

Landscape and Ecological Management Plan (LEMP) with Biodiversity Net Gain Management and Monitoring Plan (MMP)

March 2022

Sheepwash Solar Energy Farm, Marden, Kent

For and on behalf of

Statkraft

Landscape and Ecological Management Plan with Biodiversity Net Gain Management and Monitoring Plan

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1. Introduction

- 1.1. This Landscape and Ecological Management Plan (LEMP) with Biodiversity Net Gain Management and Monitoring Plan (MMP) has been prepared to support the full planning application for Sheepwash Solar Energy Farm at Marden, Kent. It has been prepared to ensure that landscape and ecology and Biodiversity Net Gain habitats, both existing and proposed are managed and monitored effectively during the lifetime (37 years) of the proposed development.
- 1.2. The Biodiversity Net Gain MMP follows the requirements of the BS8683:2021 Process for designing and implementing Biodiversity Net Gain – Specification. It particularly focuses on Section 3: Implementation and maintenance and management, Chapter 8 Maintenance and Management.
- 1.3. The British Standard however, does not solely focus on the Management and Monitoring. *The British Standard specifies a process to design, implement, maintain and monitor BNG outcomes from a development project (BS8683:2021 Section 1, pp2).*

The British Standard covers a process to achieve BNG...It does not infer compliance with any planning condition, legislation or statutory requirement, and is independent from any mandatory or legislative requirement for BNG (BS8683:2021 Section 1, pp2).

Furthermore, following the BNG process in this British Standard does not substitute the requirements to assess ecological impacts and report them e.g. as part of an EclA. Rather, this British Standard builds on, and is not intended to repeat, existing good practice for biodiversity surveys, impact assessments, mitigation and compensation for projects (BS8683:2021 Section 1, pp3)

- 1.4. The LEMP with MMP commences at the handover stage from Implementation to MMP. This report however, provides a summary of the BNG process in Section 4, with more specific detail relating to the management objectives for each landscape and habitat type in Section 5.
- 1.5. The following documents have been prepared by competent persons (Ecologist and Landscape Architect) in support of the application and should be read in conjunction with this LEMP with MMP:
 - Ecological Impact Assessment, Riverdale Ecology Limited;
 - Biodiversity Net Gain Report, Riverdale Ecology Limited;

- Landscape and Visual Impact Assessment, awSCAPE Ltd; and
- Landscape Mitigation and Enhancement Plan (AW0143-PL-002), awSCAPE Ltd.

2. Site Description and Proposals

- 2.1. The site is identified in drawing AW0143-PL-002, Proposed Mitigation, Landscape & Ecology Enhancements.
- 2.2. The site is located west of the village of Marden, Kent, and is a mix of arable fields with mature hedgerows and hedgerow trees that line each individual field. Some of these hedges are gappy and the trees very mature in nature. Oak predominates although willow is present along the watercourses.
- 2.3. The River Teise forms the eastern boundary, with a series of ponds and ditches throughout the site boundary. The site envelopes the northern half of an existing mature woodland, whilst a small ancient woodland copse is located to the west of the site boundary. A PROW traverses the northern boundary of the site, and a series of dwellings are located to the south and north west of the site.
- 2.4. The landscape and BNG proposals look to enhance existing gappy hedgerows with native hedgerow and tree species and to provide appropriate wetland tree and hedgerow species along the river bank.
- 2.5. Native hedgerows are also proposed around the solar energy farm fenceline to provide an effective visual screen to the Solar Energy Farm. These will be maintained at approximately 2.5m in height.
- 2.6. Mitigation woodland is proposed to the southern boundaries of the site to reduce visual effects from dwellings and PROW in closer proximity to the solar energy farm. These contain faster growing species such as Field maple (*Acer campestre*), Alder (*Alnus glutinosa*), Silver birch (*Betula pendula*), Prunus species and Sorbus species, as well as a smaller percentage of Oak, with an understorey of Hazel, Holly and Blackthorn.
- 2.7. Biodiversity woodland is located to the west of the site and also to the south of the site (outside the site boundary). These provide important wildlife connections between existing established woodland and surrounding hedgerow and woodland infrastructure. Species include slower growing varieties with a larger percentage of Oak, and a smaller percentage of Field Maple, Silver Birch, Prunus and Sorbus varieties. The understorey is predominantly Hawthorn and Hazel to match existing woodlands.
- 2.8. A community orchard is proposed to the north east of the site in close proximity to Marden and along the diverted section of the PROW, providing a mix of Kent known varieties of Apple, Pear, Cherry and Plum.

- 2.9. Two ponds are to be created within the site boundary and one outside of the site boundary. Biodiversity meadow to all grassland outside of the fenced solar energy farm is to receive Emorsgate EM3 Special General Purpose Meadow Mix. Whilst within the fenced area, this will receive ryegrass/clover mix, Permanent Grass from Cotswold Grass Seeds.

3. Requirements of the BNG Process

- 3.1. A summary of the requirements for the British Standard, BS8683:2021 Process for designing and implementing Biodiversity Net Gain – Specification are provided below.

