Other Guidance

- > National Planning Practice Guidance (PPG), Natural Environment (Landscape) (2019) (Ref. 27);
- > Biodiversity 2020: A strategy for England's Wildlife and Ecosystem Services with regards to marine habitats, ecosystems, and fisheries (Ref. 28);
- > 25-year Environment Plan (Ref. 29);
- > UK Post 2010 Biodiversity Framework (including priority habitats and species listed which succeeds the UK Biodiversity Action Plan (UK BAP) (Joint Nature Conservation Committee (JNCC) and Defra, 2018) (Ref. 30);
- > Landscape Institute, Infrastructure Technical Guidance Note 04/20 (2020) (Ref. 31);
- > British Standard (BS) 5837: 2012 Trees in relation to design, demolition and construction – Recommendations (Ref. 32);
- > BS 3998: 2010 Treework – Recommendations (Ref. 33); and
- > National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Ref. 34).

Biodiversity Net Gain

- 2.1.2 NPS EN-1, para. 5.4.46 (Ref 19) states that development proposals should provide opportunities for building-in beneficial biodiversity or geological features as part of good design and that such opportunities in and around developments should be maximised where appropriate. The NPPF 2024 (Ref. 25) states that planning decisions should continue to and enhance the natural and local environment by providing net gains from biodiversity (para 187).

- 2.1.3 The Applicant will provide at least 10% BNG as part of the Proposed Development, however it is likely that BNG significantly higher than 10% will be delivered for habitat, hedgerow and watercourse units.
- 2.1.4 Further information on BNG and potential BNG for the Proposed Development can be found within the **ES Volume 2, Chapter 6: Biodiversity [EN010159/APP/6.6]**

3. Existing Landscape and Biodiversity Features

3.1 Existing Landscape Features

- 3.1.1 The northeastern part of the Order Limits extends from the River Trent towards Thorney. For the majority of this area the landform is low lying at around 10m Above Ordnance Datum (AOD), before rising centrally towards the River Trent to a high point of approximately 25m AOD, north of North Clifton. The land use is agricultural, consisting of medium to large scale geometric fields divided by sparsely planted hedgerows and drainage ditches.
- 3.1.2 The southeastern part of the Order Limits follows a similar pattern to the northeast. It is also relatively low lying. The land use is mostly agricultural with medium and large scale fields varying in form. Small blocks of woodland punctuate the southeast part of the Order Limits.
- 3.1.3 The southwestern part of the Order Limits follow a slightly more varied topography with undulating landform rising away from the River Trent out towards Skegby. Land use comprises a mix of agricultural and industrial uses, with High Marnham substation occupying the land closest to the River Trent. The field pattern is made up of large arable fields either side of the National Cycle Route which bisects this portion of the Site in two.
- 3.1.4 The northwestern part of the Order Limits features a rising landform which extends from Fledborough central to the west towards the A57, which runs along the Site's northern boundary. The land use is predominantly agricultural with large scale fields surrounding the villages of Fledborough and Ragnall. National Grid pylons run the length of the Site north to south, following the River Trent towards High Marnham.

3.2 Existing Biodiversity Features

- 3.2.1 The following section summarises the baseline detail for biodiversity, as presented in **Volume 2, Chapter 6: Biodiversity [EN010159/APP/6.6]**.

Statutory and Non-Statutory Sites

- 3.2.2 The closest statutorily designated site to the Order Limits is Spalford Warren Site of Special Scientific Interest (SSSI), which lies approximately 1.9km to the south. This SSSI is poorly connected to the habitats within the Order Limits as it is separated by a number of arable fields, roads, farm tracks and buildings; it also does not support a habitat type that is present within the Order Limits.
- 3.2.3 Although at considerable distance (in excess of 30km) the statutory site with the greatest degree of linkage to the Site is the Humber Estuary Ramsar site and Special Area of Conservation (SAC). This is because the River Trent provides

functionally linked habitat to sea and river lamprey which are a feature of the designation. River and sea lamprey will be migrating through the Site (as the transmission cables cross the River Trent) and could also use silts within the River Trent and connected watercourses / ditches as nursery grounds for juvenile lamprey (ammocetes) and areas of gravel (for example at locations within the Fledborough Beck) for spawning.

Habitats

- 3.2.4 Habitats located within the Order Limits are dominated by arable fields and areas of modified grassland that are separated by a mixture of hedgerows (both intact and defunct), wet ditches and fence lines. There are small areas of other types of habitat within the Order Limits including scrub, tree lines, ponds and running water (River Trent and watercourses).
- 3.2.5 The farmland is intensively managed and fields are typically of relatively large size. There is limited evidence of agri-environment schemes being implemented with the vast majority of land held for food production.

Species

- 3.2.6 The habitats within the Order Limits support an array of legally protected and notable species. These include a range of mammals including bats, water vole, otter, badger and brown hare, reptiles such as grass snake and common lizard and birds including skylark, barn owl, grey partridge and turtle dove. The River Trent and its tributaries are also known to support river and sea lamprey and European eel. Despite the array of species present, the majority are using relatively small areas of the Order Limits being focused on the network of hedgerows, wet ditches / watercourses and the River Trent.

4. Landscape and Ecology Strategy

4.1 Landscape Strategy

- 4.1.1 Good design has been a key consideration from the outset of design development. The iterative design process has been shaped by the findings of the Environmental Impact Assessment (EIA), and the project design principles specifically developed to address the unique opportunities and constraints of the Proposed Development. This iterative process is set out in the **Design Approach Document [EN010159/APP/5.8]**. The landscape strategy has been developed in response to policy requirements, published landscape character assessment guidance, and fieldwork analysis.
- 4.1.2 The Landscape Mitigation Plan in **Appendix A**, sets out indicative locations for proposed planting and has been designed to minimise and mitigate environmental impacts, including effects on landscape character, visual amenity, biodiversity, and heritage assets.
- 4.1.3 In developing the landscape design strategy, special attention was given to:
- > Recommendations within relevant landscape guidelines, such as Natural England's Statements of Environmental Opportunity (SEO) outlined in the profile for NCA 48 (Ref. 42);
 - > Guidance from the Landscape Institute's Infrastructure Technical Guidance Note (TGN) 04/20 (Ref. 36); and
 - > Observations gained through fieldwork undertaken in winter and summer conditions.
- 4.1.4 As well as providing mitigation, the proposed planting has been developed to maximise beneficial impacts, including opportunities for delivering biodiversity net gain. Accordingly, the design aims to:
- > Integrate the Proposed Development into the existing landscape pattern by utilising and aligning with existing features, including vegetation where feasible;
 - > Replace habitats lost during construction and enhance habitats within the Solar PV Areas through the creation and enhancement of hedgerows, scrub, grasslands and riparian habitats; and
 - > To filter and screen more prominent components of the Proposed Development in views from sensitive receptors.
- 4.1.5 Details of the landscape measures that are embedded into the Proposed Development's design are presented in **ES Volume 1, Chapter 5: Description of the Proposed Development [EN010159/APP/6.5]**, **ES Volume 2, Chapter**

11: Landscape and Visual [EN010159/APP/6.11] and the Design Approach Document [EN010159/APP/5.8].

Overview of Landscape Design Principles

- 4.1.6 This section provides a description of the landscape design principles that have informed the design of the Proposed Development.

Careful Siting in the Landscape

- 4.1.7 Careful consideration of the existing visual amenity of receptors has informed the offsets from residential properties in proximity to the Order Limits, as well as PRowS and key heritage features. The form and extent of these offsets has been refined through the design process, taking into account feedback from the community in regard to the existing character of views.
- 4.1.8 With reference to the Landscape Mitigation Plan shown in **Appendix A and Illustrative Masterplan [EN010159/APP/2.7]**, the design of the Proposed Development has been carefully developed through an iterative design process to minimise, or avoid, adverse effects on views experienced by residents.
- 4.1.9 As avoidance measure, appropriate setbacks have been incorporated into the design of the Proposed Development, around Designated Heritage Assets (Scheduled Monuments) and selected villages:
- > No development is proposed on or directly adjacent to the two Scheduled Monuments in the vicinity of the Order Limits (the Roman Vexillation Fortress Scheduled Monument and Whimpton Moor Scheduled Monument). Substantial 50 m setbacks around these designated heritage assets are incorporated into the design;
 - > North Clifton (approximately 100m to Work No. 1);
 - > South Clifton- (approximately 500m to Work No. 1);
 - > To the south of Newton-on-Trent (approximately 100m to Work No. 1);
 - > To the north, south and west of the Church of St Gregory in Fledborough (approximately 160m to Work No. 1);
 - > To the east and west of Ragnall (approximately 150m to Work No. 1);
 - > West of Thorney (approximately 800m to Work No. 1); and
 - > The area north of High Marnham (National High Marnham Substation) is proposed only for the cable routing for the Grid Connection, but no further development is expected in the area.
- 4.1.10 Substantial setbacks and removal of developable land is proposed at:

- > Around North Clifton / South Clifton to ensure that the Proposed Development does not interrupt the connection between the settlements afforded by gaps and glimpsed views;
- > No development is proposed on the part of the Whimpton Moor Scheduled Monument that is within the Site and most of this Scheduled Monument is excluded from the site boundary;
- > Setbacks incorporated around Whimpton Moor Scheduled Monument which have been based on an understanding of the topography;
- > Setbacks incorporated in Fledborough to the north, south and west of the Church of St Gregory (Grade I listed);
- > Setbacks incorporated to east and west of Ragnall to reduce visual presence of development in settings of heritage assets here;
- > Substantial setbacks and removal of developable land to the south of Newton on Trent and to west of Thorney to reduce visual impact and likely significant effects on settings of heritage assets in these locations; and
- > Tree and native vegetation planting (c.3m in height and 2-3m in width) to be included at sensitive edges of the Site to manage potential visual (and to some extent experiential) likely significant effects of the Proposed Development, including potential for glint and glare, within the settings of heritage assets.

Conserving Existing Vegetation Patterns

- 4.1.11 The layout of the Proposed Development has been designed to minimise or avoid the loss of existing landscape features where possible, and to avoid significant impacts on those existing features.
- 4.1.12 The Proposed Development is set within the existing field pattern within the Order Limits. The layout utilises existing farm tracks and field openings as the preferred method of construction and operational access in order to minimise the loss of existing landscape features, where practicable.
- 4.1.13 Proposed planting responds to the existing character of the Site and looks to perpetuate the current conditions found there, allowing key views to stay open and key habitats to remain in place, with enhancement measures proposed across the 1,409 ha areas where deemed suitable.
- 4.1.14 Where access points necessitate the removal of vegetation for visibility splays it is proposed that such vegetation is coppiced, rather than removed. Regarding the hedgerow extending east to west along the northern side of the existing access track located north of the Anglian Water reservoir, west of A1133, the existing hedgerow will be retained. Minor removal will be undertaken as shown on the vegetation removal plan to facilitate the widening of the bell-mouth junction with the A1133, but no wider removal of the hedge is proposed.

- 4.1.15 Whilst no removals of trees subject to a Tree Preservation Order (TPO) are proposed, where an individual tree subject to a TPO must be removed (e.g. due to its dead or dangerous condition) and the local authority requires replacement, a new tree of equivalent species and ultimate size will be planted in the same place or as near as reasonably practicable to the position of the removed tree, subject to the operation requirements. Replacement planting for individual trees will utilise Standard tree stock (8-10cm girth) and will be planted in the next planting season following removal. The final species and planting location will be agreed in advance with the relevant local authority.

Creating New Green Infrastructure

- 4.1.16 New green infrastructure (GI) elements will be established, and habitat corridors enhanced through the Solar PV Site. These will improve wildlife connectivity, elevate landscape quality, and enhance visual amenity.
- 4.1.17 Large areas of species-rich grassland will be provided beneath the solar panels and across the broader Solar PV Site in order to boost biodiversity and create new habitats for a range of species including pollinators and ground nesting birds. This will also help to ameliorate soil conditions after long-term agricultural practices. This includes a new green corridor that follows the existing PRow east of Ragnall and continues down towards Fledborough on the western side of the Trent, extending in excess of 120m wide at its widest point.
- 4.1.18 The proposed mitigation will also increase and enhance the existing hedgerow network, with gapping up and planting of new species-rich native hedgerows with hedgerow trees, providing better connectivity and creating new valuable habitats.
- 4.1.19 Land to the west of the River Trent will be managed to create the coastal grazing marsh habitat found adjacent to the Site, helping to ensure this high-quality landscape feature and local conservation priority is delivered in areas where it would historically have been present. This will be maintained throughout the life cycle of the development.
- 4.1.20 New permissive paths will provide new connections to the existing PRow network, helping to connect villages and provide recreational opportunities for the wider community.

4.2 Ecology Strategy

- 4.2.1 The layout of the Proposed Development seeks to minimise adverse ecological effects and to maximise the opportunities for biodiversity benefit by following the 'mitigation hierarchy' as generally referred to in the Overarching National Policy Statement for Energy (EN-1) (paragraph 4.6.1) and Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (regulation paragraph

14(2)(c)18 (3)(c)), including measures to avoid, prevent, reduce and if possible, offset any identified significant adverse effects.

- 4.2.2 The scale of the Proposed Development provides the opportunity to deliver improvements to biodiversity at the landscape scale by delivering large areas of biodiverse habitats that are well connected both within the Order Limits and to habitats in the surrounding area. Key to delivery of these benefits is ensuring that the Proposed Development provides:
- > A range of good quality and well managed habitats that provide opportunities for a range of legally protected and notable flora and fauna to thrive;
 - > Heterogeneity within habitats to ensure that large expanses of open habitats can be used effectively by a range of species;
 - > Connectivity of habitats through the careful location of infrastructure and delivery of habitat corridors providing access to wider expanses of habitat both within and outside of the Order Limits; and
 - > Focusing on providing habitats for local conservation priorities to maximise benefit to the most vulnerable species present within the locale.
- 4.2.3 The Proposed Development is anticipated to result in an uplift in biodiversity, as measured using the Statutory Biodiversity Metric of:
- > 3440.43 habitat units, an increase of 113.17%
 - > 353.22 hedgerow units, an increase of 92.49%
 - > 77.60 watercourse units, an increase of 57.75%
- 4.2.4 The Proposed Development will contribute positively to local conservation priorities including provision of new and enhanced Habitats of Principal Importance including extensive hedgerow networks, coastal and floodplain grazing marsh, field margins and ditches and habitats that could provide increases in the size and distribution of Species of Principal Importance including brown hare, hedgehog, turtle dove, water vole, otter, green and brown hairstreaks, harvest mouse, bats and farmland birds.
- 4.2.5 The extent of the Order Limits provides the opportunity to deliver landscape scale nature conservation benefits that can positively contribute to the Local Nature Recovery Strategies (LNRS) being developed for Nottinghamshire and Lincolnshire. The Local Habitat Map for Nottinghamshire [4] (that will underpin the Nottinghamshire LNRS) shows habitats identified as 'areas of particular importance to biodiversity' both within and close to the Order Limits. These provide a skeleton on which habitats created and managed positively as part of the Proposed Development can be delivered around.

- 4.2.6 Land that is identified for mitigation and compensation purposes (e.g. grassland for skylarks) in fields where no construction works are proposed will have habitat establishment works begun at least 3 months ahead of construction activity.
- 4.2.7 Strategic sustainable urban drainage systems (SuDS) features such as filter drains, swales and basins/scrapes are incorporated within the solar array areas to encourage infiltration to the ground and also provide ecological and biodiversity benefits.

5. Management Prescriptions

5.1 Introduction

5.1.1 This section describes how existing and new habitats will be protected and/or implemented. These habitats are:

- > Existing retained trees and shrubs (including existing hedgerows with trees, woodland, and mature trees);
- > Drainage ditches (including riparian zones);
- > Hedgerow (with trees);
- > Woodland (including woodland buffers and tree belts);
- > Individual trees (including scattered trees); and
- > Species-rich grassland.

5.1.2 As an outline management plan, further details will be added as the design progresses in order to refine species and seed mixes of local provenance, management prescriptions and timescales, and site-specific mitigation and enhancement measures.

5.1.3 Accesses to the Order Limits that are established during the construction phase (whether new or modified/extended existing accesses) will remain in place throughout the operational phase. Vegetation management required to facilitate operational visibility splays will also be undertaken throughout the operational phase.

5.1.4 All implementation and monitoring works will be supervised by the EcoCoW.

5.1.5 Habitats will begin to be enhanced and created 12 months prior to first installation of solar PV panels. Delivery of habitats within working areas will be provided on a rolling programme as localised construction finishes (e.g. on a field-by-field basis).

5.2 Native Planting – General Principles

5.2.1 The following steps and working methods will be included as part of the establishment of all native planting:

- > Areas identified for planting will be clearly marked out and agreed with the Landscape Clerk of Works (LCoW) in advance.
- > Planting will take place in the first available planting season and at a time of year appropriate to the species being planted.

- > Plants will be inspected by the LCoW at the nursery and on delivery to site prior to planting.
- > Plants will be planted in double staggered row at 5 plants per metre in single species groups of 3, 5 or 7's. Specimen trees to be planted at 10m intervals as hedgerow trees.
- > Plants will be protected from strimming activities and damage from animals with individual biodegradable spiral guards, supported by a bamboo cane for hedgerow plants or double staked 300x60cm weld mesh guard for specimen trees. The type of guard selected appropriate to species and growth habit.
- > Trees will be staked to protect against wind-rock.

5.2.2 The design of habitats within the LEMP will be informed by further habitat survey and soil testing that will take place prior to the commencement of construction. The soil testing will measure parameters including pH and nutrient status that will allow approaches to habitat creation (for example species mixes) to be appropriately tailored. It will also identify locations where actions will be taken to manage high nutrient levels from previous farming activities, for example through the use of sacrificial crops (i.e. crops grown without nutrient inputs to lower soil nutrient levels).

5.3 Existing Habitats

5.3.1 Existing habitats to be retained include:

- > Individual trees, shrubs and woodland (including hedgerows trees);
- > Hedgerows;
- > Grassland; and
- > Drainage ditches (including riparian zones).

Existing individual trees, shrubs and woodland (including hedgerow trees)

5.3.2 The primary function of the retained trees, shrubs and woodland will be to maintain established habitats, visual amenity and the character of the landscape and provide a structure for the addition of the new planting and other features of the solar farm development.

5.3.3 Existing trees, shrubs and woodland will be managed to provide longevity, increase species diversity, enhance habitat value and improve resilience to climate change. This will include the gapping up of existing hedgerows, where appropriate, to boost species and age diversity, providing better connectivity and increasing the number of climate and disease resilient species.

- 5.3.4 During construction the retained vegetation will be protected. Measures to be employed will include the use of clearly defined stand-offs, managing the structure and integrity of the retained vegetation, and undertaking any pruning outside of the bird breeding season and in accordance with hedgerow regulations.
- 5.3.5 Retained trees will be periodically inspected by an arboriculturist during construction. Where construction works are adjacent to retained trees, works will be undertaken under a watching brief to record root loss and to recommend further arboricultural works where required. A grassland buffer will be maintained around retained individual trees. Management of the grassland buffer is detailed under species-rich grassland below.
- 5.3.6 Root protection areas for individual trees (including identified veteran trees) will be accounted for during construction and habitat creation to ensure tree retention and to avoid damage, in accordance with BS 5837:2012 Trees in relation to design, demolition and construction (Ref. 32).
- 5.3.7 Removal of existing trees will only occur where access is required. These crossings will, wherever possible, be located at current field access locations or in areas where there are existing gaps in the hedgerow and no trees. For an indication of the expected maximum extent of vegetation removal see Vegetation Removal Plan in **Appendix C**.
- 5.3.8 Where tree removal is required, works shall be carried out in accordance with BS 3998:2010 Tree Work (Ref. 33).

Existing hedgerows

- 5.3.9 Existing hedgerows will be managed to enhance biodiversity and improve ecosystem services, whilst also increasing screening for visual receptors. This will involve filling gaps and thickening hedgerows with a broader range of native species, where needed, and planting additional native hedgerow trees with locally appropriate species. Hedgerow creation will include a range of native species typical of the region, such as hawthorn, blackthorn, hazel, privet and guelder-rose, with supplementary planting ('gapping up') of species-poor and defunct hedgerows.
- 5.3.10 All retained hedgerows will be managed to achieve a minimum width and height of 3m x 3m. Where overshadowing of solar panels is not of concern the target height of hedgerows will be 4m. The planting of hedgerow gaps and positive management to increase hedgerow size will commence in the planting season (i.e. winter) prior to the commencement of construction. Where temporary access is required during construction, hedgerow will be planted on completion of the works to reinstate and enhance their former structure.

- 5.3.11 The length of existing hedgerow is 64km, of which 25.5km is defunct and will require supplemental planting, a further 13km will be created, particularly within large, open fields in areas both to the east and west of the River Trent.
- 5.3.12 When gapping up additional species diversity will be introduced; this will include the provision of hedgerow trees where appropriate (i.e. where over-shading issues can be avoided). The hedgerows will be managed in a rolling programme to ensure that no hedgerow is cut more than once in each three-year period, to maximise flower and fruit production. More detail on the implementation, management and maintenance of hedgerow enhancements is described below in 'native hedgerows with trees and hedgerow enhancement'.
- 5.3.13 No tracks (other than field entrances), solar panels or other electrical infrastructure (other than cable crossings) will be located within 5m of the centre line of a hedgerow. Within this buffer zone a variety of habitats will be established including species-rich grassland, flower-rich margins (including those tailored for turtle doves), winter bird food margins, cultivated areas for arable plants and autumn sown bumble bird mix.
- 5.3.14 Removal of existing hedgerow will only occur where access is required. These crossings will, wherever practical, be located at current field access locations or in areas where there are existing gaps in the hedgerow. The anticipated maximum extent of hedgerow removal required is shown on the Vegetation Removal Plan provided in **Appendix C**, and identified in Schedule 11 of the DCO.
- 5.3.15 Where hedgerows are present within visibility splays at access and egress points from the local highway network, vegetation management will be used to maintain safety during the period of construction. These hedgerows will be reduced in height to 0.9m to allow suitable visibility, whilst avoiding hedgerow removal. During the operational period these hedgerows will be allowed to re-grow.

Existing species-rich grassland

- 5.3.16 Existing areas of species-rich grassland will be managed to enhance biodiversity and improve ecosystem services, retaining valuable habitats. This will be supplemented with large areas of species-rich grassland beneath Solar PV panels and in habitat management areas, providing additional habitat and better connectivity across the Site.
- 5.3.17 Further details on the management of these areas of species-rich grassland can be found below in the section titled 'Species-rich Grassland'.

Existing ditches (holding permanent water)

- 5.3.18 Ditches across the Order Limits will be retained and maintained with new crossings minimised to maintain habitat connectivity. No development (other than at crossing points) will take place within 10m of the bank top.
- 5.3.19 Ditches will be managed to provide habitat for fish and other aquatic and semi-aquatic fauna, with new or upgraded crossings designed to maintain connectivity (provided as clear span bridges). Riparian zones (5m strips from bank top) will be managed for biodiversity and will be supplemented with a species rich seed mix, such as that shown in Table 5.4 through to Table 5.6.
- 5.3.20 The exact location and proportion of seed types will be tailored to conditions on Site.

