



Technical Appendix 5.6: Outline Biodiversity Enhancement and Management Plan

Kirknewton Solar & BESS EIA Report

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Basis of Report

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Acronyms and Abbreviations

AC	Alternating Current
AGL	Above Ground Level
BESS	Battery Energy Storage System
DC	Direct Current
EclA	Ecological Impact Assessment
eDNA	Environmental DNA
HRA	Habitat Regulations Appraisal
LDP	Local Development Plan
LNCS	Local Nature Conservation Site
NPF4	National Planning Framework 4
OBEMP	Outline Biodiversity Enhancement and Management Plan
OSNGR	Ordnance Survey National Grid Reference
SEIR	Supplementary Environmental Information Report
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest



1.0 Introduction

SLR Consulting Ltd. (SLR) was commissioned by Trio Power Limited (the 'Applicant') to develop an Outline Biodiversity Enhancement and Management Plan (OBEMP) for the Proposed Development (Kirknewton Farm Solar and Battery Energy Storage System (BESS)) on an area of land south of Kirknewton (hereafter referred to as the 'Site').

1.1 Site Description

The Site is located approximately 1.5 km south of the village of Kirknewton, on land off Leyden Road, East Calder, West Lothian, Scotland, EH27 8DQ at British National Grid NT 10757 65172 (see **Annex A**).

The Site is approximately 76 ha in size and currently comprises predominantly cropland and grassland used for agriculture, with livestock grazing to the northeast of the Site. Native hedgerows and lines of mature broadleaved trees border grassland and cropland areas. There are areas of ancient woodland present in the centre, north-east and north-west of the Site, as well as several ditches and watercourses, including a small, modified stream within the east of the Site. The immediate surroundings are comprised of similar habitats and land use types, with several ancient woodland sites listed in the Ancient Woodland Inventory (AWI) and Kirknewton estate Local Biodiversity Site within a radius of 2 km from the Site boundary.

1.2 Proposed Development

The Proposed Development will consist of ground mounted solar PV modules with an export capacity of up to 40 MW and a BESS with an export capacity of up to 9 MW along with a substation, associated electrical equipment, drainage, access, landscaping, underground cabling, fencing and other ancillary infrastructure. The BESS will store excess energy generated by the solar PV array and release it during periods of high demand or low generation. A layout of the Proposed Development is shown in **Figure 4.1** of the Environmental Impact Assessment (EIA) Report .

The infrastructure associated with the Proposed Development will include:

- PV module mounting frames with a minimum height of approximately 1 m Above Ground Level (AGL);
- Battery units housed in containers;
- Substation;
- Inverter cabins to convert direct current (DC) electricity into usable alternating current (AC) power;
- Transformers;
- Underground cabling;
- Internal access tracks;
- Temporary construction compound anticipated to be approximately 3,600 m² (0.36 ha) and the construction compound will incorporate a laydown area, welfare facilities, storage containers, on-site office and vehicle parking area;
- Spares container;
- CCTV cameras mounted on posts;
- Perimeter fencing;



- Site drainage, including a SuDs Pond and underground pipe discharging to the Green Burn at greenfield rates; and
- Biodiversity and landscaping enhancements.

At the end of the Proposed Development's operational lifetime of 40 years, it will be decommissioned (unless an extension is consented).

1.3 Purpose and Scope of this Document

The OBEMP fulfils two main objectives:

- I. Firstly, it outlines the habitat restoration, management and monitoring measures proposed to compensate for the direct and indirect loss of sensitive natural/semi-natural habitats, and to mitigate for potential impacts to protected and notable species as a result of construction and operation of the Proposed Development.
- II. Secondly, it functions as a plan for the delivery of biodiversity enhancement as required by national planning policy, the National Planning Framework 4 (NPF4).

This OBEMP is intended as a precursor to a more detailed Biodiversity Enhancement and Management Plan (full BEMP), which would be produced and agreed with the Local Planning Authority (i.e. West Lothian Council) and other key stakeholders including the landowners prior to commencement of construction.

The OBEMP will be a live document in place throughout the lifetime of the Proposed Development (anticipated to be 40 years), with monitoring results and unexpected developments adapting the plan to ensure the enhancement of habitats and species on the site.

1.4 Evidence of Technical Competence

This document has been compiled by Nera Cornell MSc BSc (Hons) and Rowan Smith MSc BSc (Hons). Nera is an Assistant Ecologist and Qualifying member of CIEEM with over 8 months professional experience in the environmental sector specialising in terrestrial ecology. During this time, Nera contributed to a number of reports for a variety of power sector and built environment developments throughout Scotland.

Rowan is a senior ecologist with over 6 years' professional experience in the environmental sector specialising in aquatic/riparian ecology and impact assessment. Rowan has a proven track record of project managing ecological elements of large scale (2000 MW) energy infrastructure projects, including pump storage hydro schemes, wind farms and solar farms across Scotland where she compiled a range of assessments including EIA, Ecological Impact Assessments (EclAs) and Habitats Regulations Appraisals.

Kirstie (ACIEEM, MSc, PhD) is an associate ecologist with over 10 years working in ecology within consultancy, research and non-governmental organisations. Kirstie has worked on a variety planning projects, particularly in the energy sector, with a specialism in habitats, botany and habitat management.

1.5 Planning Policy

1.5.1 National Planning Framework 4

The NPF4, Policy 3, sets out requirements for developments to deliver positive effects for biodiversity. Major applications "*will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention*". Policy 3b sets out five criteria that should be met to achieve the above "*demonstrably better state*":



- i. the proposal is based on an understanding of the existing characteristics of the Site and its local, regional and national ecological context prior to development, including the presence of any irreplaceable habitats;
- ii. wherever feasible, nature-based solutions have been integrated and made best use of;
- iii. an assessment of potential negative effects which should be fully mitigated in line with the mitigation hierarchy prior to identifying enhancements;
- iv. significant biodiversity enhancements are provided, in addition to any proposed mitigation. This should include nature networks, linking to and strengthening habitat connectivity within and beyond the development, secured within a reasonable timescale and with reasonable certainty. Management arrangements for their long term retention and monitoring should be included, wherever appropriate; and
- v. local community benefits of the biodiversity and/or nature networks have been considered.

Planning policy of relevance to this Outline BERP are listed below. Details can be found in **Annex B**.

- National Planning Framework 4 (NPF4)^{Error! Bookmark not defined.};
- Scotland's Environment Strategy¹;
- Scottish Biodiversity Strategy²; and
- West Lothian Local Biodiversity Action Plan (LBAP)³.

2.0 Methodology

This OBEMP is to be implemented to compliment an EclA (**Chapter 5** of the EIA Report) that together will serve to address the predicted impacts of the Proposed Development. The aim of the OBEMP is to set out measures that will compensate for the loss of biodiversity resulting from the Proposed Development and that will enhance existing biodiversity and aid the recovery of natural habitats and populations in a wider biodiversity and nature networks context to achieve significant biodiversity gains such that they are in a demonstrably better state than without intervention.

The aim of the OBEMP is to establish the key objectives and principles by which parts of the Site would be restored and managed to the benefit of biodiversity, which would then form the basis for the more detailed OBEMP, post consent. It is not the intention for this document to provide full details of proposed management, much of which cannot be determined fully at this stage.

¹ Scottish Government (2020). The Environment Strategy for Scotland. Available at: <https://www.gov.scot/publications/environment-strategy-scotland-vision-outcomes/>

² Scottish Government. (2020). Scottish Biodiversity Strategy to 2045. [Online] Available at: <https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland/documents/>

³ West Lothian Council. (2025). Working Together for Nature. A Biodiversity Action Plan for West Lothian 2025-35. [Online] Available at: <https://www.westlothian.gov.uk/article/75251/Local-Biodiversity-Action-Plan>



2.1 Terminology

The following definitions are taken from the International Standards for Habitat Restoration⁴:

- The **Scope** is the broad geographic or thematic focus of a project, or for the purposes of this project, the Site.
- The **Vision** is a general summary of the desired condition one is trying to achieve through the work of the project.
- The **Targets** identify the native ecosystems to be restored or species to be conserved at a site as informed by a reference model, along with any social outcomes or constraints expected of the project.
- **Goals** are formal statements of the medium to long-term desired ecological or social condition, including the level of recovery sought. Goals must be clearly linked to targets, measurable, time-limited, and specific.
- **Objectives** are formal statements of the interim outcomes along the trajectory of recovery. Objectives must be clearly linked to targets and goals, and be measurable, time-limited, and specific.
- **Indicators** are specific, quantifiable measures of attributes that directly connect longer-term goals and shorter-term objectives. Ecological indicators are variables that are measured to assess changes in the physical (e.g., turbidity units), chemical (e.g., nutrient concentration), or biotic (e.g., species abundance) ecosystem attributes as guided by the reference model. Social-ecological or cultural indicators measure changes in human wellbeing such as participation in traditional practices, governance, language and education.

NatureScot⁵ defines ecosystem services as ‘the direct and indirect contributions ecosystems (known as natural capital) provide for human wellbeing and quality of life. This can be in a practical sense, providing food and water and regulating the climate, as well as cultural aspects such as reducing stress and anxiety.’ There are four broad categories of ecosystem services: provisioning, regulating, supporting, and cultural. Biodiversity underpins many of these services.

2.2 Baseline Data Collection

The OBEMP has been informed by baseline data collected to inform the EclA carried out by SLR for the Site. Tasks included:

- Preliminary Ecological Appraisal⁶;
 - Ecological desk study;
 - UKHab habitat survey;
 - Protected species habitat suitability assessment;

⁴ McDonald, T., Gann, G., Jonson, J. and Dixon, K. (2016). International standards for the practice of ecological restoration—including principles and key concepts. (Society for Ecological Restoration: Washington, DC, USA.). *Soil-Tec, Inc. Marcel Huijser, Bethanie Walder*.

⁵ NatureScot. (2025). What are Ecosystem Services. [Online] Available at: <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/ecosystem-approach/ecosystem-services-natures-benefits#:~:text=Ecosystem%20Services%20are%20the%20direct,as%20reducing%20stress%20and%20anxiety>

⁶ SLR Consulting. (2025). Kirknewton Solar and BESS Preliminary Ecological Appraisal.



- Ecological Impact Assessment⁷; and
- Protected Species Monitoring (Confidential)⁸

3.0 Baseline Data Summary

This section summarises baseline conditions relevant to the OBEMP design, based on field surveys and detailed in the relevant reports.

This OBEMP is based on habitat suitability, protected/notable species and professional judgement to guide the broad principles for biodiversity enhancement and restoration.

3.1 Designated Sites

3.1.1 Statutory Sites

There are no statutory or non-statutory designated sites within the Site boundary.

There are five statutory designated sites of international importance within 10 km of the Site, extending to 20 km for avian features including one Special Areas of Conservation (SAC), two Ramsar sites and two Special Protection Areas (SPA). A total of nine Sites of Special Scientific Interest (SSSI) are present within 10 km of the Site. Identified sites are summarised in Table 3-1.

Table 3-1 Statutory Designated Sites

Site Name	Designation	Relevant Qualifying / Notified Ecological Features	Distance (km) and Direction from Site Boundary ⁹
Linhouse Valley	SSSI	• Lowland acid grassland; • Lowland neutral grassland; • Upland mixed ash woodland; and • Valley fen	2.6 km W
Calderwood	SSSI	• Upland oak woodland; and • Valley fen	3.1 km NW
Balerno Common	SSSI	• Bryophyte assemblage; • Mesotrophic loch; • Raised bog; and • Transition open fen	4.7 km SE
North Esk Valley	SSSI	• Lowland acid grassland; and • Valley fen	7.4 km SE
Hermard Birchwood	SSSI	• Upland birch woodland	7.7 km SE
Habbies Howe-Logan Burn	SSSI	• Bryophyte assemblage; and • Lichen assemblage	7.7 km SE

⁷ SLR Consulting. (2025). Kirknewton Solar and BESS Ecological Impact Assessment.

⁸ SLR Consulting. (2025). Kirknewton Solar and BESS Confidential Appendix B: Camera Monitoring Report.

⁹ Measured from the nearest point "as the crow flies".



