

DRAFT Landscape and Ecological Management Plan Years 6-10

Llanwern Solar, Gwent Levels

30 July 2026
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Ecology
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Revision 1	21 April 2026	Hannah Spencer MZool	Carly Benefer BSc MSc PhD MCIEEM	Carly Benefer BSc MSc PhD MCIEEM	Revisions to reflect update in management prescriptions and lapwing mitigation land as per discussion with NRW
Final	09 January 2026	Hannah Spencer MZool	Faye Midmore BSc MSc MCIEEM; Carly Benefer BSc MSc PhD MCIEEM	Jon Garner BSc MCIEEM	

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Site Details

Site Name and Location	Llanwern Solar, Gwent Levels
Central OS Grid Reference	ST 374 849
Client	Gwent Farmer's Community Solar Partnership Ltd
Boundary	



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1 Introduction

This Landscape and Ecological Management Plan Years 6-10 (LEMP) has been produced by GE Consulting on behalf of Gwent Farmer's Community Solar Partnership Ltd in relation to Llanwern Solar, located on the Gwent Levels to the south of the Llanwern Steelworks Site.

This document supersedes the LEMP produced to accompany the original application and subsequent version (V9) agreed with Natural Resources Wales (NRW) (Green Ecology, 2019a).

The implementation of the LEMP is central to protecting the landscape and visual and ecological importance of the Site.

1.1 Purpose of this Document

This LEMP provides details of management requirements between Years 6 and 10 of the operational phases.

Whilst the original LEMP (Green Ecology, 2019a) was intended to cover the lifetime of the project (30 years), a number of monitoring reports have identified the need for both remedial actions and improved management measures to secure appropriate objectives.

This LEMP therefore covers the management of ecological mitigation and enhancement features until Year 10, when it is envisioned that, subject to successful implementation, a final LEMP can be rolled out for the remaining life of the project.

This document also seeks to incorporate and update the Lapwing Management Plan v5 (Green Ecology, 2019d) produced to satisfy Condition 11 of the planning consent into a single document for the avoidance of confusion.

1.2 Project Background

The scheme received consent in 2018 (DNS Application Ref: APP/G6935/A/16/3150137) for the erection of a solar energy hub generating 49.9mw net installed generating capacity, comprising ground mounted solar panels, battery storage container units (200 units), underground cabling, grid connection hub, associated infrastructure, landscaping and environmental enhancements, for a temporary period of 30 years. The proposal is classed as a Development of National Significance (DNS) and the temporary development (30 years) covers a site of approximately 345 acres.

1.3 Works to Date

The following works have already been completed in accordance with the LEMP v9 (Green Ecology, 2019a), Hedgerow Removal Plan (Green Ecology, 2019b), Common Crane Mitigation Plan v3 (Green Ecology, 2019c) and Lapwing Management Plan v5 (Green Ecology, 2019d):

- 👉 Installation of Solar Panels, access tracks and associated security fencing;
- 👉 Removal of target hedgerows to open up/prevent overshadowing of SSSI Reens and Ditches;
- 👉 Installation of bug hotels, bat boxes and bird boxes;
- 👉 Installation of crane crossings;
- 👉 Lapwing mitigation fields, crane mitigation fields and shrill carder bee mitigation fields have been secured;
- 👉 Rotational de-silting of the reens and ditches is on-going.

1.4 Monitoring and Contingency Plan

This LEMP draws on information in the Ecological Monitoring and Contingency Plan (Green Ecology, 2019e) which was produced to satisfy Condition 14 of the planning consent. This provided a monitoring scheme for key ecological features and provided contingency plans if monitoring detects that objectives in the LEMP were not being met. This LEMP expands and refines the objectives to ensure they are fit for purpose based on current conditions, and outlines an updated monitoring schedule.

In addition, this LEMP has been informed by Monitoring Reports produced annually for Years 1 - 5, which were undertaken in accordance with the Ecological Monitoring and Contingency Plan to establish the success and effectiveness of the habitat measures and management.

2 Aims of LEMP

The aims of this document are to:

- 👉 Supersede the previous LEMP and Lapwing Management Plan, with a management framework for the next 5 years (Years 6 – 10);
- 👉 Provide sufficient detail on management operations to ensure that retained and established habitats are managed and maintained to meet appropriate and realistic objectives;
- 👉 Provide a timetable for the implementation of the LEMP; and,
- 👉 Refine the monitoring and contingency arrangements established in the Ecological Monitoring and Contingency Plan (Green Ecology, 2019e) to ensure that appropriate refinements and/ or revision of the plan can be made in order to promote any objectives of the LEMP.

This LEMP should be read in conjunction with the Ecological Features and Habitats plan in **Figure 1**.

3 Format of the Plan

The LEMP is set out as follows:

- 👉 Details on implementation and funding of the plan;
- 👉 A description of the ecological and landscape features to be managed;
- 👉 Management and maintenance specification and annual schedule of operations; and
- 👉 Review and monitoring of the plan.

Any changes to the LEMP will need to be agreed in writing by the Local Planning Authority.

4 Management Mechanism and Funding

This section describes how the LEMP will be implemented, who will fund it and who will be responsible for its delivery.

4.1 Managing Agent

Wise Energy will be the organisation responsible for the delivery of the LEMP.

Wise Energy will be responsible for commissioning a contractor/s to undertake the works in accordance with the LEMP. This Approved Contractor will be a suitably qualified and experienced contractor, capable of delivering the ongoing management works in line with the LEMP.

4.2 Funding

The developer is committed to fund the costs of compliance with the LEMP in full. This will occur for the remaining lifetime of the project (30 years).

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5 Current Ecological Features and Landscape Character

5.1 Site Context and Landscape Character

The Site covers an area of approximately 145 hectares (ha) and lies to the north, west and east of the village of Whitson, on the outskirts of Newport. The Site is approximately 0.9 – 3 km from the Severn Estuary and is located on the Caldicot Levels.

The Site comprises predominantly low-lying fields of coastal and floodplain grazing marsh comprising improved grassland on which the solar farm, substation and associated access roads have been built. Semi-improved neutral grassland with rush pasture are present within the mitigation areas outside of the panelled areas of the solar farm.

The fields are bound by hedgerows with scattered trees and reens and ditches. All hedgerows are considered to be Habitats of Principal Importance (HPI) under Section 7 of the Environment (Wales) Act, although double lines of hedgerows alongside some ditches or reens were considered likely to have an adverse effect on adjacent water courses due to shading and siltation.

The character of the site is typical of the character of LANDMAP aspect area NWPRTVS307, with “primarily pastoral land with limited arable. The pattern of linear rectangular fields to the east is distinctive, some enclosed by cut or outgrown hedges or lined with willows but all bound by ditches... A more sinuous pattern prevails to the west of Whitson Common around Goldcliff. The most distinctive feature is the drainage network including undulating fields, field ditches and reens of various sizes... These have strong reed and other marginal vegetation which contributes to the lowland character of the area”. The degree of impact on the landscape resource of the area would relate to the impacts on this pattern.

5.2 Designated Sites

The Site lies wholly within two Sites of Special Scientific Interest (SSSI) that form part of the Gwent Levels:

 **Gwent Levels SSSI.** The Gwent Levels comprises a series of six SSSIs covering a total of 5700ha. The Site is located within the Gwent Levels: Whitson SSSI and Gwent Levels: Nash and Goldcliff SSSI. Each component SSSI is notified for ‘reen and ditch habitat’, ‘insects and other invertebrates’. The Nash and Goldcliff SSSI citation notes that the site is of particular botanical interest as it is the only area in Wales for least duckweed *Wolffia arrhiza* and that there is an interesting community where two species of hornwort *Ceratophyllum submersum* and *C. demersum* grow together. The Whitson SSSI citation states that it is of particular importance for its large number of nationally rare and notable invertebrate species, including shrill carder bee *Bombus sylvarum*, *Anthomyza bifasciata*, *Coptophlebia volucris* and *Hydrophilus piceus*.

 The baseline surveys of the habitats of the Site within the Gwent Levels SSSI was improved and semi-improved grassland, bounded by reens and ditches, which were grazed by both cattle and sheep and occasionally horses.

Several other designated sites are located within 10km of the Site boundary which are a consideration as part of management:

 **Severn Estuary Special Protection Area (SPA), Special Area of Conservation (SAC) Ramsar site and component SSSI**, located a minimum of 900m south. The SPA is designated for supporting populations of European importance of overwintering Bewick’s swan, gadwall, white fronted goose, dunlin, redshank and shelduck and it qualifies as a wetland of international importance by regularly supporting an assemblage of at least 20,000 waterfowl. The SAC is designated for estuarine habitats

and fish. The Estuary also meets the criteria for a wetland of international importance under the Ramsar Convention;

- 🦉 **Newport Wetlands National Nature Reserve (NNR)/ SSSI**, located approximately 950m west. This reserve is of interest for its breeding and overwintering birds, invertebrates, aquatic and marginal flora, ditch habitats and reedbeds;
- 🦉 **Nedern Brook Wetlands SSSI** located 10km to the west designated for wet grassland habitats which support wintering birds including Bewick's swan, redshank and wigeon.

5.3 Fauna

A summary of the current fauna supported by the site is provided in **Table 1** below. Details of the original baseline (pre-development) can be found in the Environmental Statement (Savills 2018) submitted with the planning application.

Table 1: Baseline Fauna at Llanwern

Species/ Group	Summary of Findings	Location
Amphibians	The Site's reens/ ditches are likely to support breeding populations of common amphibian species based on 2018 findings. Monitoring surveys were not required for this species group, populations are assumed to be the same as pre-development.	All reens/ditches & field margins
Badger	Although no badger setts were found during 2025 surveys, the Site may support foraging badger.	All unfenced areas of the Site, mainly the buffers outside of the Solar Array Areas and Mitigation Fields
Bats	Results of the Year 3 Monitoring (2023) found several mature trees contain features with low or moderate potential to support roosting bats, although no confirmed evidence was found. The Site supported low to moderate levels of commuting and foraging bats, mostly concentrated along linear features including the extensive network of hedgerows and ditches. Although activity was widespread through the Site, H90/D82, H11/ D14 and H37/D33 supported the highest activity. The majority of species recorded were relatively common and widespread, although <i>Nathusius pipistrelle</i> was found to use the Site. Annex II species (lesser horseshoe EPS, SPI) were recorded in very low numbers and after typical emergence times indicating that these species are travelling to the Site to forage on an occasional basis.	All hedgerows and reens/ ditches.

Species/ Group	Summary of Findings	Location
	Hedgerows, reens/ditches and trees remain throughout the Site, the Site is assumed to support the same level of bat activity as found during the Year 3 surveys.	
Dormouse	There are a low number of dormouse records that lie outside, but near to the application Site and as such dormouse may be present in hedgerows within the application area (2025). No targeted monitoring for this species was secured through planning but they are assumed present.	Dormouse presence across all hedgerows and linked scrub has been assumed.
European eel	Records suggest that European eel are present in the local area and given the connectivity of the Site with a large ditch network, it is likely that they are present within the Site's ditches/ reens.	Eel presence across the Site's waterways (all that contain water) has been assumed.
Invertebrates	Monitoring surveys during 2025 found six key aquatic invertebrate species of Nationally Scarce status (or higher) recorded within the reens and ditches. The overall assessment indicated that the reen and ditch condition is improving and that the aquatic and terrestrial community of invertebrates is of high ecological importance, however both are currently in sub-optimal condition.	Reens, open ditch margins, ruderal vegetation, mitigation fields, hedgerows and deadwood.
Shrill Carder Bee	Dedicated Carder Bee surveys during 2025 found a total count of 63 shrill carder bee and 79 brown-banded carder bee across the survey areas of the Site and control fields offsite. Spear thistles and white clover provide much of this species foraging resource throughout the spring-summer. The surveys found that the improved and semi-improved fields hold ecological importance for this species.	Fields comprising shrill carder bee foodplants, spear thistle and clover species. Improved and semi-improved fields across the Site.
Otter	The Site's extensive network of water courses was surveyed in 2018 and confirmed to support otter with two otter spraints found in the south-east area of the Site. Otter spraint was recorded within Solar Array Area 3 during water vole surveys in 2025. No targeted monitoring for this species was secured through planning.	Wet reens within Solar Array Area 3.

