

Staveley Solar Farm Environmental Enhancement Strategy



This Environmental Enhancement Strategy and Management Plan has been prepared by:

Pegasus Environment, part of Pegasus Group

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Contents

	ENVIRONMENTAL ENHANCEMENT	3
01	PROPOSALS	5
02	SURROUNDING AREA	S.
О3	LANDSCAPE PROPOSALS	1
04	ECOLOGICAL PROPOSALS	15
05	HERITAGE OF THE SITE	19
06	FARM DIVERSIFICATION	2
07	CARBON SEQUESTRATION AND SOIL IMPROVEMENT	23
80	COMMUNITY BENEFIT	25
09	MAINTENANCE AND MANAGEMENT	27
10	SUMMARY	35

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ENVIRONMENTAL ENHANCEMENT STRATEGY OBJECTIVES

- To preserve and enhance existing landscape features and supplement with new planting to strengthen the landscape framework of the Site and the local landscape, respecting local character, and to help assimilate the Proposed Development in the landscape and views.
- To implement a range of on-site habitat enhancement and improvements, to encourage wildlife and enhance biodiversity.
- To provide new hedgerow, hedgerow tree and woodland planting to aid in preserving the visual amenity of local residents and visitors to the surrounding area.
- Reducing the use of chemical fertilisers will make an important contribution to managing nitrate levels and soil degradation. With the land having a period of time to rest following intensive agricultural activity it is considered the soil health of the Site would improve greatly over the lifetime of the Solar Farm.
- Once the Solar Farm is operational, livestock would continue to graze under the solar panels, and so it would remain subservient to the main agricultural use of the farm. This practice is currently utilised to good affect at the majority of Solar Farms around the UK and therefore the development would lead to limited loss of natural resources.
- Farm diversification; regular income from the Solar Farm would make an important contribution to the continued viability of the farm holding. Once renewable electricity generation has ceased, the land would be returned to agricultural use.
- To contribute to local sustainability initiatives and to improve community facilities within the Site and surrounding area.



Viewpoint 6 - Photomontage (Year 15) - PRoW near the western edge of Morcott, looking northwest to northeast







PROPOSALS

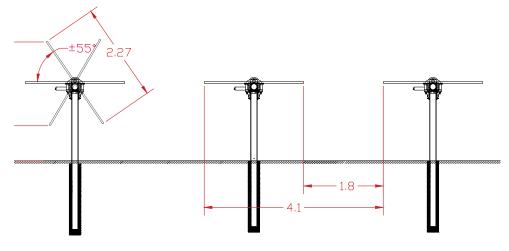
- 1.1 The Proposed Development would have an export capacity of 40MW and will provide a reliable source of clean renewable energy which will be supplied to domestic and commercial consumers via the District Network Operator ("DNO") grid network. The main element of the Proposed Development comprises the construction, operation, management and decommissioning of a grid connected Solar Farm with associated infrastructure.
- 1.2 Planning permission is sought for a temporary period of 40 years which would commence from the date that electricity is first exported to the grid. At the end of this period, the solar panels and associated equipment and infrastructure will be removed. Except for the proposed 33kV Substation and associated infrastructure and access to it, and the Anglian Water associated infrastructure (including the 33kV Customer Substation and DNO switchgear building), which will be required on a permanent basis as it will become part of the local electricity distribution network.
- 1.3 The Proposed Development comprises primarily of solar photovoltaic ("PV") panels arranged in linear rows. The solar panels will utilise single axis tracker technology to allow the movement of the sun to be followed, thereby increasing efficiency of the solar arrays. The elevation angles of the panels would differ by +/- 55 degrees in the morning and 125 degrees in the evening, tilting east through to west as the sun rises and sets. The panels will be constructed of a material designed to absorb rather than reflect sunlight and therefore have limited reflectivity when viewed in the wider landscape.
- 1.4 The arrangement and design of the solar panels has been designed to ensure the Site will be capable of dual use farming during its operational period. Each panel will be located 0.8m from the ground at its lowest point, and 2.7m at its highest. Small livestock (such as sheep which currently graze on the Site) will therefore continue to be able to graze on the land between and amongst the panels.
- 1.5 The topography of the northern parcel lies at approximately 100 m above ordnance datum (AOD) in the south-eastern extent, rising to approximately 105m AOD along the western boundary. The topography of the eastern parcel varies from approximately 90m AOD in the southern extent and 108m AOD in the northern extent. The topography of the western parcel varies from approximately 95m AOD in the southern extent, rising to approximately 110m AOD in the northern extent.
- 1.6 Access to the Proposed Development during the construction and operational periods will be obtained via three existing agricultural field gate accesses, to be upgraded, as necessary. Access to the northern land parcel on the eastern side of Morcott Road will be taken from Pinfold Lane. The other two land parcels will be accessed directly from Morcott Road. The access points will link to a network of internal tracks around the Site. Internal access tracks will follow field boundaries and utilise existing gaps in the vegetation where possible, or existing field access points.