Biodiversity Net Gain

- 3.2. This summarises Section 1 of the British Standard (*BS8683:2021*, Chapter 4 pp6-7) in relation to the requirements that apply throughout the BNG process.
- 3.3. The first stage of the British Standard relates to the project's impact assessment and mitigation, which are requirements for planning. BNG to be considered at the earliest stage of the development process and through its lifecycle, as follows:
- Projects shall document evidence on undertaking and reporting ecological, social and environmental surveys; impact assessments and mitigation design;
 - Surveys, assessments and mitigation shall be undertaken using best practice guidelines and by competent persons, taking account of seasonality;
 - Implementation of ecological management by competent persons and in accordance with published guidelines.
- 3.4. The following requirements identified in the British Standard, relate specifically to the BNG process, and include:
- Projects follow the BNG Good Practice Principles for development;
 - Projects avoid impacts on irreplaceable habitats;
 - Projects document methods used to collect data for BNG assessment, and how these might change through the lifecycle of the development and their affects on the BNG assessment results;
 - Projects to present the BNG assessment in full, detailing limitations and assumptions;
 - Projects to quantify losses and gains in biodiversity in accordance with guidelines and standards and shall continue with these methods throughout the lifecycle of the project;
 - Document evidence on the skills, experience and qualifications of competent persons complying with each requirement of the British Standard;
 - Clarify whether reporting is predicted or actual BNG outcomes;
 - Timing of BNG activities shall take account of the seasonality of plants and animals;
 - Throughout the BNG process, records of key information associated with BNG and the BNG process within the British Standards must be handed over to others responsible at different stages ensuring continuity at handover; and

- Conformance with the British Standard to be assessed in proportion to the scope and scale of the project, and the project's impact on biodiversity.
- 3.5. These requirements are to ensure that BNG is a consistent process that is taken from planning through to the management of the project, for the lifecycle of the development. This is to ensure that biodiversity is properly considered, implemented, managed and monitored for at least 30 years for the benefit of wildlife.

Preparation and Design

- 3.6. Section 2 of the British Standard details the requirements for the preparation and design of the site based on the outcomes of achieving BNG.
- 3.7. The Landscape and Visual Impact Assessment (LVIA) and the Ecological Impact Assessment (EclA) are key documents that have influenced the design of the site through landscape mitigation, and habitat enhancements and creation. These are detailed in the Landscape Mitigation and Enhancement Plan (AW0143-PL-002) and within the EclA.
- 3.8. The Biodiversity Net Gain report has identified the biodiversity baseline i.e. existing habitats, existing species, any losses and the proposals to enhance and create new habitats based on the EclA, the LVIA and ultimately the Landscape Mitigation and Enhancement Plan (AW0143-PL-002). This has all had influence over the design of the site.
- 3.9. The Biodiversity Net Gain report follows the British Standard BS8683:2021 processes for Chapter 5 Preparation and Chapter 6 Design.
- 3.10. As part of Chapter 6 of the British Standard, paragraph 6.2.12 (f) requires a BNG Management and Monitoring Plan (MMP) to be prepared. The details of the MMP requirements are included in Section 3 of this report. However, this LEMP with MMP is to be reviewed prior to MMP handover following implementation, and any changes documented.

Implementation of BNG and Mitigation

- 3.11. Section 3 of the British Standard BS8683:2021 details the requirements for the implementation and maintenance and management of the BNG within a Site.

- 3.12. All persons involved in the implementation and delivery of BNG and also landscape mitigation shall be competent, suitable trained and qualified as appropriate, as identified within paragraph 3.17. These persons are responsible for the delivery of BNG and brief the relevant site personnel on the requirements to deliver BNG as well as being in possession of all relevant documentation. A construction method statement specific to BNG and landscape mitigation that also considers other relevant works that include for example temporary access, compounds etc, should be prepared for the BNG implementation process.
- 3.13. Protection of existing biodiversity features is of high importance and must be undertaken prior to any works commencing on site.
- 3.14. Seasonality of the site preparation, construction and implementation of BNG shall be undertaken in the appropriate seasons relevant to the least impact on plant and animal life cycles and maximise success of new BNG and Mitigation interventions.
- 3.15. Site checks will be required by a competent person to ensure BNG and mitigation is being implemented in accordance with the BNG report and the landscape mitigation and enhancement plan. Any alterations to the approved designs or delays to the programme, shall be reviewed by a competent person and may require recalculation of biodiversity impacts. These will be documented and evidence retained to be handed over to the MMP.
- 3.16. This implementation monitoring and competent persons need to be included within the Construction Method Statement. More detail of competent persons is included below in Responsibilities.

Responsibilities

- 3.17. The MMP requires for the provision of competent persons to ensure that the BNG is both implemented and managed appropriately. The details of which are provided below.

