Light Valley Solar

Outline Landscape and Ecological Management Plan

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Light Valley Solar

Infrastructure Planning

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The Infrastructure Planning
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Light Valley Solar

DCO Submission

Outline Landscape and Ecological Management Plan

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1 Introduction

1.1 Overview and purpose of the document

1.1.1 Light Valley Solar Limited (the 'Applicant') has prepared this outline Landscape and Ecological Mitigation Plan (oLEMP) in relation to an Application for a Development Consent Order (DCO) for the construction, operation, maintenance, and decommissioning of Light Valley Solar (the 'Proposed Development').

1.1.2 This oLEMP sets out a framework for the planting, establishment, long term management and monitoring of landscape and ecological mitigation and enhancement for the Light Valley Solar project.

1.1.3 This oLEMP concerns works which will be required during both the construction and operational phases of the Proposed Development.

1.1.4 This oLEMP is to be read in conjunction with the following documents:

1) Outline Environmental Masterplan (ES Volume 2) [**EN0110012/APP/LVS/02.12**]
2) Outline Bird Mitigation Area Management Plan [**EN0110012/APP/LVS/07.19**].
3) Arboricultural Impact Assessment [**EN0110012/APP/LVS/06.03.16.02**]
4) Advanced Planting for Glint and Glare Mitigation Plan [**EN0110012/APP/LVS/06.02.16.1**].
5) Biodiversity (ES Volume 1) **[EN0110012/APP/LVS/06.01.06.00].**
6) Landscape and Visual Amenity (ES Volume 1) **[EN0110012/APP/LVS/06.01.10.00**].
7) Public Rights of Way Management Plan [**EN110012/APP/LVS/07.09**].

1.1.5 The purpose of this oLEMP is to set out planning, management and monitoring prescriptions to be followed by, or on behalf of, the Applicant. This includes details of operational ecological monitoring and reporting, governance over the operational lifetime, and processes for addressing unforeseen ecological effects or conflicts with BNG objectives. The detailed version of this LEMP, to be in substantial accordance with this outline, will be approved by North Yorkshire Council pursuant to a Requirement in the draft DCO.

1.1.6 The detailed LEMP will work in tandem with the detailed OEMP [**EN0110012/APP/LVS/07.03**], the detailed BNG strategy produced pursuant to the DCO and detailed BMAMP [**EN0110012/APP/LVS/07.19**], which for clarity, will outline ecological mitigation measures relevant to the operational phase (including replacement activities) to protect species and habitats during operation of the Proposed Development.

1.1.7 This oLEMP governs bird habitat creation, management and monitoring throughout the Proposed Development outside the Bird Mitigation Area (BMA), including open grasslands greater than 2 ha, Bird Habitat Areas (Solar Development Sites 4 and 6), field margins and habitat/wildlife corridors. The BMA

is located within the southern extent of Solar Development Site 1 and is subject to the specific requirements of the oBMAMP [**EN0110012/APP/LVS/07.19**]. Within the BMA, oLEMP prescriptions for hedgerows, scrub and bird boxes will apply where compatible with the BMA's primary bird mitigation objectives.

1.1.8 While as much has been included in this oLEMP as practicable to accompany the DCO Application, several options are set out in order to leave some flexibility in specification, however each will achieve the same landscape and ecological outcomes.

1.1.9 In the case of there being more than one detailed LEMP for the Proposed Development, any detailed LEMP(s) which follows a first detailed LEMP to be approved will set out how the landscape and ecological measures will be managed across the different works covered by the respective LEMP[1].

1.1.10 In the detailed LEMP that covers Solar Development Sites 3 and 4, the Applicant will set out how it has made efforts to seek to co-ordinate its landscape and ecological proposals (including the sharing of any updated baseline information collected to inform these proposals) with the landscape and ecological proposals being brought forward by other projects on those sites (noting that such coordination will be dependent on the other parties engaging with the Applicant).

1.2 The Order Limits and Proposed Development

Order Limits

1.2.1 The Order Limits outline the maximum extent of the land that will be required to facilitate the construction, operation and maintenance, and decommissioning of the Proposed Development and are shown on the Site Location and Order Limits Plans [**EN0110012/APP/LVS/06.02.01.01**]. The Order Limits are described in Chapter 2: The Proposed Development (ES Volume 1) [**EN0110012/APP/LVS/06.02.01.01**] of the Environmental Statement (ES).

1.2.2 The Order Limits cover an area of 1,270 hectares (ha) located within the administrative area of North Yorkshire Council, near Selby. The Proposed Development comprises seven distinct Solar Development Sites totalling 900 ha of land, Cable Route Corridor Area totalling 328.5 ha of land, Highways Improvement Areas 17.5 ha and Solar Development Site 8 Access Area 24.1 ha.

The Proposed Development

1.2.3 The Proposed Development (Ref 1) comprises a more than 100 megawatts (MW) solar photovoltaic (PV) electricity generating station and associated development comprising Battery Energy Storage System (BESS), substations, grid connection infrastructure and other infrastructure integral to the construction, operation and maintenance, and decommissioning phases.

[1] As mentioned in chapter 1.2, references to 'a' or 'the' detailed LEMP in this Outline plan can be read as referring to 'any' detailed LEMP, as more than one LEMP could be brought forward for different parts of the Proposed Development, depending on the detailed construction strategy undertaken.

1.2.4 The Proposed Development will include solar PV modules to convert sunlight into direct current (DC) electricity, which will then be transformed into alternating current (AC) via conversion units for export to the National Grid.

1.2.5 The solar PV modules will be mounted on either fixed or tracking structures, arranged in rows across the Solar Development Sites. A BESS will be installed to store surplus electricity generated by the solar PV system or excess energy from the grid. Supporting infrastructure will include on-site cabling to connect the PV modules to the conversion units, as well as switch rooms, substations and other electrical equipment necessary for grid export. Electricity will be transmitted via underground cables within designated Cable Route Corridors to connect to Monk Fryston substation via a 275 kV cable.

1.2.6 The Proposed Development will involve new planting, field boundary enhancement and planting of seed mixes within the Solar Development Sites. Planting will also be used to provide screening through:

1) The creation of new native woodland blocks and belts;
2) Planting new hedgerows;
3) Reinforcing existing boundary hedgerows; and
4) New tree and scrub planting.

1.2.7 Figure 3.1: Outline Environmental Masterplan (ES Volume 2) [**EN0110012/APP/LVS/02.12**] is an illustration of how the mitigation and enhancement commitments and outcomes set out in the ES could be delivered. The detailed LEMP(s) will include an updated version of the environmental masterplan for each Solar Development Site, setting out the detailed design of the Proposed Development in a way which delivers the commitments and outcomes set out in the ES.

1.3 Relevant legislation and guidance

1.3.1 This oLEMP has been produced with reference to the following guidance:

1) National Plant Specification 'Handling and Establishing Landscape Plants'.

1.3.2 All plants and planting operations are to comply with the requirements and recommendations of all current relevant British Standard specifications including but not limited to:

1) BS 8545. Trees: From Nursery to Independence in the Landscape (Ref 2);
2) BS 3936-1:1992. Nursery stock. Specification for trees and shrubs (Ref 3);
3) BS 3882:2015 - Specification for topsoil (Ref 4);
4) BS 4428:1989. Code of practice for general landscape operations (excluding hard surfaces) (AMD 6784) (Ref 5);

5) BS 5837: 2012 Trees in relation to design, demolition and construction - recommendations (Ref 6);
6) BS3998:2010 Tree work – recommendations (Ref 7);
7) Countryside and Rights of Way Act 2000 (Ref 8);
8) The Hedgerow Regulations 1997 (Ref 9);
9) Local Authority Guidance (Ref 10); and
10) Solar Energy UK Guidance: A Standardised Approach to Monitoring Biodiversity on Solar Farms (2022) (Ref 11).

1.3.3 For more detail, please refer to the 'Relevant legislation, policy, standards and guidance' section within Chapter 6: Biodiversity (ES Volume 1) **[EN0110012/APP/LVS/06.01.06.00]** and Chapter 10: Landscape and Visual Amenity (ES Volume 1) **[EN0110012/APP/LVS/06.01.10.00]**.

Local Nature Recovery Strategy

1.3.4 As required under the Environment Act 2021 (Ref 14), every county in England will produce a Local Nature Recovery Strategy. These strategies will work together to restore, create and connect habitats across England.

1.3.5 The Local Nature Recovery Strategy will consider land at a county scale and will identify locations to improve nature and provide other benefits, such as capturing carbon from the atmosphere, flood regulation and access to nature-rich spaces where this is most needed for health and wellbeing.

1.3.6 The Order Limits are wholly located within the Local Nature Recovery Strategy (LNRS) for North Yorkshire and York.

1.3.7 Consulting the LNRS mapped measures layer, there are only very discrete areas where mapped measures overlap the Solar Development Sites. There is a small area within Site 7 (0.4 ha) listed in mapped measures as "Enhance, expand and connect areas of fragmentary fen by improving management of existing sites and using species-rich ditches to connect sites." However, the habitat covered by this measure comprises cropland surrounded by railway lines and further cropland, so it is not possible to satisfy this aim for lowland fen in this location.

1.3.8 General aims and objectives of the LNRS, will however be considered when detailed landscape and planting plans are completed and the detailed LEMP is developed.

1.3.9 Mapped measures within the LNRS do however overlap the Cable Route Corridor, although there will be no long-term ownership of the Cable Route Corridor, which will be passed back to the current landowners after the temporary works are completed. As such, habitats are not able to be restored or created within the Cable Route Corridor; however, the baseline habitats will largely be reinstated.

2 Aims and objectives

2.1 Purpose of this report

2.1.1 The overall aim of this outline Landscape and Ecology Management Plan (oLEMP) is to set out prescriptions for: the successful establishment of all proposed landscape and habitat creation measures for the Proposed Development and their management, in order to provide the required ecological enhancements, strengthen the green infrastructure within the local area and to provide landscape and visual mitigation throughout the Solar Development Sites, where appropriate.

2.1.2 This document considers the habitats and species recorded within the Solar Development Sites, as well as those identified within the surrounding area during desk study, in order to maximise the biodiversity benefits of habitats within the Solar Development Sites for local wildlife.

2.1.3 An overview of how habitats will be managed to provide targeted mitigation for protected species likely to be impacted by the Proposed Development is provided within this document.

2.1.4 The overall aims of this oLEMP are:

1) To enable that the Proposed Development safeguards and enhances the integrity of existing landscape and ecological features;
2) To enable that the Proposed Development maintains and enhances existing and proposed trees and hedges in a healthy condition;
3) To enable that the Proposed Development enhances public awareness and appreciation of habitats and associated flora and fauna, except where it compromises the first two objectives;
4) To enable that the Proposed Development ensures the successful establishment and continued growth to maturity of the proposed soft landscape scheme;
5) To enable that the Proposed Development delivers Biodiversity Net Gain over its lifetime;
6) To comply with legal obligations and constraints; and
7) To enable that the Proposed Development manages the landscape and ecological measures in a manner that ensures the safety of site users.

2.2 Biodiversity Net Gain

2.2.1 Each habitat below has a UKHab definition and targeted condition. Refer to Table 3.1-3.3 of the Biodiversity Net Gain (BNG) Report **[EN0110012/APP/LVS/05.09]** to see all habitats proposed post development.

2.2.2 The BNG Report sets out the assumptions for the potential BNG units that could be provided by the habitat creation that will be delivered by the Proposed Development, and the final details of this will be set out in the detailed LEMP(s).

2.2.3 This oLEMP provides more information on how these proposed habitats will be created and managed over the lifetime of the Proposed Development (see Section 4.3-4.9 below);

2.2.4 It is noted that the statutory Biodiversity Net Gain regime, although it does not yet apply to NSIPs, requires that all habitats are secured for 30 years post completion. The DCO requires that the created habitats must be managed in line with the detailed LEMP(s) over the lifetime of the Proposed Development, which comprises 60 years. As such, this is far beyond the timeframe required for BNG.