5.4 Proposed habitats

Overview of proposed habitats

- 5.4.1 Habitats proposed across the Order Limits comprise:
- > Over 9km of species-rich native hedgerow with trees (including existing hedgerow enhancement);
 - > Approximately 6km of species-rich native hedgerow;
 - > Approximately 1,240ha of species-rich grassland accounted for across the Order Limits in hedgerow and field margins, riparian zones, wildflower meadows and tussock mixes beneath solar panels;
 - > 4.2ha of woodland and native tree belts;
 - > Individual trees; and
 - > Agricultural field margins.
- 5.4.2 Planting will take place in the first available planting season and at a time of year appropriate to the species being planted. Within the majority of habitat management areas (other than where transmission cable installation is required) habitat creation will begin in the first available planting season prior to construction commencing (considered to be installation of above ground infrastructure).
- 5.4.3 All existing and proposed habitats will be managed and maintained for the operational duration of the Proposed Development. In the unlikely event of external factors causing significant losses to the mitigation planting during the lifetime of the Proposed Development, such that the purpose of screening the development is no longer achieved as a result of gaps in the planting, replacement planting will be undertaken to infill gaps that may arise. This approach will ensure commitments are fulfilled in respect of providing screening of the scheme and enhancing biodiversity.

Native hedgerow with trees (including existing hedgerow enhancement)

Function

- 5.4.4 New species-rich hedgerows with trees will be established to supplement the existing, retained hedgerows with trees.
- 5.4.5 New species-rich hedgerows with trees will be planted across the Site to help supplement the existing hedgerow network and to filter views of the Proposed Development. New hedgerows, that include some evergreen species, with trees will provide valuable habitats for a range of species, allowing for better connectivity across the Proposed Development. The height at which these hedgerows will be maintained will be between 3- 4 m in order (hedgerow trees to grow taller) to adequately screen the Solar PV Infrastructure, where screening is not required, proposed hedgerows will be maintained at 3m or lower with a balance struck between biodiversity and desire to maintain open views of the countryside.
- 5.4.6 Species will be chosen to build in resilience and will consider the requirements of the local area, taking into account climate change and potential pest and pathogen threats.
- 5.4.7 Existing hedgerows across the Site will be 'gapped up', have reduced cutting and supplemental planting, in order to enhance existing landscape features, reinforce field patterns, increase species diversity and to provide continuous habitat corridors.

Implementation

- 5.4.8 The indicative locations of the new hedgerows with trees and gapping up of existing hedgerows are shown on the Landscape Mitigation Plan in **Appendix A**.
- 5.4.9 Hedge trenches will be dug to dimensions of 450 mm wide by 450 mm deep, with the base loosened before returning the backfill mixture. All stock will be supplied as bare root if in season (unless otherwise stated) and container-grown if planted out of season. A detailed specification for hedgerows will be developed based on the indicative species, sizes, and percentages outlined in Table 5.1.
- 5.4.10 Individual trees will be planted in pits measuring 900 mm in diameter and 900 mm in depth. The base of the tree pit will be broken up to a depth of 200 mm, and the pit will be backfilled with topsoil, consolidated in layers to ensure the tree is positioned at the correct depth. Each tree will be planted to the nursery line and secured with stakes, ties, and an irrigation pipe. A specification for hedgerow trees will be developed, detailing the indicative species, sizes, and percentages, as presented in Table 5.1.
- 5.4.11 Tree planting and hedgerow planting will take place over the winters of each of the three-year construction programme, between November to March, in soil that

is not frozen or waterlogged. New planting shall be protected using adequate strimmer and pest guards and will vary depending on the size of the plant. The purpose of this is to:

- > Gap up and plant standards in one third of the defunct hedgerows each winter
- > Plant one third of new hedgerows (including standards) each winter
- > Take existing hedgerows into positive management for biodiversity at least 3 months ahead of construction activity commencing (other than at access points and other areas where vegetation management will be needed to aid delivery).

Table 5.1 Indicative mix for hedgerows

Botanical Name	Common Name	Height	Root	Form	% Mix
<i>Acer campestre</i>	Field Maple	40-60cm	BR	Transplant	15
<i>Cornus sanguinea</i>	Dogwood	40-60cm	BR	Transplant	10
<i>Corylus avellana</i>	Hazel	40-60cm	BR	Transplant	10
<i>Crataegus monogyna</i>	Hawthorn	40-60cm	BR	Transplant	15
<i>Ilex aquifolium</i>	Holly	40-60cm	Container	Transplant	10
<i>Ligustrum vulgare</i>	Wild privet	40-60cm	BR	Transplant	10
<i>Malus sylvestris</i>	Crab Apple	40-60cm	BR	Transplant	5
<i>Prunus spinosa</i>	Blackthorn	40-60cm	BR	Transplant	10
<i>Rosa canina</i>	Dog Rose	40-60cm	BR	Transplant	10
<i>Viburnum opulus</i>	Guelder Rose	40-60cm	BR	Transplant	5

5.4.12 The Local Planning Authorities, Nottinghamshire Wildlife Trust and Lincolnshire Wildlife Trust will be consulted in preparation of the detailed Landscape and Ecology Management Plan to input to the species list proposed to respond to current priorities at the time of implementation.

Establishment Maintenance

5.4.13 A detailed plan for the establishment and maintenance of the new hedgerows with trees will be submitted as part of the detailed LEMP. This will cover a period of five years from the start of the operation stage of the Proposed Development.

5.4.14 The aim of establishment maintenance will be to support the early stages of growth to encourage thick, bushy growth and good form. This is based on the following principles and outline prescriptions:

- > Maintain a 0.5 metre weed free strip either side of hedgerow through chemical and mechanical control
- > First cut in spring to 45–60 cm above ground level taking care to exclude hedgerow trees;
- > Irrigation may be required during periods of drought or extended dry weather;
- > Remove litter, rubbish, and debris from planted areas throughout the year;
- > Re-firm soil around roots to ensure plants are supported and upright in spring each year;
- > Inspect and adjust stakes, guards, and ties in spring and autumn and after periods of particularly inclement weather;
- > Check and record failed or defective plants in September annually;
- > Replace failed or defective plants with matching species of the same size during the next planting season after failure; and
- > ECoW to undertake a quarterly check of plants to record their growth and condition.

Long-Term Management

5.4.15 The long-term management of new hedgerows with trees will focus on the following interventions:

- > Hedgerows required for screening purposes will be managed and maintained at a height of 3 m – 4 m, whilst individual tree species planted within hedgerows will be allowed to establish and left to reach maturity;
- > Cutting of hedgerows will take place outside of the bird nesting season and at the end of the winter in February. This will allow berries to stay in place for the maximum period of time throughout the winter;
- > Any branches/growth that overhangs or obstructs PRowS or access tracks will be cut back to keep routes clear to use;
- > Dead, dying or over-mature hedgerow trees will be removed if considered a hazard on health and safety grounds and in accordance with any protected species constraints; and
- > Monitoring of new hedgerows will be undertaken periodically in order to check any significant changes in health and viability of the hedgerow. Maintenance and condition checks will take place every three years.

Hedgerows

Function

- 5.4.16 New species-rich hedgerows will be established to supplement the existing, retained hedgerows and to expand the existing network of hedgerow across the Site. The proposed species-rich hedgerows will restore previously lost connectivity and create a new habitat network for local wildlife through the planting of native and species-rich hedgerow.
- 5.4.17 Hedgerows provide a valuable habitat, forming important wildlife corridors, a visual screening function and establish formal boundaries. Hedgerow height is important to screen views and the hedgerows will be maintained at a height of between 3 - 4 m and 'infilled' where there are gaps in existing hedgerows. Where hedgerows are not required for their screening function, they may be maintained at a lower height in order to maintain open views.
- 5.4.18 New species rich hedgerows will be planted across the Site to help supplement the existing hedgerow network and to filter views of the Proposed Development. New and retained hedgerows will provide and continue to provide valuable habitats for a range of species, allowing for better connectivity (including dark corridors) across the Proposed Development. The height at which these hedgerows will be maintained will be between 3-4m in order to adequately screen the Solar PV Infrastructure. Where screening is not required, proposed hedgerows may be maintained at a lower height in order to maintain open views of the countryside, balancing this with the biodiversity value provided by larger and more complex hedgerow structure.
- 5.4.19 Existing hedgerows across the Site will be 'gapped up', in order to enhance existing landscape features, reinforce field patterns, increase species-diversity and to provide continuous habitat corridors.
- 5.4.20 Species will be chosen to build in resilience and will consider the requirements of the local area, taking into account climate change and potential pest and pathogen threats.

Implementation

- 5.4.21 The indicative locations of the new hedgerows and gapping up of existing hedgerows are shown on the Landscape Mitigation Plan in **Appendix A**.
- 5.4.22 Hedge trenches will be dug to dimensions of 450 mm wide by 450 mm deep, with the base loosened before returning the backfill mixture. All stock will be supplied as bare root if in season (unless otherwise stated) and container-grown if planted out of season. A detailed specification for hedgerows will be developed based on the indicative species, sizes, and percentages outlined in Table 5.1.

- 5.4.23 Planting will take place from November to March, in soil that is not frozen or waterlogged. New planting shall be protected using adequate strimmer and pest guards and will vary depending on the size of the plant.

Establishment Maintenance

- 5.4.24 A detailed plan for the establishment and maintenance of new and retained hedgerows will be submitted as part of the detailed LEMP. This will cover a period of five years from the start of operation stage of the Proposed Development.
- 5.4.25 The aim of establishment maintenance will be to support the early stages of growth to encourage thick, bushy growth and good form. This is based on the following principles and outline prescriptions:
- > Maintain a 0.5 metre weed free strip either side of hedgerow through chemical and mechanical control;
 - > First cut in spring to 45–60 cm above ground level taking care to exclude hedgerow trees;
 - > Irrigation may be required during periods of drought or extended dry weather;
 - > Re-firm soil around roots to ensure plants are supported and upright in spring each year;
 - > Inspect and adjust stakes, guards, and ties in spring and autumn and after periods of particularly inclement weather;
 - > Check and record failed or defective plants in September annually;
 - > Replace failed or defective plants with matching species of the same size during the next planting season after failure; and
 - > ECoW to undertake a quarterly check of plants to record their growth and condition.

Long-Term Management

- 5.4.26 The long-term management of new hedgerows will focus on the following interventions:
- > Hedgerows will be managed and maintained at a height of up to 3 to 4 m, whilst individual tree species planted within hedgerows will be allowed to establish and left to reach maturity;
 - > Cutting of hedgerows will take place outside of the bird nesting season and at the end of the winter in February. This will allow berries to stay in place for the maximum period of time throughout the winter;

- > Any branches/growth that overhangs or obstructs PRowS or access tracks will be cut back to keep routes clear to use;
- > Dead, dying or over-mature hedgerow trees will be removed if considered a hazard on health and safety grounds and in accordance with any protected species constraints; and
- > Monitoring of new hedgerows will be undertaken periodically in order to check any significant changes in health and viability of the hedgerow. Maintenance and condition checks will take place every three years.

Woodland and native tree belts

Function

- 5.4.27 Proposed woodland and native tree belts will be established to introduce new areas of woodland and provide screening in sensitive areas. Proposed areas of woodland and native tree belts will be planted to provide visual and physical screening to more sensitive receptors on the edge of the Proposed Development. These will also provide better connectivity and habitat for local wildlife.
- 5.4.28 Trees will be managed to achieve their maximum mature height, to better provide biodiversity enhancements and screening, where necessary. Species will be chosen to build in resilience and will consider the requirements of the local area, taking into account climate change and potential pest and pathogen threats.
- 5.4.29 Native species will form the majority of the tree stock, while specially selected non-natives may be used to build in resilience in the face of climate change.

Implementation

- 5.4.30 The locations of the new woodland and tree belts are shown on the Landscape Mitigation Plan in **Appendix A**.
- 5.4.31 Larger specimens within the mix indicated below will be planted approximately 2.5m apart to allow the canopy to close sooner. Specific species will be determined through future detailed design work to ensure mixes are reflective of local character, whilst also building in climate resilience.
- 5.4.32 New areas of woodland and tree belts will be planted in well-prepared ground, with protection such as biodegradable spiral rabbit guards or shrub shelters to avoid harm by local wildlife. Where larger specimens have been specified, suitable anchoring will be necessary with tree stakes and ties to avoid root rock and/or displacement of trees. Once shelters and ties are deemed too small, they are to be removed and disposed of off-site.
- 5.4.33 Narrow strips of woodland will be created along the margins of some solar PV fields in the west of the Site where screening is required. Tree planting will be irregular to create both open and more closed areas between trees and will

incorporate a range of native species typical of the region and a variety of nursery stock sizes to provide difference in age structure.

- 5.4.34 Scrub species will be planted between trees to establish an understorey. A shade tolerant seed mix will also be used to encourage a diverse woodland ground flora to develop. Supplemental planting of tree and scrub species will occur annually in the first five years to replace failed individuals and will continue to create a diversity in age class.
- 5.4.35 At least one of the proposed ponds/scrapes will be created within and at the edge of newly created woodland parcels.
- 5.4.36 Larger specimens within the mix indicated in Table 5.2 will be planted in pits measuring 900 mm in diameter and 900 mm in depth. The base of the tree pit will be broken up to a depth of 200 mm, and the pit will be backfilled with topsoil, consolidated in layers to ensure the tree is positioned at the correct depth. Each tree will be secured with stakes and ties. A specification for proposed woodland and tree belts will be developed, detailing the indicative species, sizes, and percentages outlined in Table 5.2.

Table 5.2 Indicative mix for proposed woodland and tree belts

Botanical Name	Common Name	Height	Root	Form	% Mix
<i>Acer campestre</i>	Field Maple	175-200cm	Root ball	Feather	10
<i>Cornus sanguinea</i>	Dogwood	40-60cm	BR	Transplant	10
<i>Corylus avellana</i>	Hazel	40-60cm	BR	Transplant	10
<i>Crataegus monogyna</i>	Hawthorn	40-60cm	BR	Transplant	15
<i>Ilex aquifolium</i>	Holly	40-60cm	Cell grown	1L	5
<i>Prunus padus</i>	Bird Cherry	175-200cm	Root ball	Feather	10
<i>Quercus robur</i>	English Oak	175-200cm	Root ball	Feather	15
<i>Tilia cordata</i>	Small Leaved Lime	175-200cm	Root ball	Feather	5
<i>Torminalis glaberrima</i>	Wild Service tree	175-200cm	Root ball	Feather	10

Establishment Maintenance

- 5.4.37 The aim of establishment maintenance will be to support the early stages of growth to encourage thick, bushy growth and good form. This is based on the following principles and outline prescriptions:

- > Maintain a 0.5 metre weed free strip around the base of the tree through mechanical control;
- > Irrigation may be required during periods of drought or extended dry weather;
- > Remove litter, rubbish, and debris from planted areas throughout the year;
- > Re-firm soil around roots to ensure plants are supported and upright in spring each year;
- > Inspect and adjust stakes, guards, and ties in spring and autumn and after periods of particularly inclement weather;
- > Check and record failed or defective plants in September annually;
- > Replace failed or defective plants with matching species of the same size during the next planting season after failure; and
- > ECoW to undertake a quarterly check of plants to record their growth and condition.

Long-Term Management

5.4.38 The long-term management of proposed woodland and native tree belts will focus on the following interventions:

- > Woodland and native tree belts will be left to reach maturity, with careful thinning to avoid any one species becoming dominant;
- > Any necessary pruning/thinning will take place outside of the bird nesting season and at the end of the winter in February. This will allow any fruit to stay in place for the maximum period of time throughout the winter;
- > Any branches/growth that overhangs or obstructs PRowS or access tracks will be cut back to keep routes clear to use;
- > Dead, dying or over-mature trees will be removed if considered a hazard on health and safety grounds and in accordance with any protected species constraints; and
- > Monitoring of new woodland and tree belts will be undertaken periodically in order to check any significant changes in health and viability of the hedgerow. Maintenance and condition checks will take place every three years.

Individual trees

Function

5.4.39 Individual trees will be planted individually and linearly, creating tree lines along field boundary edges around the proposed solar PV fields, within existing and proposed new hedgerow and in larger areas of grassland to supplement existing retained trees and provide further screening and ecological benefits. Planted both

singularly and in groups, they will provide structure in larger, wide spanning landscapes, whilst breaking up long distance views. Trees of a variety of nursery stock sizes will be planted to provide difference in age structure.

- 5.4.40 Proposed planting of individual trees will restore individual trees to the landscape and provide visual amenity and enhance biodiversity, creating important opportunities for nesting birds and creating habitats for invertebrates and small mammals. Whilst providing valuable shelter for various nesting birds and other wildlife, individual trees also link larger areas of woodland, hedgerows and belts of trees, further adding to connectivity across the Site.
- 5.4.41 As well as providing additional habitat and wildlife connections, scattered individual trees will screen and filter views from the PRowS and residences.
- 5.4.42 Additional tree planting, will occur within three mitigation (species-rich grassland) fields in the area to the east of the River Trent.

Implementation

- 5.4.43 The locations of the individual trees are shown on the Landscape Mitigation Plan in **Appendix A**.
- 5.4.44 Individual trees will be planted in pits measuring 900 mm in diameter and 900 mm in depth. The base of the tree pit will be broken up to a depth of 200 mm, and the pit will be backfilled with topsoil, consolidated in layers to ensure the tree is positioned at the correct depth. Each tree will be secured with stakes and ties. A specification for hedgerow trees will be developed, detailing the indicative species, sizes, and percentages outlined in Table 5.3.
- 5.4.45 Planting will take place from November to March, in soil that is not frozen or waterlogged. Consideration will be given to periods of excess flooding. New planting will be protected using adequate strimmer and pest guards and will vary depending on the size of the plant.
- 5.4.46 A specification for individual trees will be developed based on the indicative species, sizes and percentages presented in Table 5.3.

Table 5.3 Indicative mix for individual trees

Botanical Name	Common Name	Height	Root	Form	% Mix
<i>Acer campestre</i>	Field Maple	175-200cm	Root ball	Feather	5
<i>Alnus glutinosa</i>	Alder	175-200cm	Root ball	Feather	10
<i>Betula pubescens</i>	Downy Birch	175-200cm	Root ball	Feather	10
<i>Crataegus laevigata</i>	Midland Hawthorn	175-200cm	Root ball	Feather	15

Botanical Name	Common Name	Height	Root	Form	% Mix
<i>Crataegus monogyna</i>	Hawthorn	175-200cm	Root ball	Feather	5
<i>Populus nigra</i>	Black Poplar	175-200cm	Root ball	Feather	15
<i>Prunus padus</i>	Bird Cherry	175-200cm	Root ball	Feather	10
<i>Quercus robur</i>	English Oak	175-200cm	Root ball	Feather	15
<i>Salix caprea</i>	Goat Willow	175-200cm	Root ball	Feather	10
<i>Torminalis glaberrima</i>	Wild Service tree	175-200cm	Root ball	Feather	5

Establishment Maintenance

5.4.47 The aim of establishment maintenance will be to support the early stages of growth to encourage thick, bushy growth and good form. This is based on the following principles and outline prescriptions:

- > Maintain a 0.5 metre weed free strip around the base of the tree through mechanical control;
- > Irrigation may be required during periods of drought or extended dry weather;
- > Remove litter, rubbish, and debris from planted areas throughout the year;
- > Re-firm soil around roots to ensure plants are supported and upright in spring each year;
- > Inspect and adjust stakes, guards, and ties in spring and autumn and after periods of particularly inclement weather;
- > Check and record failed or defective plants in September annually;
- > Replace failed or defective plants with matching species of the same size during the next planting season after failure; and
- > ECoW to undertake a quarterly check of plants to record their growth and condition.

Long-Term Management

5.4.48 The long-term management of proposed individual trees will focus on the following interventions:

- > Individual trees will be left to reach maturity, where trees are spaced close together, pruning/thinning may be required in order to promote growth and longevity;

- > Any necessary pruning/thinning will take place outside of the bird nesting season and at the end of the winter in February. This will allow any fruit to stay in place for the maximum period of time throughout the winter;
- > Any branches/growth that overhangs or obstructs PRowS or access tracks will be cut back to keep routes clear to use;
- > Dead, dying or over-mature trees will be removed if considered a hazard on health and safety grounds and in accordance with any protected species constraints; and
- > Monitoring of new individual trees will be undertaken periodically in order to check any significant changes in health and viability of the hedgerow. Maintenance and condition checks will take place every three years.

Species-rich grassland

Function

- 5.4.49 Species-rich grassland will be established across the Order Limits created within fields which currently support arable crops or species-poor grassland, under the solar PV panels, field margins buffer zones/habitat management areas, and within all fields within the Site that are identified for enhancement only. The type of mix will vary across the Site and will consider ground conditions and soil types to establish a diverse and successful sward of grasses and wildflowers.
- 5.4.50 A range of seed mixes will be used to ensure successful establishment within the conditions of a particular area. Seed mixes will be selected to target creation of two Priority Habitats: 'Coastal and floodplain grazing marsh' and 'Lowland meadows', with coastal floodplain grazing marsh targeted either side of the River Trent, increasing the extent of existing habitat to the south (on the western bank), and lowland meadow between solar PV panels and within mitigation fields.
- 5.4.51 A shade tolerant seed mix, incorporating woodland species, will be selected for grassland adjacent to existing and newly created hedgerows, around areas of tree planting and underneath solar PV panels. Grassland habitats will be managed to ensure that target conditions are achieved, through:
- > mowing (outside of the main bird breeding season), treatment of weeds and dominating species, and reseeded at regular intervals where required;
 - > Cutting regimes will be phased to ensure a range of sward heights at any one time; and
 - > Should it be possible, conservation grazing will be implemented to maintain the sward.
- 5.4.52 Grassland diversity will be achieved both through different species mixes and through management (e.g. traditional meadow style management and maintenance of flower rich tussocky swards).

- 5.4.53 By establishing a diverse sward of grasses and wildflowers biodiversity will increase, enhancing value for wildlife. The mixes used for the open areas, verges and field margins will provide a variety of wildflowers to both enhance biodiversity and to provide a valuable food source and habitat to local invertebrates and wildlife.
- 5.4.54 Areas of grassland within the habitat management areas (more than 15m from boundary features) will contain plots measuring at least 16m² to provide additional opportunities for breeding skylarks. Species-rich grassland devoid of solar panels and other above ground infrastructure will be provided to compensate for the loss of skylark breeding habitat. If necessary, skylark plots (two per pair potentially displaced due to development) will be established in the grassland. 233ha of species -rich grassland will be created, with skylark plots established in the 81ha that are further than 50m from a field boundary. In addition, adjacent solar PV panel fields will be under sown with species-rich grassland, further increasing the availability of foraging habitat. Species-rich grassland devoid of above ground infrastructure will be created 12 months before the installation of solar PV panels with seed bed preparation and sowing taking place in autumn and establishment management taking place in the following summer before it is required as compensatory habitat.
- 5.4.55 Scattered scrub will be planted to extend scrub and grassland mosaic habitats along the Fledborough Viaduct. Species will include gorse, dogwood, blackthorn and buckthorn, with natural colonisation of bramble, providing suitable food plants and habitat for green and brown hairstreak caterpillars.

Implementation

- 5.4.56 The exact location and proportion of seed types will be tailored to conditions on Site and to the needs of the Site's biodiversity. The buffer zones vary in their scale dependent on the location of panels/roads/residential properties.
- 5.4.57 A specification for species-rich grassland will be developed based on the indicative species, sizes and percentages presented in Table 5.4 through to Table 5.6. This may be subject to change based on the prevailing soil types.