Responsibility	Competent Person	Relevant Experience
Monitoring of implementation and handover of landscape	Chartered Landscape Architect or Ecologist with relevant landscape knowledge.	Evidence of work on similar projects and appropriate certificated qualifications

Responsibility	Competent Person	Relevant Experience
Monitoring of implementation and handover of habitats	Ecologist with specific habitat experience and/or Chartered Landscape Architect with relevant ecological knowledge	Evidence of work on similar projects and appropriate qualifications
Oversee the Implementation of the project	Project Manager with experience of overseeing the implementation of ecological habitats and landscape infrastructure for large scale developments	Minimum experience: at least 10 years evidence of successful landscape/habitat creation
Contractor responsible for Implementation of landscape & ecology	Landscape contractor with relevant experience of habitat creation, habitat protection, landscape implementation on a large scale	Minimum experience: at least 10 years evidence of successful landscape/habitat creation
Oversee the Management and Monitoring of the project	BNG Outcome Delivery Organisation and BNG Project Developer	As identified within the BNG Agreement
Maintenance contractor for the Management of the Site	Landscape maintenance contractor with experience of managing habitats and large scale landscape planting	All personnel managing and maintaining the site to be trained for habitat management and all evidence documented
Monitoring of habitats and landscape post implementation	Ecologist with specific habitat experience and/or Chartered Landscape Architect with relevant ecological knowledge	Evidence of work on similar projects and appropriate certificated qualifications

BNG Agreement

3.18. Chapter 7 of the British Standard BS8683:2021 (Section 3, pp23) requires that a BNG Agreement is prepared. This is a signed document that summarises the main aspects of BNG and holds to account those responsible for the project to achieve the BNG on the site for the duration of the project. This includes the BNG project developer, the consenting authority, and the organisation responsible for BNG outcome delivery. The document should include the following:

- Names and signatures of all parties entering into the agreement
- Duration of the BNG in years including start and end date

- Proposed mechanism for securing delivery e.g. through planning obligation or legal contract
- Where payments are involved for BNG delivery, a payment mechanism and schedule detailed
- Confirmation of the type, format, and frequency of any monitoring and reporting in relation to BNG outcomes, as well as the duration and to whom the recipient of the reporting information is.
- Information on mechanism for resolving disputes between those within the BNG agreement
- Summary of the BNG outcomes to be achieved

3.19. The BNG agreement shall be completed prior to Implementation on site and form part of the MMP. It shall be retained for the during of the BNG project.

Implementation to Management Handover

3.20. In Chapter 7 of the British Standard (Section 3, pp24), it is detailed that at post-implementation stage and prior to commencement of the MMP, a site check by a competent person is undertaken (refer to Responsibilities, para 3.17). This is to ensure that all relevant activities identified within the BNG report and the Landscape Mitigation and Enhancement Plan (AW0143-PL-002), have been completed. The evidence is to be included for the handover and includes:

- Area/length/condition of retained habitats;
- Area/length/condition of enhanced habitats;
- Area/length/condition of permanently cleared habitats;
- Area/length/condition of temporarily cleared habitats;
- Area/length/condition of created habitats; and
- Installations of other features such as bat and bird boxes.

3.21. Prior to Management Handover, the management and monitoring requirements within this LEMP with MMP that have been established at the design stage, must be reviewed prior to Management Handover. This is to be undertaken by a competent person (refer to Responsibilities, para 3.17) and amended as necessary to ensure the accuracy of the LEMP with MMP.

The Management and Monitoring Plan

- 3.22. As part of this planning application the Landscape and Ecological Management Plan (LEMP) is combined with the Biodiversity Net Gain Management and Monitoring Plan (MMP), hereby known as LEMP with MMP.
- 3.23. More detail of the Biodiversity Net Gain MMP requirements are identified in Chapter 8 of the British Standard (BS8683:2021 pp24-26), and summarised below, Paragraphs 3.25 and 3.27.
- 3.24. This LEMP with MMP serves to continue the process from the Implementation and Management Handover stage (BS8683:2021, Chapter 7, pp22-23) to the Management and Monitoring of the site for the next 30+ years.
- 3.25. The purpose of the LEMP with MMP is to:
- Set out the long term objectives for the landscape and ecology of the site (in relation to landscape character, visual and BNG requirements);
 - the management requirements of the individual landscape and ecological interventions as well as existing habitats of the site;
 - Prepare a clear maintenance schedule that can be followed over the lifetime of the development i.e. 30+ years; and
 - A defined monitoring and review process, for existing and proposed BNG habitats that have contributed to BNG calculations.
- 3.26. The aims of the LEMP are to:
- To assimilate the solar energy farm into the landscape to reduce impacts on visual receptors and landscape character through the enhancement of the existing landscape and creation of new landscape infrastructure;
 - To maintain public permeability around the solar energy farm, linking with existing PROW and roads;
 - To create new habitat and improve existing habitat connectivity around and within the solar energy farm; and
 - To ensure the establishment and appropriate maintenance of new and existing grasslands, meadows, woodlands, hedgerows, trees, bird and bat boxes to maximise their benefit for wildlife and landscape.
- 3.27. The aims of the BNG MMP are to:
- To monitor, evaluate and report on the effectiveness of the habitat types and features and whether they are achieving their planned condition and ecological function within the BNG timescales;

- Monitor the established BNG through the lifetime of the development;
- Provide annual reports appended to the LEMP with MMP during BNG establishment, to ensure BNG meets its relevant target, and suggesting alterations to management for following years; and
- Review the LEMP with MMP on a 5 year basis following detailed surveys and changes required to management practices following BNG monitoring to keep it relevant and up-to-date.