Tracker Solar Panels

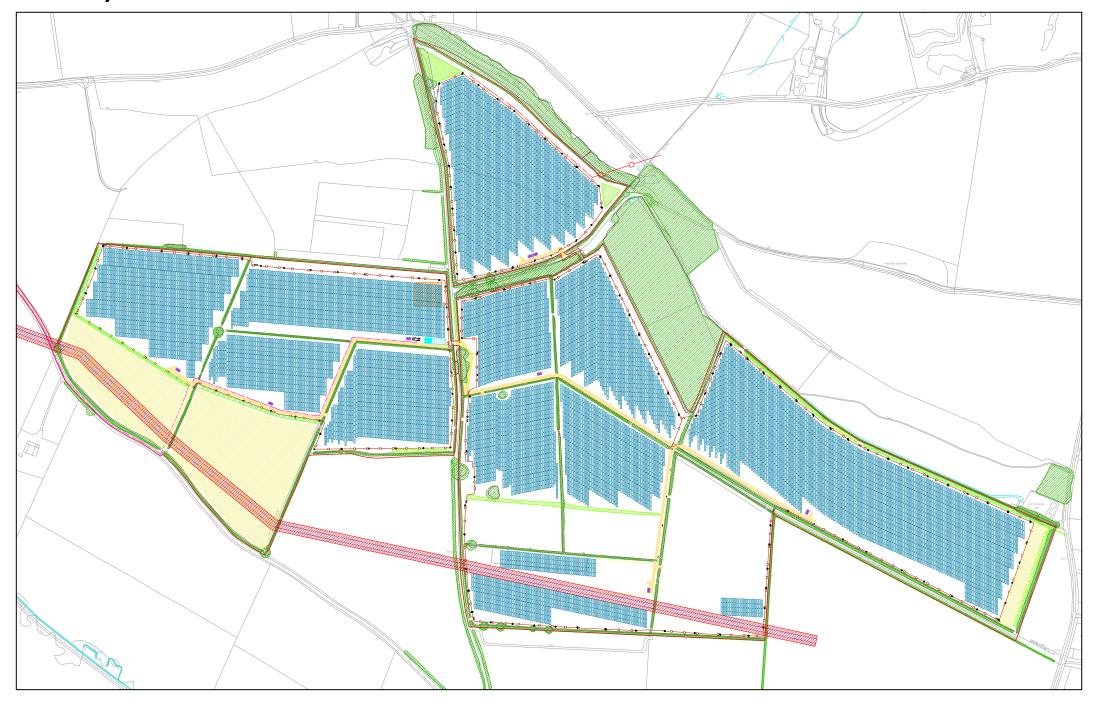


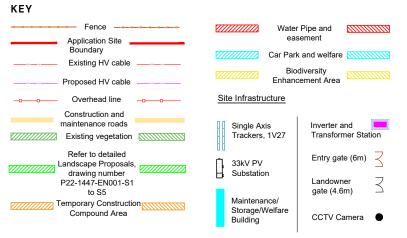
Tracker Solar Panels

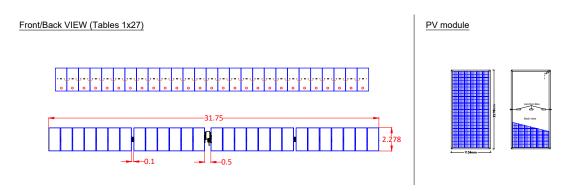


PV Detail

Site Layout Plan











SURROUNDING AREA

- 2.1 The surrounding area mostly comprises agricultural fields, pockets of woodland interspersed with fields that are separated by dense hedgerows and a range of small and large trees. However, there are some urbanised features present such as the surrounding highway network, which includes Wing Road and the A47 to the south of the Application Site as well as the Birmingham to Peterborough railway line to the north of the Application Site.
- 2.2 The rural valley landscape surrounding also includes several small settlements including Pilton to the north; South Luffenham to the east; Morcott to the south; and Wing to the west as well as isolated farmsteads and clusters of dwellings, including those adjacent to Glebe Road towards the east of the Application Site.
- 2.3 The settlements of Wing, Morcott, South Luffenham and North Luffenham each contain a designated Conservation Area and all of the surrounding settlements, including Pilton situated close to the northern boundary, contain clusters of Listed Buildings.
- 2.4 Four scheduled monuments have been identified within a 3km radius of the Proposed Development including the Scheduled Earthwork in Morcott Spinney, approximately 0.6km from the north eastern boundary of the Application Site (List UID 1005042); Moated site at North Luffenham, approximately 1.3km to the north east of the Application Site (List UID 1012106); Maze to the south east of Wing (List UID: 1019306) approximately 1.4km to the west of the Application Site; and the Village Cross at junction of Well Cross and King Edward's Way, circa 2.8km to the north-east of the Application Site at its closest point.

- 2.5 Rutland Water, which is a designated Special Protection Area and Site of Special Scientific Interest, is situated 2.7km north of the main Application Site and at its closest point 5m east from the underground cable route.
- 2.6 Seven statutory designated sites for nature conservation are located within 5km of the Site; the closest of which is Luffenham Heath Golf Course Site of Special Scientific Interest ("SSSI"), which is located approximately 2.5km east of the Site. Rutland Waters, which is designated as a SSSI, Special Protection Area ("SPA") and Ramsar site is located approximately 2.7km north of the Site. Twenty-seven designated Local Wildlife Sites ("LWS") and three candidate LWS are located within 2km of the Site, the closest of which is Ragged Robin Grassland, Wing LWS located approximately 0.4km west of the Site.
- 2.7 The Application Site does not contain any Public Rights of Way. The closest PRoW (E279) to the Application Site is situated approximately 0.3km distance from the northern boundary of the Application Site at the closest point. This bridleway has an east/west orientation, linking the settlements of Pilton and South Luffenham.
- 2.8 The Application Site is not located within or adjacent to any statutory environmental or landscape designations. There are also no designated heritage assets within or adjacent to the Application Site nor does the Application Site fall within a Conservation Area.





LANDSCAPE PROPOSALS

- 3.1 As part of the Proposed Development, retained hedgerows and trees within the Site would be managed and enhanced with new infill hedgerow planting, and new native hedgerow and hedgerow trees would be planted throughout the Site, along with areas of native woodland and scrub planting. Landscape proposals also would include new grassland for sheep grazing (within the fenced development area); new speciesrich wildflower grassland along field margins beyond proposed fencing and new species-rich wildflower grassland and wild bird seeded areas within the biodiversity enhancement area ("BEA") proposed across the south-western extent of the Site.
- 3.2 Landscape proposals would preserve, enhance and supplement retained hedgerows and trees to strengthen the landscape framework of the Site and the local landscape. Landscape proposals have considered published landscape guidelines and opportunities; reflect and respects local landscape character; and would assist in assimilating the Proposed Development in views over time. Landscape proposals also take account of ecology and drainage requirements and would increase the biodiversity value of the Site.
- 3.3 Design considerations to minimise impacts on landscape and visual amenity and landscape proposals throughout the Site refer to:
 - The height of proposed solar panels being minimised as far as possible. Solar panels would be a maximum of 2.7m high above ground level, at maximum tilt (+/- 55 degrees);
 - Careful siting of the Proposed Development on higher ground on the south facing slopes of the valley to maximise screening by existing hedgerow, woodland and landform, and where there are opportunities for new hedgerow and tree planting which would provide filtering and screening of the Proposed Development overtime;
 - Solar panels within the south-eastern part of the Site being set back from the eastern Site boundary to increase the distance between the proposed solar farm and residential properties on the eastern side of North Luffenham Road, and to provide space for proposed woodland planting which over time would provide filtering and screening of the proposed solar farm in limited property views westwards, and would provide space for replacement scrub planting and additional wildflower grassland within this south-eastern part of Site contributing to increased Site biodiversity;
 - Proposed inverters and transformer stations would either be a grey or dark green colour to assist with blending the Proposed Development into the landscape;