Table 5.4 Indicative mix for proposed species-rich grass beneath solar panels

Botanical Name	Common Name	%Mix
Wildflowers		
<i>Achillea millefolium</i>	Yarrow	0.8
<i>Agrimonia eupatoria</i>	Agrimony	0.4
<i>Arctium minus</i>	Lesser Burdock	0.1
<i>Centaurea nigra</i>	Common Knapweed	1.4

Botanical Name	Common Name	%Mix
<i>Centaurea scabiosa</i>	Greater Knapweed	1.0
<i>Chaerophyllum temulum</i>	Rough Chervil	0.8
<i>Cruciata laevipes</i>	Crosswort	0.5
<i>Daucus carota</i>	Wild Carrot	1.0
<i>Dipsacus fullonum</i>	Wild Teasel	1.6
<i>Filipendula ulmaria</i>	Meadowsweet	0.8
<i>Galium album</i>	Hedge Bedstraw	1.8
<i>Knautia arvensis</i>	Field Scabious	0.8
<i>Lathyrus pratensis</i>	Meadow Vetchling	0.4
<i>Leucanthemum vulgare</i>	Oxeye Daisy – (Moon Daisy)	1.6
<i>Lotus corniculatus</i>	Birdsfoot Trefoil	0.4
<i>Malva moschata</i>	Musk Mallow	1.6
<i>Plantago lanceolata</i>	Ribwort Plantain	1.8
<i>Poterium sanguisorba</i>	Salad Burnet	1.6
<i>Silene dioica</i>	Red Campion	1.2
<i>Vicia cracca</i>	Tufted Vetch	0.4
Grasses		
<i>Alopecurus pratensis</i>	Meadow Foxtail (w)	4.0
<i>Cynosurus cristatus</i>	Crested Dogstail	20
<i>Dactylis glomerata</i>	Cocksfoot (w)	16
<i>Festuca rubra ssp rubra</i>	Strong-creeping red fescue	12
<i>Holcus lanatus</i>	Yorkshire Fog	8
<i>Lolium perenne</i>	Perennial Ryegrass (w)	4
<i>Cruciata laevipes</i>	Smooth-stalked Meadow-grass	6.4
<i>Schedonorus arundinaceus (Festuca arundinacea)</i>	Tall Fescue (w)	9.6

Table 5.5 Indicative mix for proposed species-rich grass in field margins and hedgerows

Botanical Name	Common Name	%Mix
Wildflowers		
Wildflowers		
<i>Agrimonia eupatoria</i>	Agrimony	0.5
<i>Alliaria petiolara</i>	Garlic Mustard	1.0
<i>Anthriscus sylvestris</i>	Cow Parsley	0.5
<i>Arctium minus</i>	Lesser Burdock	1.0
<i>Centaurea nigra</i>	Common Knapweed	2.0
<i>Chaerophyllum temulum</i>	Rough Chervil	0.4
<i>Cruciata laevipes</i>	Crosswort	0.8
<i>Daucus carota</i>	Wild Carrot	0.8
<i>Dipsacus fullonum</i>	Wild Teasel	1.5
<i>Filipendula ulmaria</i>	Meadowsweet	0.4
<i>Galium album</i>	Hedge Bedstraw	1.5
<i>Geum urbanum</i>	Wood Avens	0.4
<i>Geranium pratense</i>	Meadow Crane's-bill	0.3
<i>Lathyrus sylvestris</i>	Narrow-leaved Everlasting-pea	1.0
<i>Leucanthemum vulgare</i>	Oxeye Daisy – (Moon Daisy)	1.2
<i>Malva moschata</i>	Musk Mallow	1.0
<i>Origanum vulgare</i>	Wild Marjoram	0.3
<i>Plantago lanceolata</i>	Ribwort Plantain	0.8
<i>Primula veris</i>	Cowslip	0.6
<i>Rumex acetosa</i>	Common Sorrel	0.4
<i>Silene dioica</i>	Red Campion	2.0
<i>Silene vulgaris</i>	Bladder Campion	0.8
<i>Vicia cracca</i>	Tufted Vetch	0.8
Grasses		
<i>Agrostis capillaris</i>	Common Bent (w)	2.4
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass (w)	1.6
<i>Brachypodium sylvaticum</i>	False Brome (w)	0.8
<i>Cynosurus cristatus</i>	Crested Dogstail	48

Botanical Name <i>Wildflowers</i>	Common Name	%Mix
<i>Deschampsia cespitosa</i>	Tufted Hair-grass (w)	1.6
<i>Festuca rubra</i>	Red fescue	19.2
<i>Poa nemoralis</i>	Wood Meadow-grass	6.4

Table 5.6 Indicative mix for proposed species-rich grass in buffer zones/mitigation areas

Botanical Name <i>Wildflowers</i>	Common Name	%Mix
Wildflowers		
<i>Achillea millefolium</i>	Yarrow	0.75
<i>Agrimonia eupatoria</i>	Agrimony	0.3
<i>Centaurea nigra</i>	Common Knapweed	1.5
<i>Daucus carota</i>	Wild Carrot	0.9
<i>Galium verum</i>	Lady's Bedstraw	1.5
<i>Knautia arvensis</i>	Field Scabious	0.45
<i>Leucanthemum vulgare</i>	Oxeye Daisy – (Moon Daisy)	1.27
<i>Malva moschata</i>	Musk Mallow	1.8
<i>Plantago lanceolata</i>	Ribwort Plantain	1.8
<i>Poterium sanguisorba</i>	Salad Burnet	0.9
<i>Primula veris</i>	Cowslip	0.3
<i>Ranunculus acris</i>	Meadow Buttercup	0.75
<i>Silene dioica</i>	Red Campion	1.5
<i>Rhinanthus minor</i>	Yellow Rattle	0.98
<i>Rumex acetosa</i>	Common Sorrel	0.3
Grasses		
<i>Agrostis capillaris</i>	Common Bent (w)	8.5
<i>Cynosurus cristatus</i>	Crested Dogstail	29.75
<i>Festuca rubra</i>	Red fescue	25.5
<i>Phleum bertolonii</i>	Smaller Cat's-tail (w)	4.25
<i>Poa nemoralis</i>	Wood Meadow-grass	17

- 5.4.58 Tailored mixes will also be created for areas of newly created Coastal and Floodplain Grazing Marsh (e.g. species rich mix capable of thriving in waterlogged soils) and riparian strips alongside existing wet ditches and watercourses.

Establishment Maintenance

- 5.4.59 The aim of establishment maintenance will be to support the early stages of growth to encourage a healthy sward and allow a diverse mix of species to establish. This is based on the following principles and outline prescriptions:
- > Where practicable, seed will be obtained from a local source for the purpose of maintaining continuity with local species-rich grasslands;
 - > Receiving soils should be prepared in order to reduce the nutrient levels. Techniques for reducing nutrient levels should follow best practice and take into consideration soil survey results. These measures may include sowing of crops such as forage maize or mustard without fertiliser application;
 - > Once the nutrient level is reduced, all clods will be broken up and alien material (such as plastics and metals) above 50 mm in size will be removed.
 - > The top 50mm should be raked to allow for a fine tilth before seeding. This should be done directly before seeding which should take place in preferably in the autumn to avoid sowing during dry periods. If unable to sow during autumn then the spring sowing window should be used; and
 - > Seeding and rolling will be carried out in dry weather and access will be prohibited to seeding areas until seed has germinated and a sward has established (see establishment maintenance section for grasslands generally).

Long-Term Management

- 5.4.60 Within the first 12 months after sowing, the species-rich grassland field margins, PRow buffers and open space areas will be cut to help the sown species to establish. The cuttings will be left for a period of seven days before being removed to appropriate storage areas on site.
- 5.4.61 Once the areas are fully established, typically the second Spring after sowing, the area will need to be cut in the Spring (before April) to reduce the vigour of the grass.
- 5.4.62 Following this, areas will be cut towards the end of September, after the breeding season (typically March to August inclusive), to avoid disturbing ground nesting birds. Tussocky grassland areas will be cut less frequently once established (on or 2 to 3 year cycle).

- 5.4.63 Cutting will be done strategically to allow for areas with both taller and shorter swards to provide opportunities for a range of fauna.
- 5.4.64 Skylark monitoring will be conducted to assess the efficacy of mitigation during construction and operation. Sampling locations used during baseline work will be incorporated for direct comparisons, alongside the assessment of solar PV and grassland mitigation fields.
- 5.4.65 Grassland habitats will be managed to ensure that target conditions are achieved, through:
- > mowing (outside of the main bird breeding season), treatment of weeds and dominating species, and reseeding at regular intervals where required; and
 - > Cutting regimes will be phased to ensure a range of sward heights at any one time.

Agricultural field margins

- 5.4.66 Agricultural field margins are to be established following prescriptions from Defra along one boundary in each of the fields supporting solar PV are to be established, maintained and resown as required.

Function

- 5.4.67 By establishing and maintaining a range of agricultural field margins food sources and cover for a range of fauna will be provided (e.g. for farmland birds, invertebrates and small mammals) and heterogeneity delivered.

Implementation

- 5.4.68 The exact location and proportion of seed types will be tailored to conditions on site and to the needs of the site's biodiversity. Countryside Stewardship prescriptions AB8 Flower-rich margins (targeting pollinators in the summer), AB16 Autumn sown bumblebird mix and AB9 Winter bird food (provisioning for farmland bird species in long and/or cold winters) will be grown. In locations where hedgerows will be allowed to grow to 4m tall, mixes will be tailored with fumitory and chickweed that will benefit turtle dove.
- 5.4.69 The margins will be established as per guidance and maintained for the appropriate time-scale (usually 1 or 2 years dependent on mix), before being removed and replaced. There is no long term management as these margins will be created, lost and replaced on a regular cycle.

Ditches (holding permanent water)

- 5.4.70 Ditches across the Order Limits will be retained and maintained with new crossings minimised to keep habitat connectivity. No development (other than at crossing points) will take place within 5m of the bank top.
- 5.4.71 The condition of the watercourses varies significantly across the Site, although most show steep side slope profiles and are relatively straight. This is likely to be a result of historic agricultural practices.

Function

- 5.4.72 Ditches will be managed to provide habitat for fish and other aquatic and semi-aquatic fauna, with new or upgraded crossings designed to maintain connectivity.
- 5.4.73 Riparian zones will be managed for biodiversity and will be supplemented with a species rich seed mix, such as that shown in Table 5.4 through to Table 5.6.

Implementation

- 5.4.74 The exact location and proportion of seed types will be tailored to conditions on Site and to the needs of the Site's biodiversity. Grassland strips approximately 5m wide (measured from bank top) will be established as described above for other species-rich grasslands.
- 5.4.75 Riparian seed mixes, including dense tussocky grasses, common reed, and reed canary grass, will be used along draining ditches and banks, incorporating a 2m strip either side of the bank top.

Long-term management

- 5.4.76 Ongoing management of drainage ditches will involve:
- > The clearance of any silt build-up as required (outside of the main bird breeding season), with the aim of clearing no more than one third of each ditch in each year, and from one bank/side only.
 - > Bankside vegetation will be cut every other year (in autumn), alternating from one bank, to the opposite bank, maintaining vegetation cover all year round.
 - > Removing obstructions to ensure normal flow is not impeded.
 - > Maintaining the beds and banks of the watercourse.
 - > Maintaining any structures such as culverts, bridges and outfalls.

Localised features

5.4.77 A range of localised measures will be delivered to increase the opportunity for a range of flora and fauna, many of which are local conservation priorities. These measures are:

- > Beetle banks;
- > Habitat piles/hibernacula;
- > Gabion baskets;
- > Bat and bird boxes;
- > Otter holts; and
- > Fence access (badgers and other mammals).

Beetle Banks

5.4.78 Beetle banks are to be created within solar PV fields and species-rich grassland mitigation areas to improve the availability and diversity of invertebrates for skylark and other species which feed on invertebrates. They will be constructed to be 0.4m high and 1.5–2m wide (as per Countryside Stewardship prescription). Each field between 20ha and 28.9ha will have one beetle bank (unless in the flood plain), and those larger than 29ha will have three. They will be positioned to run along solar panel arrays or alongside access tracks. The banks will be between 140 to 450m in length and will be constructed in spring or autumn and sown with a species-rich grassland sward to create a diverse structure.

5.4.79 Soil type for the base of beetle banks will be based on that available in that location. However, should different soils be available on Site (through construction) such as sand / sandy loam these will be considered for use as capping material to increase species diversity.

Habitat piles/hibernacula

5.4.80 A minimum of 75 habitat piles will be created within solar PV panel fields and mitigation areas. They will be strategically located close to scrub, woodland, hedgerows and other habitats providing habitat for invertebrates and shelter and/or hibernating opportunities for amphibians and reptiles. They will be created from logs (ideally locally sourced from associated vegetation clearance) piled into a shallow hole up to 30cm deep and covering an area of 2 x 3-4m and up to a height of 1-1.5m above ground level. The pile will be topped with a layer of mulch and/or brash and leaves to help initiate decomposition of the logs below. A final layer of grass sods or turf will be applied to prevent the materials from dispersing in high winds. These will be created outside of the design flood extent.

Gabion baskets

5.4.81 Gabion baskets/cages will be used to create habitat for invertebrates, amphibians and reptiles (minimum of 40). They will be filled using a range of materials,

including large and small rocks/pebbles, stacked logs, bamboo, bricks and ceramic pipes. This will create a range of features for fauna of various sizes and life stages. They will be provided in a variety of sizes; a minimum of 1m wide and high, and up to 20m long, located in both solar PV panel fields and mitigation fields. Some will be located in the centre of fields, and others along drainages ditches and woodland edge boundaries. Where they are positioned running east to west, they can be used to support earth works to create a shallow, south facing slope, providing basking opportunities for reptiles.

Bat and bird boxes

- 5.4.82 Bat and bird boxes will be installed (75 of each - including at least 5 barn owl boxes) within mature trees throughout the Order limits to increase roosting and nesting opportunities for bats and birds. A range of sizes, designs and materials will be used to provide a range of conditions for various species. They will be installed on the south-west or south-eastern aspect of a tree trunk, at a minimum of 3m from ground level, ensuring there is a clear entry to the box with no branches or foliage which might block the entrance.

Otter holts

- 5.4.83 Two otter holts will be constructed; one within the bank of a substantial ditch either side of the River Trent, east and west. The holts will be constructed of locally sourced logs and branches, partially buried and covered in brash to create camouflage and reduce potential for disturbance. Locations will be selected for their connectivity to the River Trent and proximity to scrub and mature trees, providing cover and support to the bank structure through root systems.

Fence access (badgers and other mammals)

- 5.4.84 Holes in fence bottoms (300mm by 300mm) will be cut and framed every 150m to allow access to badgers and other wildlife such as brown hares, foxes and hedgehogs. In locations where existing mammal paths have been identified and areas with existing or proposed suitable habitats additional openings, will be provided. The openings will be left without a hinged gate to maximise the range of species that can use them.

6. Permissive paths

- 6.1.1 New permissive paths have been designed to supplement the existing Public Right of Way (PRoW) network, linking existing routes and creating new connections. The location of the proposed permissive path network is shown in **Appendix B**.
- 6.1.2 The permissive paths will be made available to the public, 364 days a year, by permission of the Landowner. They will be managed by the Applicant and will include signs to make clear that its use is for the public by permission of the Landowner. At the end of the Proposed Development's operation, the area will be returned to the Landowner (with further detail to be included in the DEMP) when the land will be in private ownership and the permitted public use will cease.
- 6.1.3 Baseline research and consultation feedback demonstrated that Newton on Trent is not served by any public footpaths that connect to the wider network. A permissive path network, totalling 2.5km, will therefore be implemented to provide a route from the south of the A57 to the Sustrans route, including an additional spur heading west to join the Trent Valley Way, enhancing the recreational value of the Order Limits.
- 6.1.4 A further 3.6km of permissive paths are proposed on the west of the River Trent, providing a circular route between Fledborough and Ragnall, connecting to an existing footpath that follows the western bank of the River Trent.
- 6.1.5 Permissive paths will be open for use by pedestrians, cyclists, and equestrians. The surface will be permeable, typically comprising mown grass, with crushed aggregate used where required.
- 6.1.6 These new permissive paths will feature many of the proposed habitats mentioned within this report, with their management prescriptions following those given in the relevant sections. Proposed habitat types along the permissive paths will feature (but are not limited to), grassland, individual trees, hedgerow, hedgerows with individual trees and woodland and native tree belts.
- 6.1.7 As well as proposed habitats, the permissive path network will feature and interact with existing habitats such as ditches, hedgerows and grassland. The management of these existing habitats will follow the management prescriptions listed in this document with the aim of preserving and enhancing the existing landscape features and habitats.

Implementation

- 6.1.8 New signage will be installed to help wayfinding and provide information on how to link to existing parts of the PRoW network as well as course distances to promote active travel. Access points will be clearly defined. Signage will be

designed to be durable, weather-resistant and sympathetic to the natural surroundings.

Long-Term Management

- 6.1.9 Management of the habitats found along the permissive paths will follow the management prescriptions noted in this report, with particular attention paid to the heights and canopies of the individual trees and hedgerows in order to maintain accessibility for all users, including equestrian recreation activities.
- 6.1.10 Regular inspection of the path signage and wayfinding equipment will be undertaken in order to identify any damage or vandalism. Replacement or repairs will be carried out promptly to maintain visibility and accessibility. Regular inspection of the surface of the paths will also be undertaken.

7. Pre and post construction monitoring

- 7.1.1 Monitoring is required to determine that the functions documented within this OLEMP are being achieved and whether any remedial management action may be required. The baseline against which the monitoring can be compared against comprises the pre-construction baseline data. This baseline data collected in 2023/2024 will require updating prior to construction, as by operation (from 2030 at the earliest) this data will be over six years old and out of date. Updates will include a similar set of surveys undertaken at the baseline where relevant ecological receptors have been identified, including surveys of breeding and non-breeding birds, bats, riparian mammals and badgers.
- 7.1.2 The Applicant will define the appropriate roles and responsibilities for site staff, as outlined in the **Outline Construction Environmental Management Plan [EN010159/APP/7.4]**. An Environmental Clerk of Works (ECow) will be tasked with ensuring that construction-related environmental mitigation measures are properly implemented, monitored, and maintained. These measures will include, but are not limited to, vegetation clearance, species identification, and exclusion of protected or non-protected species.
- 7.1.3 The ECow's responsibilities will encompass activities that could impact biodiversity, such as providing advice on methods to prevent or minimise light spill, as well as delivering Toolbox Talks before starting any work that might affect habitats and species.
- 7.1.4 The Contractor, appointed by the Applicant to construct the Proposed Development, will be responsible for establishing, managing, and monitoring the implementation of landscape and ecological mitigation during the five-year establishment aftercare period. The Applicant will inspect and record the success of this establishment during that time. Further details are provided in **Section 4**.
- 7.1.5 Any long-term biodiversity monitoring and management requirements specified in this document will be carried out by the Applicant and/or a Contractor appointed by the Applicant.
- 7.1.6 A post-construction monitoring programme will be formalised, agreed and included within the detailed LEMP. Walkover surveys of the Site will be undertaken between April and June in years 2, 4, 6, 10 and then every 5 years post-construction until completion of decommissioning. The surveys will involve inspection of the hedgerows, woodland/tree belts grassland and riparian habitats to ensure they are being managed accordingly and are in line with the Biodiversity Net Gain Strategy
- 7.1.7 Post-construction monitoring for flora, birds (breeding and non-breeding), water vole, otter, badgers, reptiles and bats (bat box roosting and activity survey using static acoustic devices), will be undertaken in the respective seasons, in years 1,

3, 5, 10 and 15 post construction and thereafter every ten years until the completion of decommissioning.

- 7.1.8 The monitoring of bat activity using static acoustic devices will be conducted at the same locations as baseline monitoring (once during construction and in years 1, 3, 5 and 10 post construction); with additional locations as agreed by the Steering Group (see paragraph 7.1.16). Reports will be produced to be made publicly available for the development of bat mitigation strategies for future solar schemes in the UK and beyond.
- 7.1.9 Skylark monitoring will be conducted to assess the efficacy of mitigation and compensation during construction and operation. Sampling of both developed and undeveloped areas will be undertaken to record breeding densities and usage (i.e. for breeding, feeding etc.). In years 1, 2, 3, 5, 10 and 15, the results will be used to inform any adaptive management measures required through the LEMP. Reports will be produced to be made publicly available for the development of skylark mitigation strategies for future solar schemes in the UK and beyond.
- 7.1.10 Lamprey populations will be monitored during construction, for no more than 5 years, to determine any potential effects of electromagnetic fields (EMF). The approach will be agreed with the Environment Agency.
- 7.1.11 Maintenance checks of wildlife feature (e.g. otter holts, bat and bird boxes etc.) will be made annually to ensure that these features are still in position and secure. Some refitting of boxes, repairs and replacements are likely to be required over the life-time of the Proposed Development.
- 7.1.12 Results from the post-construction monitoring will feed into the management plan and, if required, management will be amended accordingly based on this monitoring.
- 7.1.13 The Proposed Development will seek to partner with the Greater Lincolnshire Nature Partnership, Waterlife Recovery Trust or other relevant stakeholder organisation to set up and deliver an American mink control project within the ditch network of the Site and the wider landscape. This will be led by the stakeholder group, with funding (part or full) by the Applicant, with the aim of reducing predation pressures on water vole populations present.
- 7.1.14 Biodiversity Net Gain will be provided for area, hedgerow and watercourse units as measured with the statutory biodiversity metric. Monitoring will be secured through a habitat management and monitoring plan in-line with DEFRA requirements for significant habitat delivery.
- 7.1.15 The Applicant is also committed to the One Earth Community Fund to support local projects led by registered community groups, local charities, social

enterprises and parish councils. This sits outside the DCO Application and is not secured by the DCO.

- 7.1.16 To ensure that the creation and management of new habitats and those subject to enhancement is delivered effectively a steering group will be created. The Applicant will invite the relevant Local Planning Authority ecologists, Natural England and the Environment Agency to be members of the Steering Group. The Steering Group will undertake the following tasks:
- > Review the detailed specifications of habitat creation and enhancement during the detailed design process;
 - > Review the detailed monitoring protocols for habitat, flora and fauna;
 - > Review the location and design of individual features for biodiversity benefit (e.g. hibernacula and bird boxes etc.);
 - > Review biodiversity monitoring reports throughout the lifetime of the project and provide advice on any adaptive management measures necessary to ensure biodiversity aims are being met.
- 7.1.17 The Steering Group would also be informed by the Applicant discussing with other willing solar developers in the area, Local Planning Authority ecologists and conservation organisations such as the Lincolnshire Wildlife Trust and Nottinghamshire Wildlife Trust opportunities for delivering biodiversity enhancements strategically, sharing lessons learnt regarding habitat establishment and management and adding to the overall knowledge base associated with the effect of solar farms on biodiversity.
- 7.1.18 The Steering Group will have Terms of Reference agreed prior to convening for the first meeting. An example of Terms of Reference provided by Lincolnshire County Council is provided at Appendix D.