4. Management and Monitoring of Landscape Types and Habitats

- 4.1. The management objectives set out the reasons for creating these particular landscape types and habitats and the benefits they will bring to the development and the local and wider area.
- 4.2. The monitoring follows the requirements as set out within the British Standard (Section 3, Chapter 8, pp24-25).
- 4.3. The landscape types and habitats that need to be managed are identified in the Landscape Mitigation and Enhancement Plan (AW0143-PL-002), the BNG report and the BNG metric. A more detailed management and monitoring programme is provided for each of the following landscape and habitat types:
 - Proposed grassland and meadow;
 - Native Woodland;
 - Specimen tree planting including orchard trees;
 - Native hedgerow planting;
 - Existing hedgerows including infill/gapping up planting;
 - Mature trees;
 - Ponds;
 - Bird boxes; and
 - Bat boxes.
- 4.4. Within the more detailed management and monitoring programme, each landscape type/habitat will include the following:
 - a description of the landscape types/habitat and its components;
 - the management objectives;
 - a table detailing establishment requirements;
 - a table detailing the management requirements of 30+ years; and
 - where appropriate, monitoring regime for the MMP.
- 4.5. Note, the BNG monitoring regime is only identified where the habitats are referenced within the BNG report. Each habitat will identify the final time to reach target conditions for achieving Biodiversity Net Gain and will identify the monitoring regime for the MMP.

Proposed grassland and meadow

4.6. The grassland will be located within the fenceline beneath the solar arrays. The meadow will be located to areas outside of the fenceline and proposed woodland but within the red line boundary.

4.7. The management objectives are:

- to create high quality meadows for the benefit of wildlife, and local people who use the PROW and permissive paths;
- to create stabilised soil underneath the solar arrays;
- to enhance biodiversity; and
- to improve watercourses and ponds reducing nutrient run off.

4.8. Time to BNG target:

- Meadow grassland is 5 years
- Modified grassland underneath arrays is 1 year

Year 1 Establishment of grassland & meadow	
Timing	Maintenance Task to be undertaken
First 6-8 weeks of growth	Cut to 5cm height. Remove arisings
July	Cut to 5cm height. Remove arisings
September	Cut to 5cm height. Remove arisings
Monthly	Remove pernicious weeds such as dock, thistle and nettle between March and September by hand preferably, or alternatively spot spray with glyphosate.
All cutting timings	Ensure maintenance is undertaken carefully around trees to avoid ring barking of trees. No strimming/mowing should be undertaken within 1m diameter of trees.
BNG Monitor for growth – September	Review sward take up to grassland and meadow and control of pernicious weeds. Any bare patches where seed not taken to be reseeded with appropriate seed mix during September. Record findings within annual BNG MMP report.

Years 2-30+ Years Management of grassland & meadow	
Timing	Maintenance Task to be undertaken
March/April	Cut and collect to 7.5cm height to control grass flush
August	Hay cut. Cut during a period of dry weather. Leave grasses to dry for 2-3 days, rotating grasses to allow for seed drop followed by hay bale.
August for meadow only (after hay cut)	Should grasses dominate, sow yellow rattle (<i>Rhinanthus minor</i>) following hay cut and increase cut and collect between August and March
September-October	Additional cut and collect if required to reduce grasses
March-September	Monitor and remove when necessary pernicious weeds such as dock, thistle and nettle by hand or spot spray with glyphosate.
All cutting timings	Ensure maintenance is undertaken carefully around trees to avoid ring barking of trees. No strimming/mowing should be undertaken within 1m diameter of trees.
BNG Years 2-5 Monitor for growth - September	<p>Review sward take up to grassland if sward has not reached full coverage after each monitor period.</p> <p>Review sward take up to meadow and control of pernicious weeds.</p> <p>Any bare patches where seed not taken to be reseeded with appropriate seed mix during September.</p> <p>Continue to review upto 5 years (BNG target)</p> <p>Record findings within annual MMP report.</p>
BNG Years 5+ Monitor July-August	Monitor grassland and meadow and ensure it is managed appropriately to enhance biodiversity.

Native Woodlands - Mitigation woodland and Biodiversity woodland

4.9. Mitigation woodland is located generally outside of the solar array fenceline and within the red line boundary to reduce the visual impacts from Public Rights of Way and dwellings as well as enhance biodiversity. The biodiversity woodland is generally

adjacent to new woodland to provide important connections with existing woodlands and habitats, and to enhance biodiversity.