Species/ Group	Summary of Findings	Location
Water vole	Evidence of water vole (SPI, WCA Schedule 5) was found within Solar Array Areas 2 and 3 during surveys in 2025, with a minimum of 5 burrows recorded between the two areas.	Wet reens within Solar Array Areas 2 and 3.
Other mammals	The 2025 surveys found that the Site contained suitable habitat to support brown hare (SPI) and hedgehog (SPI).	Brown hare and hedgehog – all fields and hedgerow bases.
Reptiles	The 2025 surveys found that the Site contains habitats that potentially support grass snake and other widespread reptile species, particularly in associated with tall ruderal vegetation, hedgerow bases, water courses, manure piles and other suitable habitat. Suitable habitat for basking, foraging, commuting and sheltering reptiles is present throughout the Site. No targeted monitoring for this species was secured through planning.	Reens and ditches (for grass snake) and margins and dense hedgerow bases.
Breeding Birds	Breeding bird surveys in 2025 found a total of 58 bird species were recorded during the breeding bird surveys, of which, 37 are considered to be 'notable', as detailed within the Ecological Monitoring and Review – Year 5 report. Confirmed notable breeding bird species comprise starling, moorhen and whitethroat. Probable notable breeding bird include Cetti's warbler, lapwing, mallard and Ramsar target species shelduck. Hedgerows, reens and ditches, vegetated buffers and invertebrate-rich grasslands support breeding birds across the Site.	Hedgerows, fields and reens across the Site.
Wintering Birds	The 2015-2017 surveys found several notable wintering bird species using the site, including teal, mallard and lapwing which are listed in the Severn Estuary SPA waterfowl assemblage. The Site also supports wintering flocks of starling, redwing and fieldfare. Nocturnal surveys of the Site found feeding/ foraging barn owl, lapwing, common snipe, mute swan, mallard and moorhen. No targeted monitoring for these species were secured through planning.	Hedgerows, fields and reens across the Site.

6 Summary of Habitats To Be Managed

Table 2 below provides a summary of the features will be managed under this LEMP. The locations of these features are illustrated in **Figures 1 – 4**.

The definition of features to be managed in this LEMP differ to those set out in the original LEMP. This is because the names of the original features were found to be confusing to both contractors and monitoring ecologists. The aim of these revisions has been to provide clear and precise areas with clear and precise objectives and management prescriptions that leave no doubt as to how the site's ecological health is progressing over time.

Table 2: Features to be Managed

Feature	Details
Retained Grassland (Solar Array Area)	- The Retained Grassland involves all grassland areas within the security fencing, which comprises improved grassland. - Panelled areas make up 91.49ha of the Site. - Management of all fields will comprise a low intensity grazing/ mowing regime to create and maintain a moderate level of plant species diversity and structural variation. Creating a mosaic of structural variances will maximise the value of the grassland as an ecological resource including for the benefit of target species shrill carder bee.
Lapwing Mitigation Fields	- The Lapwing Mitigation Area comprises 11.4ha of tussocky grass-dominated improved grassland fields to the west of Solar Array Area 1 to provide mitigation for loss of ground nesting habitat. - Management will aim to produce suitable winter foraging ground and potential nesting habitat for lapwing. - No scrub, trees or fencing will be present (excluding existing boundaries) to avoid creation of predator perches. - Re-instatement of historic grips will provide foraging habitat for breeding lapwing, Method Statement provided in Appendix 3.
Hedgerows	- This covers all hedgerows (both within and outside the solar security fencing). - Management of hedgerows is to comprise a low intensity cutting routine to maintain structure and provide screening. - Retained hedgerows will be managed for the lifetime of the project to maintain continuous, dense and connected habitat, providing commuting habitat for bats and dormice and a foraging resource (e.g. berries and nuts) for a range of species.
Reens and Ditches	- This covers all watercourses both within and outside the solar security fencing within the Site boundary, shown in the Ditch Management Schedule Appendix 4. - Management is to continue with rotational de-silting of the reens and ditches on a 8-7 year basis in accordance with NRW guidance. - The rotational ditch management to remove silt will maintain water levels and enhance habitat requirements of the SSSI feature: shrill carder bee. - Where hedgerow coppicing took place to open up reens and ditches, management will continue to keep these at ground level.
Grassland Outside of Solar Fencing	- Buffers will be maintained adjacent to field ditches and reens. - These areas are located outside of the security fencing and are subject to a sensitive, low intensity management regime to enhance species diversity.

Feature	Details
	- The buffers will create a connected network of flower-rich and tussocky grassland throughout the Site to create habitat for a range of species including terrestrial habitat for shrill carder bee and foraging habitat for barn owl. - Increasing floral diversity will provide nectar food sources for invertebrates such as shrill carder bee.
Dedicated Common Crane and Shrill Carder Bee Mitigation Area	- The Dedicated Common Crane and Shrill Carder Bee Mitigation Areas comprises a 11.2ha area of crane and bee-friendly habitat, to the east of Solar Array Area 1 and to the north and east of Solar Array Area 2. - The Shrill Carder Bee Wildflower Areas will be managed sensitively with a strip cut approach <u>to one field in June leaving areas of cut and uncut sward to promote late flowering shrill carder bee foodplants (Buglife, 2019).</u> Two options have been provided (shown in Figure 5a and 5b) as a trial as suggested by Natural Resources Wales to help create areas of varied sward structure and provide habitats for invertebrates. in June leaving areas of cut and uncut sward to promote late flowering shrill carder bee foodplants (Buglife, 2019). <u>on All fields will be cut a rotational basis at the end of September after the flowering season, cuttings will be left to sit where they are cut for a minimum of one day, maximum of one week to allow seeds to fall onto the field before arisings are baled and removed.</u>

7 Adaptive Works Following Year 5 Monitoring

The following habitat measures were identified as part of the Year 5 Monitoring Report (GE Consulting, 2025c) as immediate actions to be implemented in the appropriate season. Where changes of ongoing management were identified, this is covered in **Section 8**.

- 🐦 Restricted livestock grazing for set periods within the Retained Grassland (Solar Array Area) (see ongoing management schedule in **Section 8** below).
- 🐦 Control of important shrill carder bee foodplants such as thistles is to only occur if they will impact on the panel arrays and will be left alone elsewhere.
- 🐦 In agreement with NRW grips are to be reinstated within the Lapwing Mitigation Fields as described as per the Grip Method Statement (Wise Energy, 2026) in **Appendix 3**. Grips should be dug in mid-autumn to avoid the March-September lapwing breeding window and be allowed to establish over the winter months. Excess soil is to be spread thinly over the fields outside of the grips, if this is not possible, excess soil is to be removed offsite.
- 🐦 Artificial otter holts have not been installed within the Site. Two artificial otter holts will be installed within the Solar Array Area with locations to be confirmed with the management team, in close consultation with NRW and subject to any necessary consents, licenses or approvals being obtained.

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8 Habitat Management Schedule

8.1 Management Constraints

The following constraints are to be taken into account prior to all management activities.

8.1.1 Timing

The development site supports nesting birds and is likely to support dormouse. Hedgerow and native shrub management should be undertaken between November and February inclusive.

Any tree work should be preceded by a check for roosting bats and barn owl by a suitably licensed ecologist and should be undertaken outside of the nesting bird season of March to September.

The reens and ditches support water vole and are likely to support otter. Reen and ditch management should be undertaken between November and February inclusive.

8.1.2 Sensitive Methods

An ecologist will be present to oversee sensitive environmental works including but not limited to the re-instatement of historic grips, installing any additional hibernacula, bat or bird boxes.

8.1.3 Herbicide and Pesticide Use

There will be no application of pesticides or diluted sheep dip.

Herbicides should only be applied to control noxious weeds such as nettle and ragwort by spot treatment only and only where absolutely necessary. Where possible targeted mowing or strimming will be used first to reduce the prevalence of unwanted plant species, followed by grazing.

No stock will be grazed that has been recently treated with an Avermectin (especially if this is a bolus treatment). This has a detrimental impact on dung and soil breeding invertebrates on which the birds feed.

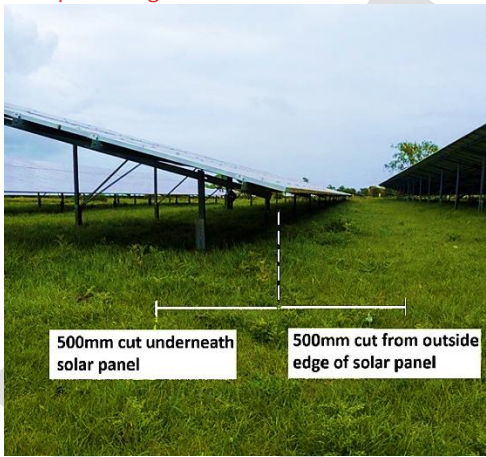
Selective herbicide usage will be limited to specific areas of the Site where hand tools are not suitable for weed control, such as around the security fencing, underneath solar panels and within areas of hardstanding and inaccessible restricted areas around high voltage areas. Herbicide usage should be used as a last resort where hand tools or other mechanical means cannot be used.

Any herbicide use should be agreed with the project ecologist prior to use, and a herbicide permit and SSSI consent obtained from NRW.

8.2 Retained Grassland (Solar Array Area)

Table 3 details the management to be undertaken between Years 6 and 10. The colour corresponds to the habitat area shown on **Figures 2 – 4**.

Table 3: Management Schedule for Retained Grassland (Solar Array Area) (mapped in green)

Feature	Management Details	Month												Year				
		J	F	M	A	M	J	J	A	S	O	N	D	6	7	8	9	10
1. Grassland within 1m around the of the Solar Panels within Solar Array area	Grass height within 1m around the panels to be grazed with supplementary managed through mowing/ strimming where required so to not exceed a height of more than 400mm to prevent shading of panels. The 1m is split between 500mm underneath the panel from the panel edge and 500mm outside from panel edge. 			✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓
2. Grassland throughout Solar Array	No mowing to be carried out outside of the 1 metre buffer around the solar array during April to September to encourage flowering.			X	X	X	X	X	X					✓	✓	✓	✓	✓
	Sheep grazing at a rate of 5 sheep per hectare in the autumn/winter and supplemental feed to be provided to not overgraze the grassland. All stock to be watered with welfare checks/ standard husbandry as required. Supplementary feeding in winter if required	✓	✓	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓
	Sheep grazing to stop and sheep to be removed from grassland during the flowering period.				✓	✓	✓	✓	✓					✓	✓	✓	✓	✓

Feature	Management Details	Month												Year				
		J	F	M	A	M	J	J	A	S	O	N	D	6	7	8	9	10
	Grassland will be mown/cut at the end of September if needed, and arisings will mulched.									✓				✓	✓	✓	✓	✓
	Any scrub or trees invading the grassland or encroaching towards the solar arrays would be removed with hand tools or spot herbicide application. All tree and shrub removal should be undertaken outside of the bird nesting season (which is March-September). If unavoidable, a thorough check of the site for nesting birds should be undertaken prior to any works affecting vegetation.	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓

8.3 Lapwing Mitigation Fields

Table 4 details the management to be undertaken between Years 6 and 10. The colour corresponds to the habitat area shown on **Figure 2**.