2.3 Long term objectives

2.3.1 The long-term objectives of the landscape and ecological enhancement works that form part of the Proposed Development are set out in Table 2-1 below.

Table 2-1 Long term objectives

Year 1-5	On-Going
Ensure good plant establishment	Complement and enhance existing local landscape character
Ensure rapid plant growth	Develop structural and visual diversity to provide screening and shelter where needed
Create rich / varied wildlife habitats	Increase wildlife habitats / value
Begin the development of natural ground layers	Achieve and maintain Biodiversity Net Gain
Create visual and sensory diversity	

2.4 Ground nesting bird objectives

2.4.1 In addition to the long-term objectives set out in Table 2-1, the following objectives apply to the creation, management and monitoring of habitats for ground nesting birds within the Solar Development Sites (total of 153.51 ha of grassland including; 138.26ha of arable field margin and 15.25ha as neutral grassland, excluding the BMA grassland) as per Sections 4.6, 4.7 and 4.8 of the oLEMP throughout the operational lifetime of the Proposed Development:

1) Establish and enhance reliable breeding and foraging habitat for ground nesting birds, comprising of high-quality open grassland with vegetation structure and diversity within the proposed grasslands within the Solar Development Sites;

2) Maintain a heterogenous sward structure, including a mosaic of shorter and taller vegetation (7-50cm, with the aim of 80% of open grassland to

be between 20-50cm) to provide and increase the range of high-quality and reliable nesting and foraging opportunities during the breeding period (March to August, inclusive) within areas of open grassland greater than 2 ha in size (Solar Development Site 1) and Bird Habitat Areas within the Solar Development Sites (4 and 6);

3) Maintain areas of taller, structurally diverse vegetation within appropriate field margins (up to 100cm in height) within the Solar Development Sites throughout the breeding period to provide and enhance nesting and foraging opportunities;
4) Maintain the open character of habitats used by ground nesting birds, including the control of scrub, bracken and undesirable vegetation and the appropriate management of transitional vegetation to hedgerows, scrub and woodland within the Solar Development Sites;
5) Manage grazing, cutting and other vegetation management activities to maintain habitat suitability, with management adapted where monitoring identifies that the prescribed habitat condition is not being achieved within the Solar Development Sites;
6) Monitor establishment, condition and use by ground-nesting birds to assess the effectiveness of the mitigation and enhancement measures and to identify where adaptive management or remedial measures are required within the Solar Development Sites;
7) Maintain the functionality of the habitats for ground nesting birds over the operational lifetime of the Proposed Development, recognising that bird abundance and distribution may vary between years in response to factors beyond habitat condition within the Solar Development Sites; and
8) Cessation of harmful agricultural practices throughout the Solar Development Sites.

2.4.2 The overall aims and objectives are designed to maintain and enhance the overall conservation status of the overall ground nesting birds within the Order Limits and immediate surrounds.

Wider bird habitat benefit

2.4.3 Habitats such as woodland, hedgerow and bird boxes enhanced and created within the Order Limits will provide increased nesting, foraging and sheltering opportunities for other farmland bird species, including those recorded during the field surveys as detailed in Appendix 12.1 [**EN0110012/APP/LVS/06.03.12.0.1**], and 12.3 [**EN0110012/APP/LVS/06.03.12.03**]. Species of conservation concern and Section 41 species such as linnet, yellowhammer, grey partridge, greenfinch, bullfinch, reed bunting and stock dove (not limited to) are anticipated to benefit from the creation and enhancement of suitable habitats across the Order Limits.

2.4.4 The provision of structurally diverse grassland, hedgerows, scrub and field margins will increase opportunities for nesting and foraging, including through the

availability of invertebrate prey, seed resources and suitable vegetation cover. These wider ecological benefits, as demonstrated in Table 3 and Table 5 of the oBMAMP [**submitted alongside this document**], compliment the primary mitigation objectives of the Solar Development Sites set out in this document and represent an additional positive consideration associated with the Proposed Development.

3 Key personal / management responsibilities

3.1.1 The detailed Landscape and Ecological Management Plan (LEMP) will be produced and approved by North Yorkshire Council pursuant to a Requirement in the draft DCO.

3.1.2 The detailed LEMP will set out the roles and responsibilities of those involved in creating, managing and monitoring the proposals set out within this document.

3.1.3 A suitably qualified person such as a Landscape Architect or Ecologist will be appointed to oversee the coordination of implementing the final LEMP, including sourcing seeds and plants.

3.1.4 The sourcing of all plant material should be considered at an early stage given the quantities required for a development of this scale.

4 Creation and management prescriptions

4.1.1 The following management measures apply to the Solar Development Sites.

4.1.2 A separate Outline Bird Mitigation Area Management Plan (oBMAMP) [**EN0110012/APP/LVS/07.19**] has been prepared for the BMA within Solar Development Site 1, which details grassland and scrape habitats, including management. The oBMAMP sets out the ecological objectives, habitat creation and management prescriptions, monitoring requirements, indicative performance criteria and adaptive management measures for both breeding ground-nesting birds and non-breeding SPA/Ramsar bird species. The provisions of the oBMAMP will apply specifically to the BMA grassland and scrape habitats, with the habitat management measures and monitoring requirements across the remaining Solar Development Sites addressed within this oLEMP.

4.1.3 The two documents will be implemented in a coordinated manner to ensure consistency in the delivery and management of ornithological mitigation.

4.2 General planting implementation and management prescriptions

Advanced Planting

4.2.1 Limited areas of planting may be undertaken prior to, or at the commencement of the construction phase to allow for sufficient growth ahead of the operational phase of the Proposed Development.

4.2.2 The planting would be undertaken early in the construction phase to ensure establishment to mitigate the potential impact of glint and glare that could occur on road and rail users, and residence from the solar panels over short lengths.

4.2.3 In light of the conclusions of the Glint and Glare Assessment [**EN0110012/APP/LVS/06.02.16.1**], the detailed LEMP will, unless this has already been provided to the local planning authority pursuant to the Permitted Preliminary Works Environmental Management Plan [**EN0110012/APP/LVS/08.10**], include:

1) an updated glint and glare analysis of the detailed design of the Proposed Development to confirm whether significant glint and glare effects currently identified in the Glint and Glare Assessment as arising at Year 1 of the Proposed Development at the general locations shown on figure Advanced Planting for Glint and Glare Mitigation [**EN0110012/APP/LVS/06.02.16.1**] would still arise on the basis of the detailed design;

2) if any significant glint and glare effects are still predicted to arise; and the Applicant is unable to confirm that it has, working with landowners otherwise already facilitated changes to existing planting that would mitigate those effects and can demonstrate that that existing planting will

be maintained to retain that mitigatory effect until the Proposed Development's landscaping proposals have matured to mitigate those effects; details of the location, species type and height of planting to be put in place to mitigate those effects so that they are not significant; and

3) a commitment that must be actioned for that planting to be put in place prior to the installation of solar panels at the locations that, but for the planting proposed, would cause significant glint and glare effects based on the updated analysis undertaken.

4.2.4 In all areas of advance planting that may be undertaken, where existing vegetation is available, the Applicant will liaise with landowners to undertake advanced management to grow up their existing hedgerows as an alternative.

Planting of proposed Sustainable Drainage Systems (SuDS)

4.2.5 Final selection, details, and planting proposals for individual SuDS features will be developed in coordination with landscape and ecological proposals at detailed design. SuDS features will be designed, where possible, to maximise opportunities for multifunctional benefits whilst ensuring that the required drainage function and performance are maintained.

Planting nearby to existing drainage ditches and watercourses

4.2.6 The following outline proposals include both new planting and enhancements to existing planting nearby to drainage ditches and watercourses contained within the SDS. Full details of all planting will be set out in the detailed LEMP(s).

4.2.7 Where planting is proposed nearby to an existing drainage ditches and watercourses all planting will be designed to ensure planting does not conflict with the access and maintenance requirements of each feature and their respective ownership.

Clearance

4.2.8 All ground vegetation within areas where planting is to take place, including any that has re-established during the construction period, should be cleared from site prior to planting.

4.2.9 The following clearance works should be undertaken:

1) All grass and perennial vegetation should be cleared from the planting area, including epicormic and below ground growth.
2) All rubbish, debris and stones over 25 mm diameter should be cleared.
3) All arisings should be removed from the area.

General planting prescriptions

4.2.10 All planting will be undertaken during the plants' dormant seasons to reduce the impact of planting upon the plant, typically between November and March of each year.

4.2.11 All planting will take place in the autumn as this provides the maximum period of time between planting and the growing season and typically has the most ideal ground conditions for planting as spring ground can be heavy and waterlogged.

4.2.12 Current trends demonstrate that the planting season is narrowing each year, and this will be taken into account when programming the planting works.

4.2.13 Planting will be carried out during the construction phase of the Proposed Development, or within the first available year/season post construction.

4.2.14 All planting will be carried out during appropriate climate conditions, avoiding wet and waterlogged conditions.

4.2.15 All plants and planting operations are to comply with the requirements and recommendations of all current legislation, guidance and British Standards set out in Section 1.3 above.

4.2.16 All planting works to be carried out to CPSE Handling and establishing landscape plants (obtainable from the Horticultural Trades Association) (2002) Part III (Ref 12), paragraphs 6.2 to 6.6. Plant upright or well balanced with best side to front. Plants to be handled and dispatched in accordance with the National Plant Specification - Handling and establishment, with special reference to the following:

1) Frost: Protect bare root plants and frost susceptible plants;
2) Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle;
3) Plant packaging: Bare root material to be sealed in co-extruded black and white polyethylene bags;
4) Planting: Upright or well balanced with best side to front;
5) If plants suffer slight damage, they are to be carefully pruned. If major damage has occurred the plant shall be rejected and replaced at the Contractor's expense;
6) After delivery, if planting is not carried out immediately, root balled shrubs should be placed cheek to cheek and the root ball covered with sand, peat or straw and watered to prevent drying out;
7) Bare-rooted plants should be heeled-in by pacing the roots in a prepared trench and covering them with top-soil, which should be watered thoroughly to eliminate air pockets around the roots; and
8) The security and tidiness of the area set aside for heeling in shall be the responsibility of the Contractor. If planting is delayed for more than a week after delivery, packaged plants shall be unpacked, the bundles

opened up and each groups of plants heeled-in separately and clearly labelled.

4.2.17 All tree and hedgerow plants will be native and should be of UK provenance where practicable and commercially available.

4.2.18 The 'Local Seed Zone Provenance' (i.e., the region which the Proposed Development lies) is Region 40 in Native Seed Zone 401.

Cultivation

4.2.19 Topsoil within planting pits will be cultivated to a minimum depth of 400 mm where tree/hedgerow/woodland planting is proposed, to ensure there is sufficient room to accommodate new planting and to provide appropriate growing conditions for new planting.

4.2.20 Topsoil in areas to be seeded with wildflower and grass seed mixes will be cultivated using minimum tilling or direct drilling of seed straight into a stubble of the previous arable crop. This retains some surface protection offered by the stubble and reduces the number of cultivator passes across the soil surface.

4.2.21 No cultivation should take place in wet/ waterlogged conditions, within the root protection areas of existing trees as defined by BS5837:2012 (Ref 6) or in areas of archaeological sensitivity.

4.2.22 Where drilling is required within the root protection areas of existing trees located within land not currently subject to arable production, this should include surface specification only and of no more than 50 mm depth to ensure roots are not damaged.

4.2.23 No topsoil will be imported or exported from site and no grading of the topsoil should be undertaken.

Staking and protection

4.2.24 Due to the nature and location of the Solar Development Sites, existing populations of both rabbit and deer are present throughout. Protection against mammal damage, particularly during the establishment years is essential to ensure their success.