8. References

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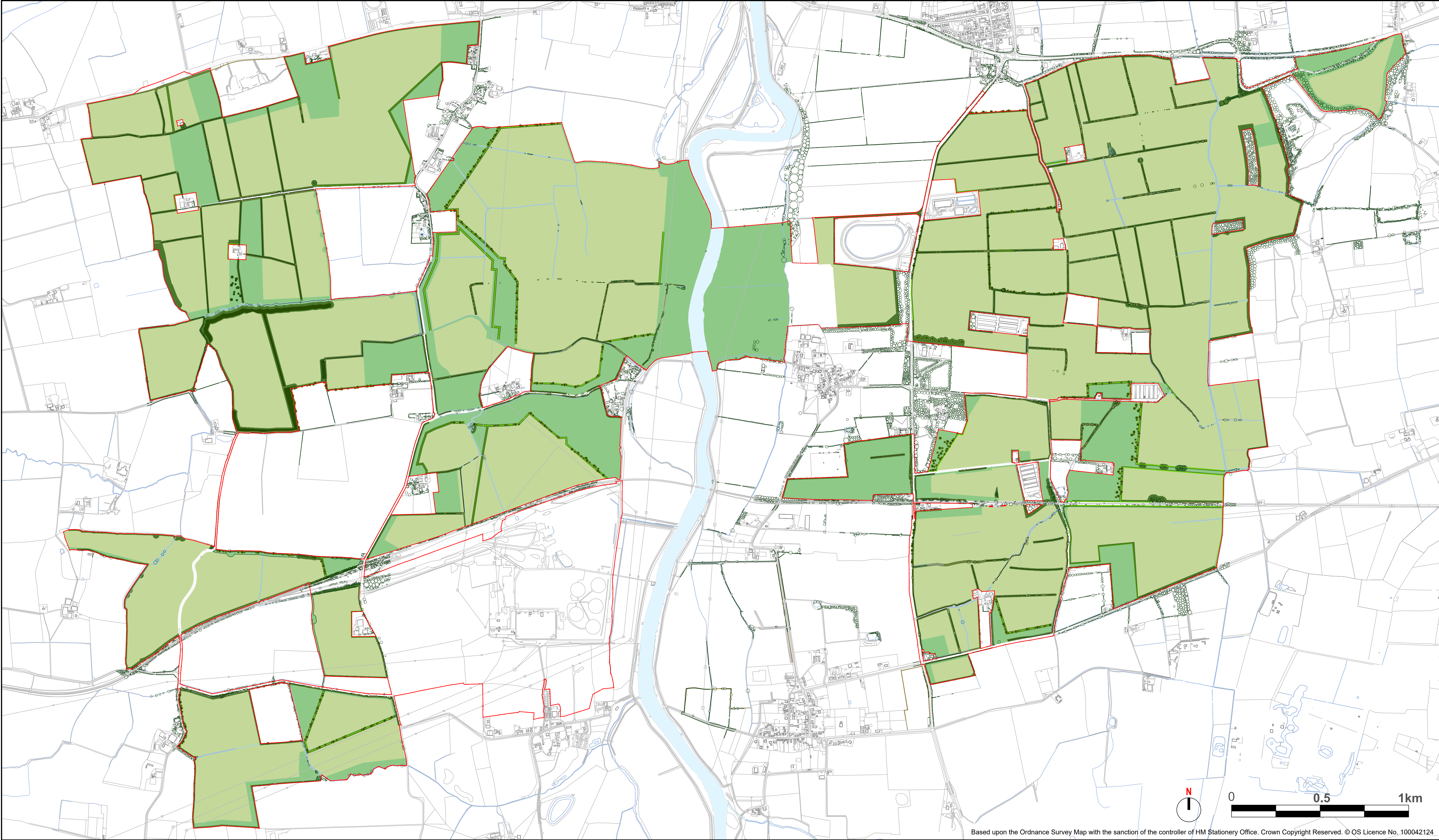
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Appendix A Landscape Mitigation Plan



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Drawing Title:

Mitigation Plan

Client:

One Earth Solar Farm Ltd

Project:

One Earth Solar Farm

Planning Inspectorate Scheme Ref:EN010159

Volume 7: Outline Landscape and Ecology Management Plan

Revision Description:

Removal of proposed species-rich grassland seed mix in field immediately north of North Clifton.

Document Reference Number:

EN010159/APP/7.7

Rev.

02

Drawn: JG

Designed: JG

Approved: SG

Drawing Date:

2025-08-21

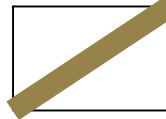
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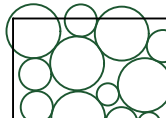
Legend



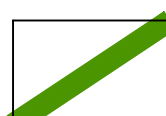
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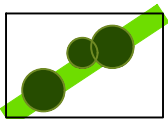
Existing hedgerows to be retained and enhanced



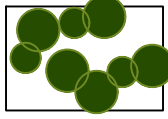
Existing vegetation to be retained



Proposed hedgerows



Proposed hedgerows with trees



Proposed standard trees



Proposed woodland and tree belts



Proposed tussock and grassland seed mix



Proposed species-rich grassland seed mix

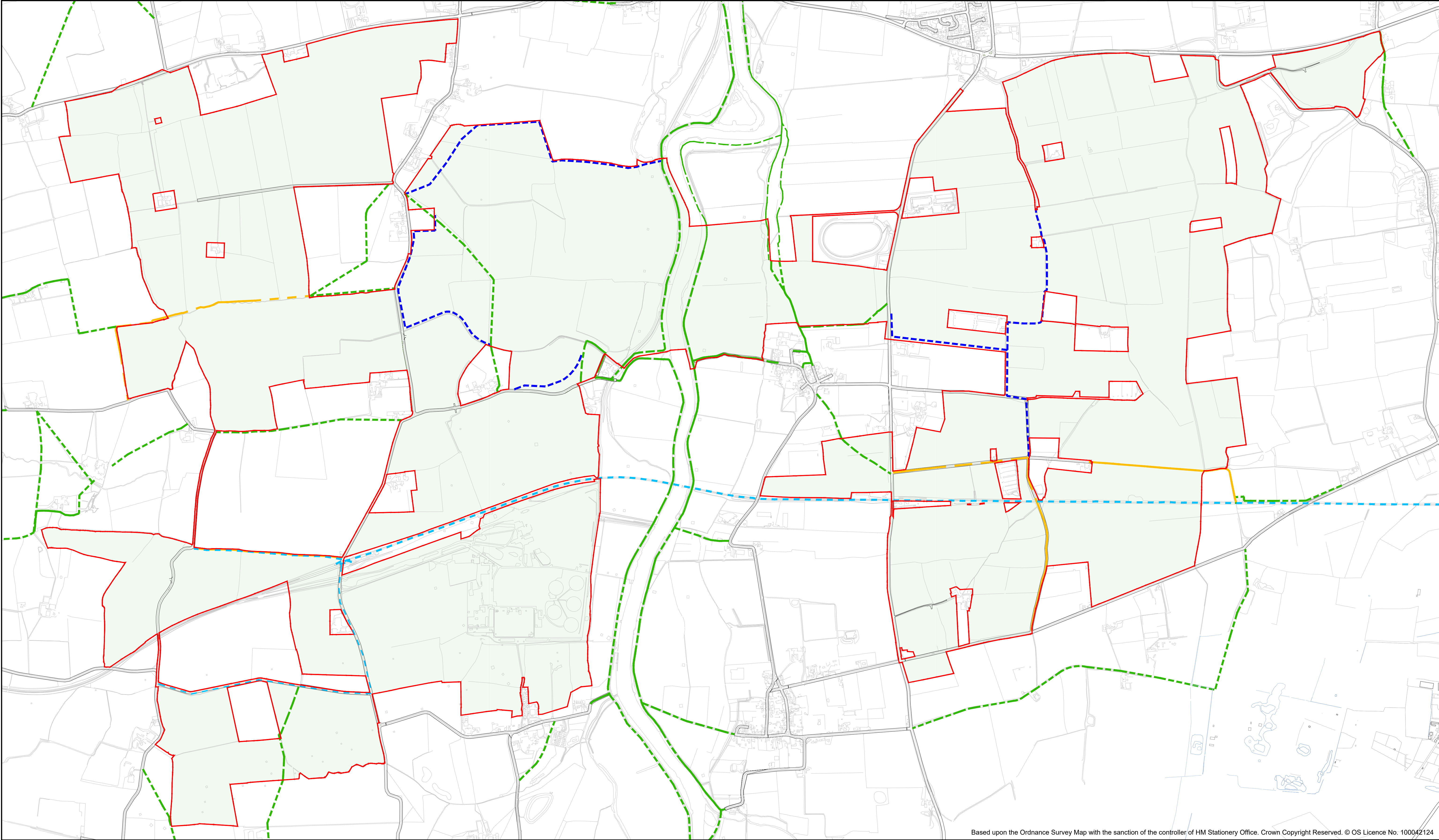


Proposed hedgerows and field margin seed mix



Proposed riparian zone seed mix

Appendix B Permissive Path Plan



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Client:
One Earth Solar Farm Ltd

Project:
One Earth Solar Farm

Planning Inspectorate Scheme Ref:EN010159
Volume 7: Outline Landscape and Ecology Management Plan

Drawing Title:
Public Right of Way and Permissive Path Plan

Document Reference Number:
EN010159/APP/7.7

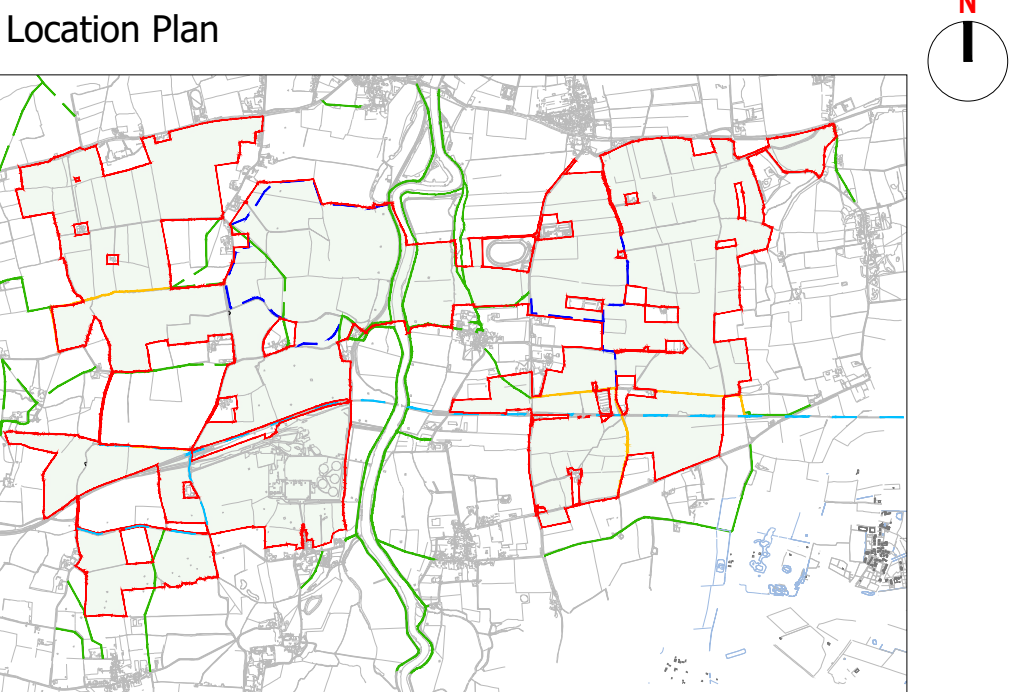
Rev.
01

Drawn: JG Designed: SG Approved: SG

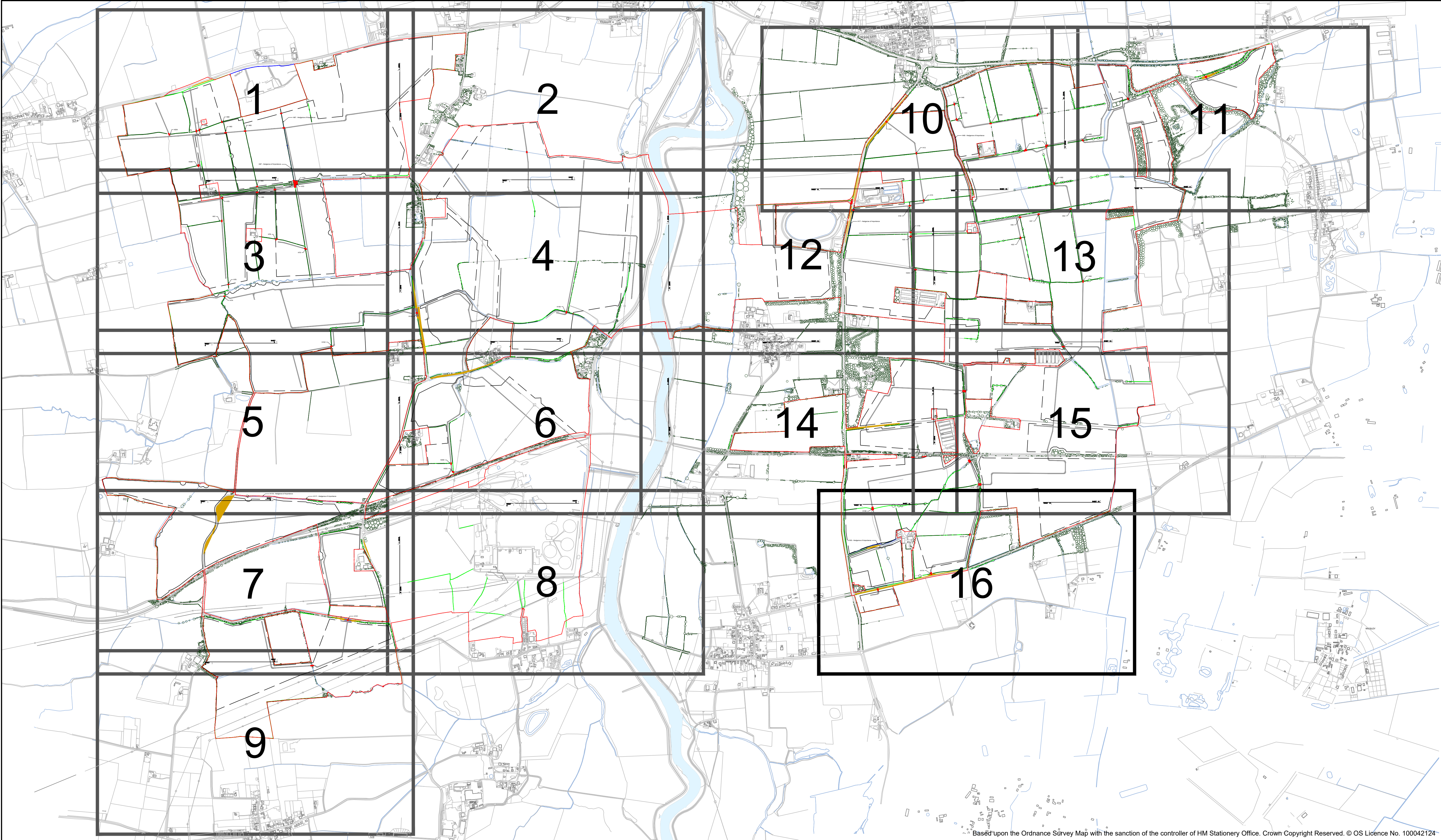
Drawing Date:
2025-01-06

Scale:
1:10000 @ A1

- Legend
- Order Limits
 - Existing Public Rights of Way Network - Footpath
 - Existing Public Rights of Way Network - Bridleway
 - Proposed Permissive Path Network
 - Existing Sustrans Cycle Route



Appendix C Vegetation Removal Plan

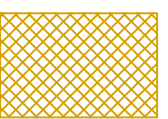
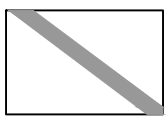
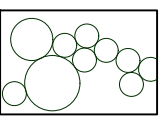
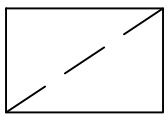
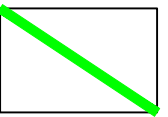
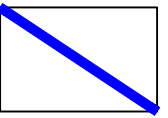


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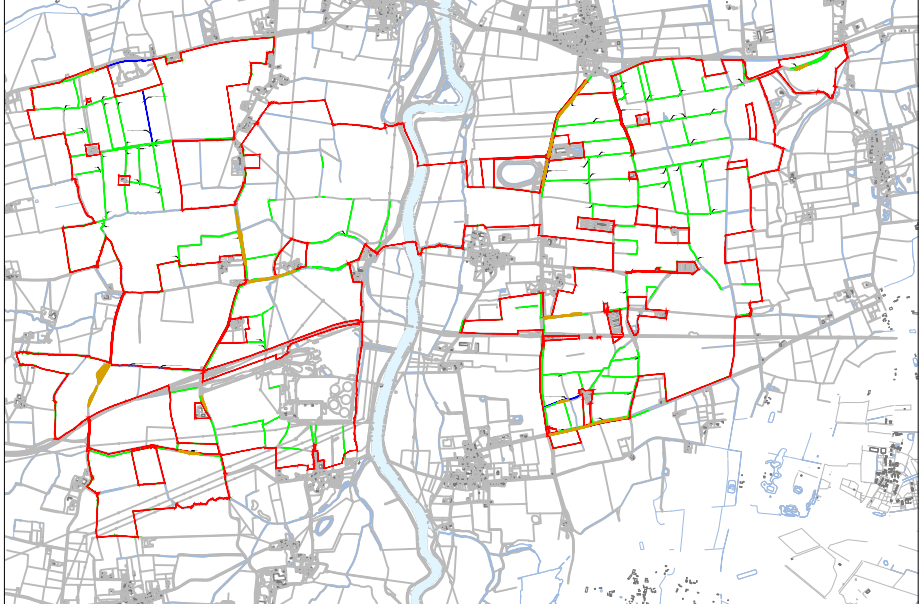


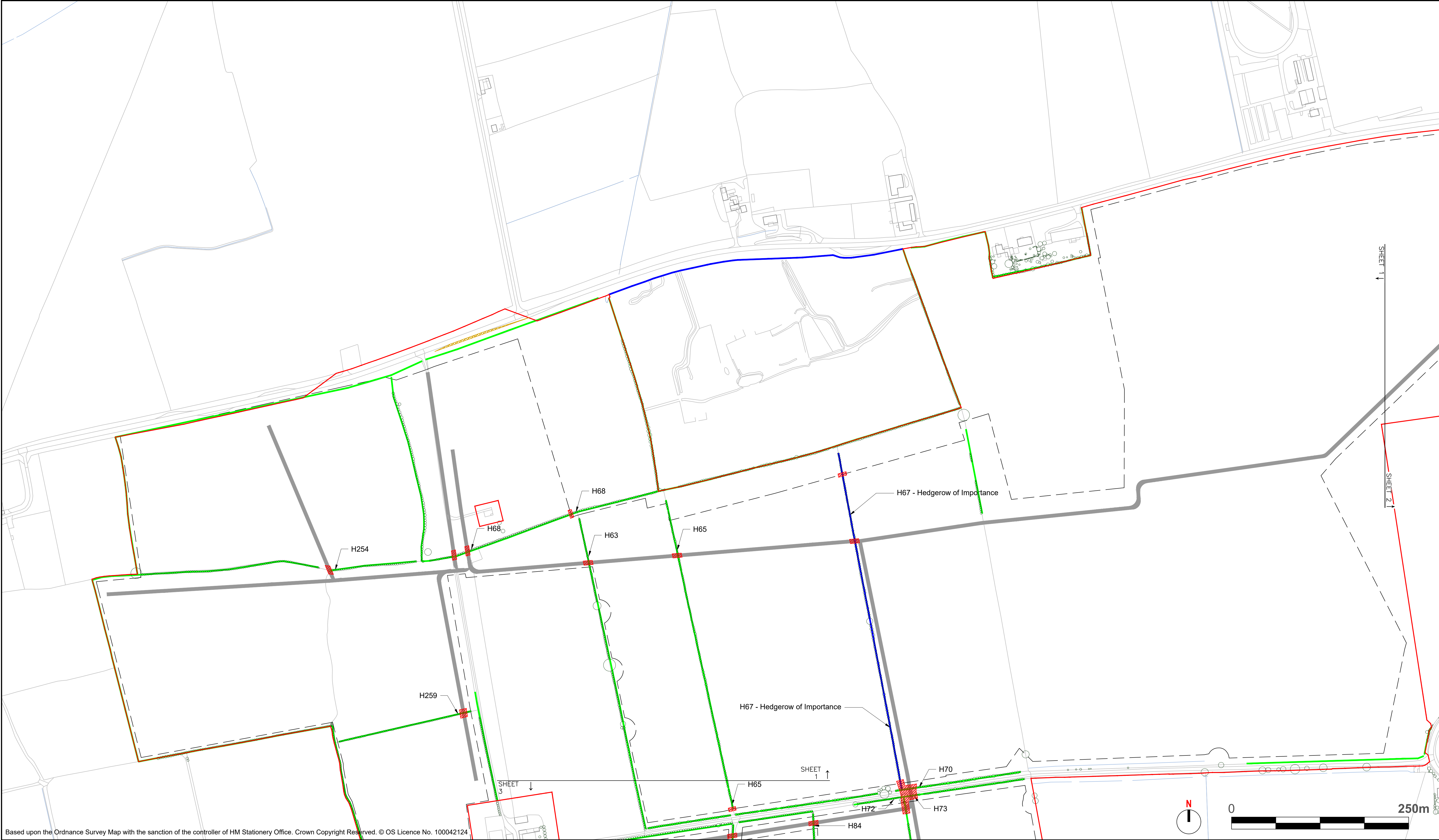
Drawing Title: Vegetation Removal Plan - Key Plan	Revision Description: Additional hedgerow removal to access point off A1133, south of reservoir - Sheet 12	Revision Date: 2025-09-09
Client: One Earth Solar Farm Ltd		
Project: One Earth Solar Farm	Document Reference Number: EN010159/APP/7.7	Rev. 02
Planning Inspectorate Scheme Ref:EN010159	Drawn: JG	Designed: SG
Volume 7: Outline Landscape and Ecology Management Plan	Drawing Date: 2025-01-06	Approved: SG
	Scale: NTS @ A1	

Legend

 Order Limits	 Vegetation to be managed at height of 0.9m
 Proposed internal access tracks	 Existing vegetation
 Proposed fence alignment	 Existing hedgerows
 Vegetation to be removed	 Existing hedgerows of importance

Location Plan





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Client:
One Earth Solar Farm Ltd