Table 4: Management Schedule for Lapwing Mitigation Fields (mapped in blue)

Feature	Management Details	Month												Year				
		J	F	M	A	M	J	J	A	S	O	N	D	6	7	8	9	10
1. Grassland within the Lapwing Mitigation Area	Cattle and/or sheep grazing to be undertaken on Lapwing Mitigation Fields. All stock to be watered with welfare checks/ standard husbandry as required. Supplementary feeding in winter if required. Livestock should be outside for at least one week before being put onto the Lapwing Mitigation Fields after being over-wintered indoors. Do not graze stock that has been recently treated with an Avermectin (especially if this is a bolus treatment).	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Between 15th March to 30th June Stocking density must not exceed one beast (cow/ heifer/ steer/ bull) per hectare or five sheep per hectare.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Feature	Management Details	Month												Year				
		J	F	M	A	M	J	J	A	S	O	N	D	6	7	8	9	10
	Vegetation flailed in September to take off the tall sward.									✓				✓	✓	✓	✓	✓
	Rushes to be flailed annually to 20cm between September-February and maintain rushes at <30% of the grassland, with 10% to remain uncut.	✓	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓
	Any new scrub and tree growth encroaching the grassland to be removed mechanically. All woody vegetation removal should be undertaken outside of the bird nesting season (which is March-September).	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓
	Do not apply any organic or inorganic fertiliser or lime - no field operations to be undertaken from 1 st April to 1 st August.	✓	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓
	Do not apply any pesticides or diluted sheep dip.	X	X	X	X	X	X	X	X	X	X	X	X	✓	✓	✓	✓	✓
	Herbicides should only be applied to control noxious weeds by spot treatments if deemed absolutely necessary and only in line with NRW licence conditions <u>under licence from NRW where applicable</u> - no field operations <u>herbicide applications</u> to be undertaken from 1 st April to 1 st August.	✓	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓
2. Grips	Existing grips are to be reinstated in line with the Grip Method Statement (Wise Energy, 2026), as consented by Natural Resources Wales (2026) <u>as consented by Natural Resources Wales (2026)</u> ; consent reference number: C005780/1 <u>C005780/1</u> in line with <u>in line with</u> Appendix 5 and Land Drainage Consent (Application Number: 2026/21) Appendix 6 , following approval by NRW									✓	✓	✓		✓				
	Re-dig and profile the grips to provide bare ground and if needed, dig the centre of the grips deeper to enable the holding of water.	✓													✓		✓	
3. Hedgerows within and surrounding Lapwing Mitigation Area	To provide predator protection for lapwing within the mitigation area, retained hedgerows that surround the lapwing area are to be cut to a height of no more than 21.5 <u>21.5</u> metres annually . Do not allow standard trees to establish.	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓

Feature	Management Details	Month												Year				
		J	F	M	A	M	J	J	A	S	O	N	D	6	7	8	9	10
	Remove any regrowth of hedgerow stumps which have been targeted for removal (along reens) by cutting back to 20cm.	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓

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8.4 Dedicated Common Crane and Shrill Carder Bee Mitigation Areas

Table 5 details the management to be undertaken within the Common Crane and Shrill Carder Bee Mitigation Areas between Years 6 and 10. The colour corresponds to the habitat area shown on **Figures 2** and **3**.

Table 5: Management Schedule for Dedicated Common Crane and Shrill Carder Bee Mitigation Areas (mapped in yellow)

Feature	Management Details	Month												Year				
		J	F	M	A	M	J	J	A	S	O	N	D	6	7	8	9	10
1. Grassland <u>within Dedicated Common Crane and Shrill Carder Bee Mitigation Fields</u>	Do not apply any organic or inorganic fertiliser, lime or herbicide to fields.	X	X	X	X	X	X	X	X	X	X	X	X	✓	✓	✓	✓	✓
	Remove livestock between April-September.				✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓
	<u>Field 2 will be managed with a trial strip cuts as shown in Figure 5a or 5b. This will comprise of sections of grassland to be cut to a height of 200mm in June to promote late-summer flowering. A 6m hedgerow buffer will be left un-cut. This management will be reviewed each year and adapted for best outcomes for shrill carder bee.</u>						✓							-	✓	✓	✓	✓
	<u>All grassland fields including hedgerow buffers and headlands</u> will be mown/cut at the end of September to a height of approx. 100mm. Arisings will be left for a maximum of 1 week to drop seeds. If the weather conditions are suitable remove the crop as hay for animal feed by baling and taking off-site. If this is not possible due to weather constraints, then flailing will be used.									✓	✓			✓	✓	✓	✓	✓
	Aftermath grazing by livestock following grass cutting (where possible) at a low stocking density of 1 cattle per hectare or 5 sheep per hectare. All stock to be watered with welfare checks/ standard husbandry as required. Supplementary feeding in winter if required. Cattle should be outside for at least one week before being put onto the Crane Enhancement Area, after being over-wintered indoors. Do not graze stock that has been recently treated with an Avermectin (especially if this is a bolus treatment).	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓



	Scrub and tree growth removal to be undertaken <u>mechanically</u> where this is >5% of the grassland area either <u>mechanically</u> . All woody vegetation removal should be undertaken outside of the bird nesting season (which is March-September).	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓
	Do not apply any pesticides or diluted sheep dip.	X	X	X	X	X	X	X	X	X	X	X	X	✓	✓	✓	✓	✓

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8.5 Hedgerows

Table 6 details the management to be undertaken between Years 6 and 10 on hedgerows across the Site except for hedgerows within and surrounding the Lapwing Mitigation Fields. The colour corresponds to the habitat area shown on **Figure 2 - 4**.

Table 6: Management Schedule for Hedgerows¹ (mapped as dark green lines)

Feature	Management Details	Month												Year				
		J	F	M	A	M	J	J	A	S	O	N	D	6	7	8	9	10
1. Hedgerows	Cut hedgerows to a minimum height of 2m and width of 1.5-2.5m on a 2-year rotation (no more than half one-third per year), as shown in Appendix 2. Existing mature standard trees will not be cut and dead wood will be left in place where safe to do so. All hedgerow management should be undertaken outside the bird nesting season and active dormouse breeding season (which is March-September inclusive).	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓
	Hedgerows growing alongside ditches within the Solar Array Areas are permitted to grow and be maintained at a height of 3m and width of 2m.	✓	✓									✓	✓	✓	✓	✓	✓	✓

8.6 Reens and Ditches

Table 7 details the management to be undertaken between Years 6 and 10. The colour corresponds to the habitat area shown on **Figures 2 - 4**.

Table 7: Management Schedule for Reens and Ditches (mapped as light blue lines)

¹ Excluding those in the Lapwing Mitigation Fields

Feature	Management Details	Month												Year				
		J	F	M	A	M	J	J	A	S	O	N	D	6	7	8	9	10
1. Reens and ditches	Rotational de-silting of the reens on an 87-year basis as per ditch management schedule.	✓	✓									✓	✓	✓	✓	✓	✓	✓
	Remove any regrowth of hedgerow stumps which have been targeted for removal by cutting stumps back to 20cm (shown in Appendix 23).	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓
	A 1m vegetated buffer to reens and ditches outside of the security fencing to be left unmown throughout the spring-summer months and cut in September with a cut and drop approach for arisings.									✓								

8.7 Grassland Outside of Security Fencing

Table 8 details the management to be undertaken between Years 6 and 10. The colour corresponds to the habitat area shown on **Figures 2 - 4**.

Table 8: Management Schedule for Grassland Outside of Security Fencing (mapped in purple)

Feature	Management Details	Month												Year				
		J	F	M	A	M	J	J	A	S	O	N	D	6	7	8	9	10
1. Grassland within 0.5m of the security fencing	Grassland height within 0.5m of the security fencing will be managed to a short sward (maximum 205cm). Where practicable this will be undertaken by mowing.			✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓
2. Grassland beyond 0.5m of the security fencing	No mowing to be carried out outside of the 0.5m buffer of the security fencing during spring/summer.				✓	✓	✓	✓	✓					✓	✓	✓	✓	✓
	Grassland will be mowed/cut at the end of September									✓				✓	✓	✓	✓	✓
	Any scrub or trees encroaching into the grassland to be removed by mechanical means where possible or where not by spot herbicide application (under licence from NRW where applicable).									✓				✓	✓	✓	✓	✓
	A 1m vegetated buffer to reens and ditches outside of the security fencing to be left unmown throughout the spring-summer months and cut in September <u>with a cut and drop approach for arisings.</u> Arisings will be left for a maximum of 1 week to drop seeds									✓				✓	✓	✓	✓	✓

9 Management Objectives and Adaptive Actions

Table 10 details the management objectives targeted during each monitoring period (see **Section 10**). Where the management objective has not been met, triggers for adaptive action have been included which will be implemented in the appropriate season where relevant.

Table 10: Management Objectives and Adaptive Actions for the Site

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Feature	Management Objectives	Pass criteria	Objective passed (to be ticked)	Trigger for Action	Adaptive Actions
1. Grassland within 1m of the Solar Array	1. Prevent shading of solar panels	Vegetation height within 1m around the panels is at or below 400mm overshading the panels		Vegetation within 1m of the Solar Panels is casting shadows onto panels is over 400mm	Mow as required
2. Grassland throughout Solar Array	2.1 Maintain a varied sward height	-Grassland varied and with diverse sward height with shorter sward near to panels (short enough so that shading does not occur) (<400mm) and taller, diverse sward towards margins (>700mm).		Sward height uniformly short or tall with no variation between panel areas and margins	Review mowing regime and mow areas on rotation.
	2.2 Maintain an absence of scrub/ trees	No scrub or trees present within the solar array area		Scrub and/or young saplings present within the solar array field (excluding within hedgerows)	Scrub will be removed as necessary. Scrub suitable for nesting birds should not be allowed to develop in the grassland. If, however, this occurs, it should only be removed between September and February.
1. Grassland within the Lapwing Mitigation Area	1.1 Maintain a short grassland sward with tussocks of taller grasses, rushes and bare ground	By the end of February there is a short sward less than 5-7cm with up to 30% tussocky grassland/ rushes and up to 10% bare ground/ light hoof-printing. No trees or scrub are present.		More than 30% of the grassland is more than 5-7cm.	Mow to <20cm so that rush/tussocky grass cover is <30%.
				There is more than 10% bare ground.	Review stocking densities prior to September and reduce where required for the following winter.
				Trees and/ or scrub are present.	Remove in line with Table 4 .
2. Grips within the Lapwing Mitigation Area	2.1 Historic grips to be re-instated and maintained in line with the Grip Method Statement (Wise Energy, 2026) (Appendix 3)	Grips are present in line with the specifications outlined.		Grips not present/ too few grips are present and/ or are not of the specified dimensions.	Create/ re-create/ re-profile grips as per the Grip Method Statement (Wise Energy, 2026) (Appendix 3).
				Grips contain vegetation/ no bare earth is present and/ or are not wet.	Re-dig and profile the grip to provide bare ground and to be able to hold water.

Feature	Management Objectives	Pass criteria	Objective passed (to be ticked)	Trigger for Action	Adaptive Actions
3. Hedgerows within the Lapwing Mitigation Area	3.1 Maintain retained hedgerows at a short height to reduce the potential for predator perching	Hedgerows are up to 4.5 2m high		Retained hedgerows are over >24.5m high	Cut to specified height as per Table 4.
	3.2 Maintain removed hedgerows adjacent to reens as grassland	No new hedgerow re-growth is present		There is re-growth of vegetation from removed hedgerow stumps that is not controlled via cutting	Treat with herbicide the following year under licence from NRW. Where stumps fail to respond to herbicide these will be manually removed.
1. Grassland within Dedicated Common Crane and Shrill Carder Bee Mitigation Areas	1.1 Provide flower-rich forage habitat until late-September	Food plants for shrill carder bee present in at least 20% of quadrats in August/September.		<20% of quadrats contain food plants for shrill carder bee	Depending on the reason for failure, overseed, remove competing species such as bramble, undertake another early cut in spring and remove arisings, remove/ reduce aftermath grazing
	1.2 Ensure scrub and trees do not account for more than 5% of the grassland area	Grassland comprises of less than 5% scrub and/or trees		More than 5% of the grassland comprises of trees and/or scrub	Trees and scrub that account for over 5% of grassland area is to be removed. All woody vegetation removal should be undertaken outside of the bird nesting season (which is March-September).
	1.3 Maintain an undisturbed diverse grassland sward in the crane breeding season	An undisturbed sward of 70 – 80% at 5-20cm and up to 5% bare ground is present at the end of February		Sward is uniform, or with <20% at 20cm and <1% / > 5% bare ground	Create variation by mowing/topping to maintain 70% at 5-20cm and create small scrapes to maintain bare ground cover. Cease/ reduce aftermath grazing if too much poaching occurs.
1. Hedgerows	1.1 Manage hedgerows to target height and width with a 1m wide vegetative buffer	Hedgerows are minimum 24.5 m high and 1.5m wide. Hedgerow buffer is c20cm tall.		Hedgerows are < 24.5 m high and <1.5 wide	Re-assess cutting height and manage to achieve target height and width in line with Table 6.
				Hedgerow buffers are <20cm high	Reduce mowing/ sheep grazing.
	1.2 Promote the presence of mature trees	Hedgerows with existing mature standard trees retained		Mature trees removed/ excessively managed	Re-assess cutting methodology and manage in line with Table 6.
	1.3 Promote visual screening and deliver good integration of the development into the landscape	Hedgerow gaps <5%		Hedgerow gaps >5%	Undertake infill planting with appropriate native species of local provenance.