4.2.25 All staking and protection measure will consist of biodegradable products where practicable.

4.2.26 Should any non-biodegradable products be used, these will be removed in a timely manner following establishment and disposed of responsibly.

4.2.27 All stakes, canes and other supports will be positioned on the windward side of the tree or shrub and driven in to the ground vertically.

4.2.28 Once plants are suitably established, all guards, stakes, ties and protective fencing will be removed and will be disposed of off-site (subject to satisfactory establishment and growth) in Year 5.

4.2.29 Where large areas of woodland and scrub planting blocks are proposed, these areas will be protected collectively through the installation of a deer and rabbit proof fence alleviating the need to provide excess quantities of individual guards.

4.2.30 The fence will be designed to protect the newly planted trees and shrubs against both rabbit and deer damage and therefore it is recommended the following typical specification is used:

1) Overall height 250 cm (minimum)
2) Fence should consist of 100 mm (maximum) aperture
3) Lower 60 cm of the fence should consist of a tighter aperture of 31 mm (maximum) to prevent rabbits.
4) The fence should continue below ground in an outward facing L shape to prevent rabbits from tunnelling under the fence.

Mulching

4.2.31 All new tree, shrub and hedgerow planting will be covered using a coarse bark mulch to a minimum depth of 75 mm leaving the stem of the plant clear to aid water retention and weed control following planting.

4.2.32 The following mulch areas are recommended:

1) Individual Tree Planting: minimum mulch area of 250 mm radius from stem.
2) Native Scrub Planting (including within Woodland Planting): minimum mulch area of 150 mm radius from stem; and
3) Hedgerow Planting (including hedgerow trees): minimum mulch area of 500 mm offset from the centreline of the proposed hedge.

4.2.33 In order to ensure the mulching remains effective it is essential that the minimum depth of 75 mm is maintained throughout the establishment period.

4.2.34 The mulch depth will be reviewed annually and topped up as required.

Watering

4.2.35 Due to current climate pressures, it is essential to minimise requirements for watering where practicable to limit the impact on water supplies.

4.2.36 Good horticultural practice methods will be followed to minimise the water requirement for each plant, including the following:

1) Planting at the correct time of year and during the planting season (November – March);
2) Ensuring the organic content of the topsoil is sufficient enough to retain moisture; and
3) Ensuring all plants are sufficiently mulched to a depth of 75 mm.

4.2.37 Immediately following planting, it is essential that all newly planted trees and shrubs receive sufficient water that penetrates the full depth of the topsoil.

4.2.38 The rates of watering vary between plant size, species and location. In order to minimise the use of water, the following volumes should be applied to each plant type:

1) Standard: 50 litres per tree
2) Feathered: 25 litres tree shrub
3) Transplants and Whips: 20 litres per shrub

4.2.39 Generally, watering should be carried out to the following principles:

1) Quantity: Wet full depth of topsoil.
2) Application: Do not damage or loosen plants.
3) Compacted soil: Loosen or scoop out, to direct water to root zone.

4.2.40 These are indicative volumes and may need to be revised when soil and weather conditions are taken into account.

4.2.41 Subject to average seasonal precipitation, and the adhering of the methods to minimise watering outlined above, the newly planted trees and shrubs should not require any further watering until growth spurts are evident through the following summer.

4.2.42 If the following spring and subsequent summer receives lower than average precipitation, additional watering may be required to help sustain the plants in the early years following planting. This will be undertaken at the same rates set out above and only continue whilst the unseasonally dry weather continues.

4.2.43 Once all plants are established and independent in the landscape all watering will cease and the plants left to mature and become self-sufficient.

4.2.44 Due to changes in the current climate, summer droughts are becoming more frequent.

4.2.45 During these periods, restrictions may be applied the use of water and, if severe can extend to the use in some commercial practices.

4.2.46 If the water supply is, or is likely to be, restricted by emergency legislation, the appointed contractor will submit proposals for an alternative suitable source of water to the managing authority and obtain instructions before proceeding, keeping the client advised of any agreements.

General landscape management

4.2.47 For the purpose of this report, the ‘establishment period’ is the first five years following planting, with ‘long-term management’ in the years following this.

4.2.48 The establishment period of plants can vary between species and the location of planting, time of year and climate conditions during the establishment period. It

is therefore important to continuously evaluate the establishment of the planting to ensure the correct prescriptions are adopted to ensure optimum growth.

4.2.49 Any plants and trees which are found to be dying, damaged or diseased within the establishment period will be replaced with the same species and size, as per the timetable in Appendix A.

4.2.50 Thereafter, replacement planting may be required for any significant failures, identified through monitoring to ensure the BNG condition criteria for each habitat type is met. The specification for replacement planting will be appropriate to the conditions on sites, acknowledging the potential for conditions to change over the 60-year lifetime of the Proposed Development.

Operational restrictions

Herbicide use

4.2.51 There is a general presumption against the use of herbicides due to the detrimental impact they can have on the environment. These will be restricted to essential tasks when other management methods are not feasible or have failed following repeated attempts.

4.2.52 Where herbicide treatments are to be used, contact with any planting, both existing or planted as part of this Proposed Development, must be avoided and all health and safety prescriptions set out by the herbicide manufacturer must be followed.

Pruning

4.2.53 All pruning works, including cutting or flailing of hedgerows, will take place during October to February, outside of the main bird nesting season (March to August/September), for the duration of the Proposed Development.

4.2.54 If pruning is required during bird nesting season advice from a suitably qualified ecologist will be sought prior to undertaking any works.

4.3 Mixed native hedgerows with / without hedgerow trees (UKHab: species rich hedgerow with / without trees)

4.3.1 The prescriptions in this Section apply to the following mitigation measures:

1) Proposed Native Hedgerow; and
2) Proposed Native Hedgerow with Trees.

4.3.2 The targeted Biodiversity Net Gain (BNG) condition to be met for ‘Species Rich Hedgerow with/without Trees’ is Moderate, as detailed with the BNG Report **[EN0110012/APP/LVS/05.09]**.

4.3.3 In order to achieve the targeted condition, the following management activities will be undertaken within the Proposed Development, which will help achieve the associated BNG condition criteria, as outlined below in Table 4-1:

Table 4-1 Species rich hedgerow with / without trees management activities for BNG condition criteria

Management Activities	BNG Condition Criteria Achieved
It is proposed that hedgerows will be managed to be 4-4.5 m tall (as described below).	This will help achieve condition criteria A1 "Height >1.5 m average"
Hedgerows will be managed to be at least 1.5 m wide	This will help achieve condition criteria A2 "Width >1.5 m average"
Hedgerows will receive a varied cutting schedule to ensure they retain their width to their base.	This will help achieve condition criteria B1 "Gap between ground and base of canopy <0.5 m for >90% of length"
Any failed hedgerow plants will be replaced to infill any gaps that form	This will help achieve condition criteria B2 "Gaps make up <10% of total length and no canopy gaps >5 m"
Invasive non-native species will be managed on an ongoing basis, and biosecurity measures to reduce the potential for spreading invasive species within and outside the Order Limits, is detailed within the Outline Invasive Species Management Plan (oISMP) [**EN0110012/APP/LVS/07.22**]	This will help achieve condition criteria D1 ">90% of the hedgerow and undisturbed ground is free of invasive non-native plant species and recently introduced species."
As detailed below, the hedgerow trees will have formative pruning carried out annually in the establishment period, in accordance with good arboricultural practice to BS 3998:2010, and be monitored for signs of failing tree health. This will ensure they are maintained in a healthy condition, with any failures replaced.	This will help achieve condition criteria E1 "At least 95% of hedgerow trees are in a healthy condition. There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity."

4.3.4 A network of existing native hedgerows are present across the Solar Development Sites, with frequent mature, standard trees present. Hedgerows are generally intact, however gaps between hedges exist often where hedgerows are adjacent to ditches, notable at Solar Development Sites 4 and 8.

4.3.5 The Proposed Development offers significant opportunities for hedgerow and hedgerow tree planting, as well as the enhancement of existing hedgerows through gapping up and supplementary planting to enhance their species diversity, in line with local conservation priorities, national targets and to mitigate minor impacts to hedgerow habitat arising from the Proposed Development.

4.3.6 Strengthening the local hedgerow network will significantly enhance the habitat areas for bat species, as well as birds and invertebrates, and contribute to local green infrastructure.

Hedgerow planting

4.3.7 All new hedgerows and gapping up planting will comprise a double staggered row of plants; overall, five plants per linear metre.

4.3.8 Species will be mixed throughout the hedge line in random, single species groups of three/five/seven.

4.3.9 A 500 mm wide trench will be excavated to take plants and topsoil cultivated to 400 mm depth prior to application of fertiliser. It is intended that all species be planted as bare root whips.

4.3.10 As per the UKHab criteria for species rich hedgerows, there will be four or more native woody species per 30 m section of hedge.

4.3.11 Locally appropriate species will be used, based on those found within the local area, such as hazel, hawthorn, blackthorn, and field maple.

4.3.12 An indicative list of hedgerow species is provided below in Table 4-2 (those which have been identified frequently within hedgerows across the Sites).

Table 4-2 Hedgerow species for planting within the Proposed Development

Common Name	Scientific Name	Specification	Mix (%)
Field Maple	*Acer campestre*	Transplant, 1+1, 40-60cm (h).	15
Hazel	*Corylus avellana*	Transplant, 1u1, 40-60cm (h)	15
Dogwood	*Cornus sanguinea*	Transplant, 1+1, 40-60cm (h)	5
Hawthorn	*Crataegus monogyna*	Transplant, 1+1, 40-60cm (h)	45
Holly	*Ilex aquifolium*	2L Containerised, 40-60cm (h)	5
Wild Privet	*Ligustrum vulgare*	Transplant, 1+1, 40-60cm (h)	5
Blackthorn	*Prunus spinosa*	Transplant, 1+1, 40-60cm (h)	5
Dog-rose	*Rosa Canina*	Transplant, 1+1, 40-60cm (h)	5

4.3.13 A total length of 35.11 km (linear) of new hedgerow is proposed within the Proposed Development. This comprises of:

1) 14.77 km (linear) of Proposed Native Hedgerow
2) 20.34 km (linear) of Proposed Native Hedgerow with Trees

Hedgerow management

4.3.14 Newly planted hedgerows will be watered in-line with the prescriptions set out in Section above.

4.3.15 To control the growth of weeds at the base of the proposed hedgerow, a 75 mm layer of bark mulch will be maintained until the plant is sufficiently established and in-line with the prescriptions set out in Section 4.2 above.

4.3.16 Newly planted hedgerows will be trimmed in at least the first two years to encourage bushy growth, allowing the hedge to become taller and wider at each cut.

4.3.17 Once the desired hedgerow height and width has been achieved and plants are suitably established, a variable cutting schedule on a three year or more rota will be adopted to provide a range of habitats for invertebrates and to ensure a supply of fruit and berries are available to birds and wildlife within the hedgerows each year.

4.3.18 Cutting must take place outside the bird nesting season, and a window of October-February is specified. Ideally, cutting will take place in January/February (where the ground Is dry enough to allow machinery access), to ensure that food source for birds, such as nuts and berries remain in the hedgerows over the winter months. This may be focussed on hedgerows adjacent to roads and tracks where a tractor will be able to access in wet conditions without damaging the ground.

4.3.19 The shrubby element of hedgerows (excluding hedgerow trees) will be maintained to an optimum height of 4-4.5 m tall.

4.3.20 Hedgerows planted under overhead lines must be maintained at a lower height in-line with the asset owners guidance. No hedgerow trees will be planted within 6 m either side of overhead lines. Final details should be sought from the asset owners prior to planting, pursuant to their protective provisions in the draft DCO.