Site Name	Designation	Relevant Qualifying / Notified Ecological Features	Distance (km) and Direction from Site Boundary ⁹
Cobbinshaw Moss	SSSI	Intermediate bog (blanket)	8.8 km SE
Craigengar	SSSI	- Blanket bog; - Marsh saxifrage <i>Saxifraga hirculus</i>; - Spring-head, rill and flush; and - Subalpine dry heath	8.9 km S
Tailend moss	SSSI	Raised bog	9.3 km NW
River Tweed	SAC	- Atlantic salmon <i>Salmo salar</i>; - Brook lamprey <i>Lampetra planeri</i>; - Otter <i>Lutra lutra</i>; - River lamprey <i>Lampetra fluviatilis</i>; - Rivers with floating vegetation often dominated by water-crowfoot; and - Sea lamprey <i>Petromyzon marinus</i>	9.8 km SE
Westwater	SPA	- Pink-footed goose <i>Anser brachyrhynchus</i>, non-breeding - Waterfowl assemblage, non-breeding (not functionally linked at this distance)	11.8 km S
	Ramsar		
Firth of Forth	SPA	- Pink-footed goose, non-breeding - A further 27 qualifying features are notified, however they are not considered to be functionally linked at this distance from the Site.	13.9 km N
	Ramsar		

3.1.2 Non-Statutory Sites

A total of four non-statutory designated sites were identified within 2 km of the Site:

- Leyden Road Verge proposed Local Biodiversity site (pLBS);
- Kirknewton Estate Local Biodiversity Site (LBS);
- Greenburn and Gogar Burn to Hatton Bridge LBS; and,
- Water of Leith – Inveror to Glenbrook and Cock Burn LBS.

In addition, four areas of woodland listed under the AWI border the boundary of the Site. Two of these woodlands intersect the Site. In total, 18 areas of ancient woodland were identified within 2 km of the Site.

3.2 Habitats

The results of the UKHab survey⁶ indicated the Site is primarily composed of farmland associated habitats including crop fields (c1) and modified grassland (g4) with some neutral grassland (g3c). There are several large arable fields in the eastern and western sections of the Site. During the spring, these fields were ploughed, and in the summer the main crops were barley and wheat. Fields of modified grassland are present throughout the Site. Areas in the northern and western regions are grazed by livestock, and the sward height is short and generally species poor. Within the eastern half of the Site, fields appear to have been



previously managed for crops. In the spring, these areas were generally species poor (2-4 species per m²), but in the summer, there was a greater variety of species present. Areas of *Arrhenatherum* neutral grassland (g3c5) were present in the north-western part of the Site associated with the watercourse, and in the eastern part surrounding the derelict building. Strips of neutral grassland (g3c) occur along field borders within the western half of the Site.

Broadleaved and mixed woodland (w1) is present throughout the Site as thin strips and lines of trees bordering field margins and along the northern, eastern and southern boundaries of the Site. South of the Site entrance, there is an area of coniferous woodland dominated by densely planted spruce trees. Scattered gorse *Ulex europaea* (h3e), occurred within the north-west of the Site, surrounding the crop fields. Other native hedgerow (h2a6) borders the road running through the centre of the Site, with hawthorn dominating the species composition.

There is a large, mostly dry ditch (r1g) running through mixed broadleaved woodland in the southeast of the Site. A small watercourse (r2b) runs through the east of Site. It has a low flow, a stone and silt channel bed, some pooling and a 5 cm depth. A densely vegetated watercourse runs along the northwestern Site boundary.

The desk study identified one ancient woodland within the Site, and 17 distinct areas within 2 km of the boundary¹⁰.

No Annex I habitats, or those present on the Scottish Biodiversity List (SBL) were present within the Site or buffer.

3.2.1 Notable Plants

No protected or notable species of plants were recorded during the field survey.

3.3 Protected and Notable Species

The Site provides moderate habitat suitability for amphibians, including wet grassland alongside the watercourse in the east of the Site, mixed woodland and field margins. Of the four ponds located within the Site and 250 m buffer, no great crested newts (GCN) *Triturus cristatus* were identified through eDNA analysis. Habitat suitability for reptiles is limited within the Site to arable field margins, with little natural refugia present. Two potential hibernacula were noted, a pile of dead branches and piles of rubble from ruined buildings. No amphibians were recorded during the field survey.

The watercourses within the Site are small, with minimal flow volume or velocity. These would generally be expected to be of low foraging suitability for otter, limited to non-fish species only, and commuting through the area. Riparian habitat was minimal and limited to rushes and sedge with limited opportunities for holt creation except where steep inclines of banks provide opportunities for burrowing.

Habitat suitability for water vole *Arvicola amphibius*, was considered to be moderate around watercourses. The presence of tall vegetation, primarily sedges and rushes, within riparian zones is likely to provide cover from predators. Watercourses had steep, vegetated banks considered optimal for burrowing with soil sufficiently above the water level. The Site was restricted by low water volumes. Potential water vole feeding evidence was recorded along the watercourse within the centre of the Site, however no evidence was identified on the second survey visit.

¹⁰ NatureScot. (2025). Ancient Woodland Inventory. [Online] Available at: <https://opendata.nature.scot/datasets/snh::ancient-woodland-inventory/explore>



Suitable habitat for badger *Meles meles*, populations was identified within the Site in terms of extent of habitat and type (grassland and woodland). In order to maintain species protection and confidentiality, relevant stakeholders can consider the full results and discussion relating to badger surveys, as provided within **Confidential Technical Appendix 5.3: Protected Species Survey Report** of the EIA report.

The Site was considered to have moderate suitability for foraging and commuting bats (sp.) across the arable and grassland habitats, and high suitability across woodland edges and linear features such as watercourses, ditches, and lines of trees/hedgerows. Multiple PRFs (six PRF-M) were recorded throughout the Site in mature beech trees. A building within the east of the Site was found to have negligible suitability for hibernating bats and of low suitability as a summer roost.

There were three live sightings of grey squirrel, *Sciurus carolinensis*. Evidence of squirrel foraging was widely evident and a potential drey was recorded. These signs cannot be assigned to red squirrel *Sciurus vulgaris* or grey squirrel, however given the grey squirrel sightings and the geographical location of the Site, it is considered likely that any drey would be from a grey squirrel.

Brown hare *Lepus europaeus* were sighted within the crop fields in the west of the Site.

3.4 Protected and Notable Bird Species

A total of 53 bird species were recorded over the six breeding bird survey visits. Of these, 29 were target species, and 24 were non-target species. No species recorded were listed on the Annex I of the Birds Directive. One species (crossbill) is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Fourteen of the recorded species were on the Scottish biodiversity list (SBL). Of the species recorded, 11 were BoCC5 red listed, 16 were amber listed, 24 were green listed, and two were classified as not assessed.

A total of 146 territories from 29 different species were identified within the Site and a 50 m buffer. Of these, 59 recorded territories belonged to a total of 13 target species. Of the target species with territories, six were BoCC5 red listed, six were amber listed, and one was green listed. Nine of the target species with territories were SBL listed. Of the 146 recorded territories, 87 territories belonged to a total of 16 non-target species. A full breakdown of the identified species territories and corresponding legal and conservation status is available in the breeding bird survey report¹¹.

Wren *Troglodytes troglodytes* were the target species with the most recorded territories, followed by woodpigeon *Columba palumbus*, yellowhammer *Emberiza citrinella*, and willow warbler *Phylloscopus trochilus*. Nineteen wren territories were identified throughout the Site, in areas of mixed plantation, strips of broadleaved trees and areas of scrub. Eleven woodpigeon territories were identified, all within areas of coniferous and mixed plantation woodland. Ten yellowhammer territories were identified throughout the survey area, in habitats of scrub, hedgerow and arable fields. Willow warbler had five territories within mixed plantation in the survey buffer.

The fields on Site were frequently used by foraging black-headed gull *Chroicocephalus ridibundus*, rook *Corvus frugilegus*, carrion crow *Corvus corone*, woodpigeon, linnet *Linaria cannabina*, and starling *Sturnus vulgaris*. One lapwing *Vanellus vanellus*, territory was recorded within arable fields at the south-east of the Site. This was the only wader species recorded as breeding within the survey area. Two sparrowhawk *Accipiter nisus* observations were recorded during different months, consisting of a male to the northwest and female to

¹¹ SLR Consulting. (2025). Kirknewton Solar BBS Report.



the west of the Site. This suggests a sparrowhawk breeding territory is present within woodland surrounding the Site.

Two additional species, tawny owl *Strix aluco*, and redstart *Phoenicurus phoenicurus*, were identified as incidental species within the camera monitoring programme undertaken for badger and otter.

4.0 Habitat Loss

4.1 Direct Habitat Loss

Where existing habitat would be replaced by civil infrastructure associated with the Proposed Development, it would be permanently lost from the Site at least for the duration of the operation of the Proposed Development. This includes habitats present under the footprint of the Proposed Development and areas that would be subject to cut and fill, grading and excavation for cables.

4.2 Summary of Predicted Habitat Loss

Habitat losses for each habitat type are detailed in **Table 4-1** Summary of Habitat Losses. Habitat loss calculations are inclusive of the area under the solar PV units.

Table 4-1 Summary of Habitat Losses

UKHab Code and Name	Total Direct Habitat Loss (ha)
c1 – arable and horticulture	4.27
c1c – cereal crops	9.76
g3c – other neutral grassland	<0.01
g4 – modified grassland	10.71
w2c – other coniferous woodland	0.02
Total	24.8

5.0 OBEMP

5.1 Vision and Scope

The vision of this plan is to create and enhance areas of existing grassland, woodland, scrub and hedgerows within the Site to provide enhanced foraging and commuting resources for protected and priority species. Provision of wildlife boxes/refugia for bats, birds and reptiles/amphibians will provide places of shelter (e.g. nests, roosts, hibernacula) within the landscape until newly planted woodland/hedgerows mature. The combined habitat creation and enhancement proposed in this OBEMP will improve habitat for flora and a range of fauna, including bats, bird assemblage, reptiles and amphibians, otter and badger.

The scope of the habitat restoration and enhancement works proposed in this OBEMP are depicted on **Figure 1**.

5.2 NPF4 Adherence

The NPF4, Policy 3, sets out requirements for developments to deliver positive effects for biodiversity. Major applications “*will only be supported where it can be demonstrated that the*



proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention”.

The mitigation proposed in this OBEMP aims to meet NPF4 criteria (refer to **Section 1.5.1**) by replacing the loss of approximately 10.71 ha of species poor grassland, 14.03 ha of arable/cropland, and small areas of neutral grassland and coniferous woodland.

The proposed tree and hedgerow planting will all take place on Site, retaining and extending the existing areas on the Site boundary. These will also serve to link existing blocks of ancient woodland present within the wider landscape (Selm Muir Wood and Overton/Green Wood) and to areas of grassland enhancement and woodland creation.

The plan for mixed woodland, individual tree and hedgerow planting has been integrated with the landscape plan to provide natural screening that fits with the character of the local area and provides benefits for biodiversity. This will require a mix of native tree and scrub species to enhance the woodland/scrub/hedgerow biodiversity.

The proposed native mixed tree planting will be carried out as individual tree planting on areas of the Site boundary and on field edges bordering Leyden Road (that intersects the Site), and as a larger concentrated block in the southeastern corner of the Site.

Habitats currently within the Site are typically of low biodiversity value, e.g. species poor modified grassland and arable cereal fields, as such planting will improve overall Site biodiversity value. The planting will comprise of native species and will provide increased habitat and foraging resources for species already present within the Site.

The proposed grassland management area for sward height and greater species diversity will provide a net biodiversity improvement of this habitat type on Site. Additionally, the area will improve foraging and commuting resources available for fauna present on Site, including reptiles, birds, badger, bats and brown hare. Seeding of wet meadow mixes on the SuDs pond boundary will provide diversity in both grassland habitats present, and species they are able to support. Negative effects of tree and scrub planting are not considered to be high, considering the improvement to species poor grassland and arable crops currently present within the Site. There is a small temporary loss of foraging habitat for badger (in terms of badgers foraging on crops), however this is considered non-significant due to the availability of habitat in the wider area, and the overall improvements to foraging availability following grassland creation.

Methods, management and monitoring are outlined below to ensure the long-term retention and retained biodiversity value of the native woodland, native species rich hedgerows and species rich grasslands.

5.3 BEMP Working Group and Review

As part of the preparation of the final BEMP post-consent, a group of key stakeholders would be invited to form a BEMP working group. Their role would be to provide input to and comment on the final BEMP and subsequent revisions to the BEMP during the lifetime of the Proposed Development.

It is envisaged that the following stakeholders would be invited to join the BEMP working group:

- Trio Power Limited, as the Applicant, and their ecological advisor(s);
- The landowners;
- West Lothian Council Biodiversity Officer;
- NatureScot; and



- SEPA.

Further details, including terms of reference for the BEMP working group, would be provided in the final BEMP, post-consent.

The BEMP would be reviewed and updated on a regular basis, based on monitoring of progress toward achieving its goals and objectives and to inform active management. Proposed review timescales are set out in **Annex C, Table C-1**.

Trio Power is ultimately responsible for meeting the commitments made in the final BEMP. The implementation of the final BEMP would be undertaken by suitably experienced contractors and all monitoring would be undertaken by suitably qualified and experienced environmental professionals.

