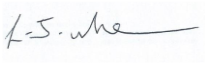
T: 01437 532580 / M: 07815 166735 / E: den@landskerecology.co.uk

Report:	Preliminary Ecological Assessment – Extended Phase 1
Target:	Improved grassland field and hedgerow
Proposed actions:	Installation of slurry storage tanks.
Location:	Oernant Fields, Crugmor Farm, Penparc, Cardigan, Ceredigion SA43 1QY
Grid reference:	SN 20172 47113
Site Assessment date:	01/05/2024
Agent:	Arthian Ltd
	13 Henderson Road, Inverness, IV1 1SN
Client:	Asgard Renewables Ltd
Address:	Unit 2, Crugmore Farm Penparc Cardigan SA43 1QY

Author:	Leander Wolstenholme
Qual:	BSc (Hons), PhD
Office address:	Landsker Ecology Llwynon Maenclochog Clynderwen Pembs. SA66 7LB

Report ref:	*SluryStorage-CrugmorFarm/James/ExtPhase1/LE(LW)24.01*	
Records submitted to WWBIC	*N/A*	
Consultation draft 1 submitted	 *- author*	*14/06/2024*
Final draft approved & submitted		*18/02/2024*

Contents

This report must be read and reviewed in its entirety before deciding on appropriate action based on its interpretations and conclusions. If there are any discrepancies or doubts as to the contents of this document, please contact Landsker Ecology for clarification.

1. Executive Summary

Details

- This Extended Phase 1 Habitat Survey was commissioned by Asgard Renewables Ltd. to inform, from an ecological perspective, the decisions that need to be made to facilitate the excavation of bio-fertiliser lagoons at Oernant Fields, Crugmor Farm, Penparc near Cardigan.
- The site was visited by the ecologist on the 1st of May 2024.
- This report presents the results, interpretations and recommendations derived from the site assessment.

Desk Study

- Location: SN 20172 47113
- Altitude; 79-93m
- Aspect: Sloping ground to the south
- Exposed at the northern/higher end become sheltered at the southern end due to lower altitude, woodland and hedgerows.
- Designated sites: A stream runs along the southern end of the site and ultimately feeds into the Afon Teifi SAC some 2.3km to the south.

Site Survey

- Habitat types and species lists are presented, along with their local status within planning and conservation policies and legal designations.
- There are no significant limitations to the assessment's findings, interpretations and recommendations.

Site assessment

- The fields within which the lagoons and access track will be positioned are ryegrass dominated improved pasture of low ecological value.
- All hedgerows (features of high ecological value) on the site will be retained as part of the development.
- An overground pipe from the neighbouring Anaerobic Digestion (AD) plant to the slurry lagoons will pass through an area of woodland and hedgerow.
- A proposed tank within the AD complex will be built on an area of marshy grassland.
- A badger latrine was noted adjacent to one of the hedgerows on site.
- Hedgerows and hedgebanks provide suitable habitat for reptiles, amphibians and hedgehogs as does on old, collapsed silage bale.

Impact assessment

- The development will result in a loss of approximately a 1.7 ha of ryegrass dominated grassland, a habitat of low ecological value.
- No hedgerows or areas of woodland will be lost to the development.
- The installation of an overground pipe from the AD plant to the lagoons will result in minimal disturbance to woodland and hedgerow habitats but potentially disturbs any nesting birds present along the pipe route.

Recommendations

- It must be ensured that the base and sides of the proposed bio-fertiliser lagoons are impermeable and that there is no leakage or seepage from the lagoons into the surrounding environment. It must also be ensured that there is no possibility of the lagoon overflowing during times of deluge and heavy rain.
- Native, locally-sourced woody species are planted along the boundaries of the lagoon site to provide a net gain for biodiversity and extend the network of wildlife corridors in the area.
- To provide further biodiversity enhancement, the hedgerows should be managed to benefit biodiversity by biennial or triennial rotated cutting.
- There should be no artificial lighting of the lagoon so that commuting and foraging bats (and other animals) are not disturbed.
- A finger-tip search for reptiles & amphibians etc. is undertaken by an ecologist of the section of collapsed silage bale before its removal to make way for the access trackway.

2. Introduction

2.1 Project Details	
Project Manager:	Asgard Renewables Ltd
Address:	Unit 2, Crugmore Farm, Penparc, Cardigan, SA43 1QY
Acting agent:	Arthian Ltd
Site address:	Oernant, Glantegfach (Penparc), Cardigan, Ceredigion SA43 1QY
Project:	The construction of two bio-fertiliser lagoons, one bio-fertiliser storage tank, a connecting overground pipe with associated hard standing, access track and landscape re-profiling (see Figure 4).
2.2 Aims & objectives:	1. Assess the target area for potential impacts on protected and priority species and habitats. 2. Assess the need for additional survey work. 3. Provide recommendations for the works activity, based on the interpretation and conclusions drawn from the site assessment, with a particular view to enhancing the biodiversity on the site.