Hedgerow tree management

4.3.21 An inspection and formative prune of all new hedgerow trees will be carried out annually in the establishment period, in accordance with good arboricultural practice to BS 3998:2010 (Ref 7).

4.3.22 A clear stem of a minimum of 1.5 m above the maintained height of the hedgerow must be maintained for all hedgerow trees in order to be distinguishable and to safeguard from damage.

Table 4-3 Hedgerow tree species for planting within the Proposed Development

Common name	Scientific name	Specification	Root type
Field Maple	*Acer campestre*	Standard, 2x, 300-350cm	B
Wild Crab Apple	*Malus sylvestris*	Standard, 2x, 300-350cm	B
Wild Cherry	*Prunus avium*	Standard, 2x, 300-350cm	B
English Oak	*Quercus robur*	Standard, 2x, 300-350cm	B

Adaptive management triggers and remedial measures

4.3.23 During monitoring of the habitat, should any of the adaptive management triggers outlined in Table 4-4 be identified, the associated remedial measure should be undertaken to ensure the target condition of the habitat is achieved.

Table 4-4 Adaptive management triggers and remedial measures

Adaptive management triggers	Remedial measures
Height <1.5 m average	Amend cutting regime to allow required growth
Width <1.5 m average	Amend cutting regime to allow required growth
Gap between ground and base of canopy >0.5 m for >10% of length	Amend cutting regime to allow required growth
Gaps make up >10% of total length and there are canopy gaps >5 m	Any gaps to be infilled with new hedgerow plants in line with species recommendations outlined in table 4.2 above.
<90% of the hedgerow and undisturbed ground is free of invasive non-native plant species and recently introduced species	Removal of invasives by a specialist invasive species contractor as per Outline Invasive Species Management Plan (oISMP) [**EN0110012/APP/LVS/07.22**]
Less than 95% of hedgerow trees are in a healthy condition. There is evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity	Review current tree protection measures and amend as required to provide sufficient protection from browsing animals. Review management measures to prevent pests/disease if present and replace any failures.

4.4 Woodland belts and blocks *(UKHab: other woodland – broadleaved)*

4.4.1 The prescriptions in this Section apply to the following mitigation measures:

1) Proposed Native Woodland Belts; and
2) Proposed Native Woodland Blocks.

4.4.2 The targeted BNG condition to be met for 'Other Woodland – Broadleaved' is Poor, as detailed with the BNG Report **[EN0110012/APP/LVS/05.09]**.

4.4.3 In order to achieve the targeted condition, the following management activities will be undertaken within the Proposed Development, which will help achieve the associated BNG condition criteria, as outlined below in Table 4-4:

Table 4-5 Other woodland – broadleaved management activities for BNG condition criteria

Management Activities	BNG Condition Criteria Achieved
No specific management required to meet condition	This will help achieve condition criteria A "Age distribution of trees – One age-classes present"

Management Activities	BNG Condition Criteria Achieved
Woodland will be monitored to ensure browsing damage is present in less than 40% of woodland. If limit is exceeded, management will be put in place to control herbivore access to woodland/trees (i.e. fencing/guards), and replanting will be established where required.	This will help achieve condition criteria B "Wild, domestic and feral herbivore damage - Evidence of significant browsing pressure is present in less than 40% of whole woodland"
Invasive non-native species will be managed on an ongoing basis, and biosecurity measures to reduce the potential for spreading invasive species within and outside the Order Limits, is detailed within the Outline Invasive Species Management Plan (oISMP) [**EN0110012/APP/LVS/07.22**]	This will help achieve condition criteria C "Invasive plant species - No invasive species present in woodland."
Five or more native tree species should be planted in the woodland, as outlined in table 4-5 below	This will help achieve condition criteria D "Number of native tree species - Five or more native tree or shrub species found across woodland parcel."
At least 80% of the woodland trees and understory shrubs will be native, as outlined in table 4-5 below	This will help achieve condition criteria E "Cover of native tree and shrub species - >80% of canopy trees and >80% of understory shrubs are native."
Any failed planting will be replaced to ensure open space does not exceed 20%	This will help achieve condition criteria F "Open space within woodland - 10 - 20% of woodland has areas of temporary open space. Unless woodland is <10 ha, in which case 0 - 20% temporary open space is permitted."
No specific management required to meet condition	This will help achieve condition criteria G "Woodland regeneration - No classes or coppice regrowth present in woodland."
Tree health will be monitored and managed throughout the lifespan of the Proposed Development, with tree species chosen to reduce likelihood of dieback (as detailed below).	This will help achieve condition criteria H "Tree health - 11% to 25% tree mortality and or crown dieback or low-risk pest or disease present."
No specific management required to meet condition	This will help achieve condition criteria I "Vegetation and ground flora - No recognisable woodland NVC plant community at ground layer present."

Management Activities	BNG Condition Criteria Achieved
No specific management required to meet condition	This will help achieve condition criteria J "Woodland vertical structure – one storey or less across all survey plots."
No specific management required to meet condition	This will help achieve condition criteria K "Veteran trees - No veteran trees present in woodland."
No specific management required to meet condition	This will help achieve condition criteria L "Amount of deadwood – Less than 25% of all survey plots within the woodland parcel have deadwood, such as standing and fallen deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities."
Halting of detrimental farming practices and ongoing woodland management is anticipated to ensure no nutrient enrichment or damaged ground within woodland.	This will help achieve condition criteria M "Woodland disturbance – No nutrient enrichment or damaged ground evident"

4.4.4 Small woodland blocks and shelter belts can provide 'stepping stones' between larger areas of woodland.

4.4.5 Proposed woodland belts vary in widths across the Proposed Development and comprises of mixed native tree and shrub planting. Suggested species to be included are illustrated in Table 4- below.

4.4.6 The tree species selected will reflect the species identified within the Solar Development Sites to ensure they are locally appropriate.

4.4.7 Tree planting locations will require an appropriate offset from Solar PV arrays to ensure shading will not occur once the tree has matured, and to ensure leaf fall on the panel structures does not present an issue.

4.4.8 Lower growing species will be planted adjacent to the proposed Solar PV arrays to avoid overshadowing, details of which will be provided in detailed landscape proposals post consent, which would be prepared prior to the construction of the Proposed Development. These plans should include detailed planting specifications and schedules as well as fully coordinated locations of all proposed planting.

4.4.9 A total area of 8.52 ha of woodland is proposed across the Proposed Development. This comprises:

1) 2.62 ha of Native Woodland Belt; and
2) 5.90 ha of Native Woodland Block.

Woodland belts and block planting

4.4.10 Trees within woodland planting will be planted at a minimum of 5 m centres.

4.4.11 Planting mixes will include a variety of tree and shrub species and ages, including 60-90 m transplants, 125-150 cm whips and 200-250 cm feathered trees. Planting mixes will be planted in single species groups of three, five or seven to reinforce a natural layout of species within the landscape.

4.4.12 Trees and shrubs will be planted appropriately depending on size and will including notch, trench and pit planting appropriate to the size of the rooting area / rootball.

4.4.13 All trees and shrubs will be planted with a 75 mm depth bark mulch a minimum of 250 mm in diameter around each tree and 150 mm diameter around each shrub to suppress weeds and retain soil moisture.

4.4.14 Planting will focus on long-lived trees to mitigate the possible loss of ash due to ash dieback in future years.

4.4.15 It may be desirable to plant trees not identified in the local area which are ecologically similar to ash or are resistant to both disease and climate change impacts. A list of locally appropriate and resistant trees is provided in Table 4- below.

Table 4-6 Woodland tree species for planting within the Proposed Development

Common name	Scientific name	Specification	Mix (%)
Field maple	*Acer campestre*	Transplant – seed raised, 1+2, 100-125	5
Black alder	*Alnus glutinosa*	Transplant – seed raised, 1+1, 40-60	5
Downy birch	*Betula pubescens*	Feathered, 2X, 125-150	10
Hazel	*Corylus avellana*	Transplant – seed raised, 1+1, 40-60	15
Hawthorn	*Crataegus monogyna*	Transplant – seed raised, 1+1, 40-60	20
Holly	*Ilex aquifolium*	Containerised, 40-60	5
Sweet cherry	*Prunus avium*	Transplant – seed raised, 1+1, 40-60	5
Blackthorn	*Prunus spinosa*	Transplant – seed raised, 1+1, 40-60	15
English oak	*Quercus robur*	Transplant – seed raised, 1+2, 100-125	10
Goat willow	*Salix caprea*	Seedling, 1+0, 40-60	10

4.4.16 Local priority species will be included within the proposed new planting, in appropriate locations.

4.4.17 Local genetic stock is to be sourced where available ensuring that they are not hybridised and a mixture of male and female plants would be planted (according to species).

Woodland and shelterbelt management

4.4.18 All trees and shrubs will be watered in-line with the prescriptions set out in Section 4.2 above.

4.4.19 To control the growth of weeds at the base of the proposed trees and shrubs, a 75mm layer of bark mulch will be maintained until the plant is sufficiently established and in-line with the prescriptions set out in Section 4.2 above.

4.4.20 Hand pulling of persistent weeds will be undertaken or treated using a spot herbicide where weeds are more widespread.

4.4.21 Seed fall would be monitored and any self-sown specimens that may negatively impact the solar panels, adjacent land or habitat establishment would be removed.

Adaptive management triggers and remedial measures

4.4.22 During monitoring of the habitat, should any of the adaptive management triggers outlined in Table 4-7 be identified, the associated remedial measure should be undertaken to ensure the target condition of the habitat is achieved.

Table 4-7 Adaptive management triggers and remedial measures

Adaptive management triggers	Remedial measures
Evidence of significant browsing pressure is present in more than 40% of whole woodland	Management put in place to control herbivore access to woodland/trees (i.e. fencing/guards), and replanting trees where required
Invasive species present in woodland	Removal of invasives by a specialist invasive species contractor as per Outline Invasive Species Management Plan (oISMP) [EN0110012/APP/LVS/07.22]
Less than five native tree or shrub species found across woodland parcel	Additional native species planting in line with species recommendations outlined in table 4.6 above.
<80% of canopy trees and <80% of understory shrubs are native	Additional native species planting in line with species recommendations outlined in table 4.6 above, and removal of non-native species
Less than 10% or more than 20% of woodland has areas of temporary open space. Unless woodland is <10 ha, in which case the lower limit is 0%	If open space exceed 20% additional planting will be undertaken to infill gaps. If open space is less than 10%, a review of the woodland management prescriptions will be undertaken to create more areas of open space.

Adaptive management triggers	Remedial measures
More than 25% tree mortality and/or crown dieback or low-risk pest or disease is present	Manage pests/disease if present and replace any failures (allowing for some deadwood to remain)
Nutrient enrichment or damaged ground evident	Damage to ground improved with planting/management. Identify cause of damage and put precautions in place so it does not continue, i.e. erecting signs if damage is the result of human activity. If nutrient enrichment is evident, further soil management would be required and identification of the source of the enrichment i.e. adjacent farmland/watercourse with further precautions put in place to reduce this

4.5 Native scrub with scattered trees *(UKHab: mixed scrub)*

4.5.1 The prescriptions in this Section apply to the following mitigation typology Proposed Native scrub with Trees.

4.5.2 The targeted BNG condition to be met for 'Mixed Scrub' is Moderate, as detailed with the BNG Report **[EN0110012/APP/LVS/05.09]**.