5.4 Targets

This section details the habitat features that will be the targets of the OBEMP. The features which form the targets of this OBEMP have been determined through consideration of the relative importance of ecological features present at the Site, the extent to which they may be impacted by the Proposed Development (as set out in the EclA report⁷), their potential to benefit from restoration/enhancement or management and national or local biodiversity priorities. Enhancement measures are primarily targeted at those measures that will support a diverse faunal community from invertebrates through to the higher trophic species groups. **Table 5-1** Table 5-1 OBEMP Targets includes all the targets of habitat management with Table 5-2 describing the associated objectives.

Some target species, e.g. small mammals and invertebrate assemblages, will not be directly measured or monitored within this OBEMP, however, will still likely benefit from general habitat improvement measures outlined in the targets, and as such they have been included in Table 5-1.

Table 5-1 OBEMP Targets

Target	Rationale	Associated Objectives
Grassland	The Proposed Development will result in the loss of 10.71 ha of grassland habitat. The enhancement of grassland will compensate for the loss of modified grassland (g4) and neutral grasslands (g3c) with additional benefits to breeding birds, reptiles and amphibians, breeding birds, small mammals, bats and invertebrates.	1.1, 1.2
Scrub	Scrub is an important habitat for commuting, foraging and breeding fauna. Construction activities will not result in the permanent and temporary loss of scrub habitat. Creation and enhancement of scrub will provide additional Site enhancement through habitat creation and enhancement benefiting breeding birds, reptiles and amphibians, brown hare, badgers, invertebrates and in turn bats.	2.3
Native Woodland	Woodland is present within the Site as thin strips and lines of trees bordering field margins, no trees are predicted to be lost as a result of the Proposed Development.	2.1



Target	Rationale	Associated Objectives
	Enhancement of woodland on field margins, in combination with hedgerow and scrub planting, will provide increased connectivity of woodland blocks within the wider landscape for birds and bats.	
Hedgerows	Hedgerows are an important habitat for commuting, foraging and breeding fauna. While construction activities will not result in any loss of hedgerow, this has been identified as an opportunity for habitat enhancement and improved visual screening of the development. The provision of hedgerow planting and gap filling will benefit breeding birds, reptiles and amphibians, badger, brown hare, invertebrates and in turn bats.	2.2
Bat assemblage	Habitats dominating the Site, including modified/neutral grassland and arable crops, are considered to be a poor foraging resource for bats with linear features (hedgerows and ditches) of greatest value. Potential roosting opportunities are present on mature trees on field margins and within the edge of woodland blocks to the north of the Site, however, overall connectivity within the Site is poor. All bats are European protected species under The Conservation (Natural Habitats, &c.) Regulations 1994 and are additionally protected in the UK under Schedules 5 and 6 of the WCA¹². The works will result in loss of 10.71 ha of potential foraging and commuting habitat for bats. The provision tree / hedgerow planting and grassland management will improve invertebrate diversity and thereby improve foraging for bats. The provision of bat boxes will provide additional roosting opportunities, which are not currently available on Site and are scarce in the wider area.	1.1, 1.2 2.1, 2.2, 2.3 3.1 4.2
Reptiles and amphibians	The habitats on-Site, particularly grassland in field margins and along watercourses, offered some potential suitable habitat for reptiles and amphibians. Potential hibernacula in the form of a dilapidated building and a large brush pile were noted but hibernacula were largely absent within the rest of the Site. The works will not result in habitat losses to areas of potential habitat for reptiles or amphibians, however, there are opportunities to provide enhancements on Site. Reptile species and some species of amphibians are protected under Schedule 5 of the WCA. Provision of artificial reptile refugia will provide enhancements to existing habitat in improving shelter and potential breeding opportunities.	1.1, 1.2 2.1, 2.2, 2.3 3.1 4.3

¹² Wildlife and Countryside Act (1981 as amended)



Target	Rationale	Associated Objectives
	Grassland planting and management will additionally improve diversity of habitat available for these species providing increased foraging opportunities.	
Bird assemblage	Grassland and scrub habitats on-Site were suitable for nesting birds. All nesting birds are protected under the WCA. The works will result in the loss of 10.71 ha of foraging and nesting habitat for birds. The tree/scrub planting and grassland management will improve habitat for birds currently using the Site and provide habitat for additional amber and red listed birds that are likely to be attracted to the habitat. Provision of nest boxes for small birds in the tree planting will provide additional breeding locations for small woodland, woodland edge and farmland birds.	1.1, 1.2 2.1, 2.2, 2.3 3.1 4.1
Small mammals	Existing habitat within the Site is limited for small mammals to field margins and watercourses, however, there are opportunities to provide enhancements on-Site. Grassland management, hedgerow and tree planting will improve habitat for small mammals currently using the Site, in turn providing an increased food resource for predators within the Site such as otter and raptors.	1.1, 1.2 2.1, 2.2, 2.3 3.1
Brown hare	Grassland and scrub habitats on-Site are suitable for brown hare which was also observed on Site. The works will result in the loss of habitat for brown hare. The tree / scrub planting and grassland management will improve diversity of habitat available for these species providing foraging and shelter opportunities.	1.1, 1.2 2.1, 2.2, 2.3 3.1
Invertebrates	While no significant effects are expected on invertebrates. The provision tree / scrub planting and grassland management will improve habitat for invertebrates currently using the Site and provide additional niches for a variety invertebrate species. Increases in invertebrate numbers will in turn provide foraging enhancements for a number of species including bats and birds.	1.1, 1.2 2.1, 2.2, 2.3 3.1



5.5 Goals and Objectives

Goals and objectives, and associated targets are outlined in **Table 5-2**. This section details how objectives meet the goals to restore the natural spaces onsite while providing resources for wildlife. A summary table of actions can be found in **Annex C, Table C-1**.

As a general rule, planting of native species of local provenance will be prioritised on-Site and no invasive and non-native species (INNS) will be planted or allowed to spread on the Site. This applies to all of the below objectives.

Consultation will be required with local and national stakeholders including West Lothian Council, NatureScot and landowners on the proposed biodiversity creation, restoration and enhancement objectives.



Table 5-2 OBEMP Goals, Objectives and Indicators

Goal	Objective	Area	Associated Targets	Indicators
1. Enhancement of grassland	1.1 Grassland creation/management	Grassland Management Area	Invertebrates Bat assemblage Reptiles and amphibians Bird assemblage Badger Brown hare	Scrub presence Species diversity Sward height diversity
	1.2 Reducing grazing pressure	Grassland Management Area	Invertebrates Bat assemblage Reptiles and amphibians Bird assemblage Badger Brown hare	Scrub presence Species diversity Sward height diversity
2. Creation and enhancement of mixed woodland, scrub and hedgerows.	2.1 Mixed native tree planting	Tree Planting Areas	Mixed woodland Bat assemblage Reptiles and amphibians Brown hare Invertebrates Bird assemblage Badger Small mammals	Tree health and survival
	2.2 Native species-rich hedgerow planting	Hedgerow Planting Area	Hedgerow Bat assemblage Reptiles and amphibians Invertebrates	Hedgerow health and survival



Goal	Objective	Area	Associated Targets	Indicators
			Brown hare Bird assemblage Badger Small mammals	
	2.3 Scrub planting/enhancement	Tree/scrub Planting Areas	Scrub Bat assemblage Reptiles and amphibians Brown hare Invertebrates Bird assemblage Small mammals	Scrub health and survival
3. Enhancement of riparian/aquatic habitats	3.1 Biodiversity enhancement of riparian/aquatic habitats (SuDs Pond and ditches)	SuDs area	Freshwater Invertebrates Bat assemblage Reptiles and amphibians Bird assemblage	Water quality Species diversity
4. Provision and maintenance of wildlife boxes/refugia	4.1 Provision and maintenance of small bird boxes	Tree/scrub Planting Areas	Bird assemblage	Use of wildlife box Wildlife box condition
	4.2 Provision and maintenance of bat boxes	Tree/scrub Planting Areas	Bat assemblage	Use of wildlife box Wildlife box condition
	4.3 Provision and maintenance of reptile/amphibian refugia	Tree/scrub Planting Areas	Reptiles and amphibians	Refugia condition



5.5.1 Goal 1: Enhancement of grassland

Grassland creation is comprised of two types within the Site. The first is the interior open grassland areas under the Solar PV units to be managed with grazing, comprising the majority of the Site, and the second is limited to fenced off areas on verges subject to manual/mechanical mowing. Interior grasslands would cover an area of approximately 62.9 ha and verge grasslands 8.97 ha.

Grassland under panels will be partially shaded by solar PV panels, therefore limiting growth of flowering species in certain areas.

5.5.1.1 Objective 1.1 Grassland Creation/Enhancement

Interior Grassland Creation

Grassland managed for sward height and species diversity is proposed within retained interior areas of the Site surrounding the PV modules. Where areas are currently being utilised for cereal crop production, grassland will require seeding and creation. Where grassland is present and retained, e.g. neutral and modified grassland, enhancement will be focused on management and long-term enhancement. The management will focus on increasing botanical diversity of the species-poor grassland (2-4 species per m²) and improving foraging resources for other species in areas of current grassland.

Several fields located to the north-western and north-eastern extents of the Site are being managed for cereal crops and will require seed planting. A grassland mix that is suited to well-drained, loamy soils in interior areas, is recommended. In verges subject to a less intensive grazing regime, a more species-rich grassland mix may be more appropriate. This can be achieved through use of hedgerow meadow mix (SCM4) adjacent to hedgerow enhancement or Mavisbank Mix (SCM1) (www.scotiaseeds.co.uk) (see **Annex D** for full details) is used which is tolerant of light shade and includes yellow rattle (*Rhinanthus minor*). Flowering lawn mix contains plants that are either low-growing or can be cut low, and hedgerow meadow mix provides a tall mix for areas of light shade beside hedges or in woodland clearings.

Grassland creation in interior areas will be detailed during the BEMP stage however will likely involve the following steps:

- Topsoil removal/preparation – as appropriate for the specific substrate conditions and grassland seed mix.
- Seeding –
 - the stripped areas will be sown with (ideally) local provenance wildflower seed which will contain at least 15 species per m² (the minimum number required to be classified as lowland meadow in the UK Habitat Classification (UKHab)). The species within the mix must shade-tolerant and include low growing fine grasses and wildflowers better suited to management by grazing¹³ such as Landlife Wildflower mix (LW12 Low Growing 80/20 Wildflower Meadow)¹⁴.
 - A general guide for grass-wildflower seed mixes is to sow at a rate of 3-5g per m².

¹³ EcoDev Group. (2024). Best Practice Guidance: Grassland & Wild Flower Management on Solar Farms. [Online] Available at: [Grassland & Wildflower Management on Solar Farms.pdf](#)

¹⁴ Landlife Wildflowers. (2025). Low Growing Wildflower Seeds LW12 80/20 Wildflower Meadow. [Online] Available at: [Low Growing Wildflower Seeds 100% - Landlife Wildflower](#)



- Yellow rattle *Rhinanthus minor* (a semi-parasitic species which feeds off the nutrients in the roots of nearby grasses) may be included in the seed mix, in order to reduce the vigour of dominant grasses and encourage desirable species.
- Seeding can be conducted in either spring (March to May) or autumn (Mid-August to late September).

Perimeter / Verge Grassland Creation

Grassland creation within verge areas will involve the following steps:

- Topsoil removal/preparation – as appropriate for the specific substrate conditions and grassland seed mix.
- Seeding –
 - The prepared areas will be sown with (ideally) local provenance wildflower seed which will contain at least 15 species per m².
 - A grassland mix that is suited to well-drained, loamy soils in open areas, is recommended, such as Scotia Seeds Mavisbank Mix (**Annex D**).
 - Seeding would take place prior to planting of scrub and trees to ensure no bare ground remains.

Interior Grassland Enhancement

In areas of existing interior grassland within the Site, enhancements are proposed through appropriate habitat management, based on long periods of low-input extensive grazing. Ideally, a period of heavier grazing from late summer (July/August) until December should be undertaken to remove thatch and reduce sward height. This grazing regime can follow a hay cut if appropriate, such as in edge areas where grazing may not be feasible. Avoid or reduce grazing in spring as emerging leaves and flower spikes can be easily damaged. Livestock should be removed if the ground becomes too wet in late autumn/winter. Controlled grazing/mowing aids in producing a shorter sward height from which species such as earthworms can be more easily accessed by birds and badger. A dominance of longer swards, such as those associated with rough un-grazed grasslands should be avoided as they are of relatively less value as both worm biomass is reduced, and worms are more difficult to access¹⁵.

Indicators

Scrub presence

Any scrub present in the grassland management area should be removed, unless in an area designed for scrub presence. Removal should allow for environmental variables, including weather and seasonality with regards to breeding birds.

Species diversity

Habitat species diversity should be surveyed during flowering seasons as an indicator of habitat management success. The aim is to achieve a diversity of 15 species per m², the minimum required to classify as Lowland meadow in the UK Habitat Classification (UKHab). It is anticipated species diversity will increase and eventually plateau. If declines in species diversity are seen, habitat management should be reviewed.