3. Survey methods

3.1 Desk study	
Previous site surveys:	None.
Relevant Local Records:	1. Landsker Ecology have a good knowledge of the local area. This includes records of protected species in the vicinity of the site. 2. No LRC data search was commissioned.
Google Earth imagery / OS maps (figs 1 to 3 below):	1. The site is located approximately 1km east of Cardigan and 0.75km south-west of the village of Penparc. 2. The site is on a gently south facing slope at a starting altitude at the top of the slope of 93m down to 79m at the southern end of the slope. 3. The site is in a moderately sheltered location set within a landscape of pasture lined with low hedgerows to the north, south and west and adjacent to a large recycling plant to the east.
Other information:	*None*
3.2 Site assessment	1. A site survey was conducted on 01/05/2024 2. All boundaries and internal areas of the site were walked; their condition relative to the proposed development and the dominant species present were recorded. 3. Evidence of or potential for protected species was recorded.

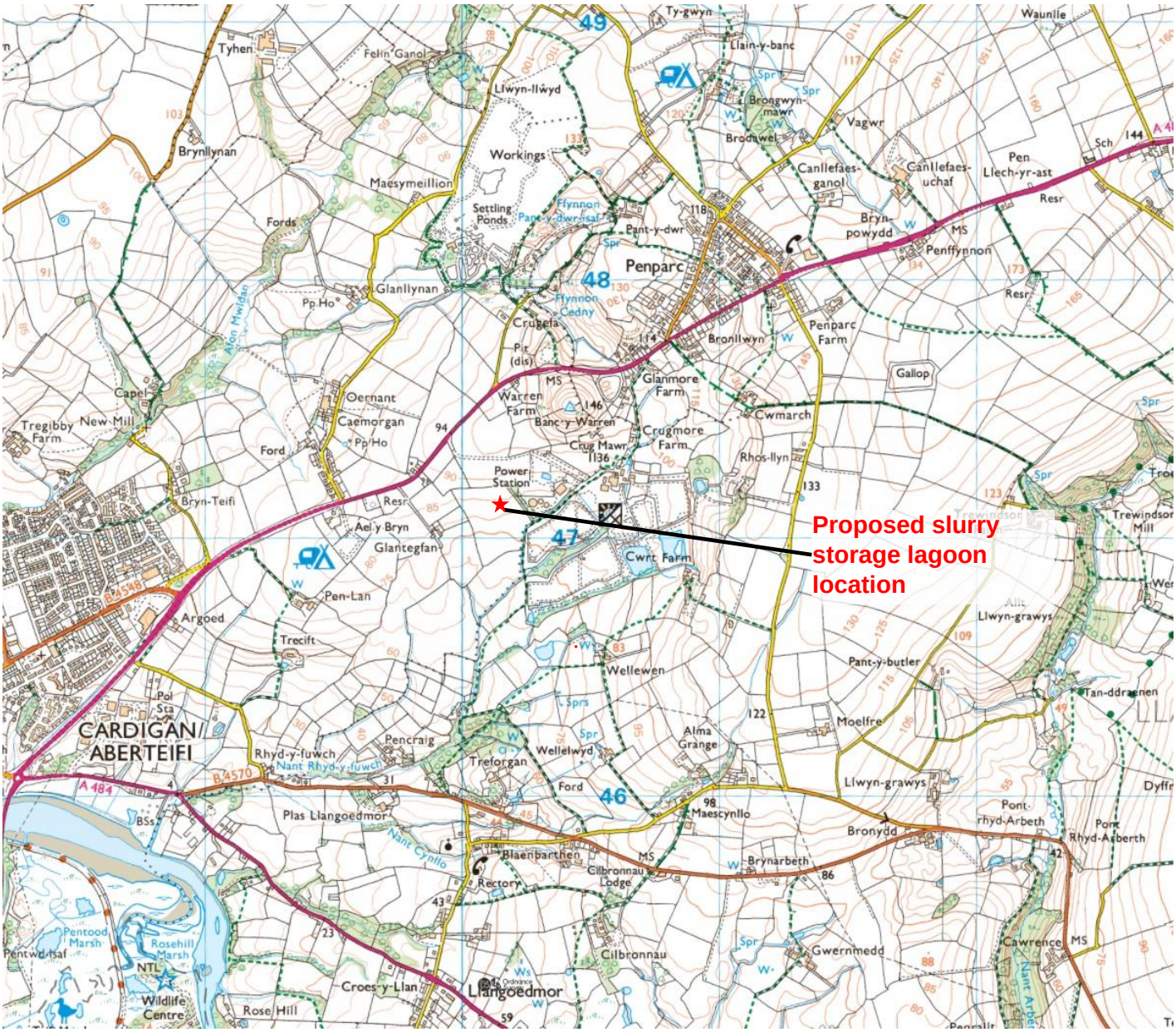


Fig.1 Location (© OS map).