Feature	Management Objectives	Pass criteria	Objective passed (to be ticked)	Trigger for Action	Adaptive Actions
1. Reens and ditches	1.1 Enhance ree and ditch condition removing silt buildup from the bottom of reens and ditches	Target reens and ditches have been de-silted		De-silting has not occurred	Review management with contractors.
	1.2 Maintain open, unshaded reens and ditches	Reens and ditches remain 50% unshaded by hedgerow. Aquatic plants are visible.		New hedgerow re-growth is present and shading >50% of the reens and ditches/ no aquatic plants are visible	Treat with herbicide the following year under licence from NRW. Where stumps fail to respond to herbicide these will be manually removed.
1. Grassland within 0.5m of the security fencing	1.1 Ensure that security fencing is unobstructed by vegetation	Vegetation height within 0.5m around the security fencing is maximum 205cm.		Vegetation within 0.5m of the security fencing is over 205cm and/ or causing damage to security fencing	Mow to the required height. Increase the frequency of mowing/ management
2. Grassland beyond 0.5m of the security fencing	2.1 Maintain a diverse sward structure	The grassland vegetation between the 1m panel buffer and the 0.5m security fencing is to have a varied and diverse sward height		Sward height uniform or with approximately less/ more than 20% of grassland at 20cm	Review mowing regime and mow areas on rotation.
		Scrub encroachment <10%		Scrub encroachment >10%	Remove scrub/trees as per Table 9.

10 Monitoring

Monitoring is fundamental to the success of this management plan and is required to assess biodiversity changes compared to the baseline and identify potential issues. This will not only enable the effectiveness of mitigation or compensation to be identified, but will also inform future revisions of the management plan to be produced.

Monitoring has been set out in the Ecological Monitoring and Contingency Plan (Green Ecology, 2019e) which was approved under Condition 14 of the planning consent. The following ecological features were agreed to be subject to a monitoring programme:

- 🐾 New grassland, hedgerows and watercourses;
- 🐾 Invertebrates: aquatic and terrestrial;
- 🐾 Breeding Birds (with specific requirements for lapwing and common crane)
- 🐾 Bats;
- 🐾 Water vole.

Table 10 below shows the suggestion of further monitoring based on the monitoring reports (GE Consulting 2022-2025c) to ensure that effective future management can be identified where required.

Table 10: Monitoring and Reporting Framework

Ecological Feature	Year (post completion)	Monitoring Methods	Location
New grassland (shrill carder bee area, common crane area)	Planning obligation: Years 1, 2, 3 and 5. Recommendation: Annually until all management objectives met then once every 5 years during the optimal survey window.	This will be achieved by using a method based on the 'Assessing Whether Created or Restored Grassland is a BAP Priority Habitat' methodology (Natural England 2012) in August/September. This will involve walking through each field with a minimum number of 10 stops sampling an area of 1m² (quadrat) at each point, these sampling points will be recorded using a handheld GPS to enable repeated monitoring. The following will be recorded: 🐾 % Cover of grasses; 🐾 % Cover of wildflowers; 🐾 Total number of species; 🐾 Ground condition, % cover of bare ground and of injurious weeds. Species composition.	Shrill Carder Bee Mitigation Areas and Common Crane Enhancement Area.
Retained grassland (Solar Array Areas, Grassland Outside of Security Fencing)	Planning obligation: Annually as part of management. Recommendation: No change.	Walkover to check on any areas that have been required to be re-seeded due to construction damage. Identify whether recommended sward heights and grazing regimes are being maintained thereafter as per the LEMP.	Retained Grassland and Grassland Outside of Security Fencing

Ecological Feature	Year (post completion)	Monitoring Methods	Location
Hedgerows	Planning obligation: Annually as part of management. Recommendation: No change.	Retained hedgerows will be monitored annually to assess growth and cut accordingly.	All retained hedgerows.
Water courses	Planning obligation: Year 1 and every 7 years with rotational desilting. Recommendation: No change.	Ditches and reens will be monitored for siltation and cast following best practice guidance and in consultation with NRW.	All existing open reens and ditches not already managed by NRW where accessible and those where hedgerow clearance has been undertaken.
Aquatic invertebrates	Planning obligation: Year 2 and 5. Recommendation: Years 7, 10, 20 and 30	Due to ongoing rotational ditch and reen management, aquatic invertebrates will be surveyed using the standard methods developed by Buglife (Palmer <i>et al</i> , 2010).	All reens and ditches sampled in original survey, all newly opened-up ditches and reens.
Terrestrial invertebrates	Planning obligation: Year 3 and 5. Recommendation: Years 7, 10, 20 and 30	Methods used will be consistent with previous surveys to allow comparison (methodology approved by the Bumble Bee Trust).	Fields sampled in original surveys and Shrill Carder Bee Mitigation Areas.
Breeding birds	Planning obligation: Year 1, 5, 10 and the year before decommissioning. Recommendation: Years 10, 20 and 30	Method to follow O'Brien and Smith 1992 (in Gilbert <i>et al</i> , 1998) method for surveying lowland breeding waders modified to include other species of conservation concern. This is consistent with the method used in baseline surveys.	Survey routes will follow as closely to the original surveys as possible excluding buffer zone to allow comparison of data.
Common crane	Planning obligation: Years 1 - 5 and Year 10 twice per month during February to September Recommendation: Only if sightings on the Gwent levels	 Walkover in Late-February to September using the walkover method (O'Brien & Smith 1992). Vantage Point Survey using standard methodology (Band, Madders & Whitfield, 2007) modified to target cranes in combination with breeding bird survey above, from one location	Crane Enhancement Area and adjacent fields.

Ecological Feature	Year (post completion)	Monitoring Methods	Location
	are recorded then immediately after sighting (in relevant season) followed by once every 5 years	to monitor cranes flying to forage and use of chick rearing fields.	
Lapwing	Planning obligation: Years 1, to 5, then every five years thereafter and in the year prior to decommissioning. Recommendation: Annually during Years 6 - 10 whilst grips establish, then every 5 years and year prior to decommissioning.	Breeding Survey 🔥 March-July once per month. Transect surveys in the breeding season using O'Brian and Smith (1992) – method for censusing lowland breeding wader populations. Wintering Survey 🔥 November-February once per month Habitat checks of the Lapwing Mitigation Areas involving observing habitat suitability for winter foraging lapwing.	Designated Lapwing Mitigation Areas and offsite fields adjacent to the Site known to hold breeding lapwing.
Bats	Planning obligation: Years 1 and 3. Bat boxes in Year 3.	No further monitoring required	N/A
Water vole	Planning obligation: Year 10	Due to ongoing rotational ditch and reed management, a survey will be conducted during year 10 during April-June (inclusive) where a detailed search will be undertaken along the reeds and ditches for evidence of water vole, including burrows, droppings, footprints and feeding remains following current best practice methodology (Dean <i>et al.</i> 2016).	Only undertaken at locations where hedgerows have been removed to allow reed and ditch management and improvements.

*Subject to change, depending on ~~Natural~~ **NRW** requirements specified in licence.

10.1 Plan Review

An adaptive management approach should be adopted whereby the results of monitoring feed back into the appropriate management of the development site and the management plan updated accordingly. The Managing Agent will be responsible for implementing any adaptive actions recommended by the ecologist.

Management will be undertaken in perpetuity following each revised management plan.

11 References

Buglife (2019) SPECIES MANAGEMENT SHEET Shrill carder bee (*Bombus sylvarum*) and Brown-banded carder bee (*Bombus humilis*). Buglife. <https://cdn.buglife.org.uk/2019/08/Shrill-and-Brown-banded-carder-bee-species-management-sheet-1.pdf> Accessed on 14th July 2026.

Green Ecology (2019a) *Landscape and Ecological Management Plan (LEMP) v9 - Gwent Levels Farmers' Solar Scheme*

Green Ecology (2019b) *Hedgerow Removal Plan - Gwent Levels Farmers' Solar Scheme*

Green Ecology (2019c) *Common Crane Mitigation Plan v3 - Gwent Levels Farmers' Solar Scheme*

Green Ecology (2019d) *Lapwing Management Plan v5 - Gwent Levels Farmers' Solar Scheme*

Green Ecology (2019e) *Ecological Monitoring and Contingency Plan - Gwent Levels Farmers' Solar Scheme*

GE Consulting (2025a) *0419-TN-HS Lapwing Mitigation Land - Ecological Technical Note – Lapwing Mitigation Land Llanwern Solar, Gwent Levels*

GE Consulting (2022) *0419-EMR-Llanwern Solar Ecological Monitoring and Review – Ecological Monitoring Report, Llanwern Solar, Gwent Levels*

GE Consulting (2023) *0419-EMR-Llanwern Solar Ecological Monitoring and Review Yr2 – Ecological Monitoring Report Year 2, Llanwern Solar, Gwent Levels*

GE Consulting (2023) *0419-EMR-Llanwern Solar Ecological Monitoring and Review Yr3 – Ecological Monitoring Report Year 3, Llanwern Solar, Gwent Levels*

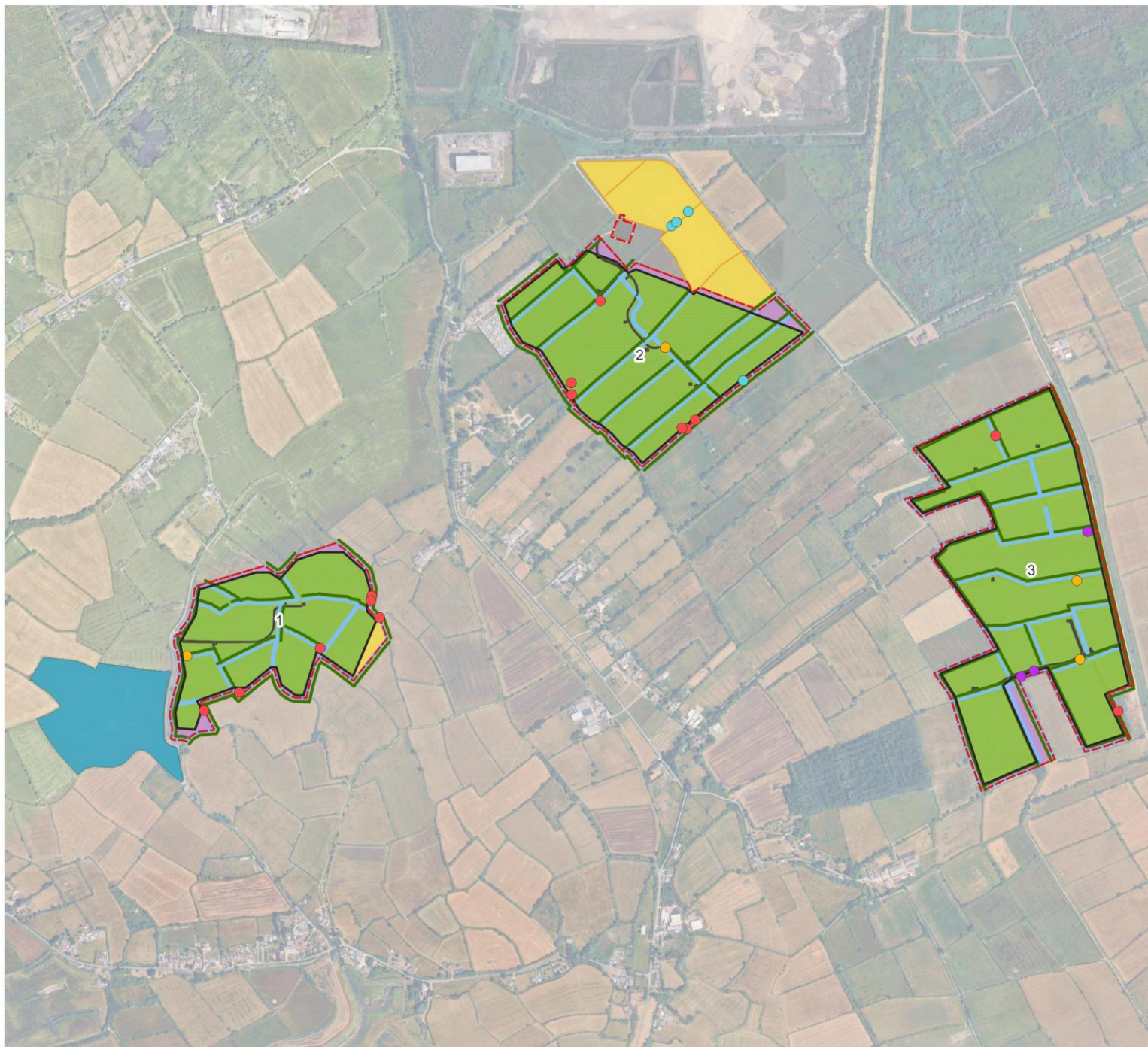
GE Consulting (2025b) *0419-EMR-HS Llanwern Solar Ecological Monitoring and Review Yr4 – Ecological Monitoring Report Year 4, Llanwern Solar, Gwent Levels*

GE Consulting (2025c) *0419-EMR-HS Llanwern Solar Ecological Monitoring and Review Yr5 – Ecological Monitoring Report Year 5, Llanwern Solar, Gwent Levels*

Gilbert G., Gibbons D.W. and Evans J. (1998) *Bird Monitoring Methods: A manual of techniques for key UK species*. RSPB, Sandy.