¹⁵ NatureScot. (2018). Managing land as a foraging resource for badgers. [Online] Available at: [Microsoft Word - 9523249F.doc](#)



The aim is for the grasslands to reach good condition after 15 years, by passing 5 or 6 criteria including essential criterion A and F for Statutory Metric Condition Sheet: Grassland Habitat Type (medium, high and very high distinctiveness) by year 15 after sowing.

Area and Extent

To compensate for this loss and to provide biodiversity enhancement, 62.9 ha of diverse grassland and 8.97 ha of meadow mix is proposed. Areas between solar PV modules are likely to experience benefits to biodiversity, however due to significant shading from the modules, grassland immediately underneath are not predicted to contribute as significant biodiversity increases. Verge areas will have a strictly managed grazing regime and are considered to have overall increased benefits to biodiversity from species and sward height diversity when compared to grassland under the panels. Grassland under the panels will require more intense grazing so vegetation does not obscure the panels and monitored for the growth of weeds/scrub that will require removal.

5.5.1.2 Objective 1.2 Reducing Grazing Pressure / Management

Conservation Grazing

Areas of neutral and modified grassland are currently stocked with sheep. The interior area should be grazed at a density of approximately 0.08-0.16 GLU¹⁶ per ha for optimal results. Where possible, avoid / reduce grazing in spring as emerging leaves and flower spikes can be easily damaged. Livestock should be removed if the ground becomes too wet in late autumn/winter. The aim in all situations is to provide a level of grazing that allows plants to grow from early spring, flower in May and June and then set seed, but which keeps highly competitive vegetation under control through grazing or cutting.

Manual / Mechanical Management

As an alternative to grazing in interior areas and within verge areas, the grassland can be cut once a year at the end of the growing season (late August). Arisings would be removed in order to reduce soil fertility, which in turn promotes higher diversity as highly competitive species (e.g. grasses) are less able to outcompete less competitive species (e.g. wildflowers). Removing the arisings also exposes the soil surface, thus providing light and space for seeds to germinate and grow. The arisings will be left in situ for a few days to dry out and facilitate seeds being shed from capsules. It is beneficial to leave uncut strips along the edges of the meadows, as a foraging resource for insects, enabling late flowering species to set seed and provide shelter for other wildlife. The aim in all situations is to provide a level of grazing that allows plants to grow from early spring, flower in May and June and then set seed, but which keeps highly competitive vegetation under control through grazing or cutting.

Overseeding / plug-planting

If monitoring results indicate initial establishment attempts were not as successful as desired, over-seeding or plug planting to supplement established plants will be undertaken.

Weed Control

Control of weed species such as ragwort *Senecio jacobaea*, creeping thistle *Cirsium arvense*, and spear thistle *C. vulgare* may be undertaken if they occur at high abundance, but only hand pulling or cutting of weed species will be used.

It should be noted that common nettle *Urtica dioica* has high value for some invertebrate species, such as the caterpillar stage of the peacock *Aglais io* and small tortoiseshell *A.*

¹⁶ Grazing Livestock Units (GLU)



urticae butterflies. While it may be removed where it risks outcompeting other species and reducing species diversity, consideration will be given to retaining areas of nettle to promote invertebrate populations.

Fertilisers and Pesticides

The management of the habitat areas is intended to promote biodiversity and therefore use of fertilisers and pesticides is contrary to the aims of the OBEMP. No fertilisers or pesticides will be used within the grasslands or within close proximity, to avoid creating nutrient-rich conditions that would result in a loss of less competitive plant species, and to ensure protection of invertebrate diversity.

Continued adaptive management will be necessary for the management of all grassland. It is likely that cutting and grazing schedules will need to be monitored and updated continuously to allow for environmental variables, including weather and breeding birds. Management decisions should be taken with advice from a qualified ecologist.

Continued adaptive management will be necessary for the ongoing management. It is likely that cutting and grazing schedules will need to be monitored and updated continuously to allow for environmental variables, including weather and breeding birds. Management decisions should be taken with advice from a qualified ecologist.

Indicators

Species diversity

Habitat species diversity should be surveyed during flowering seasons as an indicator of habitat management success. Botanical monitoring will record floristic diversity within the grassland, with an aim of annual incremental increases up to an average of 15 species per 1m x 1m sample by year 10. A varied sward height should be aimed for during the growing season, with at least 20% of the sward less than 7 cm and at least 20% more than 7 cm in height.

It is anticipated that species richness will increase and eventually plateau. If declines in species diversity are seen, habitat management should be reviewed.

5.5.2 Goal 2: Creation and enhancement of mixed native woodland, scrub and hedgerows

The aim of hedgerow and tree planting and management should be to create a mosaic of high woodland, scrub and open patches, whilst screening the infrastructure. Planting and management should aim to have 100% high canopy in woodland areas, a patchwork of 75% scrub and 25% open habitat in the 'scrub' areas, and uninterrupted hedgerows of at least 1.5 m in width (**Annex A, Figure 1**).

5.5.2.1 Objective 2.1 Native Tree Planting

Native tree planting is proposed as individual tree planting, infill planting as part of hedgerow enhancements (refer to Objective 2.2) and as part of the creation of a woodland block in the south-eastern corner of the Site, refer to **Annex A, Figure 1**: the Landscape Enhancement and Mitigation Plan (LEMP). Individual tree planting should be conducted primarily along Leyden road and the western Site boundary to provide visual screening in tandem with biodiversity increases. Areas determined for planting shall include a moderate (1,600 stems



per ha¹⁷) density following appropriate guidance^{18,19} and will include seeding of the understory with a woodland meadow mix.

Species should include a mix of trees to provide both screening and biodiversity enhancement value, priority should be given to the use of primarily native species appropriate to the ground conditions.

In this instance species such as rowan *Sorbus aucuparia*, field maple *Acer campestre*, silver birch *Betula pendula*, common hawthorn *Crataegus monogyna*, wild cherry *Prunus avium* and Scots pine *Pinus sylvestris* are proposed.

A suitable woodland meadow mix would be sourced, totalling an area of approximately 0.57 ha (total woodland area). It is recommended that the meadow is seeded with a mix that is tolerant to dappled or limited light and sown at a rate of 3.0g / m². A suitable mix for this location would be a Woodland Meadow Mix (SCM3) (www.scotiaseeds.co.uk, see **Annex D** for full details).

Tree tubes and stakes should be used to protect trees from deer herbivory; sustainable or non-plastic tree tubes should be used to reduce plastic waste/pollution and removal at the right time is important to permit healthy tree growth, ensure protection if measures fail, and avoid waste.

Indicators

Tree health and survival

Planted trees should be appropriate to ground conditions to ensure good health and plant survival. It is likely that there will be some mortality of those planted, but this should remain below 10% mortality to ensure connected habitat areas.

Management

Where mortality of tree planting or grassland is over 10%, beating up may be required, where dead plants are replaced or additional seeding undertaken. Should any particular species show low survival rates, it is recommended that the replacement species is reviewed and a species with a higher survival likelihood planted.

Tree tubes should be replaced if they are damaged and removed once the plants are mature enough. Weeding of tree tubes may be required.

5.5.2.2 Objective 2.2 Native Species-rich Hedgerow Planting/Enhancement

Native hedgerow creation is proposed along the western Site boundary and along Leyden Road. The hedgerow should be planted in a double staggered row configuration to provide an increased shelter area for fauna.

Hedgerow planting should prioritise native species and use plants appropriate to the ground conditions. Single-species hedgerows will be avoided, with a mix of species to be used including common hawthorn, blackthorn *Prunus spinosa*, dog rose *Rosa canina* and common elder *Sambucus nigra*.

¹⁷ Woodland Trust (2022). Woodland Creation Guide.

¹⁸ Scottish Forestry. Farm Woodlands. Available online at <https://www.forestry.gov.scot/support-regulations/farm-woodlands> [Accessed April 2025]

¹⁹ Woodland Trust. Tree Planting Advice. Available online at <https://www.woodlandtrust.org.uk/plant-trees/advice/> [Accessed April 2025]



Hedgerow enhancement is proposed along the northern Site boundary along an existing line of trees in conjunction with Objective 2.1. All existing trees and scrub species would be retained and infill planting will be conducted where necessary to provide an increased shelter area for fauna and enhance connectivity within the landscape between the Selm Muir Woodland and Overton Wood. Infill planting should be conducted out with the breeding bird season where possible: mid-March to late July in central Scotland.

Hedgerows will be allowed to establish and thereafter maintained at a height of 3.5 m using manual or mechanical methods. Any management would be conducted outside the breeding bird season. Hedgerow understory would be managed as verge grassland in line with the methods outlined under Objective 1.2.

Indicators

Tree, scrub, and hedgerow health and survival

Planted trees and hedgerow plants should be appropriate to ground conditions to ensure good health and plant survival. It is likely that there will be some mortality of those planted, but this should remain below 10% mortality to ensure connected habitat areas.

5.5.2.3 Objective 2.2 Native Scrub Planting/Enhancement

Scrub enhancement is proposed throughout the Site (**Annex A, Figure 1**). Scrub planting should prioritise native species and use plants appropriate to the ground conditions. Species are likely to include hazel *Corylus avellana*, broom *Cytisus scoparius*, blackthorn, dog rose and gorse. Hawthorn is already present within the native tree planting. Existing scrub would be retained where possible and allowed to naturally regenerate in the area, mixing with the proposed planting of tree and scrub within existing gaps.

Indicators

Scrub health and survival

Planted scrub should be appropriate to ground conditions to ensure good health and plant survival. It is likely that there will be some mortality of those planted, but this should remain below 10% mortality to ensure scrub is dense enough to provide sufficient habitat/cover for species.

Area and Extent

Areas of scrub planting are proposed in areas of existing scrub habitat present within the Site, including the northern and western Site boundary. These will cover a total area of 1.05 ha.

5.5.3 Goal 3: Enhancement of Aquatic Habitats

5.5.3.1 Objective 3.1 Biodiversity Enhancement of SuDs Ponds / Riparian Area

As shown on the LEMP (**Annex A, Figure 1**) the plan is inclusive of a 0.12ha SuDs pond north of the substation and BESS infrastructure in the eastern areas of the Site, which will be fed by surface water runoff.

Surrounding this feature is the area of 0.05ha proposed wet meadow planting, creating a 3.5 m buffer. It is recommended that the meadow is seeded with a mix that is tolerant to being occasionally flooded or waterlogged. A suitable mix for this location would be a Wet Meadow Mix (SCM2) (www.scotiaseeds.co.uk, see **Annex D** for full details).



Within the SuDs pond, planting of native species within the basin will be incorporated into the planting scheme to maximise species diversity around the wetland area and promote use by pond dwelling species such as amphibians, aquatic/terrestrial invertebrates and dragonflies/damselflies. This will provide increased foraging resource for species such as otter, badger, bats and birds. The following native plant species could be incorporated into the planting plan:

- Brooklime *Veronica beccabunga*;
- Water forget-me-not *Myosotis scorpioides*;
- Purple loosestrife *Lythrum salicaria*;
- Marsh marigold *Caltha palustris*; and
- Water mint *Mentha aquatica*.

Scotia Seeds (www.scotiaseeds.co.uk) have a pond-edge wildflower mix that could be used, in conjunction with planting plugs, to help create this habitat (see **Annex D** for full details).

The design will include features within the margins such as log piles, rock stacks or varied substrate to provide diversity to topography and provide increased habitat opportunities for invertebrates.

The management of surface water through the SuDs will aid in improving water quality within the catchment by retaining surface water, allowing fine sediments to settle before water is discharged into the watercourse. Additionally, retention of water will aid in reducing lag times during spate events contributing to flood risk management in lower sections of the Water of Leith and Gogar Burn catchments.

As shown on the landscape plan (**Annex A, Figure 1**), the plan is inclusive of grassland management within the riparian zone of the Green Burn. For the purposes of the OBEMP the 'riparian zone' is taken to be the existing c. 0.3 ha of unmanaged grassland habitat demarcated by the edge of current arable cultivation, this varies between 8-28 m in width. The area surrounding the Green Burn is an area of proposed grassland enhancement, totalling an area of 62.9 ha. It is recommended that a native species rich mix, such as a Mavisbank Meadow Mix (SCM1) (www.scotiaseeds.co.uk, see **Annex D** for full details) is used.

Seeding would be conducted as follows:

- To reduce potential risk of erosion if soil is left bare, it is recommended that soil is prepared and sown in the spring (March to June);
- Ensure ground is free of vegetation, then firm and rake to create a seedbed;
- Aim to let the area settle for four to six weeks to allow any weed seeds to germinate then remove before sowing seeds;
- Seed is to be sown in the spring or autumn at a rate of 3g per square metre using wet meadow mix (SCM2). Bulk up the seed with an inert carrier such as sand to make distribution easier. The seed must be surface sown by machine or broadcast by hand; and
- Tread or roll in seed lightly to produce a firm surface.