4.10. The management objectives are

- to create a high-quality mitigation woodland for the purpose of providing a visual screen inkeeping with landscape character;
- to create a biodiversity woodland to connect existing woodland habitats;
- to enhance biodiversity on the site.

4.11. Time to BNG target:

- Mitigation woodland is 5 years
- Biodiversity woodland is 15 years

Years 1-5 Establishment of Native Woodland	
Timing	Maintenance Task to be undertaken
Monthly inspection	Maintain 1m diameter around each tree free of weeds using mulch mats. Replacement of mulch mats as and when required. Nylon filament trimmers not to be used within 1m diameter of tree base. Herbicide to be avoided Mowing to be avoided within 1m diameter of tree base to avoid damage to trees.
Monthly (increase during dry periods)	Watering to be undertaken once per month within growing season to ensure continued thriving of planting. Trees and whips to receive approximately 5litres each. In unusually dry years the number of operations should be increased as appropriate.
Monthly inspection	Check trees and shrubs are protected and upright. Refirm or replace tree stakes and rabbit shelters as and when required within first 5 years and after periods of windy weather or frost heave. Refirm ground after strong winds or frost heave.
BNG Monitor for growth – Years 1-5	Inspect all woodland types for signs of disease, dead or dying trees. Replace dead or dying trees within first 5 years to ensure 100% establishment by Year 5 (BNG target for mitigation woodland). Should trees within mitigation woodland require replacement at year 5 consider assessing management practices, soil conditions

Years 1-5 Establishment of Native Woodland	
Timing	Maintenance Task to be undertaken
	<p>and watering regime and monitor until establishment has been achieved.</p> <p>Record findings within annual MMP report.</p>

Years 5-30+ Years Management of Native Woodland	
Timing	Maintenance Task to be undertaken
Annual inspection	<p>Maintain 1m diameter around each tree free of weeds using mulch mats. Replacement of mulch mats as and when required. Nylon filament trimmers not to be used within 1m diameter of tree base. Herbicide to be avoided.</p> <p>Mowing to be avoided within 1m diameter of tree base to avoid damage to trees.</p>
2 monthly (increase during dry periods)	<p>Watering to be undertaken 4 times per year during dry periods to ensure continued thriving of planting. Feather trees (as they mature) to receive approximately 25litres each. In unusually dry years the number of operations should be increased as appropriate. Watering may cease after successful establishment of 10 years subject to review.</p>
Annual inspection	<p>Inspect tree stakes and rabbit guards annually or after period of windy weather. Refirm after strong winds or frost heave. Replace where required</p> <p>Remove rabbit guards and stakes after year 10 or after annual inspection identifies their removal due to size limitation</p>
October-March	<p>Formative pruning where required.</p>
BNG Monitor for growth – Years 5-15	<p>Inspect biodiversity woodland (and mitigation woodland if it has not achieved BNG target 5 years) for signs of disease, dead or dying trees. Replace dead or dying trees within first 15 years to ensure 100% establishment by Year 15 (BNG target for biodiversity woodland).</p> <p>Should trees within biodiversity woodland require replacement at years 5, 10 and 15 consider assessing management practices,</p>

Years 5-30+ Years Management of Native Woodland	
Timing	Maintenance Task to be undertaken
	soil conditions and watering regime and monitor until establishment has been achieved. Record findings within annual MMP report.
BNG Monitor for management change – Years 15-30+	Monitor woodlands after establishment for potential changes in management requirements Record findings within annual MMP report and update of LEMP

Specimen tree planting and orchard trees

4.12. Trees located within gapped up hedgerows are to reinstate the vertical structure of the hedgerows due to loss of veteran trees. Orchard trees are provided for the benefit of community and located within the site boundary to the north east of the site in closest proximity to Marden.

4.13. The management objectives are to create:

- A community orchard for local residents that celebrates locally renowned varieties;
- to reduce views through the solar energy farm, where trees within hedgerows are absent;
- to reinstate hedgerow trees important within the landscape character that are currently absent within select hedgerows; and
- to enhance biodiversity and create important wildlife corridors through the site.

4.14. Time to BNG target for specimen trees is 15 years.

Years 1-5 Establishment of Specimen Tree Planting	
Timing	Maintenance Task to be undertaken
Monthly inspection	Maintain 1m diameter around each tree free of weeds using mulch mats. Replacement of mulch mats as and when required. Nylon filament trimmers not to be used within 1m diameter of tree base. Herbicide to be avoided

Years 1-5 Establishment of Specimen Tree Planting	
Timing	Maintenance Task to be undertaken
	Mowing to be avoided within 1m diameter of tree base to avoid damage to trees.
Monthly (increase during dry periods)	Watering to be undertaken once per week within growing season to ensure continued thriving of planting. Standard trees to receive approximately 25-50litres each. In unusually dry years the number of operations should be increased as appropriate.
Monthly inspection	Maintain guying or staking of trees as required; check, repair or replace stakes and ties. Ensure rabbit guards are maintained and replaced where required.
Annual inspection	Inspect tree stakes annually or after period of windy weather. Refirm after strong winds or frost heave.
BNG Monitor for growth Years 1-5 from October-March	Inspect all trees and replace dead or dying trees within first 5 years to ensure 100% establishment by Year 5. Should trees require replacement at year 5 consider assessing management practices, species suitability, disease, drought, soil conditions, watering regime and monitor until establishment has been achieved. If species is not suitable for location alternative species to be sought. Record findings within annual MMP report