JNCC (2010) *Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit*. JNCC, Peterborough, ISBN 0 86139 636 7.

Savills (2018) *Environmental Statement - Land on the Caldicot Levels, South of Llanwern Steel Works, Nr Newport, Wales*



Key:

- Site Boundary
- Fence Boundary Around Solar Arrays
- 2024 new bat box
- 2024 relocated bat box
- Original bat box
- Bug Hotels
- Retained Grassland (Solar Array Area)
- Dedicated Common Crane and Shriill Carder Bee Mitigation Areas
- Grassland Outside of Security Fencing
- Lapwing Mitigation Fields
- Substation
- Hardstanding
- Hedgerow and Reen/ Ditch
- Reens and Ditches
- Hedgerow



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Figure 1:
Ecological Features and Habitats Plan- Overview

Project:
Llanwern Solar, Gwent Levels

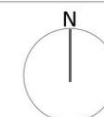
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Gwent Farmer's Community Solar Partnership Ltd

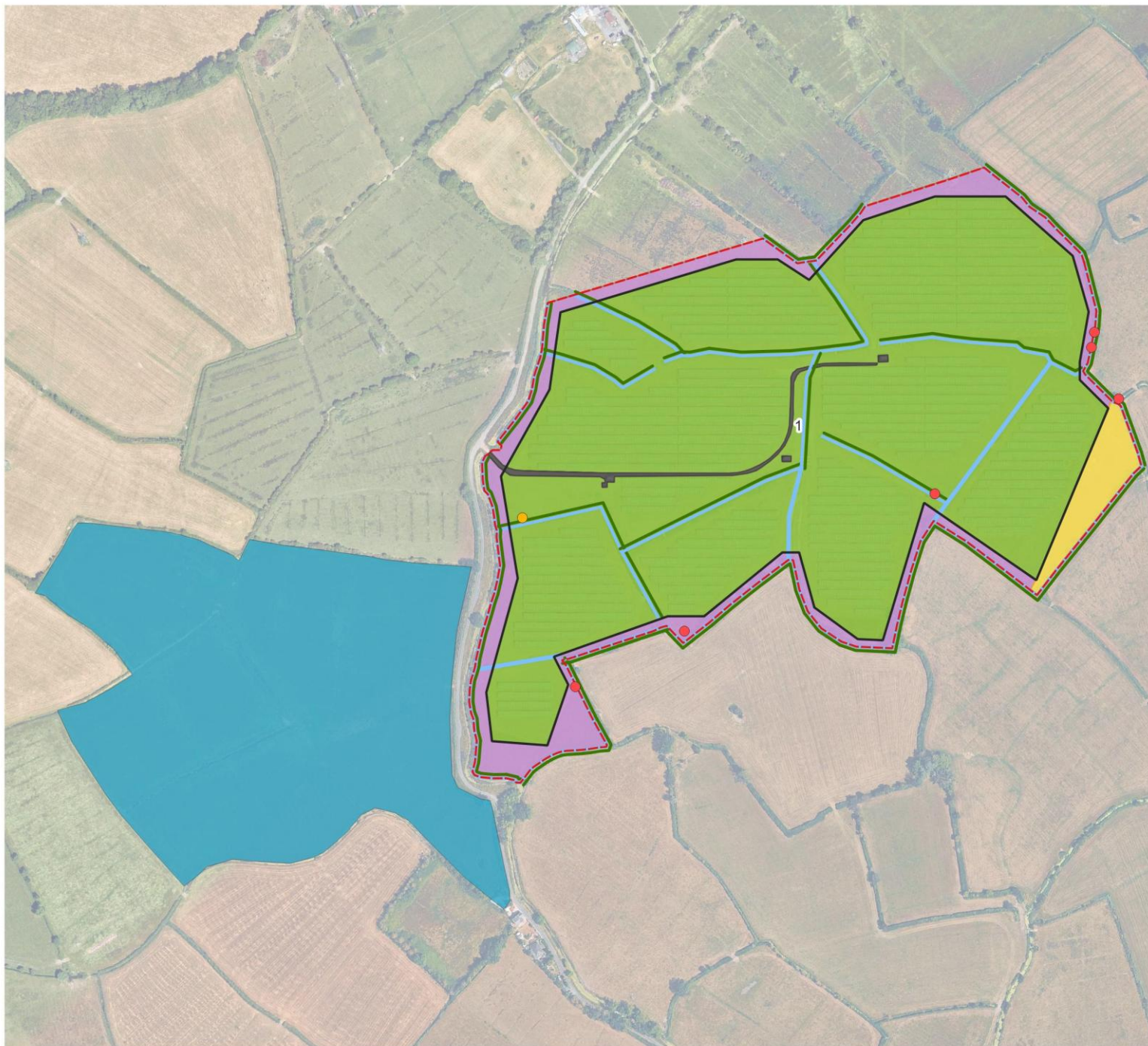
Date:
23/7/2026

Ref:
0419-LEMP-F1

Drawn:
HS

Revision:
-





Key:

- Site Boundary
- Fence Boundary Around Solar Arrays
- Original bat box
- Bug Hotels
- Retained Grassland (Solar Array Area)
- Dedicated Common Crane and Shriill Carder Bee Mitigation Areas
- Grassland Outside of Security Fencing
- Lapwing Mitigation Fields
- Hardstanding
- Hedgerow and Reen/ Ditch
- Reens and Ditches



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Figure 2:
Habitat Management Area 1

Project:
Llanwern Solar, Gwent Levels

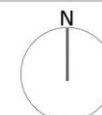
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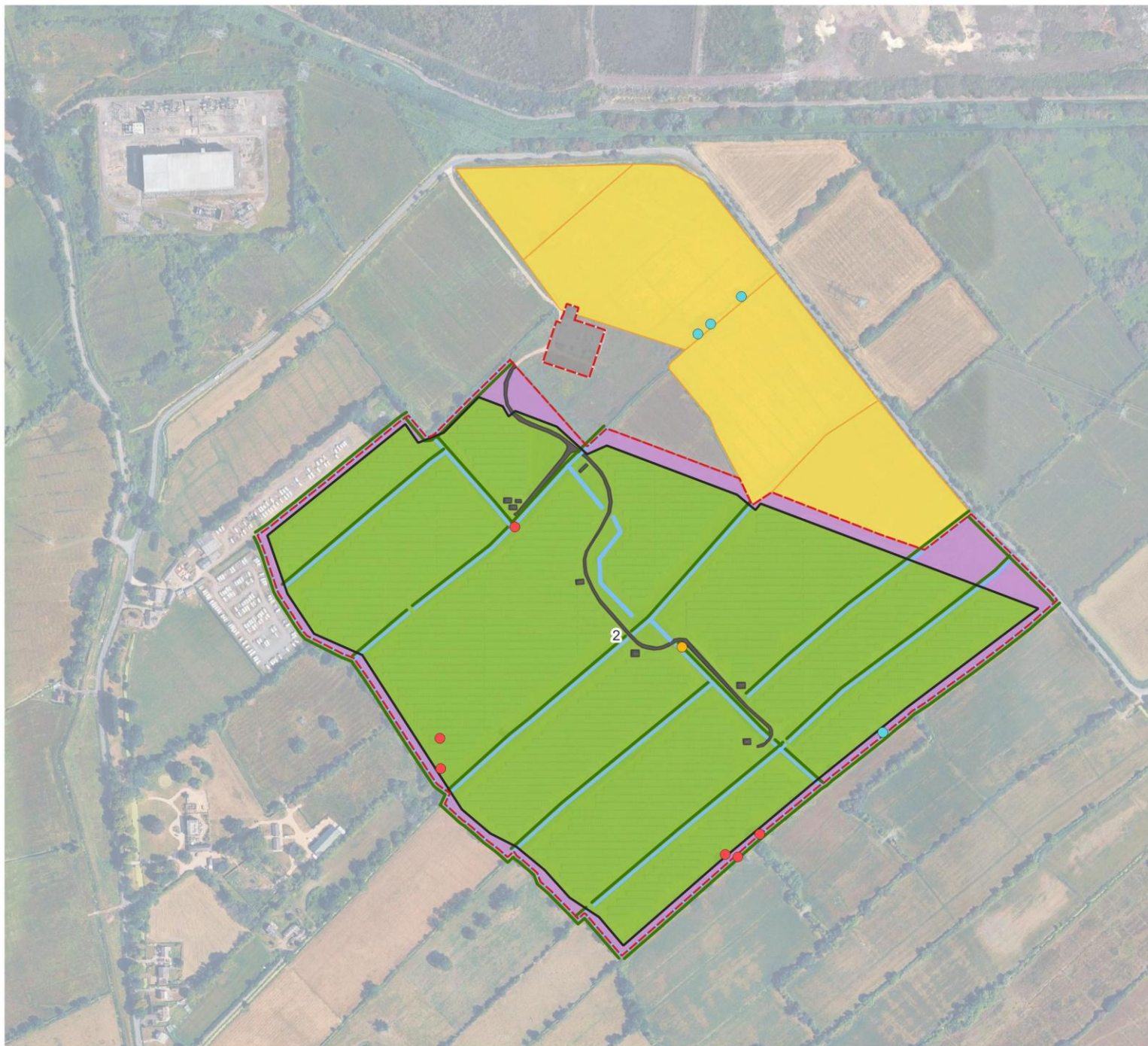
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23/7/2026

Ref:
0419-LEMP-F2

Drawn:
HS

Revision:
-





Key:

- Site Boundary
- Fence Boundary Around Solar Arrays
- 2024 new bat box
- Original bat box
- Bug Hotels
- Retained Grassland (Solar Array Area)
- Dedicated Common Crane and ShriII Carder Bee Mitigation Areas
- Grassland Outside of Security Fencing
- Substation
- Hardstanding
- Hedgerow and Reen/ Ditch
- Reens and Ditches



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Figure 3:
Habitat Management Area 2

Project:
Llanwern Solar, Gwent Levels

Client:
Gwent Farmer's Community Solar Partnership Ltd

Date:
23/7/2026

Ref:
0419-LEMP-F3

Drawn:
HS

Revision:
-





Key:

- Site Boundary
- Fence Boundary Around Solar Arrays
- 2024 relocated bat box
- Original bat box
- Bug Hotels
- Retained Grassland (Solar Array Area)
- Grassland Outside of Security Fencing
- Hardstanding
- Hedgerow and Reen/ Ditch
- Reens and Ditches
- Hedgerow



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Figure 4:
Habitat Management Area 3