Should herbicides be deemed necessary, only those cleared for aquatic use may be used in or beside water. These must be used under strict control and in accordance with the instructions printed on the product label.

Connecting the section of the Green Burn to existing riparian woodland and other areas of enhanced grassland will improve connectivity within the wider watercourse network.



Established vegetation will provide increased opportunities for foraging for birds and bats through increased invertebrate numbers. Invertebrates are additionally likely to benefit from detritus input providing foot and habitat diversification.

Indicators

Species diversity

Habitat species diversity should be surveyed during flowering seasons as an indicator of habitat management success. It is anticipated species richness will increase and eventually plateau. If declines in species richness are seen, habitat management should be reviewed.

5.5.4 Goal 4: Provision and maintenance of wildlife boxes/refugia

The number of boxes/refugia should be detailed in the final BEMP, but this outline plan indicates that the following will be suitable for this Site as a minimum:

- 6 small bird boxes;
- 2 raptor boxes;
- 6 bat roost boxes; and
- 4 reptile refugia.

5.5.4.1 Objective 4.1 Provision and Maintenance of Small Bird Boxes

Bird boxes should be placed in the tree/scrub planting areas on-Site.

Hole nesting woodland and forest edge birds are likely to benefit from the installation of nest boxes. This will allow them to breed in or near new woodland areas before the woodland matures to an age where natural tree cavities are likely to develop and provide safe rest areas for birds utilising the nearby habitats. Final decisions on placement should be assessed in the final BEMP, following a Site visit by a qualified ecologist and with reference to recommended guidance²⁰.

5.5.4.2 Objective 4.2 Provision and Maintenance of Raptor Boxes

Raptor boxes should be placed in tree/scrub planting areas on-Site. Three target species of raptor are likely to benefit from the installation of nest boxes including barn owl, kestrel and tawny owl; tawny owl and barn owl will be targeted within the Site given their presence within the Site as incidental sightings and presence within the desk study. Higher historic numbers of barn owl may indicate habitat has deteriorated since the date of the record. Nest boxes will allow them to breed in or near areas of new woodland before it matures to an age where cavities, such as tree hollows have formed. Raptor boxes would be placed at sufficient distances from small bird boxes to prevent a deterrent effect of these structures and near areas of proposed grassland and scrub enhancement. Boxes should be installed at a height of 6-8 m with a minimum of 400 m between boxes. Final decisions on placement should be assessed in the final BEMP, following a Site visit by a qualified ecologist and with reference to recommended guidance²¹.

²⁰ Cromack, D. and Baker, N. (2018). Nestboxes. Your Complete Guide. British Trust for Ornithology

²¹ Cromack, D. and Baker, N. (2018). Nestboxes. Your Complete Guide. British Trust for Ornithology



5.5.4.3 Objective 4.3 Provision and Maintenance of Bat Boxes

The Site holds suitability for foraging bats but has a low availability of roosting opportunities (6 PRF-Ms noted). The installation of bat boxes within the tree/scrub planting areas is recommended. Boxes should be positioned at a variety of aspects, with clear flight lines to the boxes. Final decisions on placement should be assessed in the final BEMP, following a Site visit by a qualified ecologist and with reference to recommended guidance²².

5.5.4.4 Objective 4.4 Provision and Maintenance of Reptile/Amphibian Refugia

The Site contains some area of potential refugia in the form of dilapidated buildings and a brash pile as suitable habitat, located in field margins. With enhancements proposed to grassland (Goal 1), woodland/scrub/hedgerows (Goal 2), riparian habitat (Goal 3) it is likely that the reptile population will increase, as such an increased availability of refugia will help support this increase. The artificial refugia must be in place before reptiles enter hibernation (October). The following recommendation is based on guidance²³. Where possible, rocks that require dismantling/removing or branches from any vegetation clearance will be reused when creating artificial refugia to maintain the character of current features.

Generally, artificial hibernacula should be at least 4 m long, 2 m wide and 1 m high, but ideally larger. In general, they should be located in a sunny position, have a long southern aspect, have access points allowing reptiles to enter the structure, be located in suitable foraging habitat and not be prone to flooding. It is often recommended that a pit is dug, and materials partially buried when creating a hibernaculum. The bulk of the hibernaculum can be created using a variety of materials, including timber, brash, tree roots, inert hardcore, bricks, rocks etc. However, materials which will decompose (e.g. plant matter) should not be placed under more enduring matter such as rocks, so as to avoid risk of collapse.

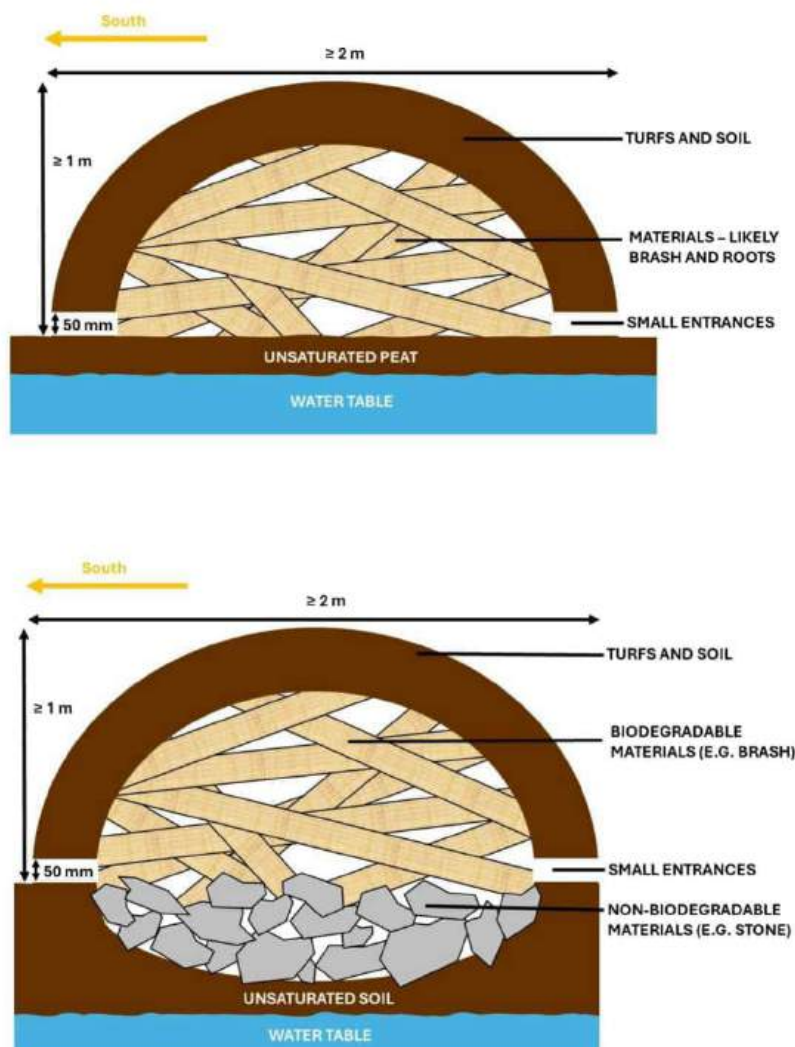
Turfs should be removed from the footprint of the hibernaculum before construction. These should be retained and replaced over the completed hibernaculum. Loose topsoil could be compacted into any remaining larger cavities, as reptiles will use quite small holes and this may provide some protection against predators (e.g. mustelids) while they are vulnerable during hibernation.

Graphic 5-1 below provides simplified hibernaculum designs for habitats where the water table is high (A) and for other habitats where the water table is lower (B).

²² Bat Conservation Trust. Bat Box Information Pack. Available at: <https://www.bats.org.uk/our-work/buildings-planning-and-development/bat-boxes/putting-up-your-box>

²³ ARG UK. (2024). Advice Note 10: Reptile Survey and Mitigation Guidance for Peatland Sites. Available at: <https://www.froglife.org/wp-content/uploads/2018/04/Compressed-Advice-note-10-Reptile-Survey-and-Mitigation-Guidance-for-Peatland-Habitats.pdf>





Graphic 5-1 Hibernaculum designs²⁴ From the top down [A] habitats where water table is high. Excavation must be avoided. [B] Other habitats where water table is lower and excavation can be undertaken. Note that in both cases hibernaculum should be 4 m in length, and non-biodegradable materials must be placed under biodegradable materials. Note, however, that it is preferable to incorporate entrances using natural materials, and not to use pipes as in some of these examples, as reptiles seem to prefer to use more 'natural' holes.

Indicators

Use of wildlife box/refugia

²⁴ ARG UK (2024). Advice Note 10: Reptile Survey and Mitigation Guidance for Peatland Sites. Available at: <https://www.froglife.org/wp-content/uploads/2018/04/Compressed-Advice-note-10-Reptile-Survey-and-Mitigation-Guidance-for-Peatland-Habitats.pdf>



Nest boxes should be checked for efficacy by assessing use. If birds are not using certain boxes for multiple years, it is likely that they are inappropriately placed and should be moved to a better location.

Box/refugia use should be monitored (**Section 6.1**) to assess the need to move boxes/refugia to more appropriate locations.

Wildlife box/refugia condition

Boxes/refugia should be kept in appropriate condition for use. This means boxes/refugia should be clean and in good repair. Box/refugia condition should be monitored (**Section 6.1**) to assess the need to clean, repair or replace the items.

6.0 Management and Monitoring

Detailed monitoring and management prescriptions will be included in the final BEMP. All monitoring would be undertaken by suitably qualified and experienced ecologists. Short and long-term monitoring and management efforts are outlined in **Table 6-1** and detailed below:

- For the first three years after sowing/planting, and then in years five, seven and ten, one monitoring visit during the peak flowering season (May to August) will be undertaken by a suitably qualified ecologist (SQE) to record plant species diversity with the Site and determine if the management scheme is successful or if additional measures are required. This visit will include monitoring of the protected species mitigation and enhancement measures.
- Where the requirement for remedial measures is identified, the SQE will communicate this to Applicant and / or those responsible for the long-term landscape maintenance contract.
- A nominated person will keep a record of enhancement measures undertaken under this plan and the results of monitoring visits by the SQE. Any adjustments or changes to the management plan will be noted;
- On completion of three years monitoring, and again in years five, seven and ten, a monitoring report will be made available to West Lothian Council. Recommendations will be made for changes to management prescriptions if objectives are not being met, as appropriate

Outline of monitoring methods are described in **Section** Error! Reference source not found. below.



Table 6-1 Management and Monitoring Prescriptions

Area	Type	Prescription	Time/Extent	Indicators/Informed by
Grassland Management Area	Monitoring	Scrub presence	At years one, three, and five and every five years thereafter. Monitoring methods reviewed after a 10 year period.	Scrub presence
	Monitoring	Species richness		Species richness
	Management	Grazing	Ongoing	Scrub presence, wildflower count, species richness
	Management	Scrub removal	As required	Scrub presence
Woodland, Scrub and Hedgerow Planting Areas	Monitoring	Tree/hedgerow plant health and survival	At years one, three, and five and every five years thereafter. Monitoring methods reviewed after a 10 year period.	Tree and hedgerow plant health and survival
	Monitoring	Hedgerow extent		Hedgerow continuity and minimum width 1.5 m
	Management	Beating up of dead trees/hedgerow plants	As required	Tree/hedgerow plant health and survival monitoring
	Management	Replacing/removing tree tubes and stakes	As required	Tree/hedgerow plant health and survival monitoring
	Management	Hedgerow cutting	First cut at year two, annually thereafter	Hedgerow extent
Aquatic Habitat Management Areas	Monitoring	Species richness	At years one, three, and five and every five years thereafter. Monitoring methods reviewed after a 10 year period.	Species richness
	Management	Management	Grazing	Annually
Wildlife boxes/refugia	Monitoring	Monitoring box/refugia use	At years one, three, and five and every five years thereafter. Monitoring methods reviewed after a 5 year period.	Wildlife box/refugia monitoring
	Management	Repairs to damaged boxes/refugia	As required	Wildlife box/refugia monitoring



Area	Type	Prescription	Time/Extent	Indicators/Informed by
	Management	Cleaning of boxes/refugia where necessary	As required	Wildlife box/refugia monitoring
	Management	Moving boxes/refugia	If required	Wildlife box/refugia monitoring



6.1.1 Tree/Scrub Monitoring

6.1.1.1 Tree/Scrub survival and health

All tree/scrub planting areas should be checked for tree health and survival, particularly during the first few years following planting. Surveyors should assess all tree/scrub areas for mortality and indicate areas of poor growth and disease so that these areas can be beaten up. Weeding of tree tubes should be advised where necessary. Tree tubes and stakes should also be checked within this timescale.