Years 5-15 Years Management of Specimen Tree Planting	
Timing	Maintenance Task to be undertaken
Annual inspection	Maintain 1m diameter around each tree free of weeds using mulch mats. Replacement of mulch mats as and when required. Nylon filament trimmers not to be used within 1m diameter of tree base. Herbicide to be avoided. Mowing to be avoided within 1m diameter of tree base to avoid damage to trees.

Years 5-15 Years Management of Specimen Tree Planting	
Timing	Maintenance Task to be undertaken
Monthly (increase during dry periods)	Watering to be undertaken at a minimum of 6 times per year to ensure continued thriving of planting up until year 10. Trees to receive approximately 50litres each. In unusually dry years the number of operations should be increased as appropriate Watering may cease after successful establishment of 10 years subject to review.
Annual inspection	Inspect tree stakes annually or after period of windy weather. Refirm after strong winds or frost heave. Replace tree stakes and ties where required. Readjust ties prior to chafing. Remove tree stakes and ties once trees are established and strong enough to withstand winds. Usually Year 5.
October-March	Formative pruning where required. Specialist pruning required for orchard trees.
Annual inspection	Remove rabbit guards after annual inspection identifies their removal due to size limitation
Annual	Specialist pruning of orchard trees undertaken following annual inspection at appropriate season and specific to each species
BNG Monitor for growth Years 5-15 from October-March	Inspect trees for signs of dead or dying trees. Replace dead or dying trees within first 15 years to ensure 100% establishment by Year 15 (BNG target for gapping up hedgerow). Should trees within gapped up hedgerow require replacement at years 5, 10 and 15 consider assessing management practices, species suitability, disease, drought, soil conditions, watering regime and monitor until establishment has been achieved. If species is not suitable for location alternative species to be sought. Record findings within annual MMP report and alter LEMP accordingly

Years 15-30+ Years Management of Specimen Tree Planting	
Timing	Maintenance Task to be undertaken

BNG Monitor for growth Years 15-30+ from October-March	Annual monitor trees after establishment for potential changes Undertake 5 year tree condition survey to ensure trees are managed and maintained in a safe condition. Pruning where required Record findings within annual MMP report and update of LEMP
Annual	Specialist pruning of orchard trees undertaken following annual inspection at appropriate season and specific to each species

Native hedgerow planting

4.15. Native hedgerows follow the line outside of the fenceline of the solar arrays to screen the fence and arrays behind.

4.16. The management objectives are to:

- establish new hedgerows;
- to provide a strong boundary to the fenced solar energy farm;
- to create new wildlife corridors and enhance biodiversity; and
- to reduce visual impact from receptors on the PROW and permissive path.

4.17. Time to BNG target for Native hedgerow is 5 years.

Years 1-5 Establishment of Native Hedgerow Planting	
Timing	Maintenance Task to be undertaken
Monthly inspection	Maintain hedgerow weed free with mulch. Herbicides to be avoided.
Monthly (increase during dry periods)	Watering to be undertaken at a minimum of monthly during growing season to ensure continued thriving of planting. Whips to receive approximately 5litres each. In unusually dry periods the number of operations should be increased as appropriate.
Monthly inspection	Replace rabbit guards, restake and refirm as and when required, particularly following strong winds and frost heave.
Year 1 – March-April	Trim lateral growth by 50% to encourage dense hedgerow growth

Years 1-5 Establishment of Native Hedgerow Planting	
Timing	Maintenance Task to be undertaken
Years 2-5 - March and September	Lightly trim allowing the hedgerow to increase in size each year.
BNG Monitor for growth Years 1-5 from October-March	<p>Inspect all hedgerows for signs of dead or dying plants. Replace dead or dying hedge within first 5 years to ensure 100% establishment by Year 5 (BNG target for native hedgerow).</p> <p>Should hedgerow require replacement at year 5 consider assessing management practices, soil conditions and watering regime and monitor until establishment has been achieved.</p> <p>Record findings within annual MMP report.</p>

Years 5-30+ Years Management of Native Hedgerow Planting	
Timing	Maintenance Task to be undertaken
September	Trim hedgerow and remove arisings to achieve a height of 2.5m. Early cuts may be advised for initial flush if causing access issues.
BNG Monitor for growth Years 5-30+ from October-March	<p>Monitor hedgerows after establishment for potential changes and losses</p> <p>Remove any dead hedging if occurred and gap up where required. Determine reason for hedgerow loss and alter species or management practice accordingly</p> <p>Record findings within annual MMP report and update of LEMP</p>

Existing hedgerows and infill gapping

4.18. Existing hedgerows are located throughout the site and to the site boundaries. They are an important existing structure to the site, which over time has eroded. The gapping up of the hedgerows includes specimen trees, which are managed separately above.