- Setting back the solar panels and infrastructure from hedgerow field boundaries and field trees to avoid impacts on these landscape features, combined with reinforcing and enhancing boundary hedgerow;
- Sensitively managing existing hedgerows across the Site to increase height and improve their structure, which will in turn aid in filtering and screening views of the Proposed Development;
- Enhancing existing hedgerow and creating new hedgerow boundaries along the perimeter of the Site to strengthen the landscape framework and character of the Site and the local landscape;
- Hedgerow along the southern boundary of the proposed solar farm, within the centre of the Site and east of Morcott Road, would replicate a former hedge line orientated east west, removed during previous activity in this part of the Site;
- Proposed woodland, which would be in keeping with existing woodland, would strengthen the existing landscape structure and increase Site biodiversity, and would overtime provide heavy filtering and screening of the Proposed Development in some views from the north, east and west;
- Planting species-rich grassland on the land beneath and surrounding the panels and the creation of botanically diverse species-rich wildflower grassland along field margins and within the BEA, which mostly comprises organic wild bird seed cover; and
- Creation of swales seeded with a species-rich meadow grassland mix suitable for wetland environments.
- 2.4 Existing vegetation across the Site would be retained except for short lengths of hedgerow to accommodate the proposed access track and to allow access via a proposed gate into a south-eastern part of the Proposed Development. Well-established hedgerow field boundaries, including few hedgerow trees, are key features of the local landscape, which would be set within a species-rich wildflower grassland buffer to ensure root protection zones are respected. Mature field trees within the Site also would be retained and accommodated within the Proposed Development. Planting proposed across the Site reflects species of local provenance to further reinforce the character of the landscape overtime.

- 3.5 Proposing more mature hedgerow trees would provide increased filtering and screening of the proposed solar panels and would provide a sense of scale and structure during the early life of the scheme. Planting typically would take place during the planting season November March. Proposed hedgerow would be maintained at a minimum height of 3 m, and proposed trees and woodland would be allowed to grow to their mature height.
- 3.6 Proposed native hedgerow planting would include Hawthorn (Crataegus monogyna) as the dominant species, with smaller quantities of:
 - Field Maple (Acer campestre);
 - Hazel (Corylus avellana);
 - Hawthorn (Crataegus monogyna);
 - · Holly (llex aquifolium);
 - Blackthorn (Prunus spinosa);
 - · Dog Rose (Rosa canina); and
 - Guelder Rose (Viburnum opulus)
- 3.7 Proposed native shrub planting within the south-eastern part of the Site would comprise the same species above, with the addition of Spindle (Euonymus europaeus).

- 3.8 Proposed native trees of a more mature height (in hedgerow, and in some instances in woodland, providing greater height) include:
 - · Field Maple (Acer campestre);
 - · Silver Birch (Betula pendula);
 - · Crab apple (Malus sylvestris);
 - · Wild cherry (Prunus avium);
 - Common Oak (Quercus robur); and
 - Small Leaved Lime (Tilia cordata)
- 3.9 Proposed native woodland planting would include English oak as the dominant species, with smaller quantities of:
 - Field maple (Acer campestre);
 - Common Alder (Alnus glutinosa);
 - Silver Birch (Betula pendula);
 - · Downy Birch (Betula pubescens);
 - · Holly (Ilex aquifolium);
 - · Wild cherry (Prunus avium);
 - · Common Oak (Quercus robur); and
 - Common whitebeam (Sorbus aria)



Crataegus monogyna



Blackthorn in flower



Malus sylvestris



Crab apple in flower



ECOLOGICAL PROPOSALS

- 4.1 The layout of the Proposed Development has been designed to avoid higher-value habitats including field boundary features such as trees, hedgerows, ditches, and ponds within and adjoining the Site.
- 4.2 Management practices through the operational lifetime of the development are proposed that will enhance the Site for the benefit of local wildlife. The design and long-term management of the land seeks to maintain and improve functionality through protecting and enhancing potentially important wildlife corridors.
- 4.3 Habitat enhancement measures proposed for the Site include:
 - The inclusion of Biodiversity Enhancement Areas ("BEA") covering
 7.63 hectares that will contain Species-rich wildflower grass mix and organic wild bird seed mix.
 - The creation of species-rich wildflower grass mix along field margins.
 - The creation of wildflower meadow under proposed hedgerow and hedgerow enhancement.
 - The creation of **native scrub planting** and **native woodland cover**.
 - 1,022m of proposed new hedgerow.
 - · 95m of new hedgerow infill.
 - 156 proposed new trees.
 - Additional bird nesting provision will be made through the inclusion of 15 bird boxes erected on semi-mature/mature trees located along the field boundaries within and bordering the Site.
 - Additional bat roost provision will be made through the inclusion of a minimum of 15 bat roost boxes on suitable trees along the field boundaries within and bordering the Site.
 - Additional hedgehog habitat provision will be made through
 the inclusion of ten hedgehog boxes within and bordering the
 Site. Precise locations will be subject to confirmation during the
 installation but will be focussed within sheltered and undisturbed
 locations within woodland and along boundary features such as
 hedgerows.
 - Additional habitat provisions for invertebrates will be made through the inclusion of ten insect hotels/boxes erected within and bordering the Site.
 - A minimum of five hibernacula features will be created within areas of species-rich meadow, adjacent to either a hedgerow or woodland; each will measure approximately 2m x 2m x 1m in height. The hibernacula will be constructed from logs and / or clean bricks/rubble sourced locally as far as possible, or with 'clean' materials brought in from elsewhere where this is not possible and topped with soil and earth. The hibernacula will provide shelter and overwintering refuge for amphibians, reptiles, small mammals and invertebrates.

Mammal gates or small gaps will also be provided at the base of the
perimeter fence which would allow wildlife to move into and out of
the Site and maintain connectivity with the wider landscape. The
perimeter fencing will include 100mm gaps at the base as well as
mammal gates 200m x 200m at suitable locations to allow for the
unimpeded passage of small animals and local wildlife through the
Site.