4.5.3 In order to achieve the targeted condition, the following management activities will be undertaken within the Proposed Development, which will help achieve the associated BNG condition criteria, as outlined below in Table 4-6:

Table 4-8 Mixed scrub management activities for BNG condition criteria

Management Activities	BNG Condition Criteria Achieved
A mix of native species will be planted within he scrub, as detailed within Table 4-7	This will help achieve condition criteria A "The parcel represents a good example of this habitat type: At least 80% of the scrub is native, there are at least three native woody species, and no single species comprises more than 75% of the cover."
Invasive non-native species will be managed on an ongoing basis, and biosecurity measures to reduce the potential for spreading invasive species within and outside the Order Limits, is detailed within the Outline Invasive Species Management Plan (oISMP) [**EN0110012/APP/LVS/07.22**]. Control of suboptimal species cover will be managed as detailed below (i.e. hand pulling and mulching to protect against weeds).	This will help achieve condition criteria B "There is an absence of invasive non-native plant species (as listed on Schedule 9 of WCA) and species indicative of suboptimal condition make up less than 5% of ground cover."
Scrub to be managed so that scattered scrub and grasses form the boundary with adjacent	This will help achieve condition criteria C "The scrub has a well-developed edge with scattered

Management Activities	BNG Condition Criteria Achieved
habitat (i.e. through an appropriate pruning regime)	scrub and tall grassland and/or forbs present between the scrub and adjacent habitat."

4.5.4 Bands of trees with lower canopy shrub planting are also proposed as part of the Proposed Development. This planting typology has been specified to provide additional vegetative layering within the landscape.

4.5.5 The mix of shrub and scattered tree planting is to provide effective screening of up to 3-12 m without compromising the open aspects of particular views.

4.5.6 The tree and shrub species selected will reflect the species identified within the Solar Development Sites to ensure that they are locally appropriate.

4.5.7 Tree planting locations will require an appropriate offset from panels to ensure shading will not occur once the tree has matured, or leaf fall becomes a problem on the panel structures.

4.5.8 An area of 4.86 ha of Native Scrub with Scattered Trees will be established across the Solar Development Sites.

Native scrub with scattered trees planting

4.5.9 Shrub planting will be planted at 1 m centres (in the case of typologies with densely planted scrub planting) or 2 – 4 m centres (in the case of typologies with scattered/low density scrub planting.

4.5.10 Scattered trees will be planted at 5 m centres within the scrub planting areas.

4.5.11 All tree and native shrub species will be planted in single species groups of three, five and seven to reinforce a natural layout of species within the landscape.

4.5.12 Planting mixes will include a variety of tree and shrub species and ages, including 60-90 m transplants, 125-150 cm whips and 200-250 cm feathered trees. Planting mixes will be planted in single species groups of three, five or seven to reinforce a natural layout of species within the landscape.

4.5.13 Trees and shrubs will be planted appropriately depending on size and will including notch, trench and pit planting appropriate to the size of the rooting area / rootball.

4.5.14 All trees and shrubs will be planted with a 75 mm depth bark mulch a minimum of 250mm in diameter around each tree and 150 mm diameter around each shrub to suppress weeds and retain soil moisture.

4.5.15 A list of locally appropriate species is given below in Table 4- (those which have been identified within the Sites).

Table 4-9 Scrub and tree species for planting within the Proposed Development

Common name	Scientific name	Specification	Density
Dogwood	*Cornus sanguinea*	Transplant – seed raised, 1+1, 40-60	10

Common name	Scientific name	Specification	Density
Hazel	*Corylus avellana*	Transplant – seed raised, 1+1, 40-60	20
Hawthorn	*Crataegus monogyna*	Transplant – seed raised, 1+1, 40-60	20
European spindle	*Euonymus europaeus*	Transplant – seed raised, 1+1, 40-60	10
Blackthorn	*Prunus spinosa*	Transplant – seed raised, 1+1, 40-60	20
Goat willow	*Salix caprea*	Seedling, 1+0, 40-60	10
Guelder-rose	*Viburnum opulus*	Transplant – seed raised, 1+1, 40-60	10
Field maple	*Acer campestre*	Transplant – seed raised, 1+2, 100-125	Counted
Downy birch	*Betula pubescens*	Feathered, 2X, 125-150	Counted
English oak	*Quercus robur*	Transplant – seed raised, 1+2, 100-125	Counted
Sweet cherry	*Prunus avium*	Transplant – seed raised, 1+1, 40-60	Counted

Native scrub with trees management

4.5.16 All trees and shrubs will be watered in-line with the prescriptions set out in Section 4.2 above.

4.5.17 To control the growth of weeds at the base of the proposed trees and shrubs, a 75 mm layer of bark mulch will be maintained until the plant is sufficiently established and in-line with the prescriptions set out in Section 4.2 above.

4.5.18 Hand pulling of persistent weeds will be undertaken or treated using a spot herbicide where weeds are more widespread.

4.5.19 Seed fall would be monitored and any self-sown specimens that may negatively impact the solar panels, adjacent land or habitat establishment would be removed.

Adaptive management triggers and remedial measures

4.5.20 During monitoring of the habitat, should any of the adaptive management triggers outlined in Table 4-10 be identified, the associated remedial measure should be undertaken to ensure the target condition of the habitat is achieved.

Table 4-10 Adaptive management triggers and remedial measures

Adaptive management triggers	Remedial measures
The scrub does not represent a good example of this habitat type: Less than 80% of the scrub is native, there are less than three native woody species, or a single species comprises more than 75% of the cover	Additional native species planting to include three of more woody species, and removal of non-native species. Further removal/planting of native species ensure one species does not comprise over 75% of the cover.

Adaptive management triggers	Remedial measures
Invasive non-native plant species (as listed on Schedule 9 of WCA) and species indicative of suboptimal condition make up more than 5% of ground cover	Removal of invasives by a specialist invasive species contractor as per Outline Invasive Species Management Plan (oISMP) [EN0110012/APP/LVS/07.22]. Cover of suboptimal species reduced by hand pulling/pesticide spot treatment if necessary and additional mulching to protect against weeds.
The scrub does not have a well-developed edge and no scattered scrub or tall grassland and/or forbs are present between the scrub and adjacent habitat	Pruning regime amended to created scattered scrub at the scrub edge, or additional grassland planting introduced at scrub edge

4.6 Meadow seeding - within perimeter fencing *(UKHab: modified grassland)*

4.6.1 The targeted BNG condition to be met for 'Modified Grassland' is Good, as detailed with the BNG Report **[EN0110012/APP/LVS/05.09]**.

4.6.2 In order to achieve the targeted condition, the following management activities will be undertaken within the Proposed Development, which will help achieve the associated BNG condition criteria, as outlined below in Table 4-8:

Table 4-11 Modified grassland management activities for BNG condition criteria

Management Activities	BNG Condition Criteria Achieved
A correct seed mix will be chosen to provide a suitable number of species that will thrive within the Proposed Development as per the soil and light conditions.	This will help achieve condition criteria A "There are 6-8 vascular plant species per m2 present, including at least two forbs. Note – this criterion is essential for achieving Moderate or Good condition."
Conservation grazing is proposed (as detailed below) to leave a varied, tall sward with flowering plants.	This will help achieve condition criteria B "Sward height is varied (at least 20% of the swad is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed."
Scrub cover is to be monitored and removed if over 20% of grassland.	This will help achieve condition criteria C "Any scrub present accounts for less than 20% of the total grassland area. Note – patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type."

Management Activities	BNG Condition Criteria Achieved
As detailed below, stocking of livestock used for conservation grazing will be amended should bare ground cover exceed limits.	This will help achieve condition criteria E "Cover of bare ground is between 1% and 10% including localised areas (e.g. rabbit warrens)."
Bracken cover is to be monitored and removed if over 20% of grassland.	This will help achieve condition criteria F "Cover of bracken Pteridium aquilinum is less than 20%."
Invasive non-native species will be managed on an ongoing basis, and biosecurity measures to reduce the potential for spreading invasive species within and outside the Order Limits, is detailed within the Outline Invasive Species Management Plan (oISMP) [**EN0110012/APP/LVS/07.22**]	This will help achieve condition criteria G "There is an absence of invasive non-native plant species (as listed on Schedule 9 of the Wildlife and Countryside Act (Ref 13))."

General management activities

4.6.3 It is assumed that all modified grassland within the perimeter fencing will be grazed once fully established.

4.6.4 It is suggested that a base stocking density of 2.5 ewes per hectare (~0.375 Livestock Unit (LSU)/ha) is used across the Proposed Development as a conservation grazing benchmark with grazing only be permitted between August-November. Note that stocking levels may be amended based on species responses or habitat review (see section 5.3).

4.6.5 No grazing will take place between April and July, allowing grasses and forbs to flower and seed. If this is not possible a reduced stocking density should be adopted to leave a varied, tall sward with flowering plants.

4.6.6 Grazing between March-April is permitted to reduce the vigour of early grasses.

4.6.7 A rotational grazing should be adopted in small mobs to avoid poaching in wet conditions.

4.6.8 All water points for stock will be positioned outside enhanced margins. Raised water troughs should be used to reduce damage to the surrounding grassland. Troughs should be dispersed around the Solar Development Sites and their placement should be rotated.

4.6.9 All supplementary feeding and any treatment will be avoided.

4.6.10 Where grazing is not possible, or commercially viable, the grassland within the perimeter fencing will be managed in-line with the general management activities for Meadow Seeding – field margins and enhanced grassland, outlined in Section 4.7.

Adaptive management triggers and remedial measures

4.6.11 If monitoring reveals excessive bare ground, overgrazing or unvaried sward height, remove stock for a four-week period to allow for the recovery of the sward and extend if necessary. If overgrazing is continually observed, a reduced stocking intensity must be considered.

4.6.12 If sward height exceeds 100 mm during periods of grazing, increase stocking rate to a maximum of 0.6 livestock units/ha.

4.6.13 If the sward height is over 150 mm before grazing commences in August, a hay cut will commence, as per the Field Margins and Enhanced Grassland prescription.

4.6.14 During monitoring of the habitat, should any of the adaptive management triggers outlined in Table 4-12 be identified, the associated remedial measure should be undertaken to ensure the target condition of the habitat is achieved.

Table 4-12 Adaptive management triggers and remedial measures

Adaptive management triggers	Remedial measures
There are less than 6 vascular plant species per m2, and less than two forbs	Amendment to the grazing/cutting regime to ensure fast growing grasses are not outcompeting forbs Reseeding of grassland with suitable seed mix where necessary should grassland continue to have less than 6 species per m2 The grassland should have achieved its target condition by year seven. In the unlikely case that 6 species (including two forbs) are not present per m2 by year five, and the above measures have not worked, more intrusive ground investigations/topsoil stripping would be considered where necessary
Sward height is homogenous; less than 20% of the sward is less than 7 cm and less than 20% is more than 7 cm (up to 100cm)	Amendment of grazing regime/densities to ensure sward height is varied
Scrub accounts for more than 20% of the total grassland area	Removal of scrub and reseeding with suitable grassland mix where necessary
Cover of bare ground is more than 10%	Grazing regime/densities will be amended should bare ground cover exceed limits. Reseeding of bare ground with suitable seed mix where necessary.
Cover of bracken *Pteridium aquilinum* is more than 20%	Removal of bracken and reseeding with suitable grassland mix where necessary

Adaptive management triggers	Remedial measures
Invasive non-native plant species (as listed on Schedule 9 of the Wildlife and Countryside Act (Ref 13) are present	Removal of invasives by a specialist invasive species contractor as per Outline Invasive Species Management Plan (oISMP) [EN0110012/APP/LVS/07.22].

4.7 Meadow seeding – field margins *(UKHab: other neutral grassland)*

4.7.1 The targeted condition set out in the BNG assessment for 'Other Neutral Grassland' is Moderate.

4.7.2 All field margins are defined as the grassland areas within 1.5m of the canopy edge of all hedgerow, scrub and woodland planting areas. This section applies to all field margins throughout the Solar Development Sites.