4.19. The management objectives are:

- to ensure the continued thriving of the existing hedgerows;

- to maintain high quality hedgerows to the site for visual amenity that includes gapping up existing hedgerows;
- to provide a succession of hedgerow trees for longevity of existing field boundaries; and,
- to retain important wildlife corridors within and to the boundaries of the site.

4.20. Time to BNG target for gapping up of existing hedgerows is 15 years. This is longer than native hedgerows as it includes the trees for which their individual management is detailed separately above.

Years 1-5 Establishment of Gapped up Hedgerow Planting	
Timing	Maintenance Task to be undertaken
Monthly inspection	Maintain hedgerow weed free with mulch. Herbicides to be avoided.
Monthly (increase during dry periods)	Watering to be undertaken at a minimum of monthly during growing season to ensure continued thriving of planting. Whips to receive approximately 5litres each. In unusually dry periods the number of operations should be increased as appropriate.
Monthly inspection	Replace rabbit guards, restake and refirm as and when required, particularly following strong winds and frost heave.
Year 1 – March-April	Trim lateral growth by 50% to encourage dense hedgerow growth
Years 2-5 - March and September	Lightly trim allowing the hedgerow to increase in size each year.
BNG Monitor for growth Years 1-5 from October-March	<p>Inspect all gapped up hedgerows for signs of dead or dying plants. Replace dead or dying hedge within first 5 years to ensure 100% establishment.</p> <p>Should hedgerows require replacement at year 5 consider assessing management practices, soil conditions and watering regime and monitor until establishment has been achieved.</p> <p>Record findings within annual MMP report.</p>

Years 5-30+ Years Management of Gapped up Hedgerow Planting	
Timing	Maintenance Task to be undertaken
September	Trim hedgerow and remove arisings to achieve a height of 2.5m. Early cuts may be advised for initial flush if causing access issues.
Annual from October-March	Remove dead hedging and gap up where required. Determine reason for hedgerow loss and alter species or management practice accordingly
BNG Monitor for growth Years 5-15 from October-March	Inspect hedgerow for signs of dead or dying hedge species and trees. Replace dead or dying hedging and trees within first 15 years to ensure 100% establishment by Year 15 (BNG target for gapping up hedgerow). Should hedgerow within gapped up hedgerow require replacement at years 5, 10 and 15 consider assessing management practices, soil conditions and watering regime and monitor until establishment has been achieved. Record findings within annual MMP report.
BNG Monitor for growth Years 15-30+ from October-March	Monitor hedgerow after establishment for potential changes and losses Remove dead hedging and gap up where required. Determine reason for hedgerow loss and alter species or management practice accordingly Record findings within annual MMP report and update of LEMP

Years 1-30+ Management of Existing Hedgerows	
Timing	Maintenance Task to be undertaken
September (April)	Cut hedge to retain current height of c.2m. Remove arisings. Hedge to be cut in September outside of breeding bird season. Initial cut in April may be required for access and amenity purposes, although should be avoided where possible
Annual – October-March	Any diseased or dying stands to be removed and replaced by gapping up and maintained according as Native Hedgerows above

Years 1-30+ Management of Existing Hedgerows	
Timing	Maintenance Task to be undertaken
Potential Year 5 & Year 15 management October-March	<p>Should hedgerows show signs of thinning at base, hedgerows should be allowed to grow unmanaged over a period of 5-7 years and phased laying of hedgerows i.e. 1/3 of hedgerow laid per year in autumn/winter.</p> <p>Relaying of hedgerows can be repeated 10 years after initial lay, or maintained at 2m height thereafter, with gapping up where required.</p>

Mature trees

4.21. Mature trees are located throughout the site within the existing hedgerows and along the boundaries of the site. They are an important structure to the site.

4.22. The management objectives are:

- to ensure the trees are retained for the purpose of visual and landscape amenity;
- of benefit to wildlife; and,
- to ensure they are safe for the purposes of proximity to working areas within the solar energy farm, the solar cells and public access/permissive paths.

Years 1-30+ Management of Mature Trees	
Timing	Maintenance Task to be undertaken
Annual – March to October	Undertake a visual tree safety inspection to mature trees during March to October by an approved arboriculturalist within the site boundary for signs of disease, decay or dead branches.
Annual – October-March	Remove dead, damaged or decaying branches only if they pose a risk to safety. Retain deadwood on site if practicably possible.
Every 5 year inspection March-October	Undertake a full tree condition survey to mature trees and any trees that mature within the site thereafter, that are publicly accessible or are a risk to health and safety within the site
Every 5 year works	Follow recommendations of arboriculturalist in terms of management. Ensure any works to trees that may involve

Years 1-30+ Management of Mature Trees	
Timing	Maintenance Task to be undertaken
	protected species such as bats or nesting birds, an approved ecologist undertakes assessment prior to removal

Ponds

4.23. Ponds are an important landscape characteristic of the area, and formation of new ponds will further extend the water body provision for the site and the surrounding area.