Species Rich Grassland

- 4.4 Construction of the Proposed Development would involve temporary disturbance to low ecological value arable and improved grassland, with extensive areas of grassland of higher biodiversity value established thereafter and maintained for the lifetime of the operational Site. Over time the areas of species-rich grassland will restore nutrients to the soil and allow it to recover so it can serve future farming generations.
- 4.5 Construction of solar farms requires very low levels of direct and permanent land take. The BRE guidance¹ states that, as panels are raised above the ground on posts, approximately over 95% of a site used for solar farm development is still accessible for plant growth and complementary agricultural activities, such as conservation grazing (BRE, 2014). The RSPB briefing note on solar energy also states that biodiversity gains are possible where intensively cultivated arable or grassland is converted to extensive grassland and/or wildflower meadows between and/or beneath solar panels and in field margins (RSPB, 2014²).
- 4.6 A significant benefit to wildlife would therefore be achieved through the creation of species-rich grassland across the Site, including new wildflower meadows replacing existing intensively managed arable and grassland. This structurally and species-diverse grassland will provide refuge and foraging resources for a range of wildlife and would over time benefit a much wider variety of amphibians, reptiles, small mammals, bats, and birds, with the cessation of intensive agricultural management and pesticide applications. Birds such as Skylark and Fieldfare breed on these species-rich grasslands and benefit from the rich insect life, as this provides essential feeding for chicks.
- 4.7 Flower-rich habitats, such as meadows, are crucial to supporting pollinators including bees, moths, butterflies, and hoverflies, by providing good sources of nectar and pollen throughout the summer, as well as shelter and nest sites. An independent scientific review commissioned by Defra in 2013³ identified the loss of flower-rich habitat as the likely primary cause of the recorded decline in the diversity of wild bees and other pollinating insects. Crops such as raspberries, apples, and pears, in particular, need insect pollination to produce good yields of high-quality fruit.

https://www.bre.co.uk/filelibrary/pdf/Brochures/NSC-Biodiversity-Guidance.pdf

² RSPB (2014) Solar Energy: RSPB Policy Briefing, December 2014. RSPB: Sandy. Available at https://www.rspb.org.uk/Images/Solar_power_briefing_tcm9-273329.pdf.

³ Vanbergen A.J., Heard M.S., Breeze T., Potts S.G., Hanley N., (2014) 'Status and value of pollinators and pollinating services.'

Hedgerows and Buffer Planting

- 4.8 The hedgerows due to their linear form would function as ecological wildlife corridors, linking isolated trees, existing areas of woodland and existing hedgerows within the Site, to woodland belts and other landscape features in the surrounding landscape. Improving and reinstating hedgerow boundaries within the Site would provide further habitat connectivity across the Site.
- 4.9 The arrangement of the panels within the Site allows for generous margins to be implemented around existing hedgerows, trees, and areas of woodland to respect the root protection zones. The invertebrates attracted to these field margins would provide food for a variety of once common farmland bird species such as Lapwing.
- 4.10 The structure of proposed hedgerows and buffer planting would be further enhanced by introducing native species of different ages to create habitat opportunities.

Native Hedgerow and Scrub Planting

- 4.11 Native hedgerow and scrub planting and infilling will use native species, as identified in the Detailed Landscape Proposals (Drawing numbers: P22-1447_EN_0001_Rev C_S1 P22-1447_EN_0001_Rev C_S5). Following planting, hedgerows will be seeded with Emorsgate EH1 Hedgerow Mixture or similar understory mix.
- 4.12 Hedgerows and scrub will be notch planted in double or triple staggered row at five or seven plants per linear metre, respectively.
- 4.13 The exact timing of the proposed hedgerow and scrub planting will be dependent on the ground conditions, but planting would take place between the months of December-February inclusive. It is expected that ground conditions and climate will allow for earlier planting (i.e. before January), and this will allow the plants more time to establish a network of feeder roots before the onset of spring. Planting would avoid freezing and waterlogged conditions.
- 4.14 Hedgerow planting as well as species-rich wildflower meadow creation will benefit a range of species including passerine birds, bats, amphibians, reptiles, small mammals such as hedgehog, brown hare, and invertebrate species.
- 4.15 Vegetation cuttings will be retained in the Site and piled at selected locations along field margins to provide additional undisturbed refuge opportunities for wildlife including invertebrates, small mammals, reptiles and amphibians where present.



Wild bird cover seed mix



Species-rich wildflower grassland mix



Crab apple flowers

Trees and Woodland Planting

- 4.16 All standard trees will be planted in separate pits (1m x 1m x 900mm), which shall be backfilled with a mixture of approved topsoil and tree and shrub planting compost at a rate of one part compost to two parts topsoil. Root barriers will be employed near services.
- 4.17 The bottom of each pit will be broken up to a depth of 150mm and the sides will be scarified. Each tree shall be planted centrally within the pit to the original root collar and secured by two untreated stakes (1.4m minimum length), with approved ties.
- 4.18 After planting, all trees will be watered-in and a mulch layer of 1m diameter approved forest bark will be spread over the tree pit to a depth of 50mm. A biodegradable spiral guard will be fixed to the base of each tree to protect it from rabbit damage and potential strimmer damage.

Wild Bird Seed Mix

- 4.19 A single field within the Biodiversity Enhancement Areas will be sown with Hurrells 2 Year Wild Bird Cover Seed Mix or Hurrells 1 Year Wild Bird Cover Seed Mix, or similar (a seed mix containing at least 6 seed bearing crops, not maize). This area would provide important food resources (small seeds) for farmland birds, especially in autumn and winter. The flowering plants would also benefit mammals, amphibians, reptiles and invertebrates.
- 4.20 One-year or two-year mixes can be used. Throughout the summer the plants would grow and flower. By autumn, the plants would set seed. This would provide the much-needed supply of small seeds throughout the winter. For two-year mixes, during the second spring, biennial plants, such as kale, would show continued growth and development.

Ecological Monitoring

4.21 The development of the biodiversity interest of the Site would be monitored over time by a suitably experienced ecologist. A walkover survey would be undertaken on years 1, 3 and 5 and 10. This would involve an inspection of the woodland, hedgerows, grassland, and any other ecological features to ensure that they are being managed in a manner suitable for the enhancement of wildlife interest. Bird, bat, insect and hedgehog boxes and hibernacula would also be checked to ensure they are in place and in working order. The results of these monitoring surveys would be used to inform future changes in management and the need or otherwise to replace missing boxes or rebuild damaged hibernacula.