4.7.3 In order to achieve the targeted condition, the following criteria must be met (note BNG Condition Criteria is collectively assessed across all 'Other Neutral Grassland' across the Solar Development Sites):

Table 4-13 Other neutral grassland: BNG Condition criteria

Management Activities	BNG Condition Criteria Achieved
A correct seed mix will be chosen to provide a suitable number of species, including indicator species of neutral grassland, that will thrive within the Proposed Development as per the soil conditions. Ongoing monitoring, as detailed below in Remedial Measures, will ensure management is amended should indicator species not be present or the grassland is failing.	This will help achieve condition criteria A "The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type. Note – this criterion is essential for achieving Moderate or Good condition."
The grassland will be managed through a traditional hay cut, as described below	This will help achieve condition criteria B "Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm and up to 100cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed."
Scrub and bracken cover to be monitored and removed if over 5% of grassland for scrub, and 20% of grassland for bracken.	This will help achieve condition criteria D "Cover of bracken is less than 20% and cover of scrub (including bramble Rubus fruticosus agg.) is less than 5%."

General management activities

4.7.4 All field margins will adopt a light touch management throughout the operational phase of the Proposed Development.

4.7.5 The field margins will comprise a diverse sward structure, generally unmaintained for the majority of the year with a target of up to 80% of the sward falling within the 20 cm to 100 cm range during the breeding season (March to August inclusive; see Section 5.3).

4.7.6 A single cut will be undertaken each year, in early March to a height of 15-20cm, prior to the bird breeding period.

4.7.7 The grassland will be left uncut for the remainder of the year. This will allow for sward to develop naturally through the breeding period and beyond with habitat monitoring undertaken in accordance with Section 5.3 to assess sward height and coverage to inform timings and intensity of management in the subsequent years if necessary.

4.7.8 Some localised management may be required during the bird breeding period to ensure heights do not exceed 100cm. This will be subject to appropriate ecological checks and safeguards.

4.7.9 It is essential that all arisings are removed from site to lower the nutrient status and prevent litter build-up.

4.7.10 Field margins will be managed to avoid progressive encroachment of scrub. This will involve localised areas of grubbing out where suckering and self seeding of scrub has occurred.

Weed control

4.7.11 The field margin will be monitored for invasive and perennial weeds.

4.7.12 All persistent weeds should be hand pulled if not too excessive.

4.7.13 If weeds are too widespread then an increase in cutting will be considered to top all perennial weeks.

4.7.14 If herbicide treatments are to be used, contact with the other vegetation must be avoided and all health and safety prescriptions set out by the herbicide manufacturer must be followed.

Adaptive management triggers and remedial measures

4.7.15 If monitoring reveals the field margins are failing to reach the condition criteria highlighted above, a supplementary seeding will take place to ensure a sufficient, species diverse sward.

4.7.16 Where establishment is not occurring as required, action will be taken to alter the seed mix and/or management methodologies. If indicator species are not present, over seeding or plug planting with desired species may be required.

4.7.17 If coarse grasses persist after five years, subject to nesting bird safeguards a three-cut regime (April, July, September, with removal of arisings) will be implemented to reduce fertility. Once fertility is reduced, cutting frequency may return to twice per year.

4.7.18 During monitoring of the habitat, should any of the adaptive management triggers outlined in Table 4-14 be identified, the associated remedial measure should be undertaken to ensure the target condition of the habitat is achieved.

Table 4-14 Adaptive management triggers and remedial measures

Adaptive management triggers	Remedial measures
The grassland is not a good example of its habitat type, with a low proportion of characteristic indicator species present	Amendment to the cutting regime to ensure fast growing grasses are not outcompeting wildflowers, subject to nesting bird safeguards If indicator species are not present, over seeding or plug planting with desired species may be required The grassland should have achieved its target condition by year five. In the unlikely case that the grassland is not a good example of neutral grassland with indicator species present by year four, and the above measures have not worked, more intrusive ground investigations/topsoil stripping would be considered where necessary, subject to nesting bird safeguards
Sward height is homogenous; less than 20% of the sward is less than 7 cm and less than 20% is more than 7 cm	Amendment of cutting regime to ensure sward height is varied, subject to nesting bird safeguards
Cover of bracken is more than 20% and cover of scrub (including bramble Rubus fruticosus agg.) is more than 5%	Removal of bracken and scrub, and reseeding with suitable grassland mix where necessary, subject to nesting bird safeguards

4.8 Meadow seeding – enhanced grassland *(UKHab: other neutral grassland)*

4.8.1 The targeted condition set out in the BNG assessment for 'Other Neutral Grassland' is Moderate.

4.8.2 Enhanced grasslands are defined as all grassland areas located outside of the field margins defined in section 4.7 above. Enhanced grasslands will include areas such as open grasslands greater than 2ha within Solar Development Site 1, open corridors associated with Public Rights of Ways and wildlife corridors (Solar Development Site 4; see example **PDA-007)**, overhead/underground utilities and further mitigation areas associated with flooding, archaeology (Solar Development Site 1; see example **PDA-003**) and aviation and the Bird Habitat Areas (Solar Development Sites 4 and 6; see example **PDA-009**). Grassland within the Bird Mitigation Area (BMA), located in the southern extent of Solar Development Site 1, is subject to the specific management prescriptions set out

in the oBMAMP [**EN0110012/APP/LVS/07.19**]. However, the target of Moderate condition for Other Neutral Grassland and the relevant BNG condition criteria set out below also apply to the BMA grassland. These will be delivered through the oBMAMP alongside its specific seasonal habitat requirements for breeding and non-breeding birds.

4.8.3 In order to achieve the targeted condition, the following criteria must be met (note BNG Condition Criteria is collectively assessed across all 'Other Neutral Grassland' across the Solar Development Sites):

Table 4-13 Other neutral grassland: BNG Condition criteria

Management Activities	BNG Condition Criteria Achieved
A correct seed mix will be chosen to provide a suitable number of species, including indicator species of neutral grassland, that will thrive within the Proposed Development as per the soil conditions. Ongoing monitoring, as detailed below in Remedial Measures, will ensure management is amended should indicator species not be present or the grassland is failing.	This will help achieve condition criteria A "The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type. Note – this criterion is essential for achieving Moderate or Good condition."
The grassland will be managed through a traditional hay cut, as described below	This will help achieve condition criteria B "Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm and up to 50cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed."
Scrub and bracken cover to be monitored and removed if over 5% of grassland for scrub, and 20% of grassland for bracken.	This will help achieve condition criteria D "Cover of bracken is less than 20% and cover of scrub (including bramble Rubus fruticosus agg.) is less than 5%."

General management activities

4.8.4 All enhanced grassland areas will be managed as hay meadow throughout the operational phase of the Proposed Development.

4.8.5 The grassland will comprise a diverse sward structure, generally maintained between 7 cm and 50 cm in height, with a target of up to 80% of the sward falling within the 20 cm to 50 cm range during the breeding season (March to August inclusive; see Section 5.3).

4.8.6 Localised variation in vegetation height will also be retained, including areas of shorter and taller vegetation.

4.8.7 The first cut will take place in each year, during March to a height of 7-10cm, prior to the bird breeding period to allow desirable sward development.

4.8.8 The hay meadow will be left uncut until late summer (August) to avoid impacts to ground nesting birds. This will allow for sward to develop naturally to desirable heights through the breeding period with habitat monitoring undertaken in accordance with Section 5.3 to assess sward height and coverage to inform timings and intensity of management in the subsequent years if necessary.

4.8.9 Should the average height of >30% of each grassland area be greater than 50cm, some localised cutting will be permitted to reduce the average height of the grassland subject to nesting bird safeguards.

4.8.10 Following the main hay cut, enhanced grassland will be managed as necessary to maintain suitable vegetation conditions for the subsequent breeding season, taking account of habitat condition, ground conditions and the requirements of ground-nesting bird species. The timing and intensity of any additional cutting or grazing will be informed by habitat monitoring and undertaken with appropriate safeguards for breeding.

Weed control

4.8.11 The enhanced grassland areas will be monitored for invasive and perennial weeds.

4.8.12 All persistent weeds should be hand pulled if not too excessive.

4.8.13 If weeds are too widespread then an increase in cutting will be considered to top all perennial weeks.

4.8.14 If herbicide treatments are to be used, contact with the other vegetation must be avoided and all health and safety prescriptions set out by the herbicide manufacturer must be followed.

Adaptive management triggers and remedial measures

4.8.15 If monitoring reveals the enhanced grassland are failing to reach the condition criteria highlighted above, a supplementary seeding will take place to ensure a sufficient, species diverse sward.

4.8.16 Where establishment is not occurring as required, action will be taken to alter the seed mix and/or management methodologies. If indicator species are not present, over seeding or plug planting with desired species may be required.

4.8.17 If coarse grasses persist after five years, a three-cut regime (April, July, September, with removal of arisings) will be implemented to reduce fertility. Once fertility is reduced, cutting frequency may return to twice per year. Routine cutting and other potentially disruptive vegetation management will be avoided during the breeding season where possible, with appropriate safeguards for active nests and dependent young.

4.8.18 During monitoring of the habitat, should any of the adaptive management triggers outlined in Table 4-14 be identified, the associated remedial measure should be undertaken to ensure the target condition of the habitat is achieved.

Table 4-14 Adaptive management triggers and remedial measures

Adaptive management triggers	Remedial measures
The grassland is not a good example of its habitat type, with a low proportion of characteristic indicator species present	Amendment to the cutting regime to ensure fast growing grasses are not outcompeting wildflowers, subject to nesting bird safeguards If indicator species are not present, over seeding or plug planting with desired species may be required The grassland should have achieved its target condition by year five. In the unlikely case that the grassland is not a good example of neutral grassland with indicator species present by year four, and the above measures have not worked, more intrusive ground investigations/topsoil stripping would be considered where necessary, subject to nesting bird safeguards
Sward height is homogenous; less than 20% of the sward is less than 7 cm and less than 20% is more than 7 cm	Amendment of cutting regime to ensure sward height is varied, subject to nesting bird safeguards
Cover of bracken is more than 20% and cover of scrub (including bramble Rubus fruticosus agg.) is more than 5%	Removal of bracken and scrub, and reseeding with suitable grassland mix where necessary, subject to nesting bird safeguards

4.9 Public Rights of Way and Permissive Paths

Public Rights of Way

4.9.1 It is essential to maintain all Public Rights of Way (PRoWs) located throughout the Solar Development Sites free from obstructions, in-line with the legislations listed in Section 1.3 above. This includes:

1) The pruning of all hedgerows and shrub planting adjacent to all PRoWs;
2) Maintaining clear stem heights of all trees along PRoWs to ensure the minimum head heights are provided; and
3) Ensure all gates and stiles are functional and safe to use.

4.9.2 To restrict the movement of domestic animals into the bird mitigation area a proposed agricultural wire stock fence (up to 1.15m (h)) will be located within Solar Development Site 1 along sections of an existing PRoW (NY|35.28|3/1) and the eastern and western boundaries of the Bird Mitigation Area. The fence will be retained and managed for the duration of the operational phase of the Proposed Development to substantially reduce disturbance to bird species.

4.9.3 Details of the outline PRoW management measures are set out in in the Outline Public Rights of Way Management Plan [**EN110012/APP/LVS/07.09**];

Permissive paths

4.9.4 The Applicant will create three types of permissive paths across the Solar Development Sites to improve local connectivity, complement the wider network of PRoWs and facilitate greater public access to the countryside. They will provide new links between existing PRoW creating loops that seek to improve connectivity.

4.9.5 The permissive path uses will include:

1) pedestrian only;
2) pedestrian and cyclists; and
3) pedestrian, cyclists and equestrian.

4.9.6 The designation of these permissive paths take into consideration their connectivity to existing types of PRoW (e.g. footbaths or bridleways) and associated permitted users.