Project:
One Earth Solar Farm

Planning Inspectorate Scheme Ref:EN010159

Volume 7: Outline Landscape and Ecology Management Plan

Drawing Title:
Vegetation Removal Plan - Sheet 1 of 16

Document Reference Number:
EN010159/APP/7.7

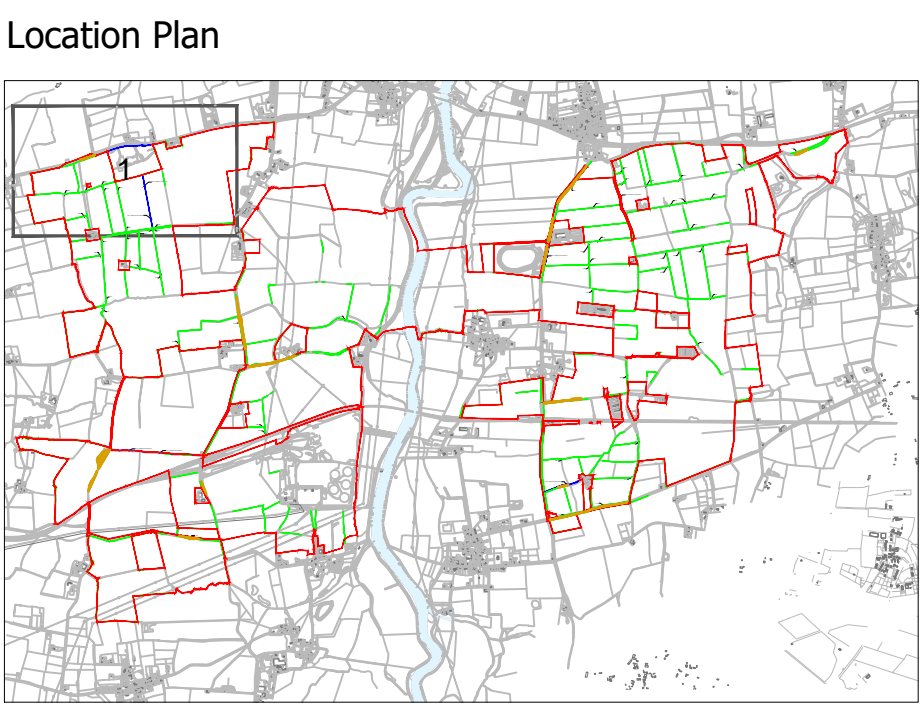
Rev.
02

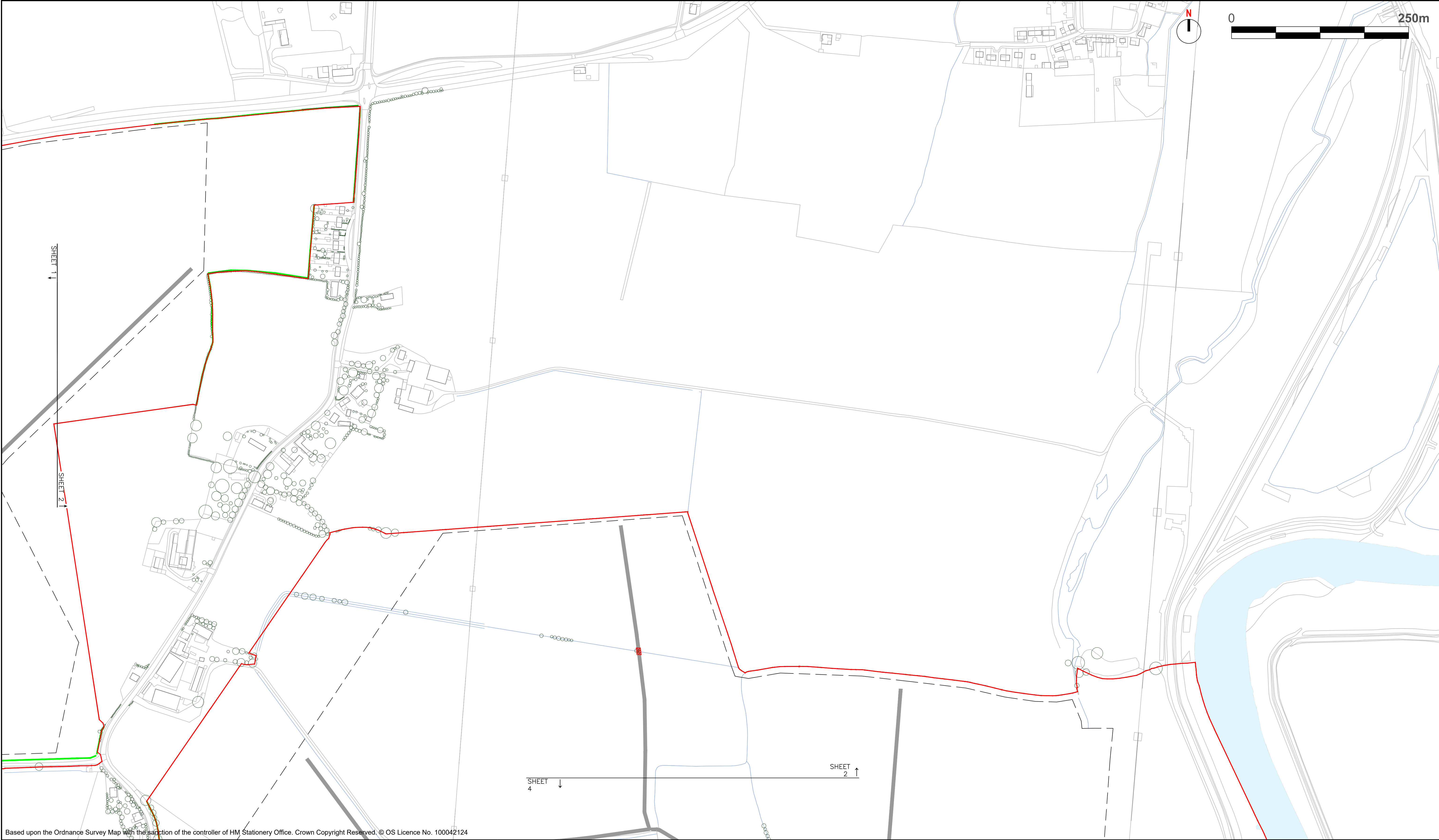
Drawn: JG Designed: SG Approved: SG

Drawing Date:
2025-01-06

Scale:
1:2500 @ A1

- Legend
- Order Limits
 - Proposed internal access tracks
 - Proposed fence alignment
 - Vegetation to be removed
 - Vegetation to be managed at height of 0.9m
 - Existing vegetation
 - Existing hedgerows
 - Existing hedgerows of importance

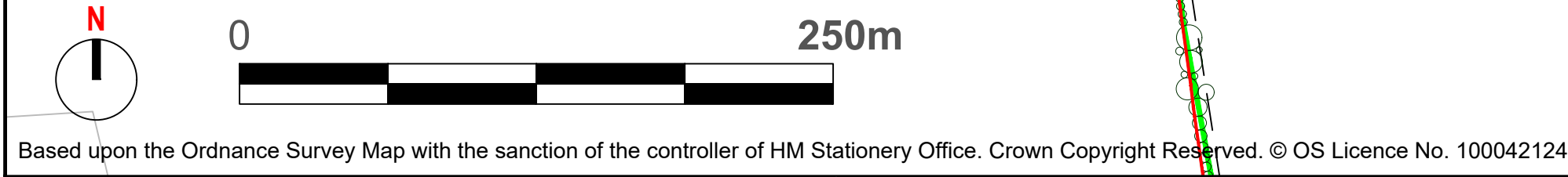
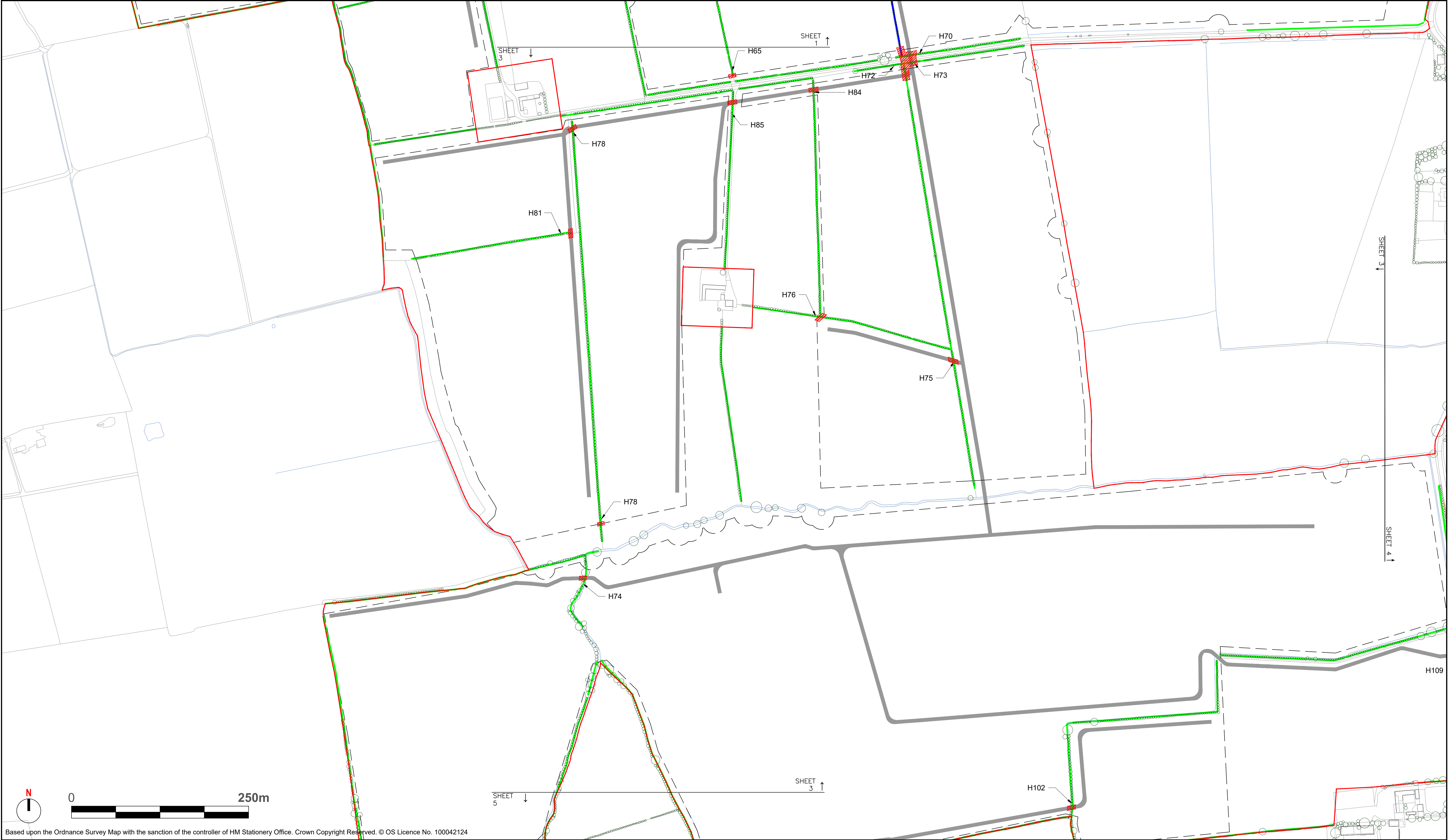




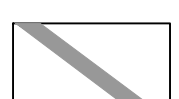
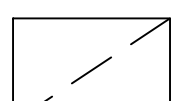
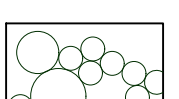
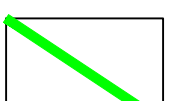
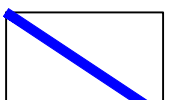
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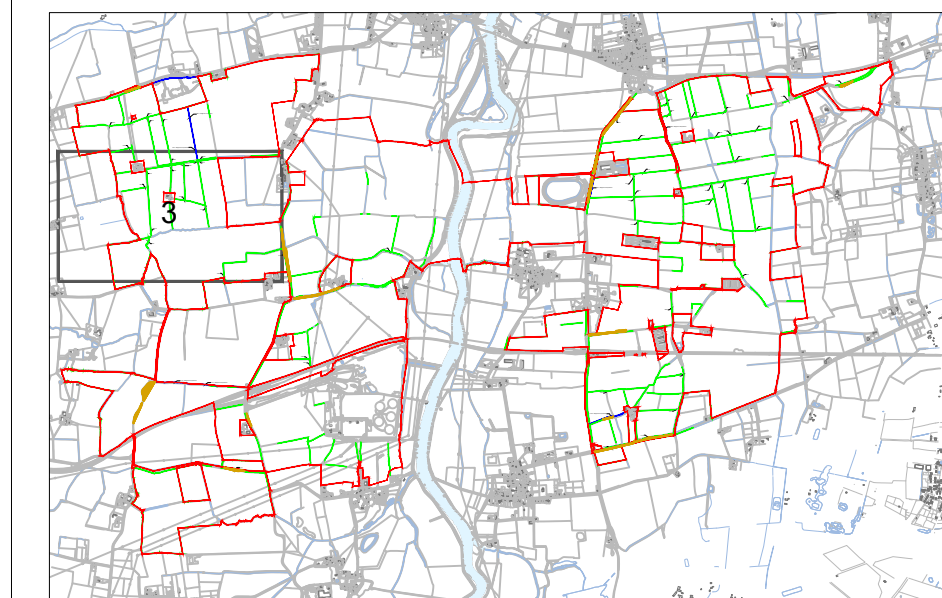
Client: One Earth Solar Farm Ltd		Drawing Title: Vegetation Removal Plan - Sheet 2 of 16		Legend Order Limits Proposed internal access tracks Proposed fence alignment Vegetation to be removed Vegetation to be managed at height of 0.9m Existing vegetation Existing hedgerows Existing hedgerows of importance				Location Plan			
Project: One Earth Solar Farm		Document Reference Number: EN010159/APP/7.7								Rev. 02	
Drawn: JG		Designed: SG								Approved: SG	
Planning Inspectorate Scheme Ref:EN010159		Drawing Date: 2025-01-06								Scale: 1:2500 @ A1	
Volume 7: Outline Landscape and Ecology Management Plan											



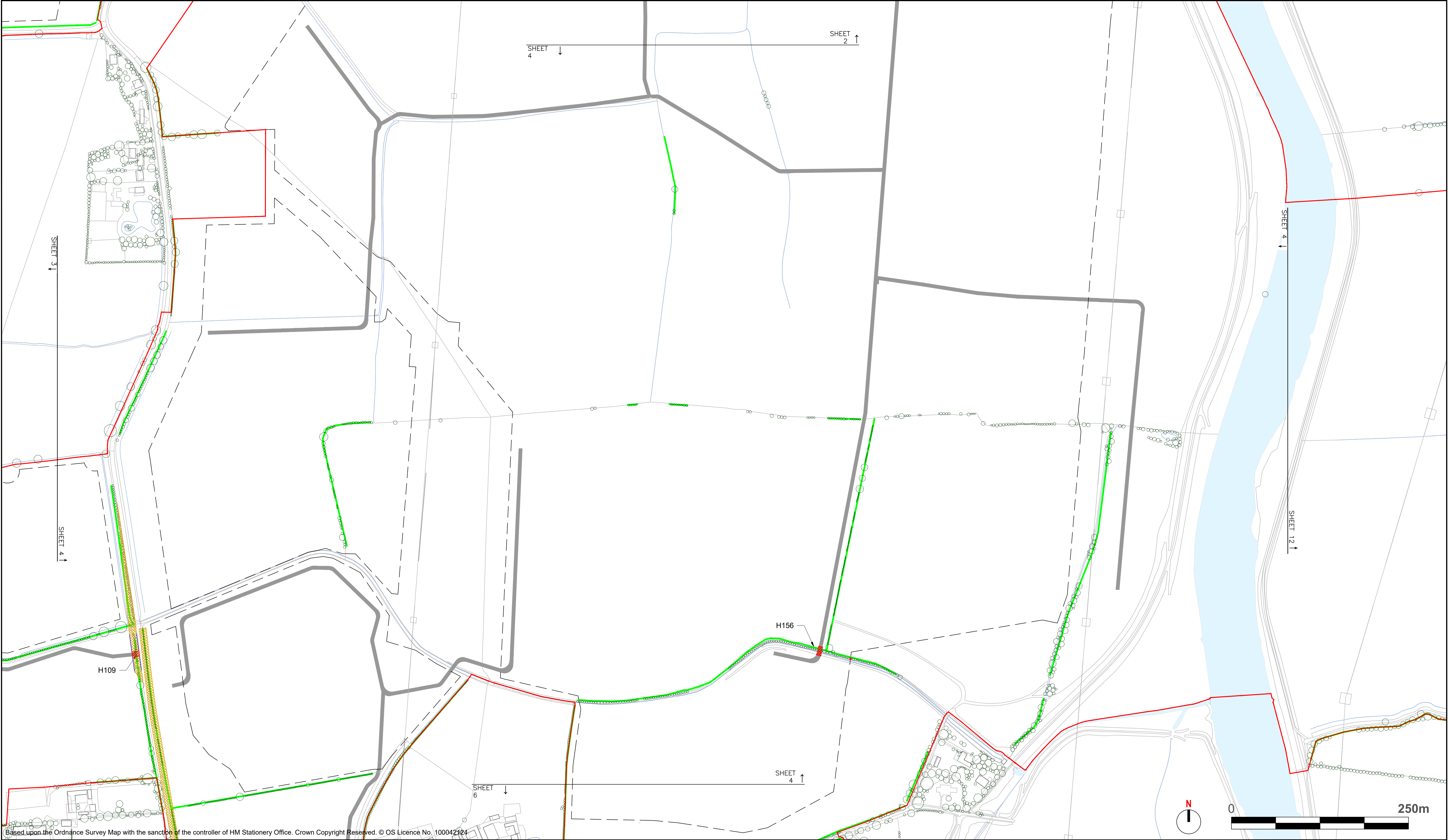
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	Client: One Earth Solar Farm Ltd		Drawing Title: Vegetation Removal Plan - Sheet 3 of 16			Legend  Order Limits  Proposed internal access tracks  Proposed fence alignment  Vegetation to be removed  Vegetation to be managed at height of 0.9m  Existing vegetation  Existing hedgerows  Existing hedgerows of importance
	Project: One Earth Solar Farm	Document Reference Number: EN010159/APP/7.7			Rev. 02	
		Drawn: JG	Designed: SG	Approved: SG		
	Planning Inspectorate Scheme Ref:EN010159		Drawing Date: 2025-01-06		Scale: 1:2500 @ A1	
	Volume 7: Outline Landscape and Ecology Management Plan					

Location Plan



Location Plan



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Client:
One Earth Solar Farm Ltd

Project:
One Earth Solar Farm

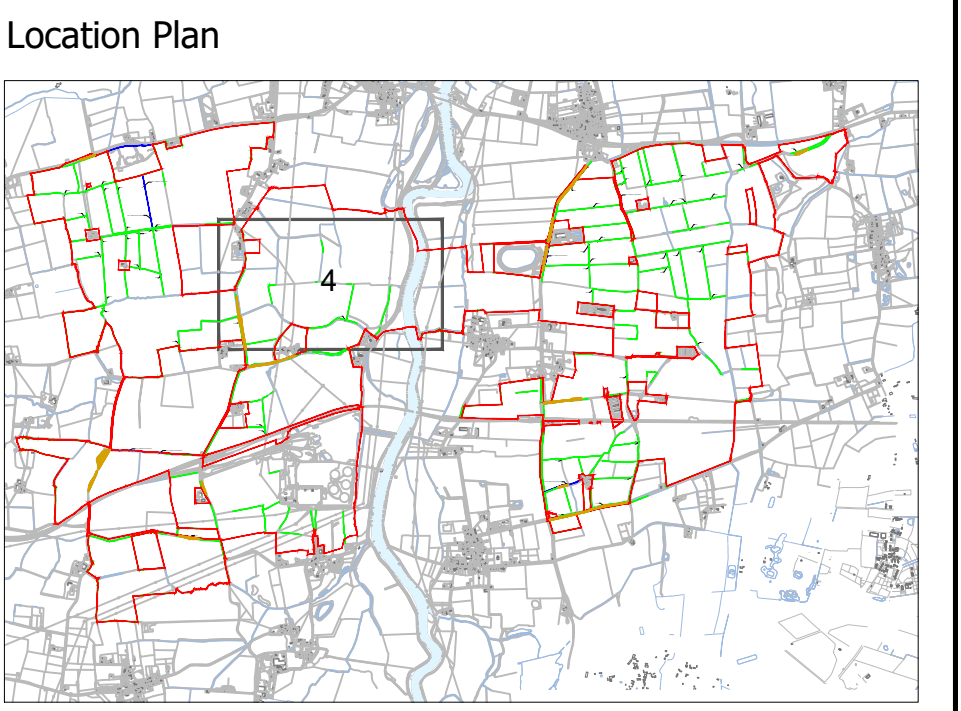
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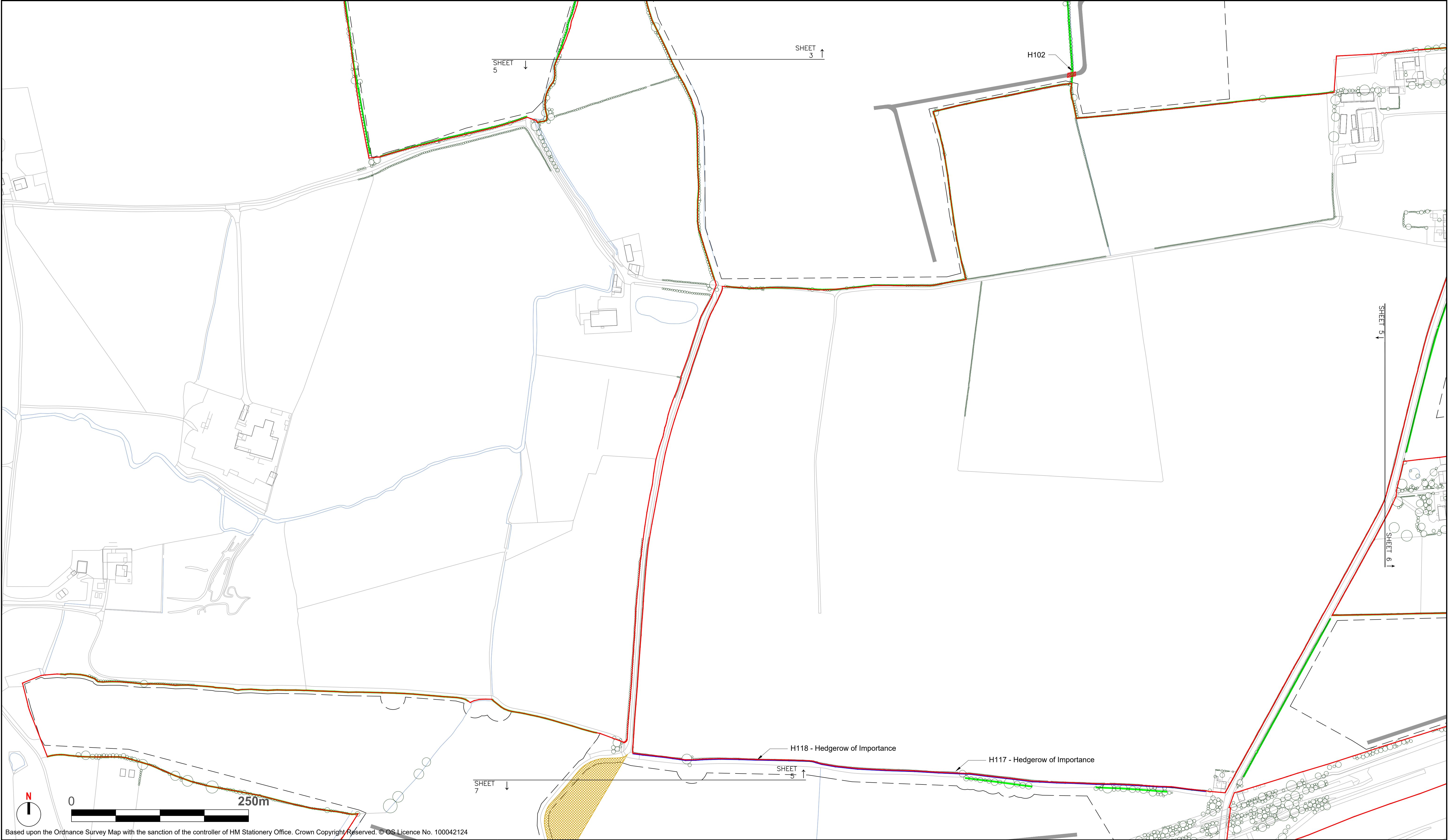
Volume 7: Outline Landscape and Ecology Management Plan

Drawing Title:
Vegetation Removal Plan - Sheet 4 of 16

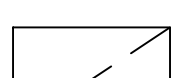
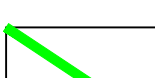
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Drawn: JG	Designed: SG	Approved: SG
Drawing Date: 2025-01-06	Scale: 1:2500 @ A1	

- Legend
- | | |
|---------------------------------|--|
| Order Limits | Vegetation to be managed at height of 0.9m |
| Proposed internal access tracks | Existing vegetation |
| Proposed fence alignment | Existing hedgerows |
| Vegetation to be removed | Existing hedgerows of importance |