Hawthorn

Hazel



Insect Tower from BEMP



Hibernacula from BEMP



Bat Box from BEMP



Bat Box from BEMP



HERITAGE OF THE SITE

- 5.1 No designated heritage assets lie within the Site.
- 5.2 The majority of the Site was utilised as an Ironstone Quarry comprising extraction areas and an associated railway during the mid-20th century, which will have removed or heavily disturbed any below-ground archaeological remains across their footprints.
- 5.3 The Pilton Ironstone Company opened a quarry in 1919 which covered the majority of the Site (Parcels 1 and 3), discussed further in Section 5 of the submitted Heritage Statement. It is documented that during the 1920's, approximately 40 men were employed there and both ore and over-burden were excavated by steam-driven diggers. By 1930 there were two large quarries on the eastern side of Morcott Road, and one on the western side.
- 5.4 A number of quarries were established in this area, the first of which was opened at Cottesmore in 1882, with many opening from 1914 onwards. A second ironstone quarry was recorded c. 440m west of the Site. The quarries were linked to the main line railways in a network of small mineral lines, including the Pilton mineral railway which crosses the Site. The railways incorporated viaducts, bridges and loading inclines, and at the village crossroads at Pilton there are remains of railway cuttings and bridges, with a sinuous quarry face to the south.
- 5.5 There is scarce evidence for prehistoric activity in the wider surrounds of the Site, with a flint scatter identified in the vicinity of the Morcott Spinney earthwork and comprising finds of Mesolithic, Neolithic and Bronze Age date. There is no evidence to suggest that prehistoric activity was focussed within the Site itself. On this basis, the potential for significant archaeological remains of prehistoric date within the Site is considered to be low.
- 5.6 Roman activity has been recorded in the surrounds of the Site, comprising a potential occupation site and pottery sherds identified during the quarrying of ironstone c. 160m north of the Site. There is no evidence to suggest that Romano–British activity was focussed within the Site itself. On this basis, the potential for significant archaeological remains of Roman date within the Site is considered to be low.

- The majority of the land within the Site was historically located within the parish of Morcott and the northern extent of Site was historically located within the parish of Pilton, and these may have formed part of the agricultural hinterland to these settlements during the medieval period. There is no evidence to suggest that medieval settlement activity is focussed within the Site; rather it is considered to have been used as agricultural land. On this basis, the potential for significant archaeological remains of medieval date within the Site is considered to be low.
- 5.8 As noted above, the land within the Site was in use as agricultural land until the mid-19th century when it was in use as an Ironstone Quarry with associated extraction pits and a railway. The former Morcott Lodge within the Site was demolished, and it is likely that no belowground traces survive due to the extent of quarrying. The potential for significant archaeological remains of postmedieval to modern date within the Site is considered to be low.



Insert 1 from Agricultural Considerations Report



FARM DIVERSIFICATION

- 6.1 The Applicants partner with landowners and developers on comprehensive land-management programmes including livestock grazing and pollinator support. As approximately 95% of the Site remains available for sheep grazing, the National Farmers Union support solar schemes such as this project as it allows farms to diversify which in turn helps keeps farmers in business, allows farmers to continue to farm sustainably, employs local people and provides investments locally, whilst improving the land and soil quality for future generations to come.
- 6.2 The proposal will aid in diversification of the existing farm business, supporting the continued agricultural operation through the provision of long-term and diversified financial income. As mentioned, the Proposed Development will also allow sheep grazing to continue below the solar panels, enabling a dual use of the Site.
- 6.3 Pollinators across the world are now in decline for a number of reasons including invasive species, pesticides, climate change and habitat destruction. Conventional agriculture and farming have led to declines in biodiversity. A big problem for bees specifically is the lack of suitable habitat for foraging due to the loss of hedgerows, woodland and meadows rich in plant species, many of which have been replaced by monocultures and intensive agriculture.
- 6.4 The Proposed Development would introduce flower-rich habitats, such as wildflower meadows, which are crucial to supporting pollinators including bees, moths, butterflies, and hoverflies, by providing good sources of nectar and pollen throughout the summer, as well as shelter and nest sites. An independent scientific review commissioned by Defra in 2013¹ identified the loss of flower-rich habitat as the likely primary cause of the recorded decline in the diversity of wild bees and other pollinating insects. Crops such as raspberries, apples, and pears, in particular, need insect pollination to produce good yields of high-quality fruit.

¹ Vanbergen A.J., Heard M.S., Breeze T., Potts S.G., Hanley N., (2014) 'Status and value of pollinators and pollinating services'.



CARBON SEQUESTRATION AND SOIL IMPROVEMENT

- 7.1 The frames that support the solar panels occupy less than 1% of the land area within the Site, and the rest of the infrastructure typically disturbs less than 5% of the ground. The sheep could easily pass underneath and/or between the supporting frames. On that basis, approximately 95% of the Site would be accessible for vegetation growth and can support agricultural activity, such as sheep grazing, as well as wildlife, for the lifespan of the scheme.
- 7.2 The sheltered area under the panels forms a microclimate which allows vegetation, including grass, to establish itself successfully. The botanically diverse species-rich wildflower grassland would also be able to grow in the areas between the panels and also in the areas beyond the panels inside the security fencing. The quantity of sheep can be managed to ensure that the land is grazed effectively; the BRE (2014) Agricultural Good Practice Guidance for Solar Farms¹, provides guidance on the grazing livestock within solar farms. Accommodating sheep on the Site at the advised grazing density would ensure that the grassland would not need to be cut mechanically or applied with herbicides or pesticides to manage the weeds.
- 7.3 Grazing sheep under and around solar panels is the most cost-effective way of maintaining the land, which has the potential to increase the level of carbon sequestered by the grassland over the 40 years of the operation of the Solar Farm. It will significantly increase the soil organic matter which will increase long-term fertility and soil workability.
- 7.4 As the perennials within the grassland, they draw down carbon through the process of photosynthesis, which releases oxygen and stores the carbon within the plants. The carbon which the perennials do not need for their growth is secreted through their roots and into the soil where it feeds soil microorganisms, and a portion is stored deep in the soil.
- 7.5 The grazing of animals such as sheep on the land underneath the panels allows it to rest. Their hooves lightly disturb and aerate the soil as they feed on the meadow grasses and perennials, which in turn fertilises the land and increases nutrient levels.



Sheep Grazing Under Fixed Panels



COMMUNITY BENEFIT

- 8.1 Working in partnership with local communities to unlock a project's full potential and delivering significant biodiversity net gains is at the heart of what we do.
- 8.2 Our vision is to power the UK with reliable, affordable, clean solar energy, and to add value through innovation and investment. We are bringing the benefits of solar energy to communities and the planet at the scale and pace that is needed to help the country meet its net zero ambitions.
- 8.3 As part of our commitment to local communities, we are offering a community benefit fund. A Community Benefit Fund is a voluntary commitment by a developer to pay into a fund which is then made available to finance community projects. Community benefit funds can offer an opportunity for the local community to access longterm, reliable, and flexible funding to directly enhance their local area, economy, society, and environment.
- 8.4 The value of the fund will be based on £1,000 per MW (indexed linked) per year output of the Solar Farm from point of construction. Staveley Solar Farm has a maximum power output of 40MW resulting in an annual community benefit fund of £40,000. The community benefit fund will be available for the operational lifetime of the Solar Farm. The Solar Farm is expected to operate for 30 years. If the Solar Farm operates beyond this, the community benefit fund will be extended in line with the lifetime of the Solar Farm.