4.9.7 Locations and use of permissive paths, are illustrated on Figure 3.1: Outline Environmental Masterplan (ES Volume 2) [**EN0110012/APP/LVS/02.12**]

4.9.8 The permissive paths will be managed through the following measures:

1) Displaying clear signage at the entrance to permissive path, which should include making clear the path is a permissive path, with usage permitted by the landowner;
2) Appropriate enclosures (e.g. gates or other barriers) will be installed at access points to control the type of users permitted on each path where appropriate. For example gates will be designed to allow pedestrian access while preventing horse riders and cyclists where such users are not appropriate or permitted. Where equestrian access is permitted, gates will comply with British Horse Society standards.
3) Regular maintenance, including annual closure for maintenance with appropriate signage / warnings;
4) Surfacing all permissive paths using a grass and wildflower seeding as set out in section 4.7 above. Where permissive paths utilise existing tracks, the surface will be maintained as existing.
5) Providing the following minimum widths / heights:
    a. Pedestrian only paths: minimum maintained width of 1.5m along field edges and 1m where paths cross fields;
    b. Pedestrian and cyclists only: minimum maintained width of 3m along field edges and 2m where paths cross fields, and a clear head height of 3m; and
    c. Pedestrian, cycle and equestrian paths: minimum maintained width of 3m along field edges and 2m where paths cross fields, and a clear head height of 3m.

4.9.9 The final detail of all permissive path including signage, surfacing and widths will be agreed in advance with North Yorkshire Council as part of approval of the detailed LEMP(s).

4.10 Existing habitats

Existing hedgerows to be enhanced

4.10.1 Existing hedgerows marked as retained across the Proposed Solar Development Sites and as illustrated in Arboricultural Impact Assessment [**EN0110012/APP/LVS/06.03.16.02**] will be enhanced to improve their structure and species diversity.

4.10.2 The proposed enhancement will be undertaken through two main methods:

1) In-fill planting to close up small gaps within the hedgerow using a suitable species rich mix; or
2) The removal of sections where either the hedgerow has suffered substantial die back or where the majority of the hedgerow is formed of non-shrub species such as bramble or ivy.

4.10.3 All sections requiring removal to improve their structure and diversity will be done in a way in which damage to adjacent hedgerow plants is limited.

4.10.4 Sections identified for removal should be completely removed and grubbed out to create a clear, cultivated gap for re-planting.

4.10.5 Prior to the commencement of the construction phase, existing hedgerows will be trimmed to their current managed extent to minimise the risk of conflict with construction plan and to avoid the need for maintenance during construction. Once construction is complete, the hedges will be allowed to grow out to their proposed height.

4.10.6 During the operational phase, existing hedgerow maintenance will be required. This will include:

1) Removal of trees succumbing to ash dieback or other disease;
2) Removal or pruning of trees experiencing partial or total structural failure due to storm damage, where that failure threatens to damage infrastructure;
3) Hedge trimming and maintenance.

4.10.7 Where hedgerows require removal for visibility splays to facilitate temporary access routes these will be coppiced to just above ground level allowing for the necessary visibility splay. The trees can then be allowed to regenerate following completion of site works and the removal of temporary access.

Existing ditches and watercourses

4.10.8 Generally, the quality of the ditches within the Solar Development Sites have been identified as poor, due to agricultural impacts such as runoff; the cessation

of intensive agricultural land use in proximity to these watercourses will likely lead to better water quality over the duration of the Proposed Development.

4.10.9 In addition, wide buffers of at least 10 m will enhance the ditch and river habitats for associated protected and notable species, including water vole, otter, birds and invertebrates.

4.10.10 Ditch management will be carefully considered, with works being undertaken on a rotational basis so that undisturbed areas remain annually. Ditch management can be carried out every two to five years, with cutting being undertaken in autumn/winter and only on one side of the bank cut each time.

4.10.11 Habitats adjacent to watercourses within the Solar Development Sites will be managed to enhance the structural and species diversity of marginal vegetation. This may be achieved through a combination of seeding, rotational cutting and targeted scrub removal where encroachment is detrimental to ditch condition.

4.10.12 Where not in conflict with access and maintenance requirements, planting of trees may also be undertaken adjacent to ditches and rivers, with sufficient distance from the ditch to prevent damage and on the northern side where practicable to prevent shading.

4.10.13 With regards to BNG (see BNG Report **[EN0110012/APP/LVS/05.09**]), as per the Design Parameters and Commitments Document [**EN0110012/APP/LVS/05.06**], a 10 m buffer will be provided from bank top for all ditches where practicable, with neutral grassland largely proposed within this buffer. The change from arable at baseline to neutral grassland post development within parts of this proposed 10 m buffer will result in reduced riparian zone encroachment (from Major to No encroachment), and as such, the applicable lengths of ditches have been added to the metric as enhanced resulting from reduced riparian zone encroachment, namely D1.1, D1.2, D1.4, D1.5, D1.9, D1.11, D1.12, D1.13, D2.2, D3.1, D4.4, D4.7, D4.13, D4.14, D6.5, and D7.1 (shown on Figure 6.6: UK Habitat Classification Results [**EN0110012/APS/LVS/06.02.06.06**]). Where ditches are present on the Solar Development Sites' boundary, the extent of encroachment on the offsite bank is anticipated to remain unchanged from the baseline and as such is not changed in the metric.

4.10.14 In addition, the condition of a smaller number of ditches within the Solar Development Sites, namely D1.3, D1.12, D1.13, D6.3, and D6.5 (shown on Figure 6.6: UK Habitat Classification Results [**EN0110012/APS/LVS/06.02.06.06**]), will be improved from poor to moderate. This will be achieved through passing the condition criteria as detailed in Table 4-10 below. The management activities required to pass these criteria are also detailed. To note, to increase to moderate condition not all of these measures need to be passed for each of the ditches listed, for example D6.3 only requires the removal of filamentous algae and duckweed to reach moderate condition:

Table 4-15 Enhanced ditches management activities for BNG condition criteria

Management Activities	BNG Condition Criteria Achieved
The halting of agricultural fertiliser and pesticides application on adjacent land will help improve water quality of surrounding ditches, and the creation and management of buffer zones as detailed above will help trap sediment and nutrients before reaching the channel. Additional in channel planting, with species such as water forget-me-not (*Myosotis scorpioides*) or brooklime (*Veronica beccabunga*), and ensuring the ditches do not become overshaded by surrounding vegetation will also help improve water quality.	This will help achieve condition criteria A "The ditch is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution."
Ditches will be monitored and if filamentous algae and/or duckweed Lemma spp. exceeds 10% cover of the ditch the species will be removed.	This will help achieve condition criteria C "There is less than 10% cover of filamentous algae and/or duckweed Lemma spp.."
The establishment of the 10 m buffer zones, as detailed above, will help reduce physical damage along the ditch, with ongoing monitoring to ensure damage remains under 5%.	This will help achieve condition criteria E "Physical damage is evident along less than 5% of the ditch, with examples of damage including: excessing poaching, damage from machinery use or storage, or any other damaging management activities."

Adaptive management triggers and remedial measures

4.10.15 During monitoring of the habitat, should any of the adaptive management triggers outlined in Table 4-16 be identified, the associated remedial measure should be undertaken to ensure the target condition of the habitat is achieved.

Table 4-16 Adaptive management triggers and remedial measures

Adaptive management trigger	Remedial measures
Poor water quality is identified within the ditch, with high turbidity or signs of pollution.	Identify the cause of the poor water quality and where linked to the Proposed Development put measures in to rectify i.e. additional in channel/upstream planting to help trap sediment and nutrients, reducing potential overshading by surrounding vegetation, review of adjacent land management, or stopping poaching by livestock if present.
There is more than 10% cover of filamentous algae and/or duckweed Lemma spp. within the ditch.	Removal of filamentous algae and/or duckweed

Adaptive management trigger	Remedial measures
Physical damage is evident along more than 5% of the ditch, e.g. excessing poaching, damage from machinery use or storage, or any other damaging management activities.	Damaged to ditch rectified e.g. with additional planting. Identify cause of physical damage and put precautions in place to ensure this does not continue i.e. livestock fencing, amendment to management activities, removal of machinery use from ditch buffer zone

4.11 Habitat boxes and wildlife enhancement features

Bats

4.11.1 No bat roosts will currently be lost to facilitate the Proposed Development. However, to improve the Proposed Development for roosting bats post development, a series of bat boxes will be installed on mature trees within the Sites.

4.11.2 Boxes will be installed facing a number of aspects to increase opportunity for roosting bats. Exact locations will be determined by an ecologist.

4.11.3 The boxes will be visually inspected from ground-level annually to ensure that they remain in situ and secure, and to monitor for any damage to the box structure.

4.11.4 Where damage has been observed to bat boxes, they will be replaced during October-November.

4.11.5 Boxes will be inspected by a qualified ecologist prior to any removal/replacement to ensure no bats are present, avoiding any disturbance.

Birds

4.11.6 To enhance nesting opportunities across the Solar Development Sites, a series of bird boxes (colony boxes and A-Frames) will be installed on retained mature trees.

4.11.7 All bird boxes will be installed at suitable locations across the Solar Development Sites (1-4 and 8), with the final locations determined by a licensed ecologist (where appropriate).

4.11.8 The boxes will be visually inspected from ground level annually to ensure they remain in situ and secure, and to monitor for any damage to the box structure.

4.11.9 All boxes will be cleaned out on an annual basis between September and February. Where damage has been observed to the bird boxes they will be replaced between September and February. All health and safety guidance current at the time must be followed.

Insect houses

4.11.10 A series of insect houses will be fixed to a single wooden stake 1,550 mm (l) x 75 mm (dia) driven a minimum of 500 mm into the ground to ensure the box is

approximately 1 m above ground level. The insect houses will be attached to post using an aluminium nail.

4.11.11 The insect houses will be located within suitable habitat across the Solar Development Sites, with the final locations determined by an ecologist.

Hedgehog houses

4.11.12 A series of hedgehog houses will be installed in suitable habitat within the Solar Development Sites to improve the Proposed Development for the species post development.

4.11.13 The houses will be located in suitable habitat adjacent to woodland or scrub, with the final locations determined by an ecologist.

Log piles/hibernacula

4.11.14 A series of log piles/hibernacula will be installed in suitable habitat within the Solar Development Sites, such as in the grassland margins adjacent to wet ditches, to improve the Proposed Development for groups such as reptiles and amphibians post development.

4.11.15 All log piles and hibernacula will be installed in suitable locations across the Solar Development Sites determined by an ecologist.

5 Landscape and ecological auditing / monitoring

5.1 Landscape

5.1.1 For successful establishment, it is essential to undertake regular monitoring visits during the establishment period.

5.1.2 The purpose of the monitoring visits is to provide a detailed assessment of plant establishment and health and growing conditions.

5.1.3 It is recommended that monitoring visits are undertaken twice a year, one in early-mid spring at the beginning of the growing season and once in late summer – early autumn towards the end of the growing season.

5.1.4 Additional site visits may be required in the first year to monitor the establishment of proposed meadows and the presence of competing weeds where seeding has been made on bare ground.

5.1.5 Monitoring visits should be undertaken by a competent Landscape Architect who is a member of the Landscape Institute.

5.1.6 It is recommended that the monitoring visits are carried out prior to any scheduled maintenance activity.

5.1.7 Following the monitoring visit, a monitoring report should be provided to the maintenance teams setting out the condition of the planting and any recommendations to ensure the management objectives are met and if necessary, recommend revisions to the management plan to ensure successful establishment.

5.2 Ecology

5.2.1 An outline ecological monitoring strategy is set out below, however, further details for essential monitoring of the Proposed Solar Development Sites habitats will be set out within the detailed LEMP, based on a standardised approach.

5.2.2 Habitat specific monitoring will be required as part of Biodiversity Net Gain delivery / progress reporting and is included as a 'UKHab' survey along with Condition Assessments of the habitats recorded.