Remedial Action

Beating up of dead trees and weeding of tree tubes should be carried out where advised by monitoring. Tree tubes and stakes should be repaired and/or replaced where necessary, and tubes and stakes should be removed and recycled when trees are established and no longer required to avoid littering the woodland areas and to avoid damage to mature trees. This should be carried out within one year of survey results with the aim to keep young trees healthy.

6.1.1.2 Grassland Monitoring

All grassland areas should be surveyed for habitat health and survival, particularly in the first few years following planting. Surveyors should assess all planted grassland areas for large patches of bare ground; where these exist, targeted re-seeding should take place and/or re-evaluation of the seed mix based on ground conditions at that stage. Species of plants should be noted to ensure those targeted in the seed mix have grown and not others from the surrounding area. Monitoring should also assess the presence of scrub in interior grassland areas.

Remedial Action

Should surveys indicate the presence of scrub, additional management may be required, such as removal or the grazing regime may require a review and amendment. Where significant areas of grassland have failed to seed, it may be recommended that the grass mix is re-assessed for suitability.

6.1.1.3 SuDs Management

Management for the SuDs grassland areas would be conducted in accordance with those outlined in Section 6.1.1.2.

6.1.1.4 Wildlife Box/refugia Surveys

All wildlife box surveys will be conducted by suitably qualified and licenced (where necessary) ecologists. Wildlife boxes will be checked for occupancy once within the breeding bird season, at the end of the bird and bat breeding season. If any bat hibernation boxes are installed these will be checked once during January-February. The condition of the wildlife boxes will also be assessed, and faulty or missing boxes will be fixed/replaced before as soon as possible.

Remedial Action

Should boxes be reported faulty or missing, boxes will be fixed/replaced before as soon as possible. Should occupancy be reported low for consecutive years at any box, it may be recommended that the box is moved to a more suitable location.



6.1.1.5 Report and Review

Monitoring results would be reported annually (in years when monitoring takes place) and recommendations made for changes to management prescriptions if objectives are not being met, as appropriate. As such, the final BEMP would be a live document, such that it can be altered following monitoring results, unexpected events or evolving guidance. Any amendments to the BEMP because of the outcome of monitoring would be agreed with the BEMP Working Group in advance of any such revised prescriptions being implemented. The BEMP would be reviewed every five years.

6.2 Timescales

All BEMP works, including grassland management, tree and scrub planting and the installation of wildlife boxes/refugia should take place within one year of construction works. A more detailed programme will be provided in the Final BEMP, post-consent.

7.0 Summary

The OBEMP for the Kirknewton Solar and BESS is comprised of four primary goals:

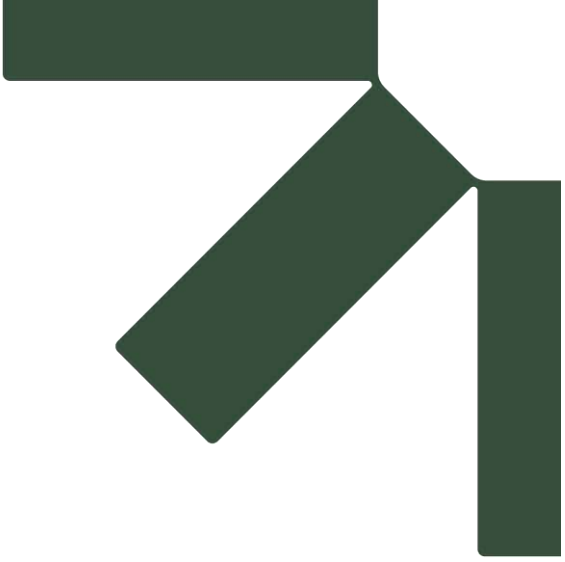
To create and enhance grassland habitats within the Site. Managed grassland is proposed around the solar PV modules to enhance sward height and species diversity. In crop areas, new grassland will be created using native seed mixes, preference is given to species-rich mixes such as hedgerow meadow or flowering lawn, while existing grasslands will be enhanced through low-input grazing and mowing. Verges surrounding the Site will comprise of species-rich native seed mixes. Management will focus on increasing botanical diversity, improving foraging habitat. This habitat will provide increased opportunities for insects, which in turn will provide increased foraging habitat for birds and bats.

To provide enhancements to aquatic habitats within the Site. A SuDs pond and riparian areas of the Green Burn will be seeded with a wet meadow mix. Native aquatic and marginal plant species will be introduced in and around the pond to enhance biodiversity and support amphibians, invertebrates, and species higher up the food chain such as birds and bats. Additional habitat features like log piles and varied substrates will be added to increase ecological value.

To create and enhance areas of mixed woodland, scrub and hedgerows throughout the Site. Planting is proposed across the Site to enhance biodiversity, provide screening, and improve habitat connectivity. Native tree species such as alder, downy birch, and rowan will be planted at moderate density, with woodland meadow mixes sown in the understory. Scrub and hedgerow planting will use native species suited to Site conditions, with hedgerows planted in double staggered rows to maximise shelter for wildlife. Existing vegetation will be retained and enhanced where possible. Low-density livestock grazing is recommended to help maintain diverse ground vegetation without damaging young trees.

To provide and maintain wildlife boxes/refugia for birds, bats and reptiles/amphibians. This will compensate for the loss of some refugia within the Site (drystone dyke) and provide nesting/roosting opportunities for bats and birds to help improve species assemblages within the Site while young, planted trees mature.





Annex A Figures

Technical Appendix 5.6: Outline Biodiversity Enhancement and Management Plan

Kirknewton Solar & BESS EIA Report

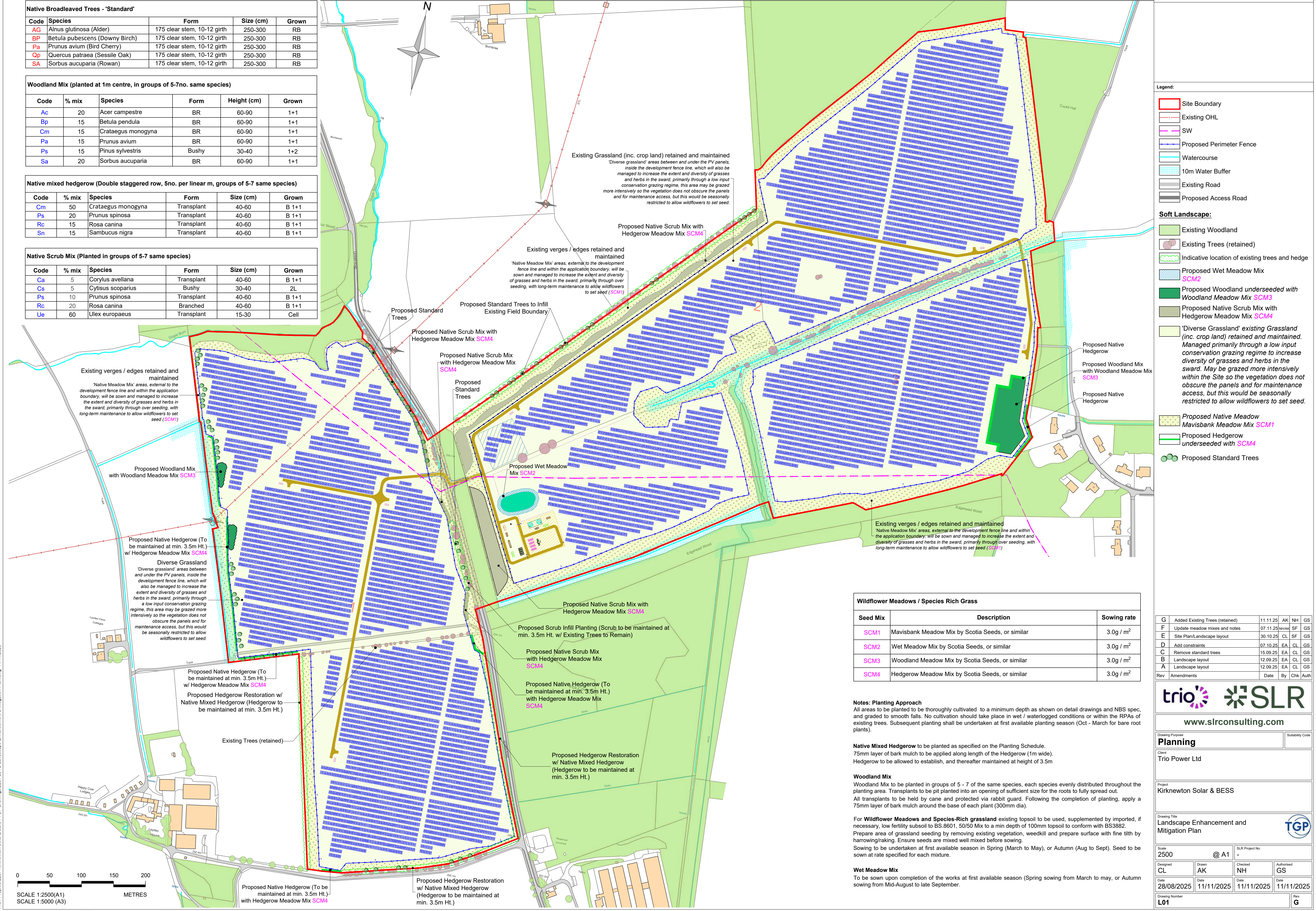
Figure 1: Landscape Enhancement and Mitigation Plan

Native Broadleaved Trees - 'Standard'					
Code	Species	Form	Size (cm)	Grown	
AG	Alnus glutinosa (Alder)	175 clear stem, 10-12 girth	250-300	RB	
BP	Betula pubescens (Downy Birch)	175 clear stem, 10-12 girth	250-300	RB	
Pa	Prunus avium (Bird Cherry)	175 clear stem, 10-12 girth	250-300	RB	
Qp	Quercus patraea (Sessile Oak)	175 clear stem, 10-12 girth	250-300	RB	
SA	Sorbus aucuparia (Rowan)	175 clear stem, 10-12 girth	250-300	RB	

Woodland Mix (planted at 1m centre, in groups of 5-7no. same species)					
Code	% mix	Species	Form	Height (cm)	Grown
Ac	20	Acer campestre	BR	60-90	1+1
Bp	15	Betula pendula	BR	60-90	1+1
Cm	15	Crataegus monogyna	BR	60-90	1+1
Pa	15	Prunus avium	BR	60-90	1+1
Ps	15	Pinus sylvestris	Bushy	30-40	1+2
Sa	20	Sorbus aucuparia	BR	60-90	1+1

Native mixed hedgerow (Double staggered row, 5no. per linear m, groups of 5-7 same species)					
Code	% mix	Species	Form	Size (cm)	Grown
Cm	50	Crataegus monogyna	Transplant	40-60	B 1+1
Ps	20	Prunus spinosa	Transplant	40-60	B 1+1
Rc	15	Rosa canina	Transplant	40-60	B 1+1
Sn	15	Sambucus nigra	Transplant	40-60	B 1+1

Native Scrub Mix (Planted in groups of 5-7 same species)					
Code	% mix	Species	Form	Size (cm)	Grown
Ca	5	Corylus avellana	Transplant	40-60	B 1+1
Cs	5	Cytisus scoparius	Bushy	30-40	2L
Ps	10	Prunus spinosa	Transplant	40-60	B 1+1
Rc	20	Rosa canina	Branched	40-60	B 1+1
Ue	60	Ulex europaeus	Transplant	15-30	Cell



Wildflower Meadows / Species Rich Grass		
Seed Mix	Description	Sowing rate
SCM1	Mavisbank Meadow Mix by Scotia Seeds, or similar	3.0g / m ²
SCM2	Wet Meadow Mix by Scotia Seeds, or similar	3.0g / m ²
SCM3	Woodland Meadow Mix by Scotia Seeds, or similar	3.0g / m ²
SCM4	Hedgerow Meadow Mix by Scotia Seeds, or similar	3.0g / m ²

Notes: Planting Approach
All areas to be planted to be thoroughly cultivated to a minimum depth as shown on detail drawings and NBS spec, and graded to smooth falls. No cultivation should take place in wet / waterlogged conditions or within the RPAs of existing trees. Subsequent planting shall be undertaken at first available planting season (Oct - March for bare root plants).

Native Mixed Hedgerow to be planted as specified on the Planting Schedule.
75mm layer of bark mulch to be applied along length of the Hedgerow (1m wide).
Hedgerow to be allowed to establish, and thereafter maintained at height of 3.5m

Woodland Mix
Woodland Mix to be planted in groups of 5 - 7 of the same species, each species evenly distributed throughout the planting area. Transplants to be pit planted into an opening of sufficient size for the roots to fully spread out.
All transplants to be held by cane and protected via rabbit guard. Following the completion of planting, apply a 75mm layer of bark mulch around the base of each plant (300mm dia).