4.24. The management objectives are:

- to ensure the ponds enhance biodiversity; and,
- add to the landscape character of the local area.

4.25. Time to BNG target for ponds is 3 years.

Years 1-30+ Management of Ponds	
Timing	Maintenance Task to be undertaken
BNG Monitor for establishment Year 1, undertaken monthly	<p>Monitor the natural establishment of ponds with no erosion to embankments.</p> <p>Repair erosion should this occur.</p> <p>Should natural establishment not be successful come September consider plug planting of appropriate native species in Spring/Summer of following year as an appropriate means to establish ponds.</p> <p>Record findings within annual MMP report and amend LEMP accordingly</p>
BNG Monitor Years 2-3 - Twice annual inspection	<p>Monitor by an ecologist for continued establishment to ensure appropriate progress of the natural establishment of ponds, water levels are maintained, no silting, correct balance of aquatic and marginal plants and no significant encroachment or succession with pioneer tree species to achieve BNG target of 3 years.</p>

Years 1-30+ Management of Ponds	
Timing	Maintenance Task to be undertaken
	<p>Should natural establishment not have been successful in September of Year 2 or Year 3 consider the water levels and whether the ponds need to be relined, any additional planting requirements for spring/early summer of following year, such as hydroseeding as an appropriate means to establish ponds.</p> <p>Record findings within annual MMP report and amend LEMP accordingly</p>
BNG Monitor annually during August with 2 year maintenance September-November	<p>Continue to ensure successful establishment of ponds if not achieved in Year 3. Works to be determined following establishment of ponds and further to annual inspections by ecologist.</p> <p>Every 2 years, reduce the encroachment of self-set willows and alder if they cause shading or hinder high quality pond</p> <p>Record findings within annual MMP report and amend LEMP accordingly.</p>

Bird Boxes

4.26. These will be located within existing mature trees along the field boundaries within the site and also within the barn.

4.27. The management objectives are

- to ensure the boxes function for the benefit of their intended species; and
- to enhance biodiversity within the site.

4.28. Bird boxes are not included within the BNG Report. Management is only recommended for first 5 years.

Years 1-30+ Management of Bird Boxes	
Timing	Maintenance Task to be undertaken
Annual Winter Years 1-5	Nest boxes to be cleaned out and old nests removed annually between November and February.

	<p>Replace bird boxes damaged or fallen from trees within first 5 years</p> <p>Monitor and record their use within the MMP report</p>
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Bat Boxes

4.29. These will be located within the existing mature trees along the field boundaries within the site and also with the barn.

4.30. The management objectives are:

- to ensure the bat boxes function for the benefit of their intended species; and
- to enhance biodiversity within the site.

4.31. Bat boxes are not included within the BNG report. Management is only recommended for first 5 years.

Years 1-20+ Management of Bat Boxes	
Timing	Maintenance Task to be undertaken
Annual Years 1-5	<p>Boxes only to be replaced if they become damaged. No specific management required. Boxes must not be disturbed except by licenced bat ecologist.</p> <p>Record their use within the MMP report</p>
Suggested Annual summer inspection 6-30+	Suggest involvement of local bat group to undertake annual summer inspections to determine bat usage of boxes.

5. Reporting and Review

- 5.1. This LEMP with MMP is to be subject to an annual report to ensure appropriate establishment to achieve BNG targets and their continued maintenance of BNG habitats. It is also subject to annual review for maintenance purposes and to meet the MMP requirements to ensure survey methods, timing and frequency are consistent, as well as ensuring surveyors are experienced to aid the future interpretation and assessment of change. Any changes to the management and monitoring are to be appended to the LEMP with MMP and handed over to any parties undertaking management and monitoring (BS8683:2021, Chapter 8, para 8.2, pp25).
- 5.2. All monitoring reports shall be collated annually and appended to the LEMP with MMP and shall be submitted to the body specified within the planning conditions. All monitoring information shall be made available to third parties for the purpose of reporting on progress towards attaining the BNG outcomes (BS8683:2021, Chapter 8, para 8.3, pp25).
- 5.3. A more detailed review of the LEMP with MMP is recommended at 5 yearly intervals to ensure the LEMP with MMP reflects any changes made to the site and includes any new requirements, and any changes to monitoring. This will be informed by:
 - the establishment or progress towards establishment of landscape mitigation planting and BNG targets;
 - the results of inspections and monitoring being duly accounted for with required changes if any;
 - changes in survey methodology, timing and frequency, if required;
 - changes required from detailed surveys such as arboricultural assessments; and
 - responding to any changes in environmental legislation and policy (if required).
- 5.4. All BNG records shall be kept and maintained for the duration of the project. Records relating to biodiversity outcomes delivered shall be made available to third parties as required (BS8683:2021, Chapter 8, para 8.4, pp25).
- 5.5. Maintaining up-to-date records of monitoring reports, survey records and management interventions is essential to allow for smooth transitions in the event of changes to management team, owners or surveyors.