Fund Priorities

- 8.5 The fund will be open to proposals from the community to promote social and environmental prosperity and will prioritise funding in the following areas:
 - Climate and Environmental improvements.
 - · Youth Inclusion and Education.
 - Road Safety.
 - · Cultural Dialogue and Heritage.
- 8.6 The Community Liaison Group will have discretion to support projects outside of these areas if the community can demonstrate a significant need.
- 8.7 However, the fund will not support:
 - · Organisations that promote any kind of discrimination.
 - · Religious organisations, trade unions and political parties.
 - · Organisations that target or support an individual.
 - · Partnerships that require money to pay for salaries.

Fund Management

- 8.8 The Community Benefit Fund will be managed by a Community Liaison Group which will consist of a representative from the Operator of the project, a representative from Anglian Water and representatives from the communities local to the Site.
- 8.9 This Community Liaison Group will have responsibility for agreeing:
 - A clearly defined purpose for the fund that correspond to local needs and priorities.
 - · When the fund will begin making payments.
 - · The size and frequency of fund pay-outs.
 - The payments that will be made and what if anything the payments depend upon.
 - What if any obligations the beneficiary has to the fund such as auditing and reporting.
 - · How disputes should be dealt with.

Timeframe for Implementation

- 8.10 The mechanism for administering the benefits will be decided once the Community Liaison Group is in place. The fund's operation is determined by the successful start-up of Staveley Solar Farm.
- 8.11 You can submit any ideas through our project email address (info@staveleysolar.co.uk).





MAINTENANCE AND MANAGEMENT

Construction Phase

- 9.1 Management Objectives during the construction stage of the Proposed Development refer to:
 - Adequately protecting existing retained habitats and features from damage and disturbance;
 - Ensuring protected and notable species including birds, bats, amphibians, reptiles, hedgehogs and other small mammals are adequately safeguarded to ensure their continued favourable conservation status; and
 - Providing habitat and landscape enhancements through new planting and ensuring they are protected from damage and disturbance.

Operational Phase

- 9.2 Maintenance and Management objectives during the operational phase of the Proposed Development refer to:
 - Maintaining and managing existing field boundary hedgerow to a height of 3 m or above, to safeguard visual enclosure and retain as wildlife corridors;
 - Establishing and maintaining new areas of proposed tree, hedgerow, scrub and woodland planting on the Site;
 - Managing grassland and establishing a diverse sward surrounding the solar panels and elsewhere on the Site;
 - Providing additional nesting and refuge and overwintering habitat for wildlife; and
 - · Monitoring the Site and assessing the success of management.
- 9.3 The following prescriptions have been identified to achieve the above objectives.

Existing Hedgerows

- 9.4 Existing hedgerows shall be left to grow with minimal selective thinning and maintained to a height of 3 m and above.
- 9.5 During establishment, dead, dying, and diseased wood is to be removed and replaced with stock of a similar size and species by the appointed contractor. If the failure of the plant is due to disease and the disease is considered likely to re-occur, then an alternative native species of local provenance may be used as a replacement. Planting should ideally be undertaken between the months of December and February.
- 9.6 Hedgerows across the whole Site would be cut on a rotational basis, i.e., not all hedgerows will be cut in the same year. This will maintain a resource of flowering and fruiting plants across the Site create nesting and foraging habitat for wildlife and preventing hedgerows from becoming leggy.
- 9.7 Established hedgerows will be cut between late September and February and no cutting or trimming is to be undertaken during the breeding bird season (1st March to 31st August inclusive).
- 9.8 Ground flora will be cut at the base of hedges on a 3-year rotational basis to a height of no less than 150 mm height, with arisings removed. This is to maximise the value of the habitat for overwintering and foraging insects and prevent scrub establishment. Cutting is to take place in October/November.

Existing Trees and Woodland

- 9.9 Management operations would ensure health and safety inspections are carried out at 12–15 month intervals, to note any:
 - · Major deadwood that needs to be removed from crowns;
 - Split or damaged branches, storm damage, hung-up limbs, and jagged or open wounds that require tidying;
 - Forks, cavities and major defects that could result in structural failure, cavities, cracks or bark wounds at the base of trees, together with bracket fungus. An arboriculturist will probe cavities as required to determine the best course of action:
 - Basal suckers or epicormic growth that require removal from the main trunk;
 - Poor quality trees with structural defects, such as forked trunks that may require pruning or felling; and
 - · Diseases.
- 9.10 Ivy on tree trunks would be retained, except where it needs to be removed to facilitate inspection of trees or where it has become extensive and could result in a tree falling in high winds.
- 9.11 Should works to trees or woodland be required, the following would be adhered to:
 - Before probing by an arboriculturist, felling or management operations such as pruning or ivy removal, the tree shall be checked for bat roosts and other protected species by a licenced bat ecologist;
 - Timing of works will be determined in consultation with the advising ecologist, taking into account the potential presence of roosting or hibernating bats and/or nesting birds; and
 - All tree works to be in accordance with BS 5837:2012: Trees in Relation to Design, Demolition and Construction: Recommendations.

New Drainage

9.12 Proposed swales would be seeded with an appropriate wetland see mix and management during the establishment phase will be carried out in accordance with the seed supplier's technical advice.

New and Infill Hedgerows

- 9.13 All canes, spirals or guards shall be regularly checked and adjusted or replaced as required.
- 9.14 The base of all hedgerows is to be kept weed-free by manually removing weeds by hand, during the first three years. If there is an abundance of annual or perennial weeds, herbicide will be used as required. Thereafter, the ground flora is to be allowed to develop naturally to contribute to the wildlife value of the hedgerow and managed as an existing hedgerow. Any litter to be cleared at the same time as weed control operations.
- 9.15 All hedge lines shall be regularly watered in times of drought to field capacity and shall receive an application of slow-release fertiliser for the first three years.
- 9.16 Plants will remain upright and adjusted during treatment of weeds. Rabbit protection will be retained/replaced until no longer needed, when it will be removed from Site and disposed of. This is to be checked annually.
- 9.17 All hedges shall be allowed to grow up to a minimum of 3 m high and maintained at 3 m or above. Any plants that fail to thrive shall be replaced with stock to the original specification, unless diseased.
- 9.18 Annual inspection is to be undertaken in September to replace dead/diseased plants at the end of each growing season and to be replaced within the first five years after planting. Pruning will be undertaken to promote healthy growth, where required, between late September February to avoid bird breeding season.
- 9.19 Bark mulch to be topped up annually or as required, to maintain 50mm deep layer, until the plants have established.
- 9.20 Once new and infill sections of hedgerows have established, management operations are to reflect those as set out for existing hedgerows.