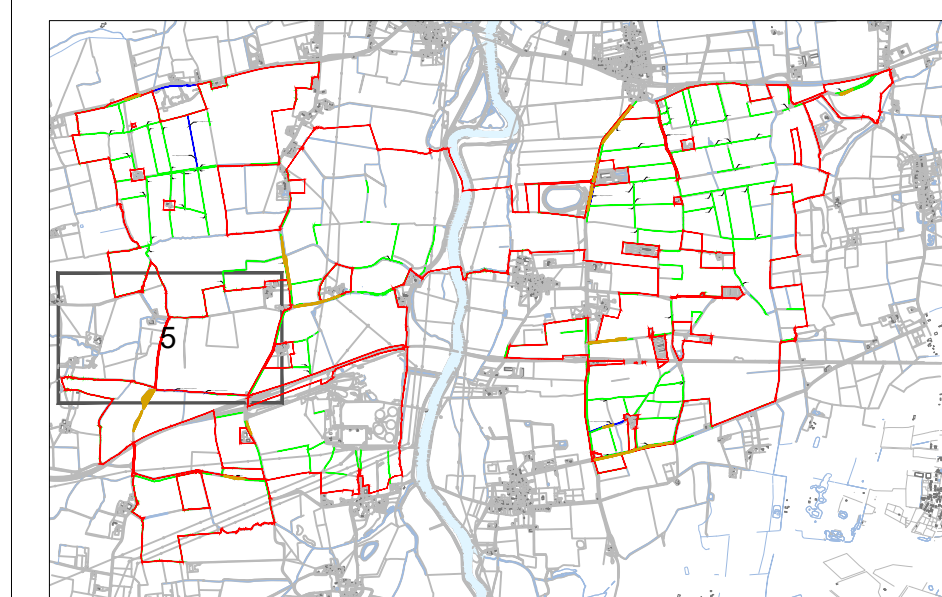


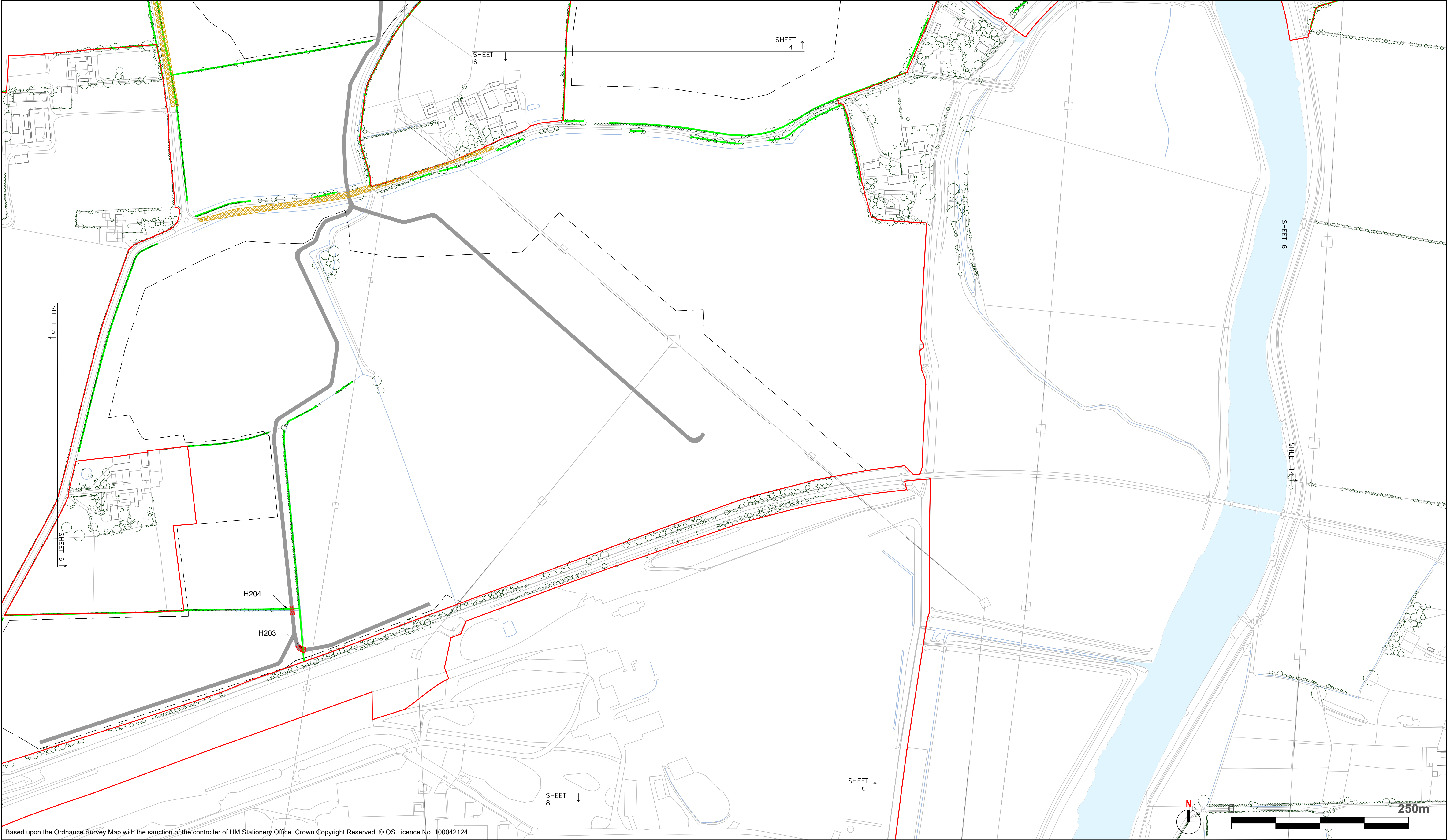


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	Client: One Earth Solar Farm Ltd		Drawing Title: Vegetation Removal Plan - Sheet 5 of 16			Legend  Order Limits  Proposed internal access tracks  Proposed fence alignment  Vegetation to be removed  Vegetation to be managed at height of 0.9m  Existing vegetation  Existing hedgerows  Existing hedgerows of importance
	Project: One Earth Solar Farm	Document Reference Number: EN010159/APP/7.7			Rev. 02	
		Drawn: JG	Designed: SG	Approved: SG		
		Planning Inspectorate Scheme Ref:EN010159		Drawing Date: 2025-01-06	Scale: 1:2500 @ A1	
	Volume 7: Outline Landscape and Ecology Management Plan					

Location Plan





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Client:
One Earth Solar Farm Ltd

Project:
One Earth Solar Farm

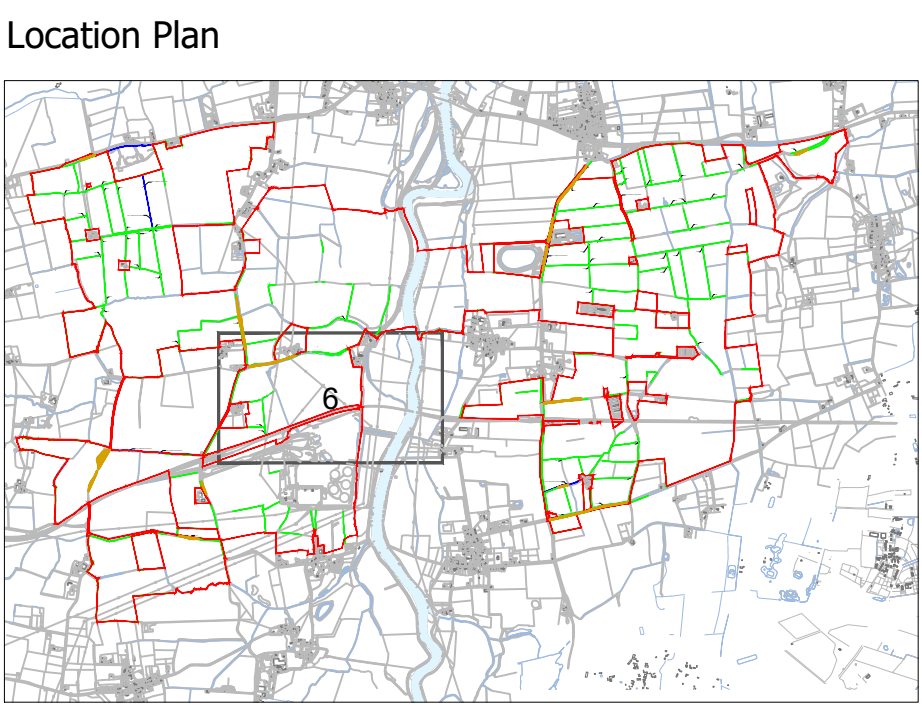
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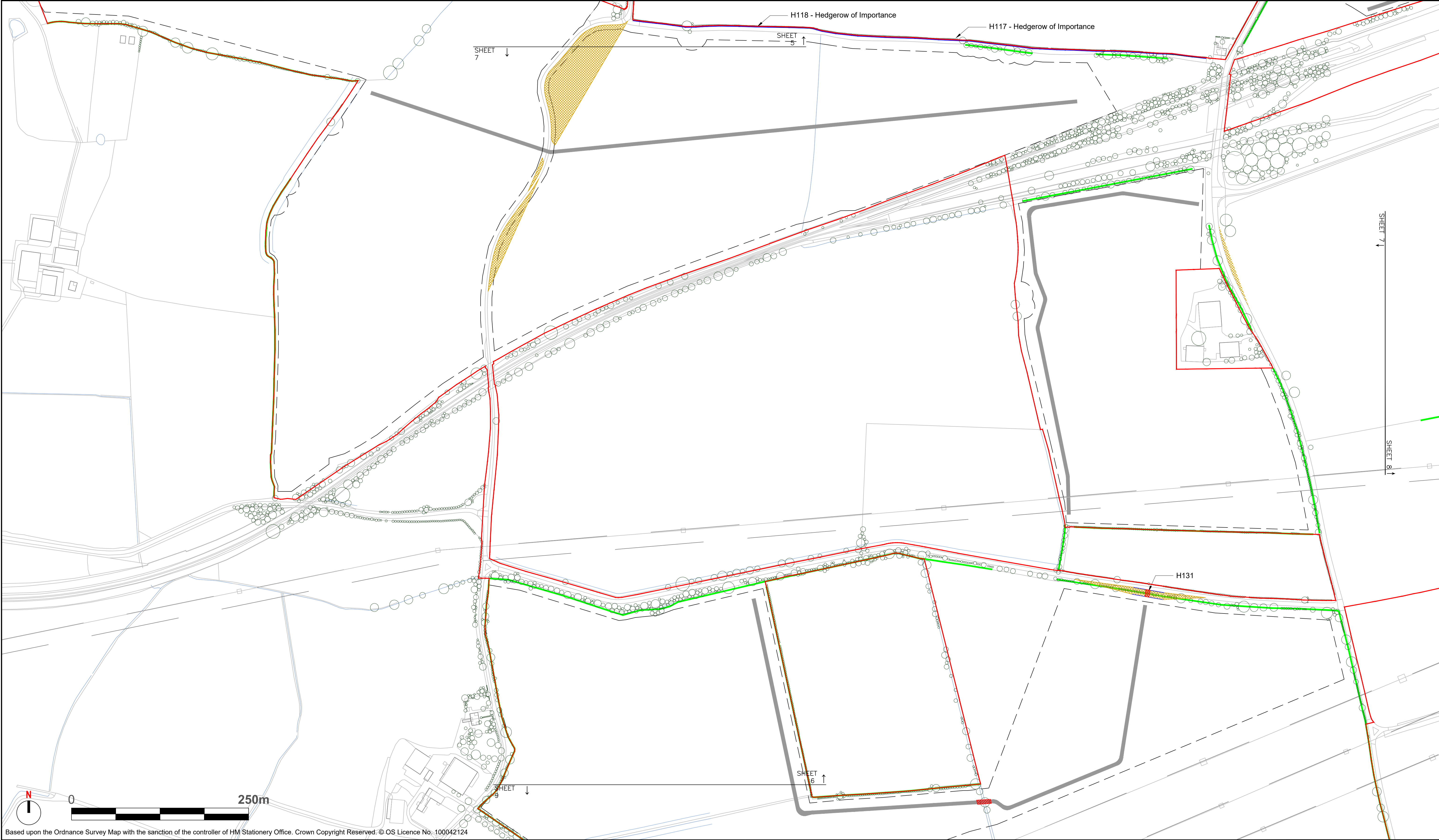
Volume 7: Outline Landscape and Ecology Management Plan

Drawing Title:
Vegetation Removal Plan - Sheet 6 of 16

Document Reference Number: EN010159/APP/7.7	Rev. 02	
Drawn: JG	Designed: SG	Approved: SG
Drawing Date: 2025-01-06	Scale: 1:2500 @ A1	

- Legend
- | | |
|---------------------------------|--|
| Order Limits | Vegetation to be managed at height of 0.9m |
| Proposed internal access tracks | Existing vegetation |
| Proposed fence alignment | Existing hedgerows |
| Vegetation to be removed | Existing hedgerows of importance |





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Client:
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Project:
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Planning Inspectorate Scheme Ref:EN010159

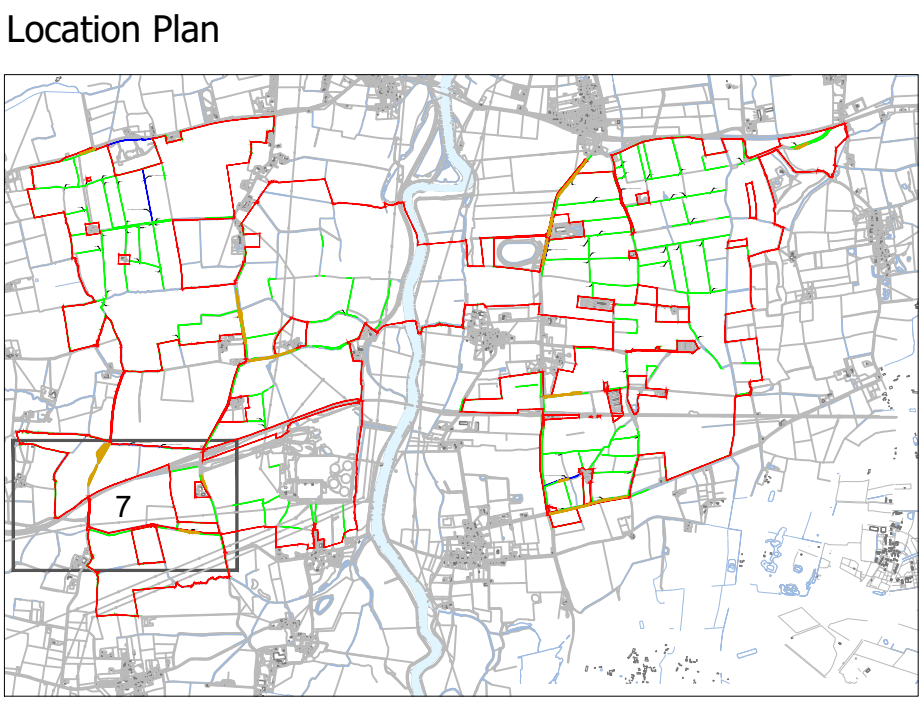
Volume 7: Outline Landscape and Ecology Management Plan

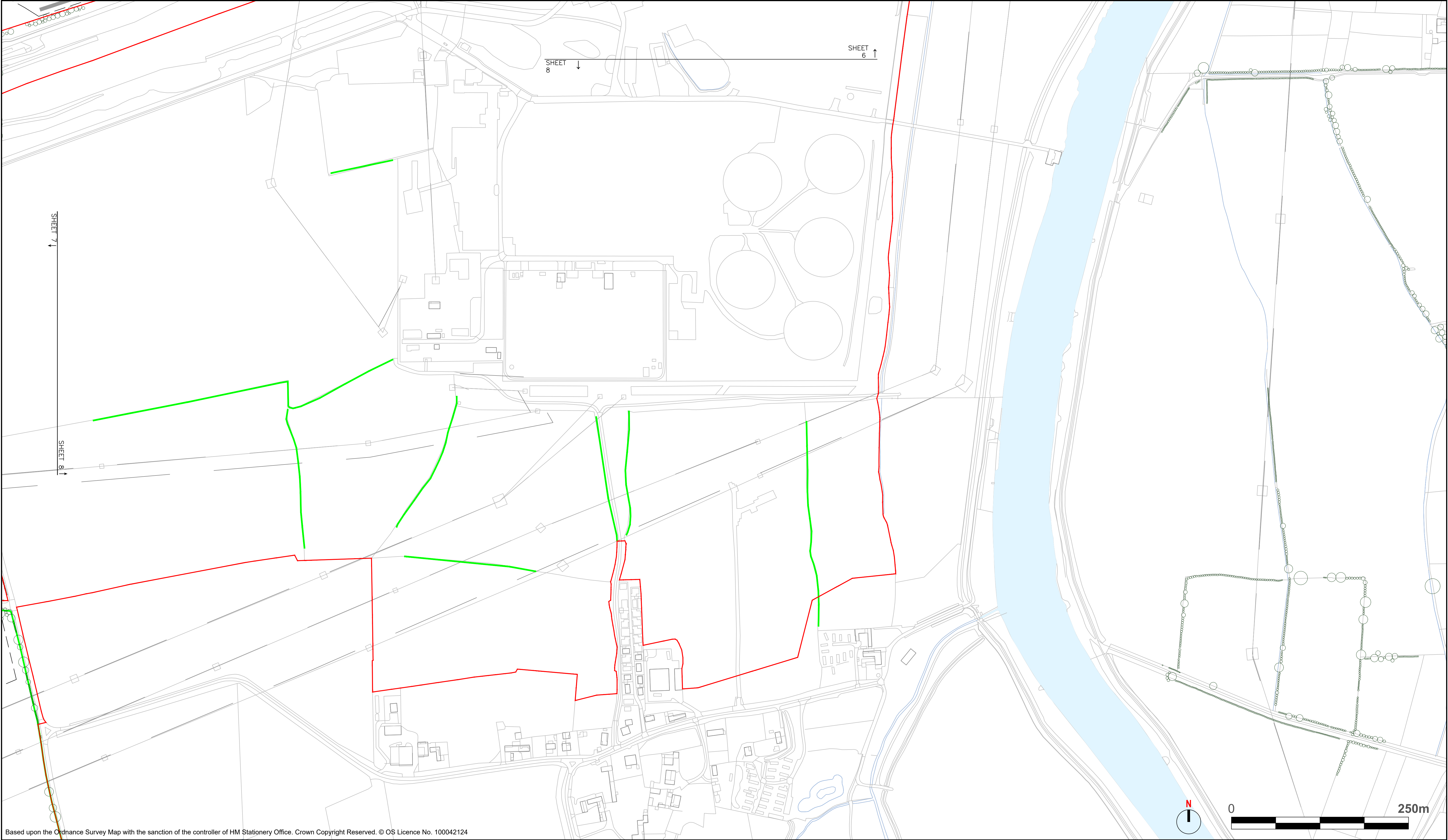
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Vegetation Removal Plan - Sheet 7 of 16

Document Reference Number: EN010159/APP/7.7	Rev. 02
Drawn: JG	Designed: SG
Approved: SG	

Drawing Date: 2025-01-06	Scale: 1:2500 @ A1
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- Legend
- Order Limits
 - Proposed internal access tracks
 - Proposed fence alignment
 - Vegetation to be removed
 - Vegetation to be managed at height of 0.9m
 - Existing vegetation
 - Existing hedgerows
 - Existing hedgerows of importance





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Client:
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Project:
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Planning Inspectorate Scheme Ref:EN010159

Volume 7: Outline Landscape and Ecology Management Plan

Drawing Title:
Vegetation Removal Plan - Sheet 8 of 16

Document Reference Number:
EN010159/APP/7.7

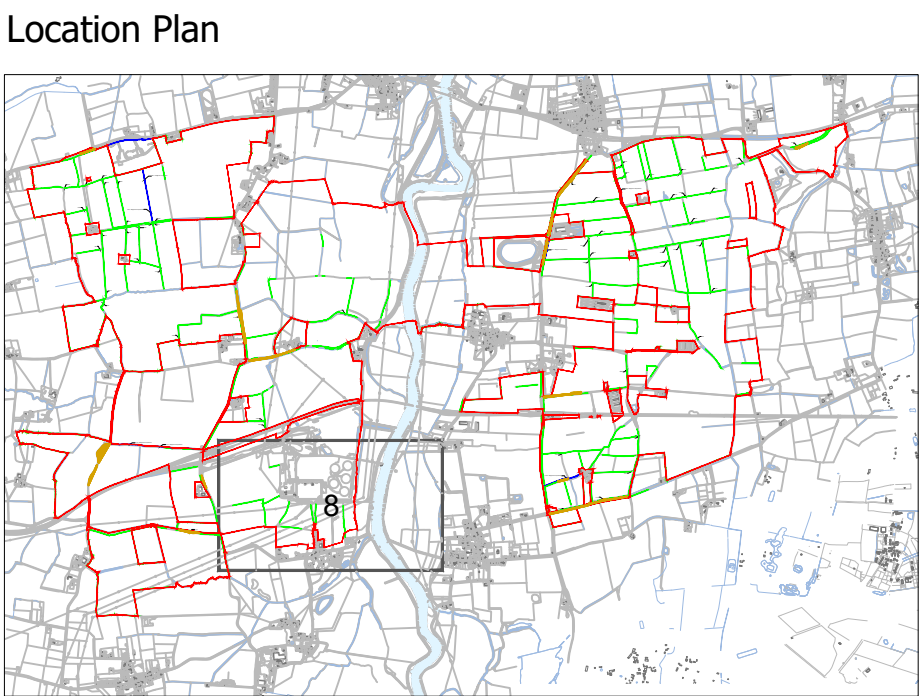
Rev.
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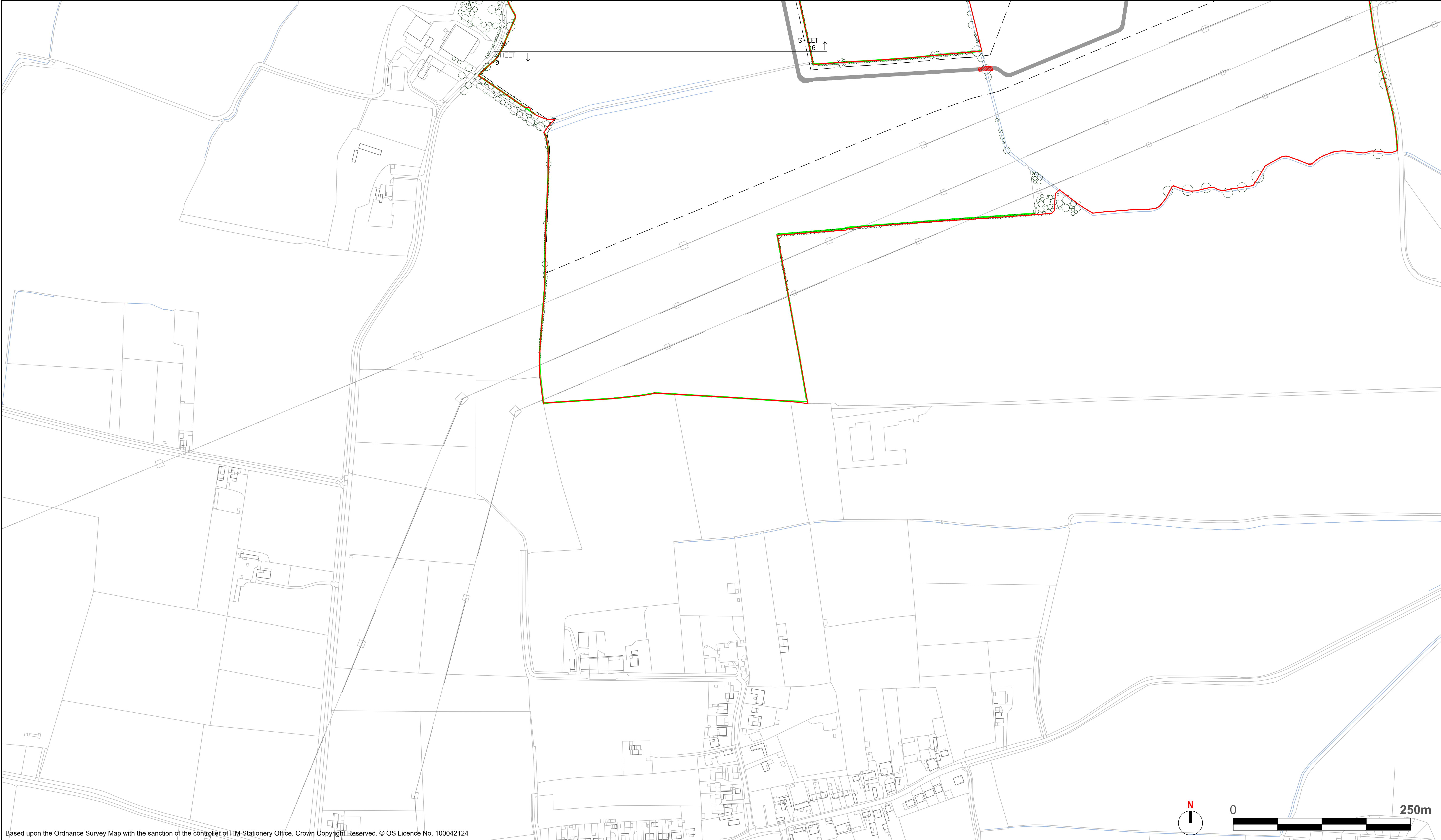
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Drawing Date:
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- Legend
- Order Limits
 - Proposed internal access tracks
 - Proposed fence alignment
 - Vegetation to be removed
 - Vegetation to be managed at height of 0.9m
 - Existing vegetation
 - Existing hedgerows
 - Existing hedgerows of importance