5.2.3 Following the monitoring visit, a monitoring report should be provided to the maintenance teams setting out the condition of the habitats and any recommendations required to ensure the BNG and protected species objectives are met. If necessary, recommend revisions to the management plan or remedial actions to ensure successful establishment will be included.

5.2.4 The monitoring strategy should include:

1) UKHab Survey – a habitat survey as well as Condition Assessments of the establishing habitats, will be undertaken to ensure the habitats are

developing as desired, and in line with BNG commitments. As rough guidance, it is suggested that this assessment is undertaken on year 1, 2, 3, 5, then every five years until year 30. The requirements for monitoring under Biodiversity Net Gain will be fully detailed in the BNG strategy to be prepared alongside the detailed LEMP.

2) Botanical Quadrants – fixed point quadrants will be recorded at selected locations. The distribution of quadrants will be designed to ensure each habitat is sampled, with the number of quadrants to be dependent on the size of the area and estimated species diversity of the proposed habitat. This will help to track establishment and identify any problems should the habitat not be forming as required. Where these quadrants are undertaken within panelled fields, locations will ensure that all habitats are sampled, including directly beneath and between the strings of panels, as well as within the field edges, outside of the array.

3) Soil Survey – a soil survey would provide a helpful measurement, particularly within an area that had previously been subject to intensive agricultural production for many years. It is therefore proposed that such a survey is carried out prior to seeding and habitat establishment across the Proposed Development, although this could be targeted or sampled according to needs identified during the preparation of the detailed LEMP. Basic measurements may include pH, soil type, soil organic matter, bulk density, soil moisture, infiltration capacity, and texture. Additional measurements may include soil carbon, nitrogen, phosphorous, potassium and magnesium. There may also be opportunities to monitor other indicators such as fungal: bacterial ratio or fungal DNA.

4) Monitoring of protected and notable species (bats, water vole, otter etc) through the completion of protected species surveys at various times post development, with the frequency of monitoring to be agreed though consultation with North Yorkshire Council and Natural England where relevant and defined in the detailed LEMP. This will help to understand if protected species are still present within the Order Limits compared to the predevelopment baseline, and how protected species use of the site post-development. Results from the species surveys will be considered alongside habitat status, condition and the outcomes of management when evaluating the effectiveness of the mitigation and enhancement measures. Species numbers alone will not be used as the sole measure of success, as this may be influenced by wider environmental factors. The combined assessment of habitat condition, management outcomes and species monitoring will therefore be used to determine whether the relevant habitat/species objectives are being achieved and whether adaptive management is required. Where required appropriate remedial measures will be implemented as detailed in the previous sections of this oLEMP.

5) Measurable targets for protected species will be agreed though consultation with North Yorkshire Council and Natural England where relevant and defined in the detailed LEMP.

5.3 Breeding Birds (Ground nesting)

5.3.1 Breeding bird surveys, with particular focus on ground nesting birds will be undertaken during post-construction Years 1, 2, 3, 4 and 5 and subsequently at five-yearly intervals within the Solar Development Sites, excluding the BMA (survey requirements for the BMA are set out in the oBMAMP [**EN0110012/APP/LVS/07.19**]. . A breeding season monitoring report will be prepared following each survey year to document survey results, including species richness, abundance and distribution, and to inform ongoing habitat management.

5.3.2 The breeding bird monitoring will be considered alongside the habitat monitoring undertaken in accordance with Section 5.2 of this oLEMP, including UKHab Condition Assessments and vegetation monitoring. Particular consideration will be given to habitat characteristics relevant to ground-nesting birds, including vegetation structure and sward height, vegetation cover, bare ground and the presence of scrub or other undesirable vegetation during the breeding period.

5.3.3 Fixed-point photography from selected vantage points across the Solar Development Sites will also be undertaken to provide a visual record of habitat establishment, sward heights and development and to identify areas where changes to vegetation or habitat management may be required i.e. arable margins. This information will supplement the habitat condition monitoring undertaken pursuant to Section 5.2.

5.3.4 Bird species richness, abundance and distribution will be considered alongside habitat status, condition and the outcomes of management when evaluating the effectiveness of the mitigation and enhancement measures. Bird numbers alone, including the number of territories recorded, will not be used as the sole measure of success, as breeding populations and their distribution can be influenced by wider environmental factors. The combined assessment of habitat condition, management outcomes and bird monitoring will therefore be used to determine whether the relevant habitat objectives are being achieved and whether adaptive management is required. For skylark, the assessment will consider the extent and structure of suitable habitat (see below), territory distribution and breeding activity, with persistent reductions in habitat suitability or unexpected changes in habitat use investigated to determine whether further management intervention is required.

5.3.5 Where monitoring identifies that habitat conditions are not developing or being maintained in accordance with the relevant objectives (Section 2.4), appropriate remedial measures will be implemented, including, where appropriate, amendments to grazing (stocking levels), cutting or vegetation management in accordance with Sections 4.6, 4.7, 4.8 and prescriptions outlined in Annex A,

Table A-1. In all cases, where a failure is identified, the root cause should be identified and remedial measures implemented.

5.3.6 Where monitoring identifies persistently low or declining use by bird species, or an unexpected absence of breeding activity, the causes will be investigated even where habitat condition targets are being achieved. The review will consider habitat suitability and accessibility, disturbance, management practices and wider influences on bird populations. Where factors within the Applicant's control are identified as contributing to reduced use, appropriate remedial measures will be implemented and their effectiveness assessed through follow-up monitoring.

5.3.7 Remedial measures may include changes to:

- the timing, location or intensity of cutting;
- Additional cut-and-collect management;
- Targeted re-seeding;
- Management of undesirable vegetation (bracken/scrub); and (or)
- Review of survey efforts

5.3.8 All interventions will safeguard active nests and dependent young and maintain the intended breeding habitat functions.

5.3.9 Measurable habitat performance criteria, monitoring requirements and associated adaptive management measures for ground-nesting birds across the wider Solar Development Sites will be defined within the detailed LEMP, following consultation with North Yorkshire Council. The ecological objectives, performance criteria, monitoring requirements and remedial management measures applying specifically to the BMA, for both breeding ground-nesting birds and non-breeding SPA/Ramsar bird species, are set out in the oBMAMP [**EN0110012/APP/LVS/07.19**] and will be further specified within the detailed BMAMP. Monitoring results from the BMA and wider Solar Development Sites will be considered together, where relevant, to inform ongoing habitat management and assess the effectiveness of the ornithological mitigation measures.

Annex A Outline management prescription timetable

The management prescriptions set out in Table A.1 apply to the relevant habitat types within the Solar Development Sites, excluding the grassland and wetland habitats within the Bird Mitigation Area (BMA), which are subject to the specific management prescriptions and timetable set out in the oBMAMP [EN0110012/APP/LVS/07.19]. The oBMAMP addresses the combined requirements of breeding ground-nesting birds and non-breeding SPA/Ramsar bird species, whereas the prescriptions within this oLEMP address the habitat creation, enhancement and management objectives of the wider Solar Development Sites. Other habitat types within the BMA, including hedgerows and scrub, will continue to be managed in accordance with the relevant provisions of this oLEMP, where compatible with the BMA's primary ecological objectives.

Table A-1 Outline management prescription timetable

Operation Management Prescription	Frequency per Annum	Season	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 onwards
Hedgerow								
Water newly planted hedgerow plants during extended periods of dry weather.	As required	March – October						
Maintain a weed free area to base of hedgerow.	Twice yearly	March – October						
Mechanical cut	3 year rotation	November – February						On-going
Replace dead and dying plants	Check annually	Next available planting season						
Hedgerow trees								
Water newly planted hedgerow trees during extended periods of dry weather.	As required	March – October						
Maintain a weed free area to base of hedgerow tree.	Twice yearly	March – October						
Formative prune to remove dead, dying and diseased branches and maintain a clear stem a minimum of 1.5m above top of hedgerow in order to be distinguishable. All works in accordance with good arboricultural practice and to BS3998:2010.	Annually	November – February						On-going
Replace dead and dying plants	Check annually	Next available planting season						
Woodland Belts and Blocks								
Water newly planted trees and shrubs during extended periods of dry weather.	As required	March – October						

Operation Management Prescription	Frequency per Annum	Season	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 onwards
Maintain a weed free area to base of trees and shrubs	Twice yearly	March – October						
Formative prune to remove dead, dying and diseased branches. All works in accordance with good arboricultural practice and to BS3998:2010.	Annually	November – February						On-going
Replace dead and dying plants.	Check annually	Next available planting season						
Native Scrub with Scattered Trees								
Water newly planted shrubs during extended periods of dry weather.	As required	March – October						
Maintain a weed free area to base of shrubs	Twice yearly	March – October						
Formative prune to remove dead, dying and diseased branches. All works in accordance with good arboricultural practice and to BS3998:2010.	Annually	November – February						On-going
Replace dead and dying plants.	Check annually	Next available planting season						
Meadow Seeding within Solar Development Sites (excluding the BMA)								
Sheep grazing.	Annually	August – March						On-going
Mechanically topped to control flush of weeds.	As required	August - September						On-going
Cut and maintain to a height of 150-200mm	1	February – March						On-going
Spot herbicide application	As required	March – October						On-going
Meadow Seeding within Enhanced Grasslands (excluding the BMA)								
Maintain a varied breeding-season sward in accordance with Section 4.8, including a target of up to 80% within the 20–50 cm range. Exclude routine cutting, topping and disruptive vegetation management between March and August inclusive. Any necessary localised intervention will follow ecological assessment and safeguard active nests and dependent young.	As required	March – early September						

Operation Management Prescription	Frequency per Annum	Season	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 onwards
Hay cut, leaving cutting to dry and seed to disperse. Collect arisings after 7-14 days and remove from site.	1	August – September						On-going
Field margins- lightly managed, cut to 150–200 mm, collecting and removing arisings	As required	March						
Spot herbicide application	As required	March – October						On-going
Bird and Bat Boxes, and Hedgehog and Insect Houses								
Visually inspect and clean out (excluding bat boxes and targeting protected species)	Annually	October – February						On-going

References

Ref 1 Planning Act 2008, available at: https://www.legislation.gov.uk/ukpga/2008/29/contents

Ref 2 BS 8545. Trees: From Nursery to Independence in the Landscape. Available at: [redacted] Accessed: January 2026

Ref 3 BS 3936-1:1992. Nursery stock. Specification for trees and shrubs. Available at: [redacted] Accessed: January 2026

Ref 4 BS 3882:2015 - Specification for topsoil. Available at: [redacted] Accessed: January 2026

Ref 5 BS 4428:1989. Code of practice for general landscape operations (excluding hard surfaces) (AMD 6784). Available at: [redacted] Accessed: January 2026

Ref 6 BS 5837: 2012 Trees in relation to design, demolition and construction - recommendations. Available at: [redacted] Accessed: January 2026

Ref 7 BS3998:2010 Tree work – recommendations. Available at: [redacted] Accessed: January 2026

Ref 8 Countryside and Rights of Way Act 2000. Available at: https://www.legislation.gov.uk/ukpga/2000/37/contents Accessed: January 2026

Ref 9 The Hedgerow Regulations 1997. Available at: https://www.legislation.gov.uk/uksi/1997/1160/contents Accessed: January 2026

Ref 10 Local Authority Guidance; and

Ref 11 Solar Energy UK Guidance: A Standardised Approach to Monitoring Biodiversity on Solar Farms (2022)

Ref 12 Horticultural Trades Association (2002) Handling and establishing landscape plants. Available at: [redacted] Accessed on: January 2026

Ref 13 Wildlife and Countryside Act 1981. Available at: https://www.legislation.gov.uk/ukpga/1981/69/contents Accessed: January 2026

Ref 14 UK Government, “Environment Act 2021,” 2021. [Online]. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents

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