Project:
Llanwern Solar, Gwent Levels

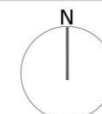
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Gwent Farmer's Community Solar Partnership Ltd

Date:
23/7/2026

Ref:
0419-LEMP-F4

Drawn:
HS

Revision:
-





Key:

- Site Boundary
- Cut strips in SCB Area
- Uncut strips in SCB Area



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Figure 5a:
Indicative Strip Cut Locations and Dimensions

Project:
Llanwern Solar, Gwent Levels

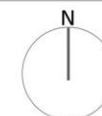
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Date:
23/7/2026

Ref:
0419-LEMP-F5a

Drawn:
HS

Revision:
-





Key:

-  Site Boundary
-  Cut strips in SCB Area
-  Uncut strips in SCB Area



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Figure 5b:
Indicative Strip Cut Locations and Dimensions

Project:
Llanwern Solar, Gwent Levels

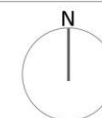
Client:
Gwent Farmer's Community Solar Partnership Ltd

Date:
23/7/2026

Ref:
0419-LEMP-F5b

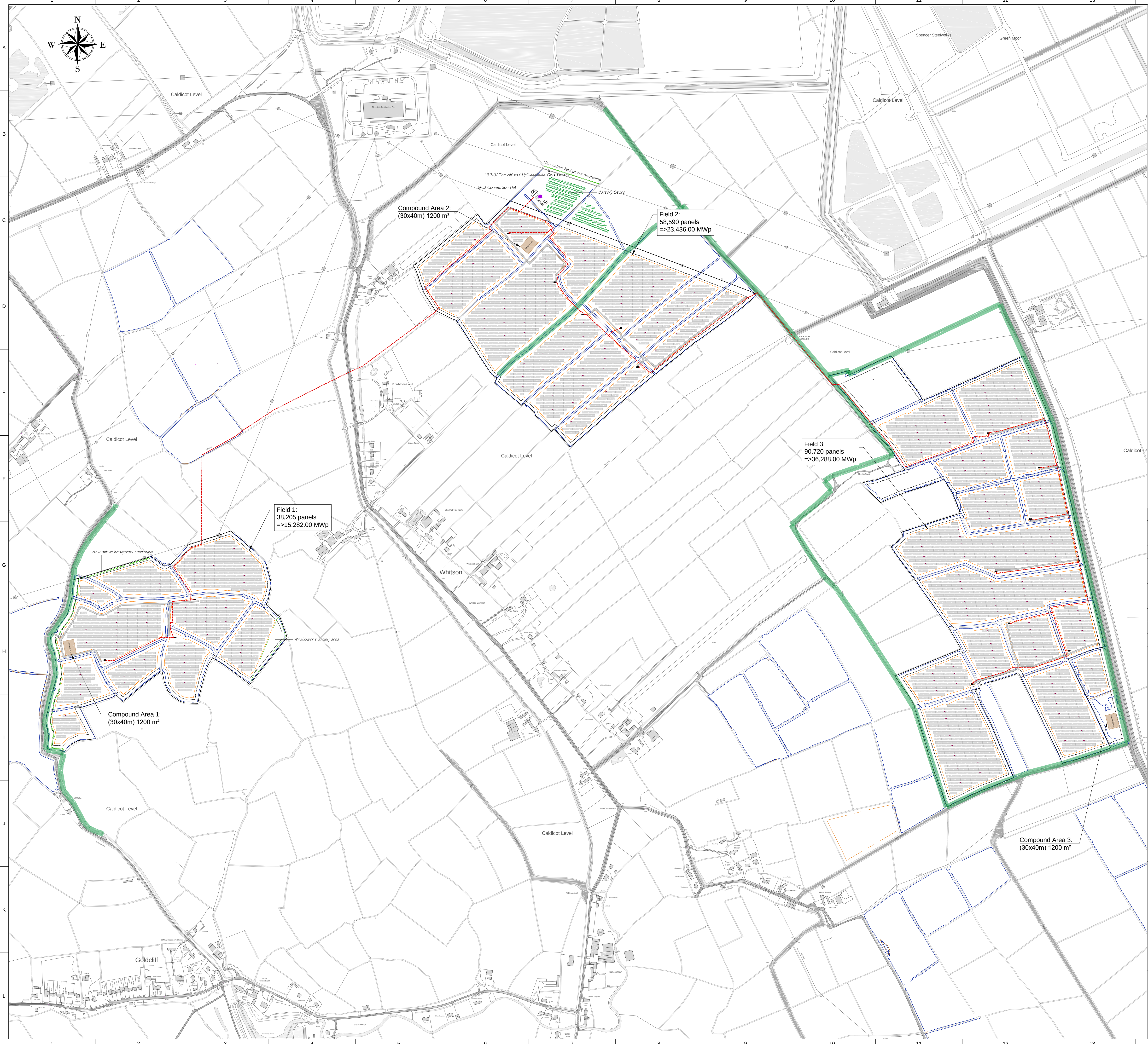
Drawn:
HS

Revision:
-





Appendix 1 – Landscape Proposals



- Legend
- Site Boundary
 - Fence
 - PV Area
 - Gate
 - Transformer Station
 - Internal Road
 - Rack 3V27
 - Rack 3V18
 - Rack 3V9
 - Costumer Substation
 - Drainage
 - Main Drainage
 - MV Cable Trench
 - DC Combiner Box

Rev	Type of modified	Date	Name
02	Inverter changed from SMA to SG	04/10/19	PRX
01	First Issue	12/09/19	PRX

Plan - History



Bouygues E&S FM UK Limited
1 Lambeth Palace Road
Waterloo - London - SE1 7EU

Plan composer
Drawman:
PRX
Date:
04.10.2019

Project informations:

Panels per String: 27 pcs
Number of Strings: 6,945 pcs
Paneltype:
Number of modules: 187,515 pcs
DC-Power: 75,006 kWp
Invertertype: SG3125HV-MV-20
Number of Inverters: 15
Inverter AC-power: 15 x 3437 kW
Number of Transformers: -
Nominal AC-Power: 51,555 kVA
Azimuth: 0°

Project:

Llanwern Solar Farm

Drawing No.: -	Part No.: -	Scale: 1:5000	Sheetscale: ISO- A1
Type of plan: Cable Trench Layout	Pl. - No.: 1 of 1	State of: 04.10.2019	Index: 02
Approved:	Approved:	Date:	Signature:



Appendix 2 – Hedgerow Removal Plan



Key:

- Site Boundary
- Fence Boundary Around Solar Arrays
- Lapwing Mitigation Fields

Hedgerow management schedule:

- Cut Each Year
- Cut Year 1
- Cut Year 2



Imagery ©2026 CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies. Map data ©2026 Google

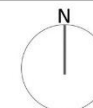
Appendix 2a:
Hedgerow Management Plan

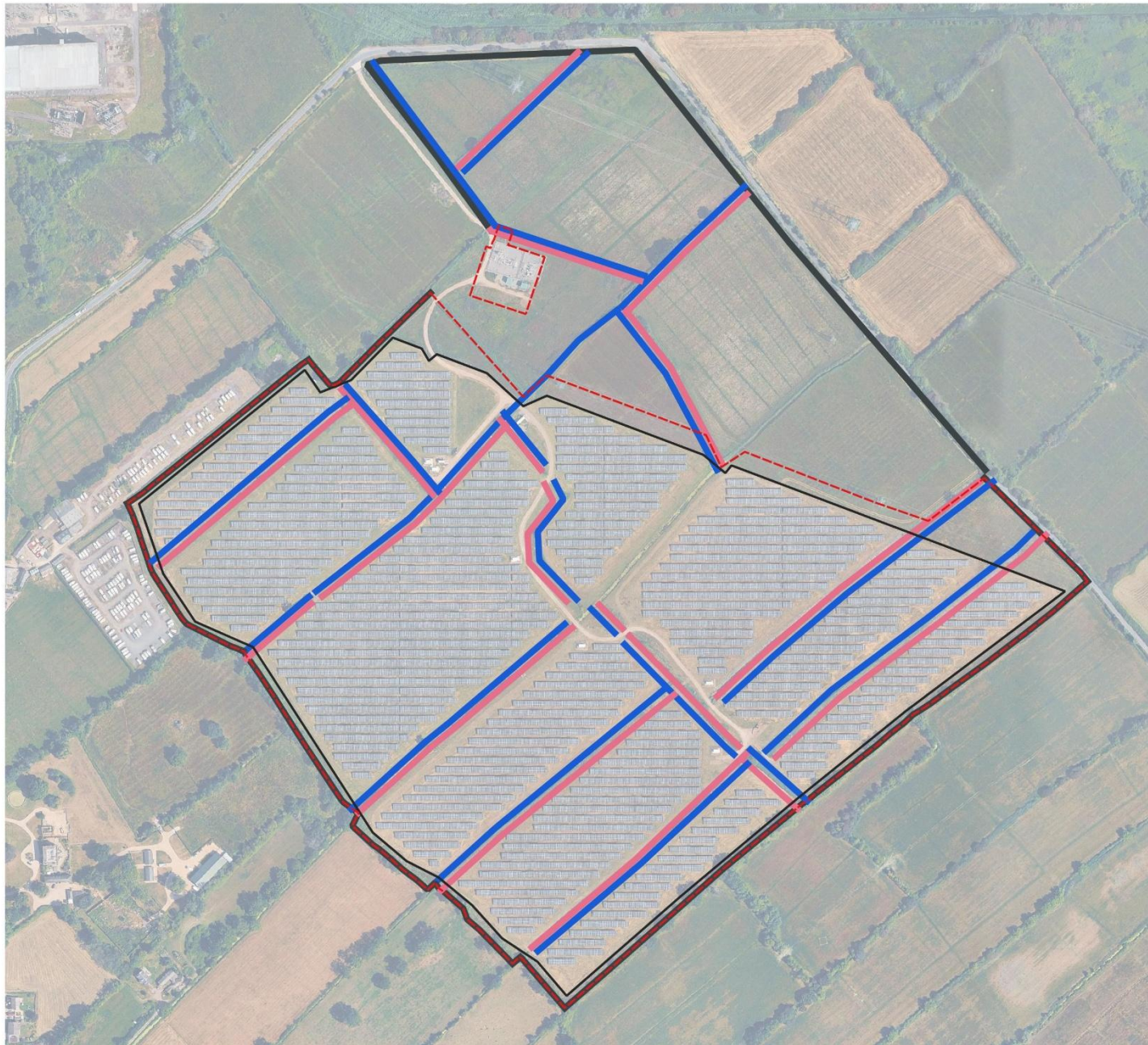
Project:
Llanwern Solar, Gwent Levels

Client:
Gwent Farmer's Community Solar Partnership Ltd

Date:
30/7/2026
Ref:
0419-LEMP-A2a

Drawn:
HS
Revision:
-





Site Boundary
Fence Boundary Around Solar Arrays

Hedgerow management schedule:
Cut Each Year
Cut Year 1
Cut Year 2

0 60 120 180 240 m

Imagery ©2026 CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies. Map data ©2026 Google

Appendix 2b:
Hedgerow Management Plan

Project:
Llanwern Solar, Gwent Levels

Client:
Gwent Farmer's Community Solar Partnership Ltd

Date:
30/7/2026
Ref:
0419-LEMP-A2b

Drawn:
HS
Revision:
-







Appendix 3 – Proposed Grip Reinstatement Methodology

Proposed Grip Reinstatement Methodology – Llanwern Lapwing Mitigation Area

The proposed methodology for the works at the Llanwern Solar Farm Lapwing Mitigation Area has been developed in accordance with the guidance document provided by NRW titled *Annex 2: Method Statement – Drainage Grips: Maintenance & Re-establishment*.