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Client:
One Earth Solar Farm Ltd

Project:
One Earth Solar Farm

Planning Inspectorate Scheme Ref:EN010159
Volume 7: Outline Landscape and Ecology Management Plan

Drawing Title:
Vegetation Removal Plan - Sheet 9 of 16

Document Reference Number:
EN010159/APP/7.7

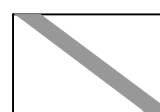
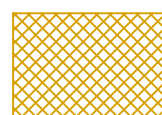
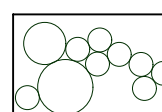
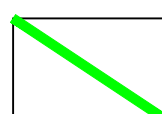
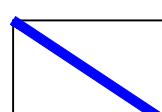
Rev.
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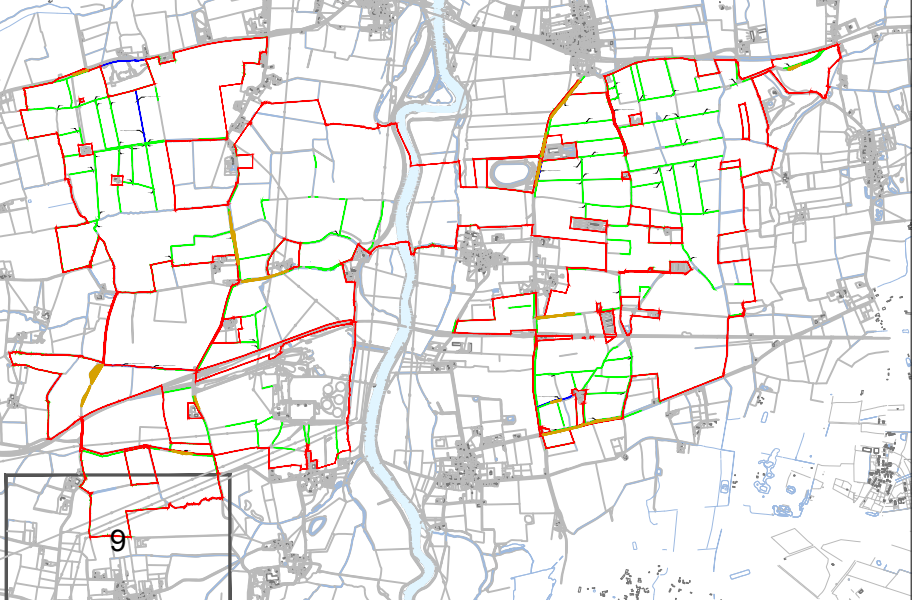
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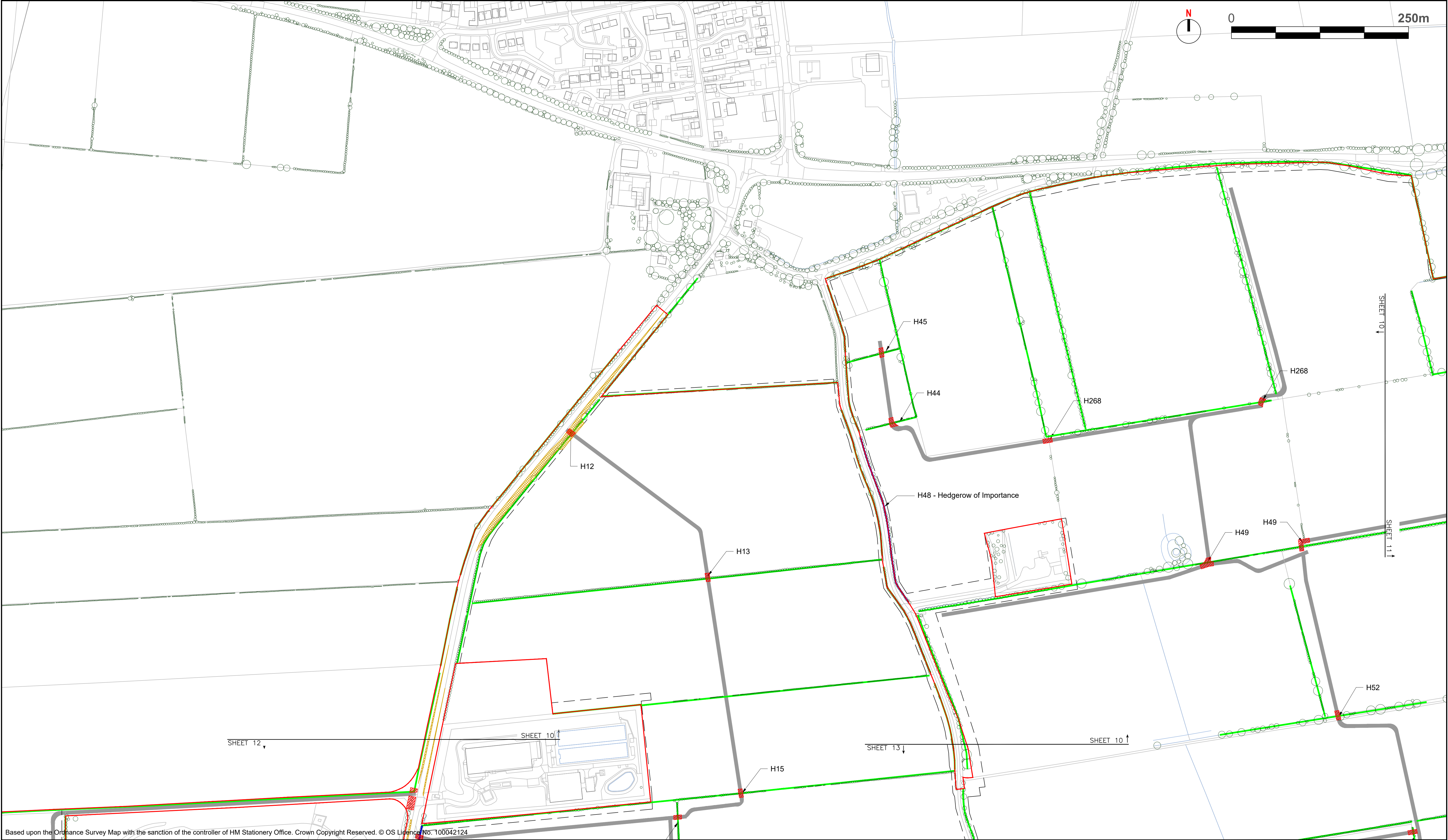
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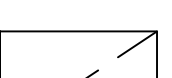
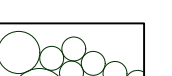
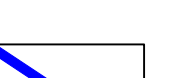
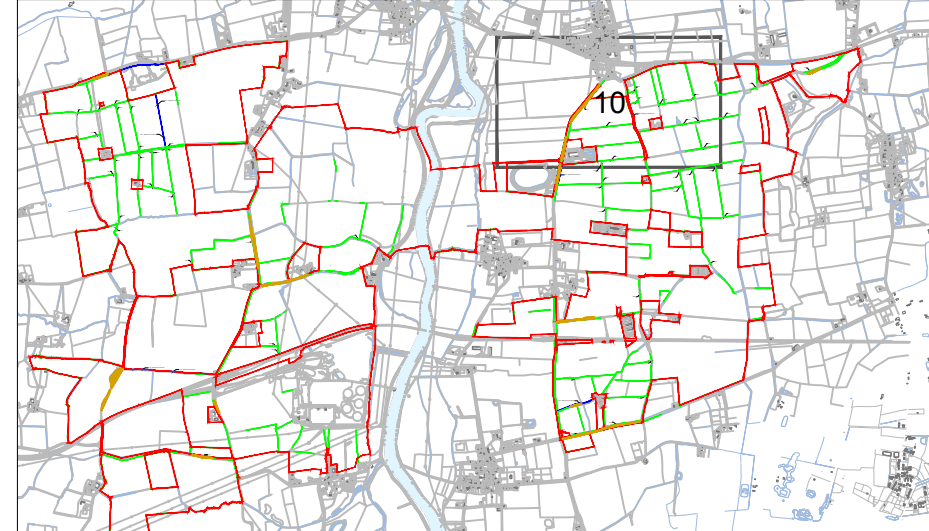
-  Order Limits
-  Proposed internal access tracks
-  Proposed fence alignment
-  Vegetation to be removed
-  Vegetation to be managed at height of 0.9m
-  Existing vegetation
-  Existing hedgerows
-  Existing hedgerows of importance

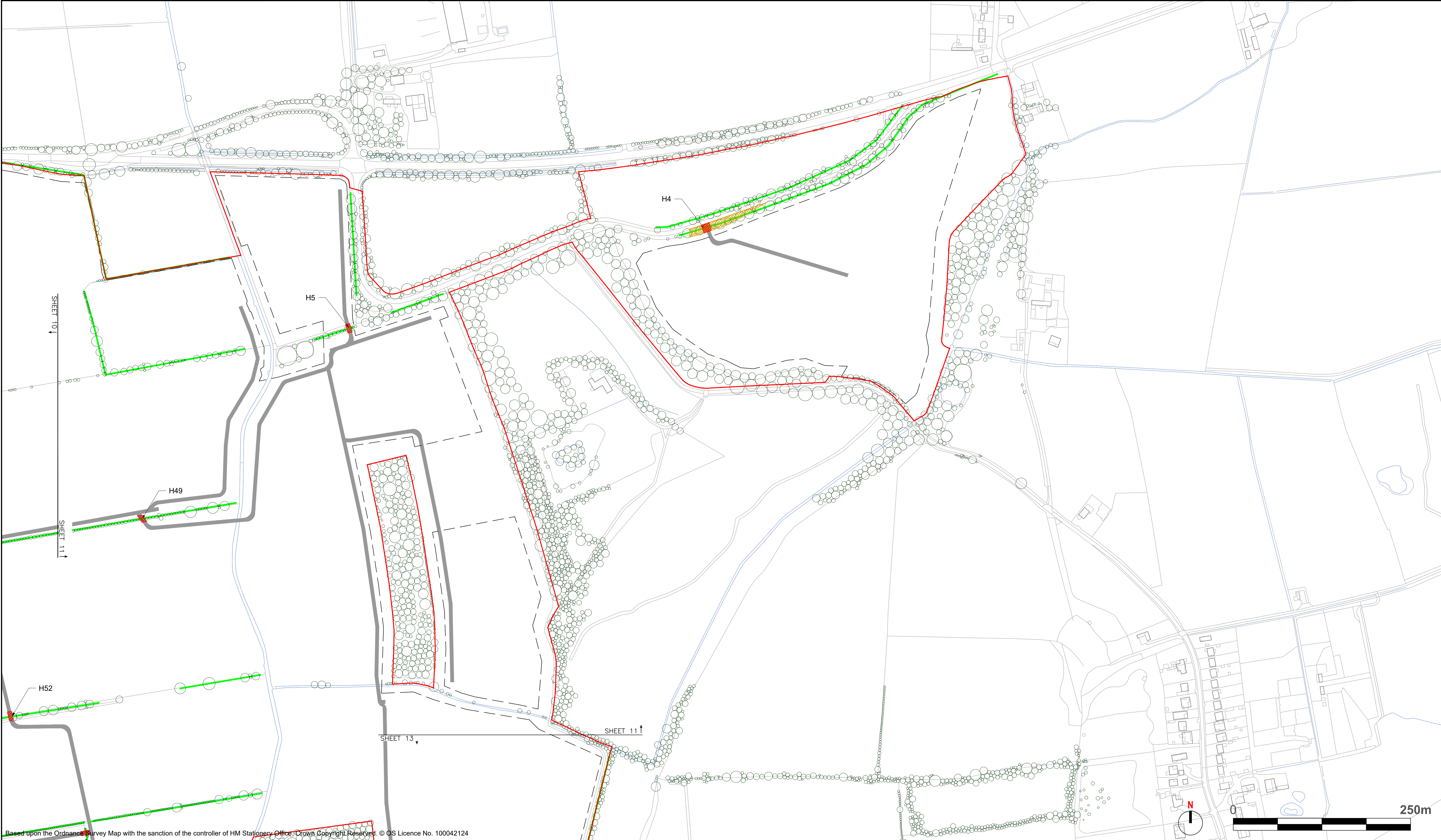
Location Plan





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	Client: One Earth Solar Farm Ltd		Drawing Title: Vegetation Removal Plan - Sheet 10 of 16			Legend  Order Limits  Proposed internal access tracks  Proposed fence alignment  Vegetation to be removed  Vegetation to be managed at height of 0.9m  Existing vegetation  Existing hedgerows  Existing hedgerows of importance
	Project: One Earth Solar Farm	Document Reference Number: EN010159/APP/7.7			Rev. 02	
		Drawn: JG	Designed: SG	Approved: SG		
	Planning Inspectorate Scheme Ref:EN010159		Drawing Date: 2025-01-06		Scale: 1:2500 @ A1	
	Volume 7: Outline Landscape and Ecology Management Plan					
Location Plan 						



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One Earth Solar Farm Ltd

Project:
One Earth Solar Farm

Planning Inspectorate Scheme Ref:EN010159

Volume 7: Outline Landscape and Ecology Management Plan

Drawing Title:
Vegetation Removal Plan - Sheet 11 of 16

Document Reference Number:
EN010159/APP/7.7

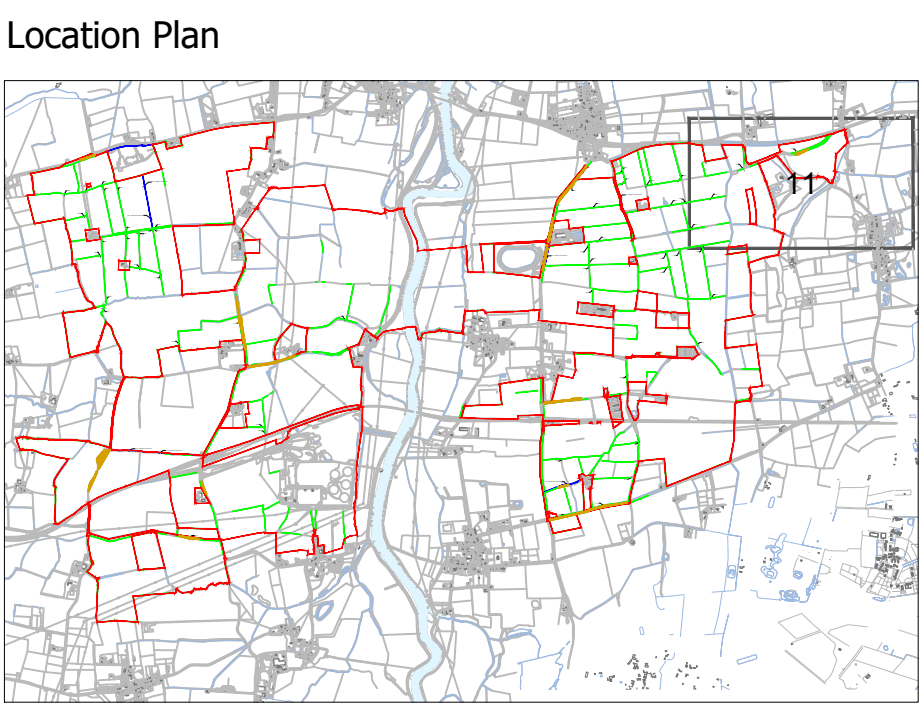
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02

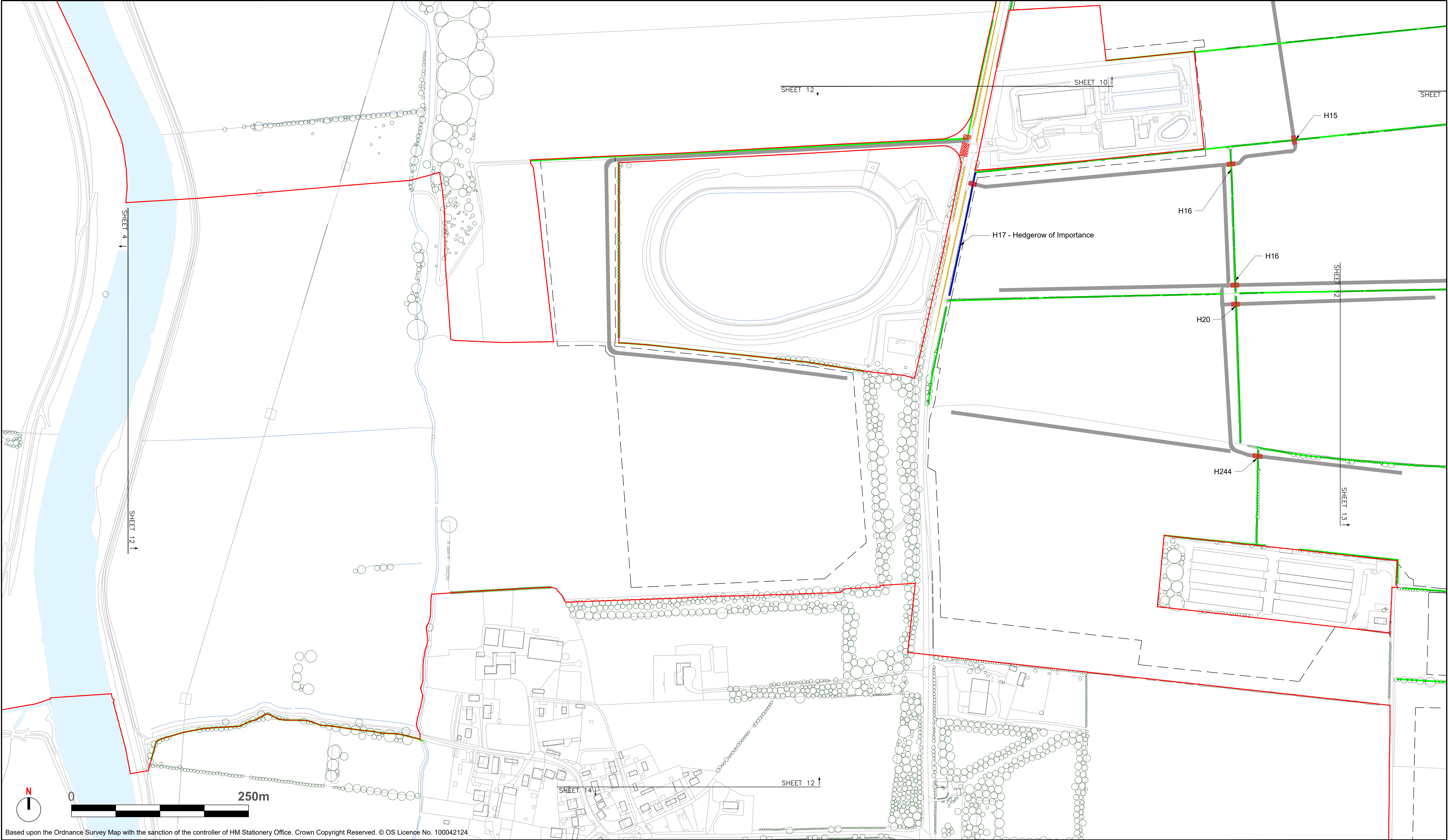
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- Legend
- Order Limits
 - Proposed internal access tracks
 - Proposed fence alignment
 - Vegetation to be removed
 - Vegetation to be managed at height of 0.9m
 - Existing vegetation
 - Existing hedgerows
 - Existing hedgerows of importance





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Drawing Title:
Vegetation Removal Plan - Key Plan