New Scrub planting

- 9.21 Management operations within the new area of scrub planting would ensure:
 - All canes, spirals or guards shall be regularly checked and adjusted or replaced as required.
 - The base of the scrub area is to be kept weed-free by manually removing weeds by hand, during the first three years. If there is an abundance of annual or perennial weeds, herbicide will be used as required;
 - Any litter is to be cleared at the same time as weed control operations;
 - The scrub area shall be regularly watered in times of drought to field capacity and shall receive an application of slow-release fertiliser for the first three years;
 - Plants will remain upright and adjusted during treatment of weeds.
 Rabbit protection will be retained/replaced until no longer needed,
 when it will be removed from Site and disposed of. This is to be checked annually;
 - Any plants that fail to thrive shall be replaced with stock to the original specification;
 - Annual inspection is to be undertaken in September to replace dead/diseased plants at the end of each growing season and to be replaced within the first five years after planting. Pruning will be undertaken to promote healthy growth, where required, between late September – February to avoid bird breeding season; and
 - Bark mulch to be topped up annually to original levels, to maintain 50mm deep layer, until the plants have established.

New Woodland Planting

- 9.22 Management operations within new areas of woodland planting would ensure:
 - Trees that pose a health and safety risk and/or are diseased will be removed. Any dead, old and/or broken limbs that are not a health and safety risk are to be retained for ecological purposes, where they do not compromise the healthy growth and natural shape of the tree;
 - Dead, missing, dying or defective plants will be replaced annually for the first 5 years after implementation;
 - All tree stakes, ties and guards will be adjusted/replaced/removed as required until anchorage has been achieved and checked annually;
 - Rabbit/deer protection will be maintained until no longer needed and then removed. This will be checked annually;
 - Weed-free ground will be maintained with the use of translocated, non-residual herbicides, until the canopy closes, in order to avoid competition for water and nutrients. This will be done four times a year, reducing to two times a year when the canopy is closed;
 - · Any litter to be cleared at the same time as weed control operations;
 - A slow-release fertiliser (4:19:10) will be spread annually in early March in the first three years after planting or replanting after defects replacements;
 - · Plants overhanging roads will be trimmed back annually; and
 - Plants will be watered in dry weather in the initial three-year establishment period. Beyond the establishment period, watering will be in times of drought.



New Trees

- 9.23 Management operations for new tree planting would ensure:
 - Trees that pose a health and safety risk and/or are diseased will be removed. Any dead, old and/or broken limbs that are not a health and safety risk are to be retained for ecological purposes, where they do not compromise the healthy growth and natural shape of the tree;
 - Dead, missing, dying or defective plants will be replaced annually for the first 5 years after implementation;
 - All tree stakes, ties and guards will be adjusted/replaced/removed as required until anchorage has been achieved. This will be done annually;
 - Rabbit/deer protection will be maintained until no longer needed and then removed. This will be checked annually;
 - Weed-free ground will be maintained by manually removing weeds by hand and if required, with the use of translocated, non-residual herbicides, in order to avoid competition for water and nutrients. This will be done four times a year for at least the first 3 years;
 - A slow release fertiliser (4:19:10) will be spread annually in early March in the first three years after planting or replanting after defects replacements;
 - Plants will be watered in dry weather in the initial three year establishment period. Beyond the establishment period, watering will be in times of drought; and
 - Trees are to be maintained upright and adjustments will be made following strong winds.

Species Rich Wildflower Grassland Mix

- 9.24 Wildflower areas would be mown under differing regimes for Year 1 after seeding and subsequent years. Mowing would only take place during periods of dry weather to ensure that no waterlogged ground is damaged by machinery.
- 9.25 The wildflower areas would not be improved by chemical fertilizer or slurry and nutrient levels in the soil would be allowed to reduce over time. All arisings would remain on-site for three to five days following the cut to allow seeds to disperse, and then either removed from Site or placed on habitat piles within field margins.

Year 1

9.26 Newly seeded grassland would be subject to regular cutting to a height of 15cm or 20cm during the first year of establishment in order to prevent annual weeds from establishing. This shall constitute a cut 6-8 weeks after sowing and then every month thereafter between May and September (subject to the results of a nesting bird check, incorporating any species-specific buffers around the nest site, if required). The frequency of cutting would be increased should annual weeds establish.

Subsequent Years

9.27 After the first year following seeding, grassland will be managed by mowing as per the schedule below:

January	No mowing required.
February	Cut can be undertaken (if necessary, by mowing), to approx. 15cm.
August-September	Cut once to approx. 15 or 20cm (by mowing) once the wildflowers have seeded.
	Subject to nesting bird check (if mowing in August). Grassland to be mown adopting a systematic method, allowing opportunities for animals and birds to escape.
Late September to end of December	No mowing required.

- 9.28 No cutting would take place throughout the summer to allow the seeds of the later flowering species to fall prior to the cut. If cutting in August, mowing would be subject to the results of a nesting bird check, incorporating any species-specific buffers around the nest site, if required.
- 9.29 Cutting would adopt a systematic method (i.e. working outwards towards the boundary features); this will allow fauna to temporarily and safely vacate the area.
- 9.30 A phased (rotational) cutting regime would be undertaken (i.e., ideally the entire area would not be cut at the same time) in order to allow a more varied structured grassland.
- 9.31 Cuttings would remain on-site for three to five days following the cut to allow seeds to disperse, and then would be removed or heaped in designated areas within the Site in order to remove nutrients and promote the development of a species-rich sward.

Re-seeding: Years 1 and 2

9.32 Newly seeded areas are unlikely to remain bare for extended periods of time. If grassland fails to become established upon areas of bare ground created during construction, these areas would be lightly scarified and reseeded with the same seed mix used to seed the wildflower grassland area during construction. An inspection would be undertaken in early August following completion of the installation. Should the proportion of bare ground be greater than 20% then sowing would be repeated in these areas. Reseeding in August likely would be appropriate when the months of May, June and July have been very dry.