General Approach:

- No work will commence until the relevant SSSI consent approval has been obtained from NRW.
- Works will not take place near or within any waterways; however, PPG5: Working Near Water or Over Watercourses will be followed to prevent pollution.
- Access to the site will be from Chapel Road and no materials are to be stored on site.
- Machinery movements across the site will be minimised, and works will pause if ground conditions risk disturbance.
- Machinery will be selected based on ground conditions, primarily low-ground-pressure vehicles. The Price Brothers will be using machinery previously used by Des Williams for grip reinstatement several years ago.
- Bog mats will be used where necessary to reduce rutting and soil disturbance.
- Grips are positioned away from any perch features.
- Works will not take place during heavy rainfall and when ground conditions are unsuitable.
- Works will take place in a phased approach, starting at one end of the field and working one grip length at a time.
- Works will occur over 6–8 days between September and November and will not take place between March and August to avoid disturbance during the bird nesting season.
- A suitably qualified ecologist will be present throughout the works to provide advice if required and ensure no lapwing and other protected species are harmed during the works.
- Glamorgan-Gwent Archaeological Trust will be notified and will supervise excavations if necessary.

Methodology for Re-Cutting Existing Grips – 4 x Grips:

1. Locate Existing Drainage Infrastructure:

- Use LIDAR imagery from the LiDAR Viewer on DataMapWales to assist in locating former grip lines and pipe positions.
- Identify headland pipes, typically spaced according to historic field drainage layout.
- Assess field surface indicators:
 - Walk ditches after rainfall to listen for water discharge from unseen pipes.
 - Look for subtle linear depressions or variations in crop/grass growth.

- Where pipes cannot be identified visually:
 - Excavate small trial trenches at likely locations, or
 - Use rodding (T-bar or equivalent) to locate subsurface pipes.
- Once located, all pipes and grips will be clearly marked with stakes or paint.

2. Prepare Adjacent Ditch (If required):

- Clear vegetation and re-cut the ditch if overgrown or infilled.
- Ensure ditch blockage is not preventing headland pipe function.

3. Field Clearance & Re-cutting Existing Grips:

- Excavate to the required grip depth adjacent to the headland pipe, working on grip length at a time.
- Cut the channel gradually upward from the pipe to near surface level at the field end.
- Use a grip-cutting implement, skillful excavator work, or hand tools as appropriate.
- Maintain maximum grip depth within 0.3–0.5 m.
- Spread excavated material evenly across adjacent areas.

4. Grip End Pipe Replacement:

- Rod existing pipes to clear blockages where present.
- Where new pipe is required:
 - Install a 160 mm (6") twin-wall unperforated drainage pipe, meeting British Standards. Pipes will have a minimum of 450 mm cover.
 - Pipe to be installed within the headland trench, connecting open grip to ditch.
 - Ensure a slight gradient to the ditch and confirm pipe sits above static water level (SPL).
 - Use traditional 6 m lengths, consistent with Gwent Levels practice.

Completion and Site Restoration:

- Ensure all areas are left tidy and free from unnecessary disturbance.
- Remove all temporary materials (bog mats, equipment, waste).

Ongoing Maintenance Requirements:

- Keep ditches open and headland pipes clear to maintain functionality.
- Undertake periodic inspections after heavy rainfall.
- Re-cut grips as necessary.

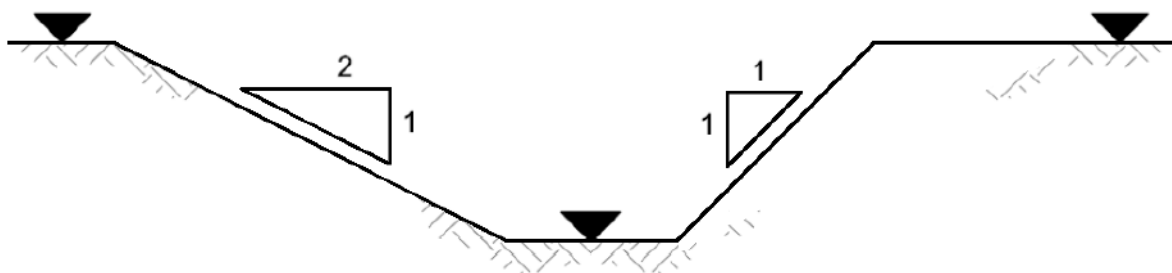
Method statement for field ditch casting works

Description of Work

Contractor/machine operator to ensure he has relevant plans and consents to hand.

1. Contractor to agree with Landowner operational matters such as access routes for machinery, parking etc.
2. Contractor to ensure machinery used is in good repair before beginning work i.e. no leaks.
3. Ensure pollution prevention measures are in place before commencing work - refer to PPG5 working near water.
4. Contractor to check for underground/overhead services.
5. Bankside scrub/hedgerow on field ditches to be cast to be cleared as guided by landowner using excavator with bucket/hydraulic hedge/tree shears. Mature trees, particularly oak trees, to be left in situ or pollarded.
6. A clay bund will be created in the ditch using the first cuts from upstream where it joins the IDD/NRW watercourse. This bund will be left in place while casting works are being undertaken to ensure that debris does not enter the IDD watercourse. Once the ditch is cast, all debris removed, and silt settled, the bund will be removed to provide connection to the IDD/NRW watercourse
7. Using an excavator and bucket contractor to remove as much silt and vegetation as possible working down to the hard bed of the ditch and feeling for the banks without undercutting them.
8. The field ditches to be cut to the same depth as the connecting reen. Ditch profile to be cast to current NRW IDD standards - no steeper than 2:1. If in doubt advice will be sought from IDD staff.
9. Timber to be removed as firewood, brush to be chipped or burnt on site. No chippings or debris to be left in ditches or within 7m of any watercourse. No burning is to be undertaken within 7m of any watercourse.
10. Spoil is to be spread and levelled on top of bank within 7m of the watercourse.
11. Decommission site, remove all machinery and waste.
12. Ensure that the site is left in a neat and tidy condition.

Ditch Profile



Figures

Grip Reinstatement works will take place within the red pentagon shaped field as suggested by NRW, shown below:



The proposed locations of the four grips are marked below in yellow:



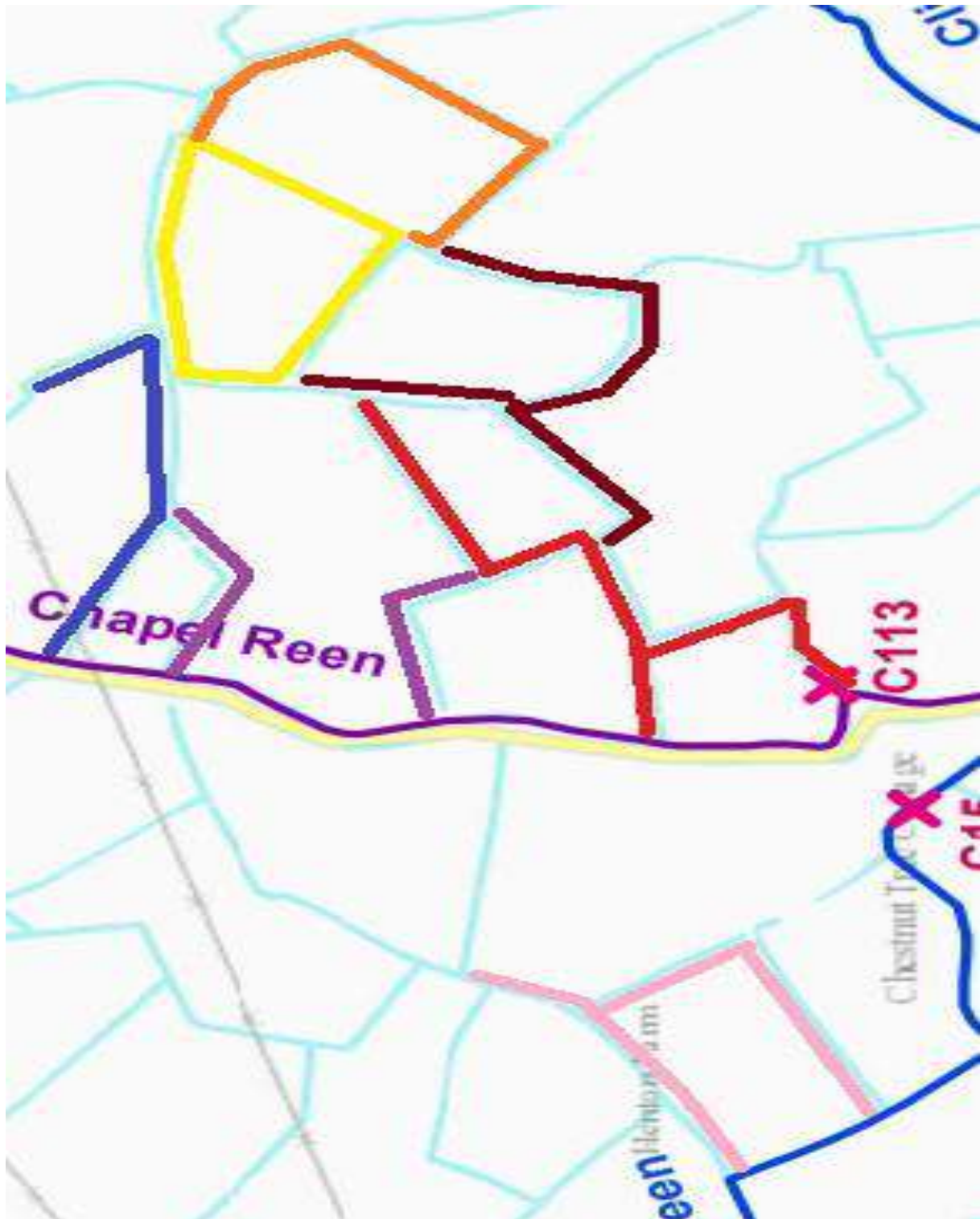
Using the LiDAR Viewer on DataMap Wales, we have been able to visualise the locations of the existing grips clearer. The top four grips on the northern pentagon shaped field are the grips proposed to be reinstated:





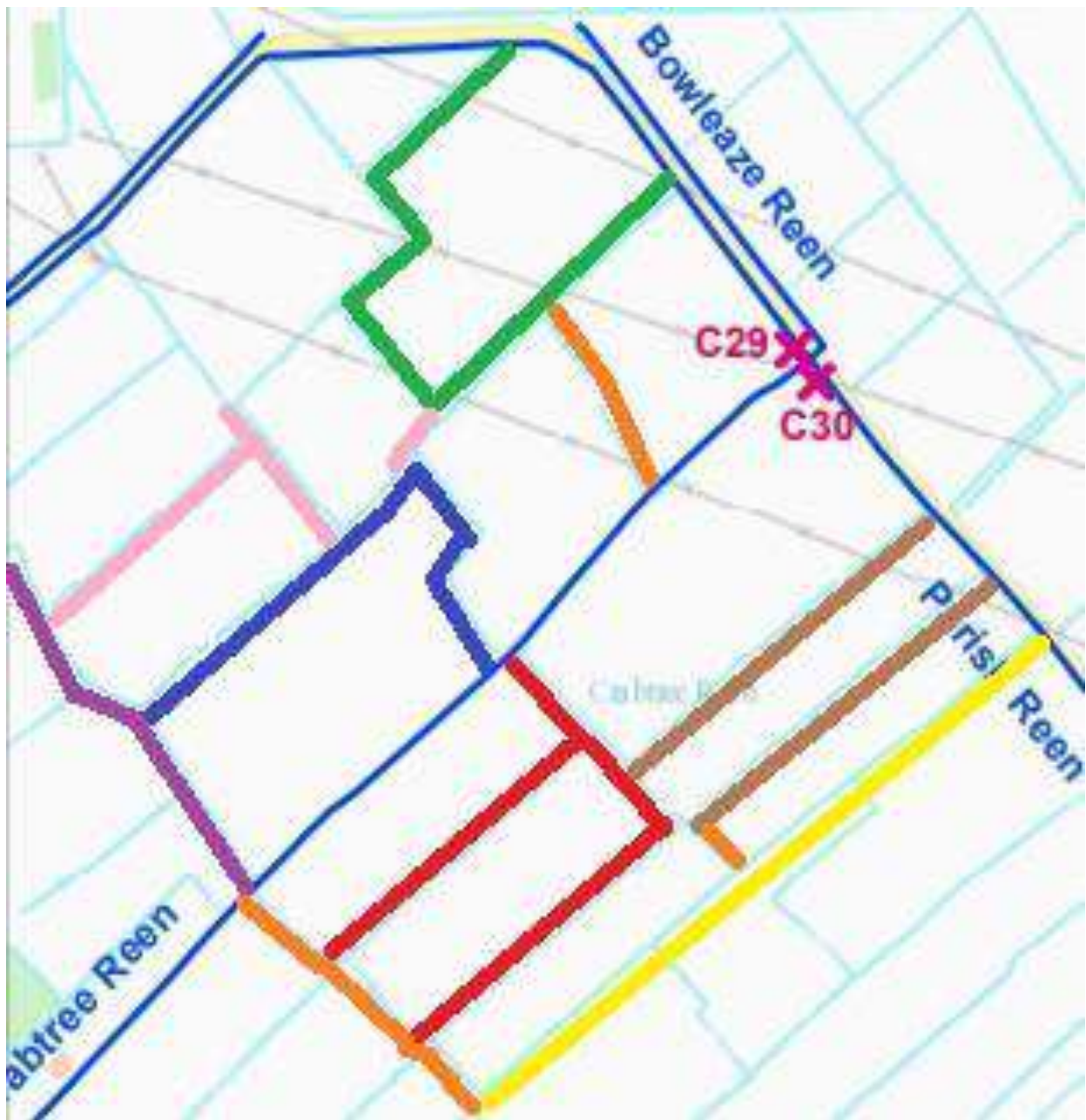
Appendix 4 – Ditch Management Schedule

Llanwern Solar Site Area 1



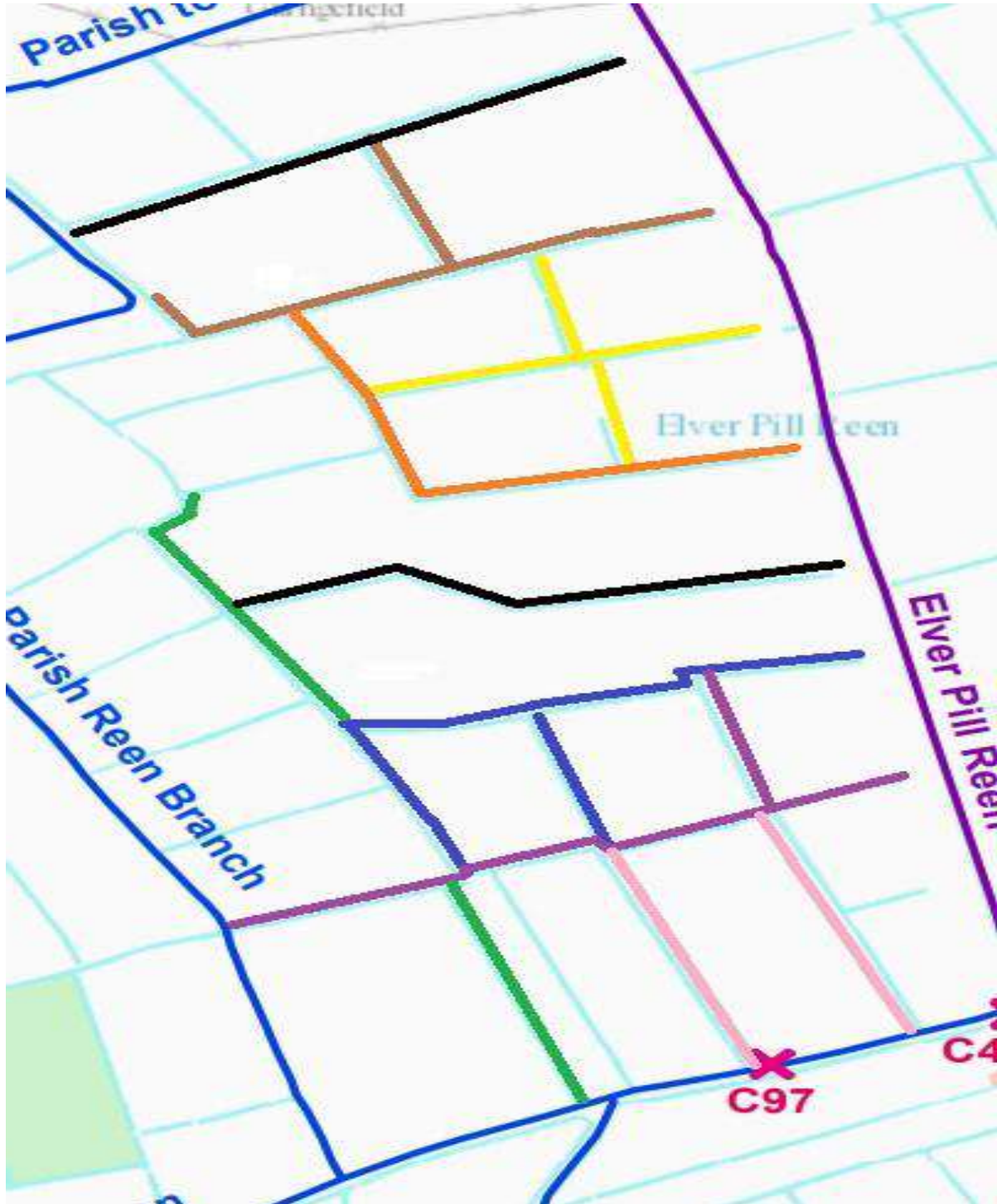
Year 1	Year 5
Year 2	Year 6
Year 3	Year 7
Year 4	Year 8

Llanwern Solar Site Area 2



Year 1	Year 5
Year 2	Year 6
Year 3	Year 7
Year 4	Year 8

Llanwern Solar Site Area 3



Year 1	Year 5
Year 2	Year 6
Year 3	Year 7
Year 4	Year 8

Appendix 5 – Natural Resources Wales Consent of Grip Reinstatement

CYFOETH NATURIOL CYMRU
NATURAL RESOURCES WALES

Consent ref no: C005780/1

CONSENT UNDER SECTION 28E OF THE WILDLIFE AND COUNTRYSIDE ACT 1981

Site(s) of Special Scientific Interest:
Gwent Levels - Nash and Goldcliff

Natural Resources Wales hereby gives consent that:

Gwent Farmers Community Solar Partnership Limited
Great Newra
Chapel Road
Goldcliff
Newport
Newport
NP18 2BB

As an owner/occupier of land within the above site(s), may carry out, cause or permit to be carried out the operation(s) specified below in the manner prescribed.

Reinstate four existing grips in the pentagon shaped field of the Lapwing Mitigation Area at Llanwern Solar Farm. Historic grip lines have been identified using DataMap Wales LiDAR Viewer. Works are detailed in the attachments to the notice dated 5 May 2026.

Condition	Condition Reason
1. Works to be undertaken as specified in the attachments to the notice dated 5 May 2026.	To safeguard the special features of the Gwent Levels - Nash & Goldcliff SSSI.
2. Prior to works commencing on site NRW's Environment Team are to be informed of the start date of the works ET.NewportCaerphilly&BlaenauGwent@cyfoethnaturiolcymru.gov.uk	To enable the opportunity for a NRW Conservation Officer to plan a site visit during the grip reinstatement works.
3. No works are to take place when the ground conditions are poor or after very wet weather.	To safeguard the special features of the Gwent Levels - Nash & Goldcliff SSSI.
4. A copy of the Section 28E – Notice of intent, the Annex 2 Method Statement and this SSSI consent are to be held on site to refer to during works.	To safeguard the special features of the Gwent Levels -

	Nash & Goldcliff SSSI.
--	---------------------------

This consent is valid until: 30/11/2026

To enable of a review of the proposed works if necessary and avoid works within the period of the year when ground conditions are more likely to be wet.

This consent only relates to the above legislation. It does not release you from any obligations to obtain approval under other legislation or the General Law. If the proposed works involve development, you may also require planning permission from the Local Planning Authority. Some proposals may require the landowner's permission or other authorisations.

Date: 18/06/2026

Signed: Kate Rodgers

SSSI Consents: Your right of appeal

If we have not consented to the proposed operations you have notified us of, or you disagree with any imposed conditions or time limits, you have the right to appeal. If we do not make a decision whether or not to give consent within 4 months you may appeal as if we had refused consent.

You also have a right of appeal if we withdraw or modify a consent we have previously issued to you.

If you are unclear as to why we have made our decision you should ask us for clarification before deciding whether to lodge an appeal.

Submitting an appeal

Forms and further guidance are available on the Welsh Government website [Countryside access and rights of way appeals | GOV.WALES](#)

Appeals must be made in writing to Planning & Environment Decisions Wales who will consider it on behalf of the Welsh Ministers.

Planning and Environment Decisions Wales

Crown Buildings

Cathays Park

Cardiff

CF10 3NQ

Tel: 0300 0604400

Email : PEDW.Casework@gov.wales

You will need to state the grounds on which you are making the appeal and enclose a copy of the decision being appealed against as well as any other relevant documentation.

Your appeal must be received **within 2 months** of the date of the notice telling you about the decision you want to challenge¹. You should also send a copy of the appeal to us at Natural Resources Wales.

The appeal may be dealt with by an exchange of written statements, at a hearing, or at a Local Inquiry. You will be asked to indicate which you would prefer. In any case, the appeal will be decided on the basis of the evidence put forward.

After receiving your appeal, Planning & Environment Decisions Wales will write to explain what will happen next, in more detail.

Withdrawal or modification of SSSI Consents: Payment if you have suffered loss

You may be eligible for a compensation payment if you will suffer loss as a result of the modification or withdrawal of a consent previously issued to you. If you feel you should be considered for compensation, please write to us at the address shown on the covering

¹ Or, where the appeal relates to the failure of a decision being made, within two months of the expiry of the four-month period from the date of your notice to NRW notifying them of your intention to carry out the operation(s).



Appendix 6 - Land Drainage Consent

**NRW, Pye Corner,
Broad Street Common,
Nash, Newport.
NP18 2BE**

Ebost/Email:
david.penny@cyfoethnaturiolcymru.gov.uk

Ffôn/Phone: **0300 065 4762**

Miss Kendall Vaughan
Wise Energy,
75 Grosvenor St.
Mayfair, London.

W1K 3JS

Date; 19/06/2026

Dear Miss Kendall

**Land Drainage Act 1991 and Land Drainage Byelaws 1993
Land Drainage Consent Application No. 2026/21**

Thank you for your application for Consent under the Land Drainage Act 1991/Land Drainage Byelaws 1993 for:

“Reinstate four existing grips in the pentagon shaped field of the Lapwing Mitigation Area at Llanwern Solar Farm, identified by NRW. Historic grip lines have been identified using DataMap Wales LiDAR Viewer. Works will occur in a phased approach, avoiding bird nesting season and will take place between September and November as suggested by NRW. It is estimated that a maximum of four structures/pipes will be replaced and cleared and an ecologist will be on site to supervise. The full methodology can be read in the document titled SSSI Consent - Grip Reinstatement Methodology”.

Refer to full description in LDC application int. ref; 2026/21 and associated documents as provided by applicant.

I am pleased to advise that the details submitted are satisfactory and accordingly I enclose herewith the **Formal Consent for the Works**.

Note: Please refer to Guidance for Pollution Prevention [PPG 6: Working at construction and demolition sites](#) and [GPP 5: Works and maintenance in or near water](#) available at www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/

Your attention is drawn to the Conditions relating to the Consent.

It should be noted that this Consent does not free you from the need to obtain other licenses, consents, approvals or permissions (including planning permission) which may be required in law, or to comply with any duties or responsibilities for conservation or protection of the environment. In addition, you should ensure that you obtain the prior consent of any owners or occupiers of land if necessary. This Consent does not confer any rights of entry or rights over property.

I would be grateful if you could please notify us when the work is completed in order that we can carry out an inspection.

Thank you for your co-operation.



David P L Penny – IDD Engineer Team Leader (S.E)
Gwent Levels and Lower Wye Internal Drainage District

Website: www.ge-consulting.co.uk
Phone: 01647 253652
Email: info@ge-consulting.co.uk

GE Consulting is a trading name for
GE Consulting Services (UK) Ltd
registered number 08435536

Registered office: Unit 11A, Gidleys
Meadow Business Park, Christow,
Devon, EX6 7QB.
VAT Number 160595992

Ecology
Arboriculture
Land Management