For **Wildflower Meadows and Species-Rich grassland** existing topsoil to be used, supplemented by imported, if necessary, low fertility subsoil to BS.8601, 50/50 Mix to a min depth of 100mm topsoil to conform with BS3882. Prepare area of grassland seeding by removing existing vegetation, weedkill and prepare surface with fine tith by harrowing/raking. Ensure seeds are mixed well mixed before sowing.
Sowing to be undertaken at first available season in Spring (March to May), or Autumn (Aug to Sept). Seed to be sown at rate specified for each mixture.

Wet Meadow Mix
To be sown upon completion of the works at first available season (Spring sowing from March to may, or Autumn sowing from Mid-August to late September).

Notes:

Legend:

Site Boundary

Existing OHL

SW

Proposed Perimeter Fence

Watercourse

10m Water Buffer

Existing Road

Proposed Access Road

Existing Woodland

Existing Trees (retained)

Indicative location of existing trees and hedge

Proposed Wet Meadow Mix
SCM2

Proposed Woodland underseeded with
Woodland Meadow Mix SCM3

Proposed Native Scrub Mix with
Hedgerow Meadow Mix SCM4

'Diverse Grassland' existing Grassland
(inc. crop land) retained and maintained.
Managed primarily through a low input
conservation grazing regime to increase
diversity of grasses and herbs in the
sward. May be grazed more intensively
within the Site so the vegetation does not
obscure the panels and for maintenance
access, but this would be seasonally
restricted to allow wildflowers to set seed.

Proposed Native Meadow
Mavisbank Meadow Mix SCM1

Proposed Hedgerow
underseeded with SCM4

Proposed Standard Trees

G	Added Existing Trees (retained)	11.11.25	AK	NH	GS
F	Update meadow mixes and notes	07.11.25	NHAK	SF	GS
E	Site Plan/Landscape layout	30.10.25	CL	SF	GS
D	Add constraints	07.10.25	EA	CL	GS
C	Remove standard trees	15.09.25	EA	CL	GS
B	Landscape layout	12.09.25	EA	CL	GS
A	Landscape layout	12.09.25	EA	CL	GS
Rev	Amendments	Date	By	Chk	Auth

trio

SLR

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Drawing Purpose

Planning

Suitability Code

Client

Trio Power Ltd

Project

Kirknewton Solar & BESS

Drawing Title

Landscape Enhancement and Mitigation Plan

Scale

2500 @ A1

SLR Project No.

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Designed

CL

Drawn

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Checked

NH

Authorised

GS

Date

28/08/2025

Date

11/11/2025

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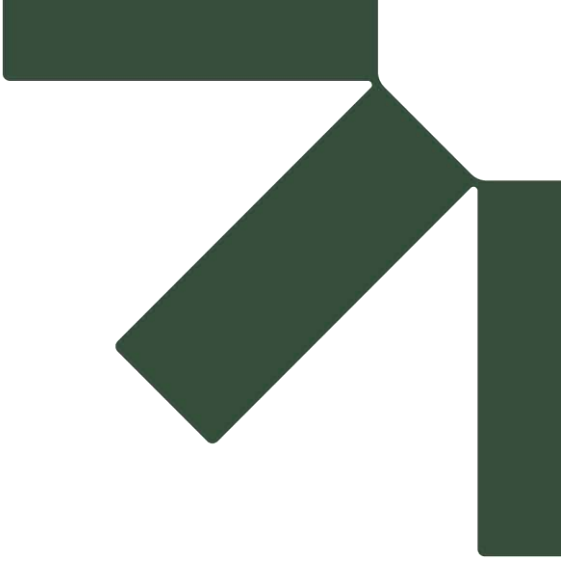
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Annex B Planning Policy

Technical Appendix 5.6: Outline Biodiversity Enhancement and Management Plan

Kirknewton Solar & BESS EIA Report

A.1 National Planning Policy

A.1.1 National Planning Framework 4 (NPF4)

The National Planning Framework 4 (NPF4) was adopted by Scottish Ministers on 13 February 2023. In order to accord with the biodiversity provisions of NPF4, development proposals should demonstrate that they contribute to the enhancement of biodiversity. Of particular relevance to this project, Policy 3 of NPF4 states:

‘3a) Development proposals will contribute to the enhancement of biodiversity, including where relevant, restoring degraded habitats and building and strengthening nature networks and the connections between them. Proposals should also integrate nature-based solutions, where possible.

...

c) Development proposals for national or major development, or for development that requires an EIA will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention. This will include future management. To inform this, best practice assessment methods should be used. Proposals within these categories will demonstrate how they have met all of the following criteria:

- i. the proposal is based on an understanding of the existing characteristics of the site and its local, regional and national ecological context prior to development, including the presence of any irreplaceable habitats;*
- ii. wherever feasible, nature-based solutions have been integrated and made best use of;*
- iii. an assessment of potential negative effects which should be fully mitigated in line with the mitigation hierarchy prior to identifying enhancements;*
- iv. significant biodiversity enhancements are provided, in addition to any proposed mitigation. This should include nature networks, linking to and strengthening habitat connectivity within and beyond the development, secured within a reasonable timescale and with reasonable certainty. Management arrangements for their long-term retention and monitoring should be included, wherever appropriate; and*
- v. local community benefits of the biodiversity and/or nature networks have been considered.*

d) Any potential adverse impacts, including cumulative impacts, of development proposals on biodiversity, nature networks and the natural environment will be minimised through careful planning and design. This will take into account the need to reverse biodiversity loss, safeguard the ecosystem services that the natural environment provides, and build resilience by enhancing nature networks and maximising the potential for restoration.’

A.1.2 Scotland's Environment Strategy

Scotland's Environment Strategy sets out the Scottish Government's vision for tackling the twin climate and nature crises and sits alongside high-level Scottish Government policy frameworks. The Strategy sets out six outcomes to achieve its vision of restoring nature and ending Scotland's contribution to climate change, transforming the country for the better.



A.1.3 Scottish Biodiversity Strategy

Targets for biodiversity are set out the Scottish Biodiversity Strategy to 2045 (draft)²⁵. The Strategy sets targets for Scotland to be Nature Positive by 2030 and to have restored and regenerated biodiversity across the country by 2045. The following six objectives have shaped the development of actions to deliver the high-level goals required to meet the above targets of halting biodiversity loss and being Nature Positive by 2030:

- 1 Accelerate restoration and regeneration;
- 2 Protect nature on land and at sea, across and beyond protected areas;
- 3 Embed nature-positive farming, fishing and forestry;
- 4 Protect and support the recovery of vulnerable and important species and habitats;
- 5 Invest in Nature; and
- 6 Take action on the indirect drivers of biodiversity loss.

A.2 Local Planning Policy

A.2.1 West Lothian Biodiversity Action Plan

The West Lothian Biodiversity Action Plan was adopted in 2025. The LDP outlines biodiversity priorities in the West Lothian area. The OBEMP supports a number of the actions outlined by West Lothian Council to support biodiversity improvement over grassland, woodland and aquatic habitats, as outlined below:

Grassland

GL1 - Increased connections between grassland habitats that support pollinators;

GL2 - An additional 10ha of species-rich wildflower meadows / semi-natural grassland have been created and are being actively managed (from 2024 coverage); and

GL5 - Increased species diversity of all grassland, including pasture, amenity grassland, etc, leading to habitats in better condition to support priority species (brown hare, barn owl, kestrel, grey partridge, curlew, lesser butterfly orchid, greater butterfly orchid, salad burnet)

Woodland

WE1 - Increased native woodland cover from 9% (broadleaf + mixed) to 14%, in priority areas by 2035. Priority areas in West Lothian include restructuring of non-native woodland and areas between woodland fragments (notably ancient woodland areas), areas around existing woodland, riparian woodland planting, wet woodland and areas identified for natural flood management run-off reduction;

WE4 - Increased length of native hedgerows across West Lothian by 10km (from 2025 levels) by 2035; and

WE5 - Increased condition of native hedgerows across West Lothian

Aquatic

AE2 - Increased native riparian woodland by at least 5km in total across West Lothian, with buffers of at least 10m wide on banks;

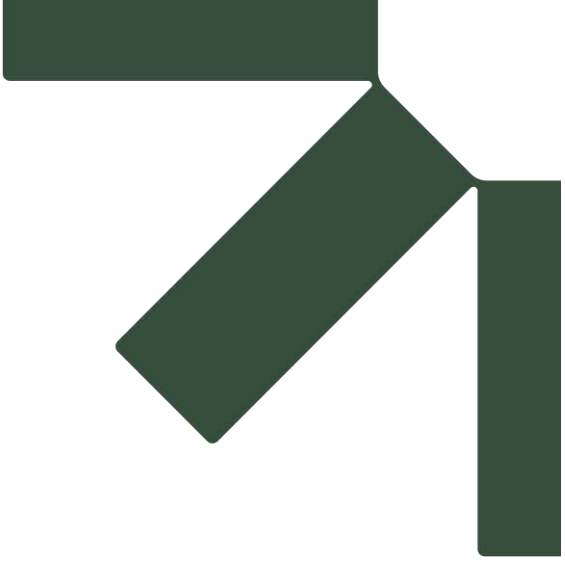
²⁵ Scottish Government (2023) Scotland's Biodiversity Strategy to 2045: tackling the nature emergency - draft. Accessed via <https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland-2/>



AE5 - Increased volume of wetland habitat types by 5ha, within appropriate places - increasing the number of seasonal ponds and seasonal wetlands for amphibians and wading birds in particular; and

AE6 - Improved habitats increase the opportunities for the expansion and support of populations of priority aquatic species (water vole, Slavonian grebe, sandwich tern, scaup, curlew, common scoter, grasshopper warbler, Atlantic salmon, brown/sea trout, slender mud snail, marsh saxifrage, great crested newt)





Annex C Outline Schedule of Works

Technical Appendix 5.6: Outline Biodiversity Enhancement and Management Plan

Kirknewton Solar & BESS EIA Report

Outline Schedule of Works

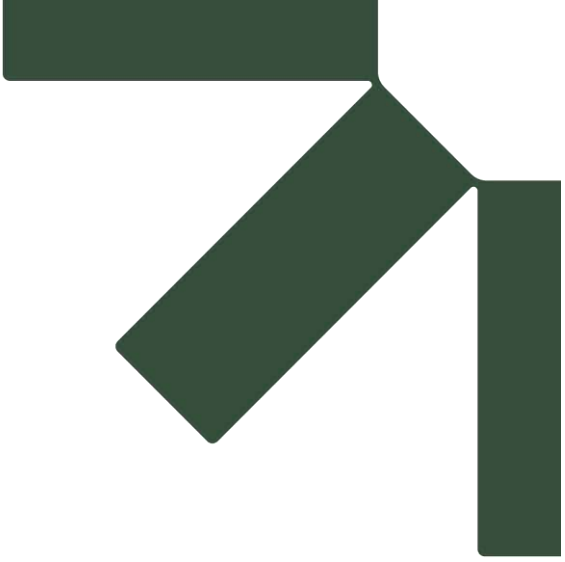
Table C-1: Outline Schedule of Works

Task	Pre-construction	Construction	Post Construction Year															
			1	2	3	4	5	6	7	8	9	10	11-14	15	16-19	20	After Year 20	
Enabling Tasks																		
Form BEMP working group	x				x													
Detailed BEMP preparation and finalisation	x																	
BEMP reviews and updates							x					x		x		x		
Detailed woodland creation plan	x																	
Detailed grassland enhancement plan	x																	
Ongoing adaptive management			x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Grassland Enhancement Area																		
Hay meadow cut		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Grazing management		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Habitat condition and botanical monitoring (species rich grassland)			x		x		x					x		x		x		
Habitat condition and botanical monitoring (wet grassland)			x		x		x					x		x		x		
Scrub monitoring			x	x	x	x	x					x		x		x		
Scrub removal		As required																
Removal of undesirable species		As required																



Task	Pre-construction	Construction	Post Construction Year														
			1	2	3	4	5	6	7	8	9	10	11-14	15	16-19	20	After Year 20
Woodland and hedgerows																	
Tree/hedgerow planting		x	x														
Grazing management		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Tree/hedgerow and survival monitoring			x	x	x	x	x	Additional works as required									
Beating up			As required														
Replacement/removal of tree tubes/stakes			As required														
Hedgerow cutting				x	x	x	x	x	x	x	x	x	x	x	x	x	x
Placement of wildlife boxes			x	x													
Wildlife box monitoring			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Wildlife box repair			As required														
Wildlife box cleaning			As required														
Moving wildlife boxes			As required														
Enabling Tasks		Management Tasks							Monitoring Tasks								





Annex D Seed Mixes

Technical Appendix 5.6: Outline Biodiversity Enhancement and Management Plan

Kirknewton Solar & BESS EIA Report

A.3 Mavisbank Meadow Mix



MIX CONTENTS

Mavisbank Meadow Mix

Our most popular mixture, a general mix for well-drained, loamy soils in open sites, this provides a range of plants for a type of species-rich grassland widespread in Scotland. There are 17 wildflower & 6 grass species in this mix.