Re-seeding: Year 5

9.33 If monitoring finds that by Year 5 following seeding the sward contains less than 10 plant species per m2, <10% cover by forbs, or that the sward contains <75% of the species which were included in the seed mix, then targeted re-seeding will be conducted

Species Rich Grassland Mix (Inside the Proposed Security Fence)

9.34 Initial grassland management will be carried out in accordance with the seed supplier's technical advice during the establishment phase. The grass area shall be grazed lightly by sheep or mown during Year 1 after seeding and grazed by sheep during subsequent years, as detailed below.

Year 1

- 9.35 Grazing livestock can be introduced once the grass has established. Sheep are to be preferred as they have lighter feet and nibble grass back neatly and so encourage the grass to thicken up by tillering at the base. Grazing for short periods initially will avoid overgrazing and allow time for the grass to recover. Grazing should be avoided if the soil is saturated with water.
- 9.36 Alternatively, top initial growth (sown species and weeds) to encourage the sward to thicken up and restrict any weed growth. Cuttings will be removed/relocated so as not to leave mulched patches which will kill young grass.

Subsequent Years

- 9.37 Grazing is to be in accordance with the landowner's requirements and will involve rotating sheep within the grazing areas of the Site, through control with stock proof fencing and through rotational grazing using nearby fields.
- 9.38 The following indicators will be used to review and amend stocking densities:
 - An increase in the amount of uneaten grass, the accumulation of litter, an increase in vigorous rank and unpalatable grasses, and a reduction in low growing herbs: indicates stocking density is too low (need to increase density).
 - A reduction in density/diversity of plants, excessive poaching, weed invasion and the development of bare patches: indicates stocking density is too high (need to reduce density).
- 9.39 Any herbicide applications to control weeds should be undertaken immediately after sheep have been removed from a grazing area.
- 9.40 The areas will be subject to intermittent grazing by sheep between approximately September and January, where conditions allow. Moderate trampling will expose ground for colonisation by annuals the next spring; however, heavy trampling can lead to ground poaching and infestations by weed species that will be detrimental to the Site.
- 9.41 Grazing will be carefully monitored in the winter period in order to prevent excessive compaction of wet earth.
- 9.42 Cutting of any un-grazed areas will be in accordance with measures mentioned previously.

Habitat Piles

9.43 Any wood and grass arisings removed during habitat management or other work operations would be kept in habitat piles, placed along the edge of hedgerows, near ditches and the boundaries of woodland, in order to provide valuable invertebrate habitat and shelter for other species including small mammals, amphibians and reptiles. These would be placed in the same locations each year.

Wildlife Enhancements

Birds

- 9.44 Bird boxes would be erected on suitably sized trees at a height of between 1 to 5 metres. Boxes would be angled so that they face away from prevailing wind or in a semi sheltered environment, within or close to hedgerows.
- 9.45 All bird boxes would ideally be installed in the autumn (September to November) following the cessation of construction works, and as advised by a suitably competent ecologist.

Bats

9.46 Bat roost boxes would be erected on suitable trees, in suitable habitat, at an appropriate height (ideally between 4 and 6 metres in height) with clear flight paths. They would ideally be sited in open sunny positions facing different directions to provide a variety of micro-habitats; boxes suitable for summer maternity roosts should be on a south-easterly to south-westerly aspect. Precise locations would be dependent on tree condition at that time, and as advised by a suitably competent ecologist.

Amphibians and Reptiles

9.47 Hibernacula would be created within areas of species-rich meadow, adjacent to either a hedgerow, woodland, or external pond(s). In combination with the creation of new hedgerows, these would provide additional terrestrial refuge habitat for amphibians and reptiles.

Other Species

- 9.48 Hedgerow, tree planting and grassland/wildflower meadow creation as well as installation of insect hotels and hedgehog boxes would benefit a range of species including small mammals such as hedgehog, brown hare, and invertebrate species.
- 9.49 The proposed perimeter fence would incorporate suitably sized (approximately 250mm x 250mm) gaps or gates at its base at suitable locations around the Site to allow the free movement of wildlife, including badger and small mammals, thereby maintaining, and strengthening habitat connectivity and dispersal opportunities across and through the solar farm.
- 9.50 Vegetation cuttings would be retained in the Site and piled at selected locations along field margins to provide additional undisturbed refuge opportunities for wildlife including invertebrates, small mammals, reptiles, and amphibians.







SUMMARY

- 10.1 Development of Staveley Solar Farm and the implementation of the landscape and ecological enhancements proposed would bring a range of environmental benefits to the Site and its surroundings, as well as social and economical benefits to the local community.
- 10.2 It is expected that work to deliver the environmental benefits could commence when construction of the Solar Farm begins. Strengthening of the existing field pattern of the Site through the infilling of hedgerow gaps is intended to take place in the first winter after the erection of the solar panels begins.
- 10.3 New native hedgerow field boundaries including hedgerow trees, and new native woodland and shrub planting would conserve and enhance the landscape structure within the Site, which in turn would be beneficial in terms of strengthening local landscape character taking account of the landscape management strategy for Landscape Character Area (LCA) Aii Undulating Mixed Farmlands, (identified in the 2022 Rutland Landscape Character Assessment), which the Site is located within.
- 10.4 New hedgerow, hedgerow tree, shrub and woodland planting comprising native species of local provenance would take place in the first winter after the erection of the Solar Farm begins.
- 10.5 The hedgerows would provide an invertebrate food source and foraging route for bats to feed and commute. Careful maintenance and management of the proposed trees and hedgerows over the period of 40 years that the solar farm would be in operation and beyond would ensure they continue to thrive.

- 10.6 The provision of wildflower grassland field margins adjacent to the existing and proposed planting would develop new habitats with wildflowers encouraging insects and invertebrates that in themselves would provide a feeding resource for birds and other animals.
- 10.7 The provision of bird boxes, bat roost boxes, hedgehog boxes, insect hotels/boxes, and hibernacula for amphibians, reptiles, small mammals, and invertebrates would ensure that the resident populations are accommodated, and further species move into the Site. Whilst mammal gates and small gaps at the base of the perimeter fence would allow wildlife to move into and out of the Site and maintain connectivity with the wider landscape.
- 10.8 The local community surrounding Staveley Solar Farm would benefit from the economic boost that the development would provide in terms of the provision of local initiatives and funds for community-based projects.
- 10.9 Overall, there would be substantial enhancements to the existing landscape framework of the Site, which would strengthen the local landscape character and be beneficial from an ecological perspective, whilst respecting the visual amenity of local residents and visitors.

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