Client:
One Earth Solar Farm Ltd

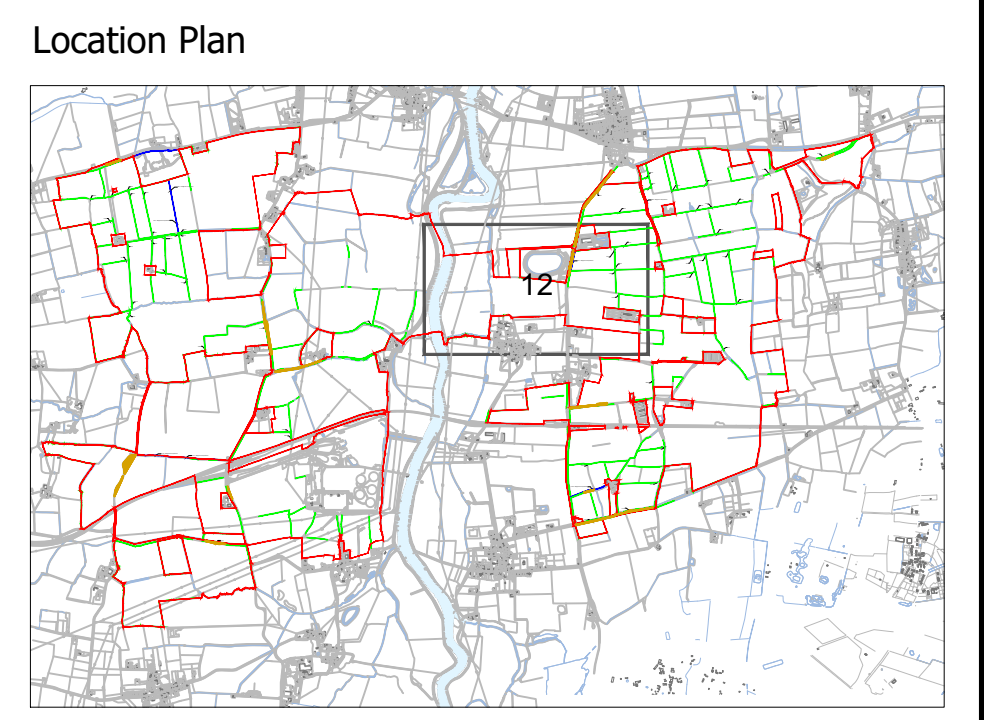
Project:
One Earth Solar Farm

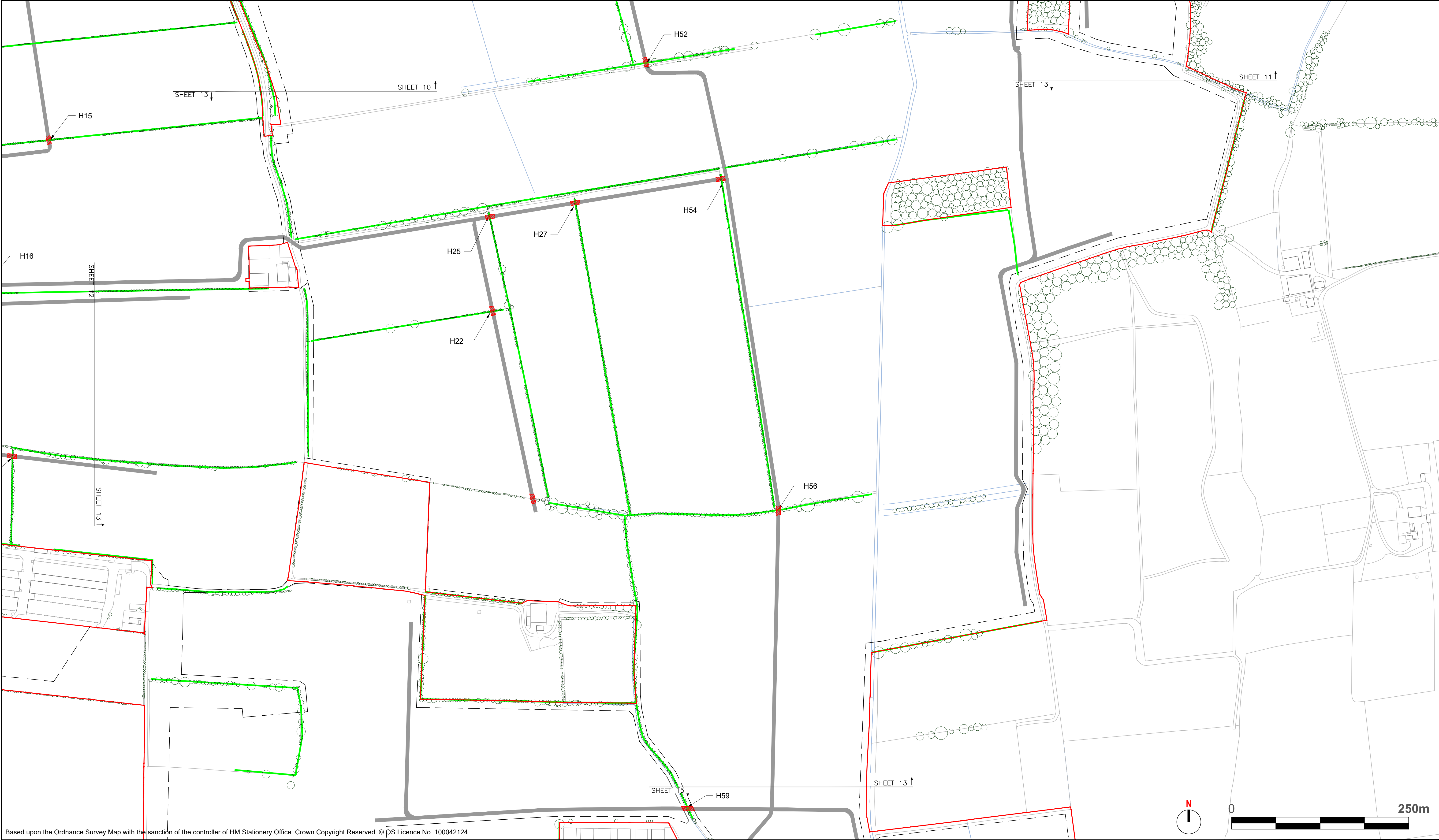
Planning Inspectorate Scheme Ref:EN010159

Volume 7: Outline Landscape and Ecology Management Plan

Revision Description:		Revision Date:
Additional hedgerow removal to access point off A1133, north of reservoir		2025-09-09
Document Reference Number:		Rev.
EN010159/APP/7.7		02
Drawn: JG	Designed: SG	Approved:
Drawing Date:	Scale:	
2025-01-06	NTS @ A1	

Legend	
	Order Limits
	Proposed internal access tracks
	Proposed fence alignment
	Vegetation to be removed
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	Existing hedgerows of importance





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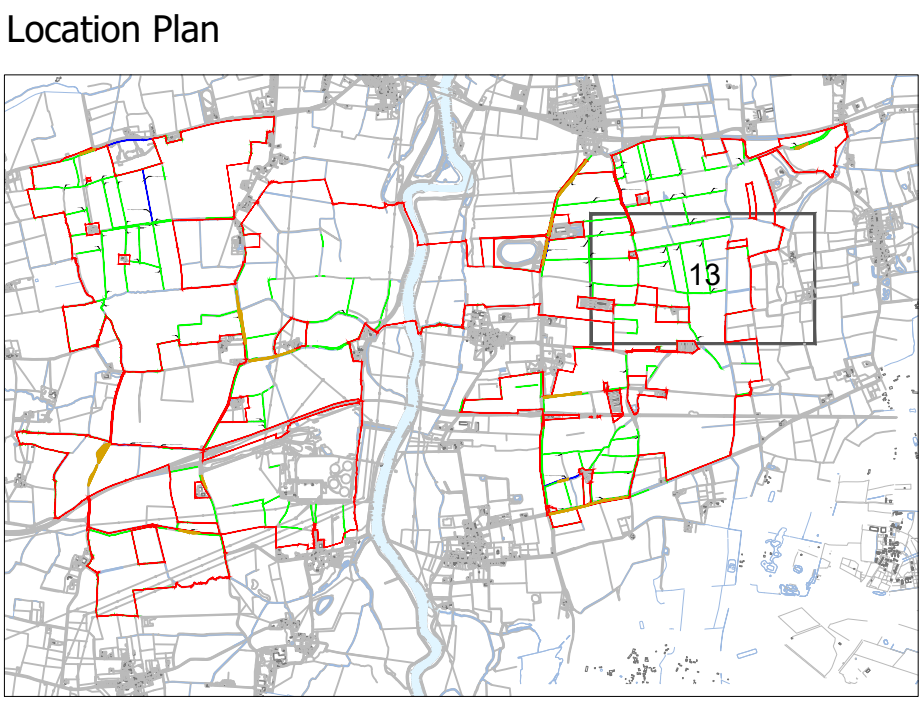
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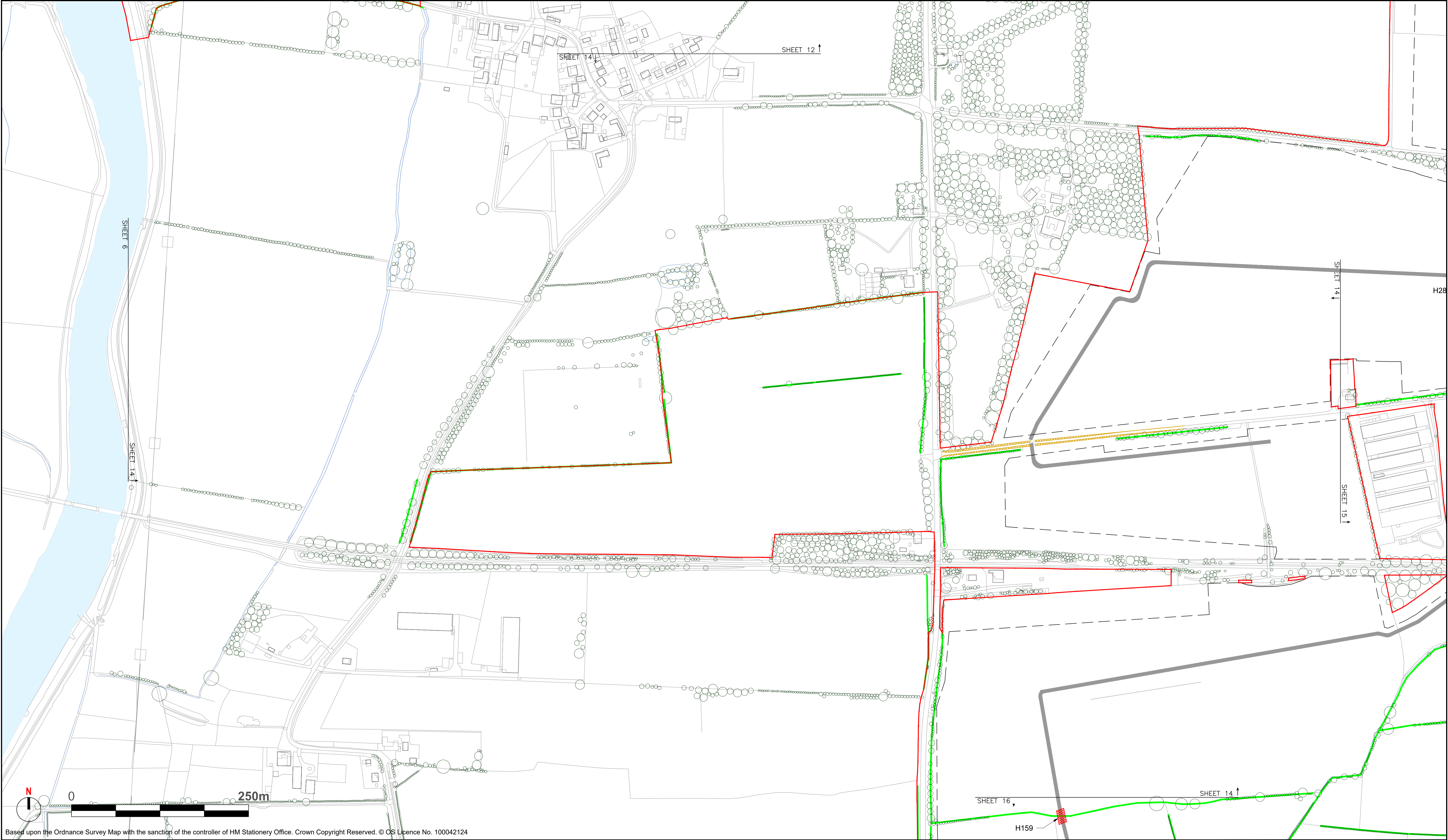
Volume 7: Outline Landscape and Ecology Management Plan

Drawing Title:
Vegetation Removal Plan - Sheet 13 of 16

Document Reference Number: EN010159/APP/7.7	Rev. 02	
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Drawing Date: 2025-01-06	Scale: 1:2500 @ A1	

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|---------------------------------|--|
| Order Limits | Vegetation to be managed at height of 0.9m |
| Proposed internal access tracks | Existing vegetation |
| Proposed fence alignment | Existing hedgerows |
| Vegetation to be removed | Existing hedgerows of importance |





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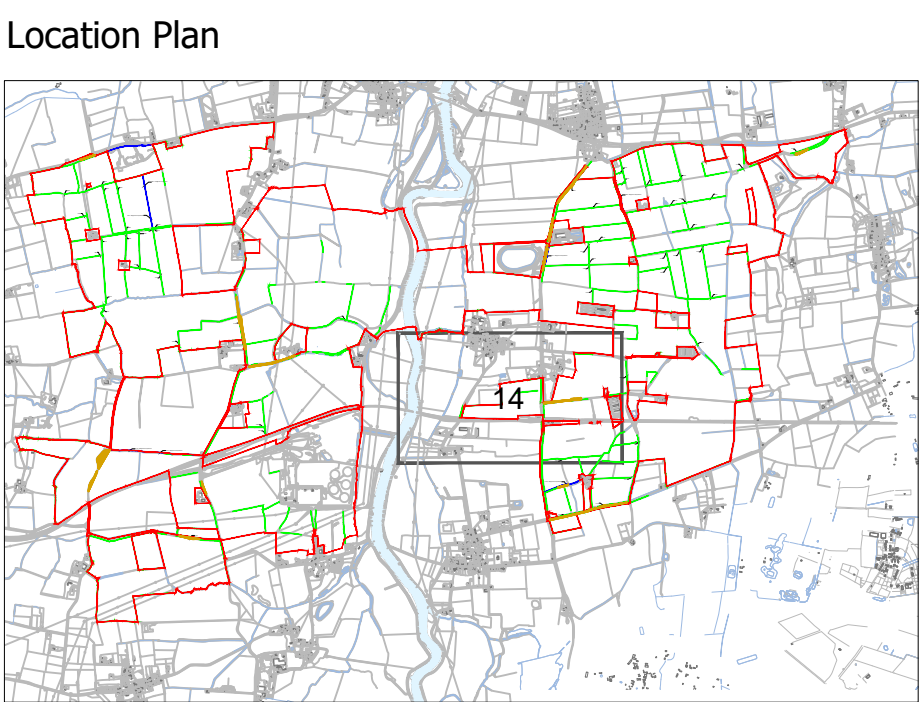
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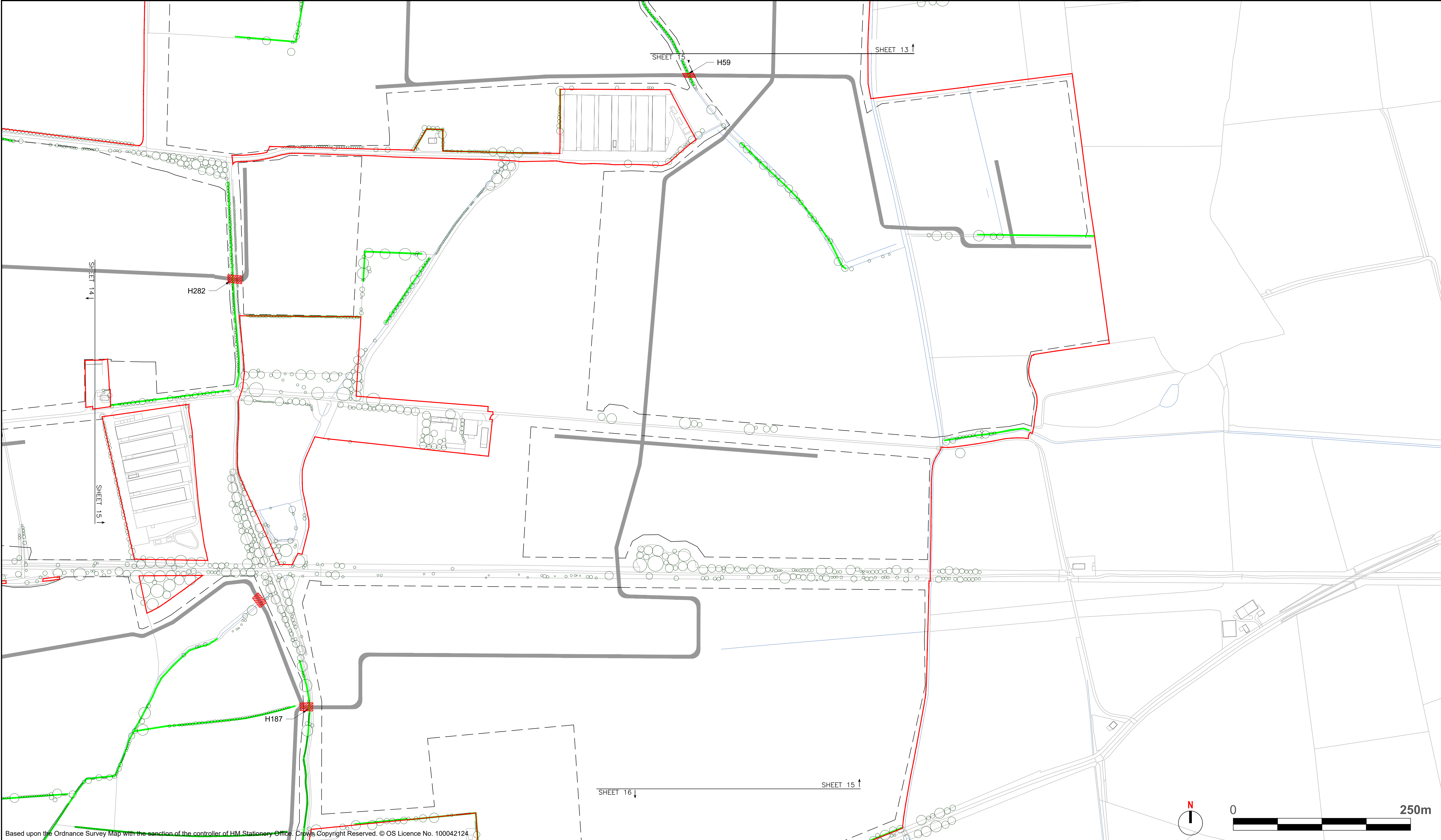
Volume 7: Outline Landscape and Ecology Management Plan

Drawing Title:
Vegetation Removal Plan - Sheet 14 of 16

Document Reference Number: EN010159/APP/7.7	Rev. 02	
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- Legend
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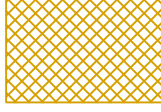
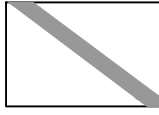
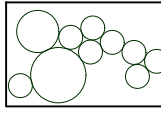
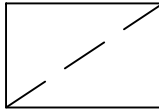
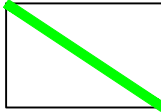
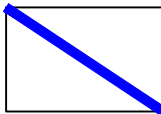
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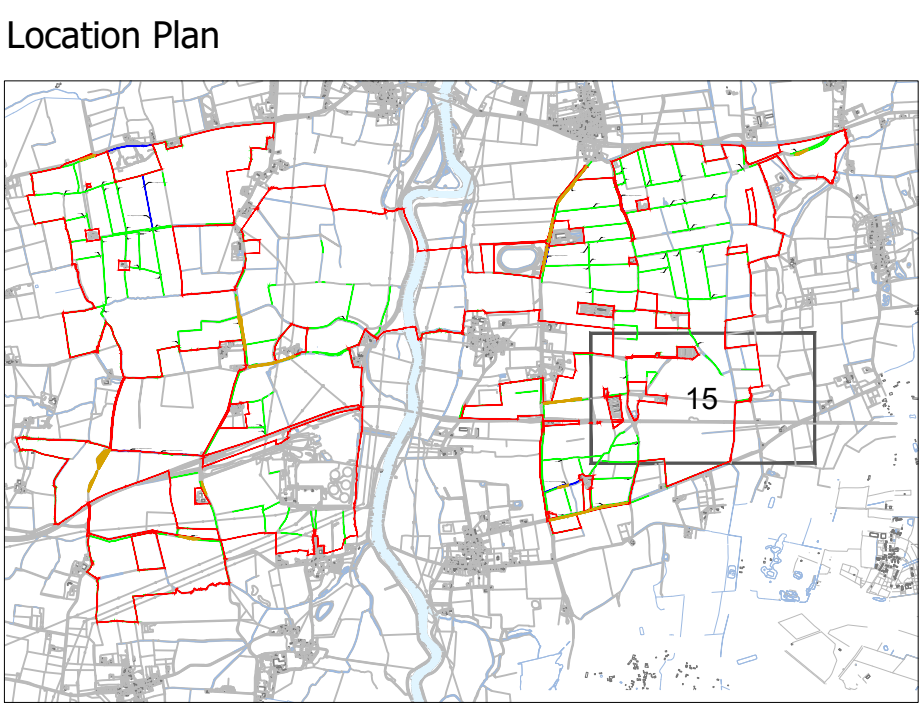
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Document Reference Number:	Rev.
EN010159/APP/7.7	02

Drawn:	Designed:	Approved:
JG	SG	SG

Drawing Date:	Scale:
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|  | Order Limits |  | Vegetation to be managed at height of 0.9m |
|  | Proposed internal access tracks |  | Existing vegetation |
|  | Proposed fence alignment |  | Existing hedgerows |
|  | Vegetation to be removed |  | Existing hedgerows of importance |



Appendix D Example Terms of Reference

TERMS OF REFERENCE FOR THE ECOLOGICAL STEERING GROUP

Overview

The Ecological Steering Group (the “Group”) is established to monitor the progress of the Landscape and Ecology Management Plan and the delivery of Biodiversity Net Gain, as per commitments within the Outline Landscape and Ecology Management Plan to create an external review group.

Purpose

THE DEVELOPER will have overall responsibility for the delivery of measures identified in the Landscape and Ecology Management Plan (LEMP) and the delivery of Biodiversity Net Gain (BNG) however, the involvement of other stakeholders is essential for the effective working of the LEMP. As such, THE DEVELOPER will establish the Group, whose role will include the following:

- to monitor the progress of implementation of the LEMP to ensure that it is meeting the objectives.
- to consider and recommend remedial measures where those objectives are not being met.
- to provide expert views, opinions and feedback to THE DEVELOPER about key issues through regular meetings.
- to help direct and focus the LEMP and its development in an interactive way including through revisions to targets, monitoring requirements and if necessary, the adoption of any remedial actions.
- to undertake a compliance audit of the LEMP against key performance indicators identified within the LEMP at least every five years
- to co-opt members and working groups if necessary.
- to ensure a transparent and open process to the implementation of the LEMP with an evident audit trail.

Constituent Members

- A representative from THE DEVELOPER;
- A representative from each relevant Local Planning Authority; and
- Where practicable, others as necessary to ensure the purpose of the group is met, including if possible, representatives from Natural England, the RSPB and Local Wildlife Trusts.

Role of Members

All Group members will be required to:

- Take an active part in the development of the Group and its aims;

- Ensure that their organisation is represented by a person of appropriate experience / competency who has full authority within the relevant organisation to speak on behalf of the organisation and contribute fully to all discussions;
- Take responsibility for sharing information with the Group relevant to their organisation, stakeholders and sector;
- Be open, honest, and work collaboratively;
- Work to promote equality and non-discriminatory practices in all aspects of the Group's activities; and
- Respect all members of the Group and invited attendees.

Meetings

THE DEVELOPER shall, as soon as reasonably practicable following the Commencement of THE DEVELOPMENT, establish the Group.

The Group shall:

- hold its first meeting as soon as reasonably practicable following its establishment and thereafter meet biannually until the date falling xx years after the date of its first meeting but in the event that on that date (LPA) (acting reasonably) considers that the agreed schemes of ecological mitigation, compensation and enhancement have not yet achieved the objectives set out in the LEMP, the Group shall continue to meet until the earlier of either (i) the date falling xx years after the date of its first meeting, or (ii) the date on which LPA (acting reasonably) considers the objectives set out in the LEMP have been met.
- in its final year carry out a full review of the effectiveness of the measures in achieving the objectives set out in the LEMP, and following this review the Group will make recommendations as regards what general revisions could be made in terms of the effectiveness of ecological management measures including how these may continue to be managed for the operational period of THE DEVELOPMENT.

Where practicable, THE DEVELOPER shall have regard to any reviews, recommendations or updates received from the Group in accordance with its terms of reference and thereafter employ reasonable endeavours to implement any competent recommendations including, where necessary, through proposing to the Group such alterations to ecological management measures as THE DEVELOPER considers appropriate, having regard what is reasonable, practicable, and achievable.

Meeting Frequency and Venue

The Group will meet twice per year as a minimum, with the flexibility for additional meetings as decided by the Chair. The Chair will be responsible for agreeing meeting dates. The frequency of meetings may be reviewed after an initial agreed period. A meeting of the Group shall be quorate where it includes at least one representative of each relevant LPA and THE DEVELOPER.

Group members are expected to attend the majority of meetings. If they are unable to attend, they should ensure their views on applications are shared with the Group in advance of the meeting.

Meetings may be held via Microsoft Teams or a similar virtual platform and may also be held in person including as site visits, where necessary.

Agenda

Once formed the Group will formalise the agenda, which will as a minimum include the following standing items:

- Minutes of previous meeting
- Reports on progress with the delivery of the LEMP
- Report on progress with the delivery of BNG
- Any Other Business

Administration of the Group

THE DEVELOPER shall, be responsible for the proper and reasonable costs associated with the proper administration of the Group (for instance office or secretarial costs).



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