Species	Common name	Origin	%
20 % wildflowers			
<i>Achillea millefolium</i>	Yarrow	Fife	2
<i>Centaurea nigra</i>	Common Knapweed	Fife	2
<i>Conopodium majus</i>	Pignut	Angus	0.2
<i>Galium verum</i>	Ladys Bedstraw	Fife	1.5
<i>Hypochaeris radicata</i>	Cat's Ear	Fife	0.5
<i>Lathyrus pratensis</i>	Meadow Vetchling	Fife	0.3
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	Fife	2
<i>Plantago lanceolata</i>	Ribwort Plantain	Fife	2
<i>Primula veris</i>	Cowslip	Fife	0.5
<i>Prunella vulgaris</i>	Selfheal	Fife	1.5
<i>Ranunculus acris</i>	Meadow Buttercup	Fife	2.5
<i>Rhinanthus minor</i>	Yellow Rattle	Inverness-shire	1
<i>Rumex acetosa</i>	Common Sorrel	Fife	2.1
<i>Scorzonoides autumnalis</i>	Autumn Hawkbit	Fife	0.5
<i>Succisa pratensis</i>	Devils-bit Scabious	Fife	0.4
<i>Trifolium repens</i>	White Clover	Angus	0.5
<i>Vicia cracca</i>	Tufted Vetch	Fife	0.5
80 % grasses			
<i>Agrostis capillaris</i>	Common Bent	cultivated	10
<i>Alopecurus pratensis</i>	Meadow Foxtail	cultivated	4
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass	Fife	1
<i>Cynosurus cristatus</i>	Crested Dogs-tail	cultivated	11
<i>Festuca rubra commutata</i>	Chewings Fescue	cultivated	34
<i>Poa pratensis</i>	Smooth Stalked Meadow Grass	cultivated	20

Mix well before sowing and sow at a rate of 3g/m².

If you have any queries about the mix please call us on 01356 626425.

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A.4 Wet Meadow Mix



MIX CONTENTS

Wet Meadow Mix

This mix has a colourful range of species for wet soils, including sites which are occasionally flooded or waterlogged for short periods. There are 19 wildflower & 6 grass & sedge species in this mix.

Species	Common name	Origin	%
20 % wildflowers			
<i>Achillea ptarmica</i>	Sneezewort	Inverness-shire	2
<i>Centaurea nigra</i>	Common Knapweed	Fife	2.25
<i>Cirsium palustre</i>	Marsh Thistle	Angus	0.1
<i>Filipendula ulmaria</i>	Meadowsweet	Fife	2.5
<i>Geranium pratense</i>	Meadow Cranesbill	Fife	0.5
<i>Geum rivale</i>	Water Avens	Fife	0.5
<i>Hypericum tetrapterum</i>	Square-stemmed St John's Wort	Argyll	0.5
<i>Hypochaeris radicata</i>	Cats Ear	Inverness-shire	0.5
<i>Iris pseudacorus</i>	Yellow Flag Iris	Fife	1
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	Fife	1.5
<i>Lotus uliginosus</i>	Greater Trefoil	Angus	0.1
<i>Plantago lanceolata</i>	Ribwort Plantain	Fife	1.5
<i>Prunella vulgaris</i>	Selfheal	Fife	1
<i>Ranunculus acris</i>	Meadow Buttercup	Fife	1
<i>Rhinanthus minor</i>	Yellow Rattle	Inverness-shire	1
<i>Rumex acetosa</i>	Common Sorrel	Fife	1
<i>Scorzoneroideis autumnalis</i>	Autumn Hawkbit	Fife	1
<i>Silene flos-cuculi</i>	Ragged Robin	Fife	1.5
<i>Succisa pratensis</i>	Devil's-bit Scabious	Fife	0.5
80 % grasses & sedges			
<i>Agrostis capillaris</i>	Common Bent	cultivated	10
<i>Alopecurus pratensis</i>	Meadow Foxtail	cultivated	5
<i>Carex ovalis</i>	Oval Sedge	Berwickshire	0.05
<i>Deschampsia caespitosa</i>	Tufted Hair Grass	Inverness-shire	7.6
<i>Festuca rubra commutata</i>	Chewing's Fescue	cultivated	36.5
<i>Poa pratensis</i>	Smooth-stalked Meadow Grass	cultivated	20.9

Mix well and sow at a rate of 3g/m²

If you have any queries about the mix please call us on 01356 626425.

A.5 Pond-edge Wildflower Mix



Pond-edge wildflower mix

For marshy conditions or water margins, these wildflowers provide interest & colour around the edges of ponds. Adding appropriate native plants around ponds will encourage pond-dwellers like toads, frogs, newts & dragonflies. There are 21 species in this mix.

Species	Common name	Origin	%
100 % wildflowers			
<i>Achillea ptarmica</i>	Sneezewort	Inverness-shire	13
<i>Angelica sylvestris</i>	Angelica	Aberdeenshire	2
<i>Caltha palustris</i>	Marsh Marigold	Fife	1
<i>Carex leporina</i>	Oval sedge	Berwickshire	2
<i>Carex paniculata</i>	Greater Tussock Sedge	Berwickshire	7
<i>Carex pendula</i>	Pendulous Sedge	Roxburghshire	7
<i>Cirsium palustre</i>	Marsh Thistle	Angus	3
<i>Comarum palustre</i>	Marsh Cinquefoil	Inverness-shire	2
<i>Filipendula ulmaria</i>	Meadowsweet	Fife	17
<i>Geum rivale</i>	Water Avens	Fife	7
<i>Hypericum tetrapterum</i>	Square stemmed St John's wort	Argyll	4
<i>Iris pseudacorus</i>	Yellow Flag Iris	Fife	10
<i>Lotus pedunculatus</i>	Greater Trefoil	Angus	1
<i>Lythrum salicaria</i>	Purple Loosestrife	Argyll	7
<i>Mentha aquatica</i>	Water Mint	Argyll	1
<i>Myosotis scorpioides</i>	Water Forget me not	Inverness-shire	2
<i>Ranunculus flammula</i>	Spearwort	Fife	1
<i>Silene flos-cuculi</i>	Ragged Robin	Fife	5
<i>Stachys palustris</i>	Marsh Woundwort	Fife	1
<i>Valeriana officinalis</i>	Valerian	Angus	6
<i>Veronica beccabunga</i>	Brooklime	Berwickshire	1

Mix well and sow at a rate of 2g/m²

If you have any queries about the mix please call us on 01356 626425.

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A.6 Woodland Meadow Mix



MIX CONTENTS

Woodland Meadow mix

For deep shade, this mix provides a colourful, tall mix of plants tolerant of lower light levels. There are 17 wildflower & 5 grass species in this mix.

Species	Common name	Origin	%
20 % wildflowers			
<i>Allium ursinum</i>	Wild Garlic	Perthshire	0.3
<i>Campanula latifolia</i>	Giant Bellflower	Fife	1.0
<i>Circea lutetiana</i>	Enchanters Nightshade	Fife	0.7
<i>Digitalis purpurea</i>	Foxglove	Fife	2
<i>Fragaria vesca</i>	Wild Strawberry	Angus	0.1
<i>Geranium robertianum</i>	Herb Robert	Fife	0.3
<i>Geum urbanum</i>	Herb Bennet	Fife	1.7
<i>Hyacinthoides non-scripta</i>	Bluebell	Perthshire	2
<i>Hypericum pulchrum</i>	Slender St Johns Wort	Inverness-shire	0.1
<i>Primula vulgaris</i>	Primrose	Fife	0.2
<i>Silene dioica</i>	Red Champion	Fife	3
<i>Silene flos-cuculi</i>	Ragged Robin	Fife	2
<i>Stachys sylvatica</i>	Hedge Woundwort	Inverness-shire	2
<i>Teucrium scorodinia</i>	Wood Sage	Angus	1
<i>Torilis japonica</i>	Upright Hedge Parsley	Inverness-shire	2.5
<i>Vicia sepium</i>	Bush vetch	Fife	1
<i>Viola riviniana</i>	Common Dog Violet	Angus	0.2
80 % grasses			
<i>Agrostis capillaris</i>	Common Bent	cultivated	10
<i>Cynosurus cristatus</i>	Crested Dog's Tail	cultivated	10
<i>Festuca rubra</i>	Red Fescue	Fife	25
<i>Poa nemoralis</i>	Wood Meadow Grass	cultivated	10
<i>Poa pratensis</i>	Smooth-stalked Meadow Grass	cultivated	25

A.7 Landlife LW12M Low Growing 80/20 Wildflower Meadow

LW12 Low Growing 80/20 Wildflower Meadow



LW12 contains twenty native British wildflowers and grasses to create a low growing meadow.

Consisting of 80% grass and 20% wildflowers, LW12 creates a permanent meadow with flowers from May to October. Suitable for creating habitats of only low growing plants. It is ideal for use where visibility is important, for example along roadsides.

LW12 supports bees, butterflies and other pollinators as 88% of the wildflowers included in this mixture are recommended by the Royal Horticultural Society (RHS) as 'Perfect for Pollinators'.



Mixture Contents:

Common Name	Latin Name	Quantity	Flowers	Height	Type
1 Bedstraw, Lady's	<i>Galium verum</i>	1.5%	Jun - Sep	50 - 80cm	Perennial
2 Black Medick	<i>Medicago lupulina</i>	1.2%	May - Oct	15 - 80cm	Annual
3 Burnet, Salad	<i>Sanguisorba minor</i>	2%	Jun - Sep	15 - 50cm	Perennial
4 Campion, Bladder	<i>Silene vulgaris</i>	0.8%	May - Sep	25 - 60cm	Perennial
5 Carrot, Wild	<i>Daucus carota</i>	1%	Jun - Oct	30 - 100cm	Perennial
6 Cat's-ear, Common	<i>Hypochaeris radicata</i>	0.8%	Jun - Oct	15 - 50cm	Perennial
7 Cornflower	<i>Centaurea cyanus</i>	2%	Jun - Oct	20 - 80cm	Annual
8 Cowslip	<i>Primula veris</i>	0.4%	Apr - May	15 - 30cm	Perennial
9 Forget-me-not, Field	<i>Myosotis arvensis</i>	1%	May - Jul	20 - 40cm	Annual
10 Hawkbit, Autumn	<i>Leontodon autumnalis</i>	1.2%	Aug - Oct	15 - 20cm	Perennial
11 Hawkbit, Rough	<i>Leontodon hispidus</i>	1.3%	Jun - Oct	15 - 35cm	Perennial
12 Plantain, Hoary	<i>Plantago media</i>	0.8%	May - Sep	15 - 45cm	Perennial
13 Ragged Robin	<i>Lychnis flos-cuculi</i>	0.2%	May - Aug	30 - 90cm	Perennial
14 Self-heal	<i>Prunella vulgaris</i>	1%	Jun - Sep	15 - 30cm	Perennial
15 Sorrel, Sheep's	<i>Rumex acetosella</i>	0.4%	May - Jul	20 - 40cm	Perennial
16 Toadflax, Common	<i>Linaria vulgaris</i>	0.2%	Jun - Oct	30 - 90cm	Perennial
17 Trefoil, Bird's-foot	<i>Lotus corniculatus</i>	1%	Jun - Aug	10 - 40cm	Perennial
18 Vetch, Kidney	<i>Anthyllis vulneraria</i>	1%	May - Oct	15 - 50cm	Perennial
19 Yarrow	<i>Achillea millefolium</i>	0.2%	Jun - Oct	20 - 100cm	Perennial
20 Yellow-rattle	<i>Rhinanthus minor</i>	2%	Jun - Sep	25 - 50cm	Annual
Bent, Common	<i>Agrostis castellana</i>	4%		50 - 100cm	Grass
Bent, Creeping	<i>Agrostis stolonifera</i>	4%		40 - 100cm	Grass
Crested Dogstail	<i>Cynosurus cristatus</i>	34%		30 - 60cm	Grass
Fescue, Sheeps	<i>Festuca ovina</i>	20%		15 - 50cm	Grass
Meadow Grass, Smooth Stalked	<i>Poa pratensis</i>	8%		30 - 90cm	Grass
Timothy, Small Leaved	<i>Phleum pratense</i> ssp <i>Bertolinii</i>	10%		50 - 100cm	Grass

Contains:



Sowing Rate: 5g/sqm

Wildflower seed in Landlife Wildflowers mixtures is of UK native origin.