Fig.2 Local area habitats and connectivity.

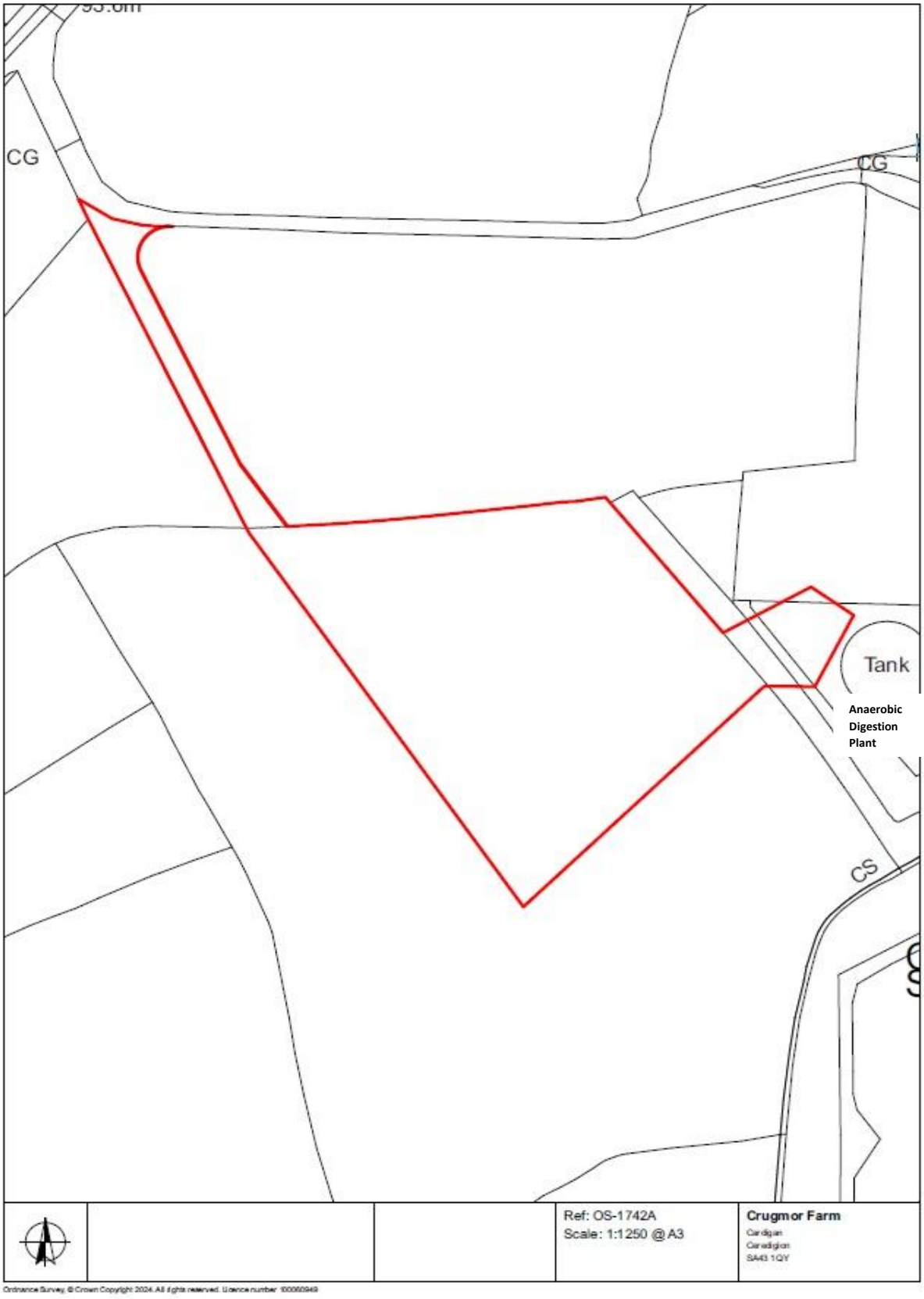


Figure 3: Site Location Plan

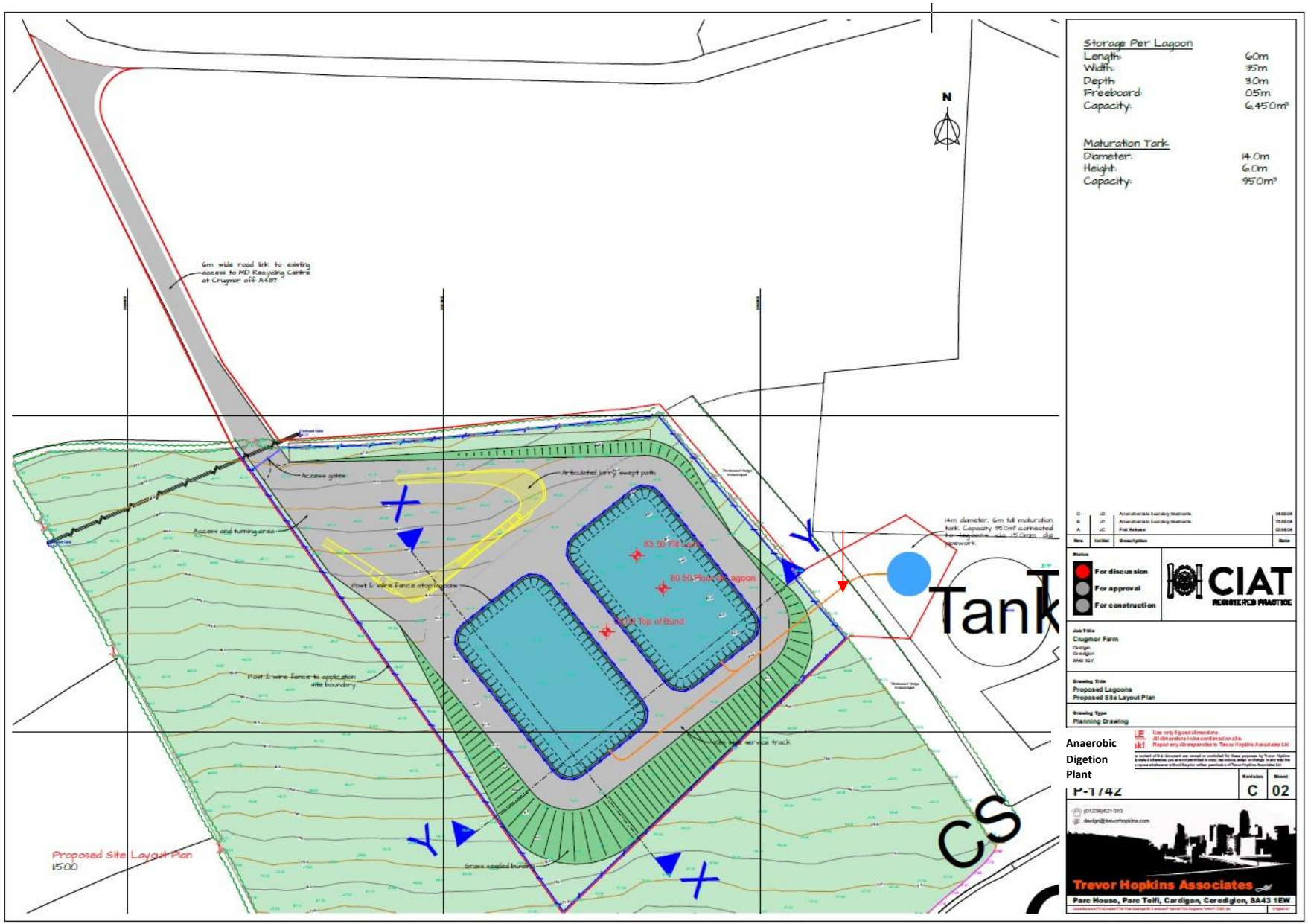


Figure 4: Proposed site plan

3.3 Survey limitations	• In the context of the site assessment and information from the desk study, there are no significant limitations to the interpretations, conclusions and recommendations of this report.
Personnel: D. Vaughan BSc (hons) Lead Ecologist for Project	• Director, Landsker Ecology; a professional field ecologist with over 30 years' experience. • Specialist qualifications in bird, bat and dormouse surveys. A full-time independent ecological consultant in SW Wales since 2010, with Landsker Ecology and Biodiversity Solutions. • Other contracts: RSPB, Edward Grey Institute (Oxford Univ.), Central Science Laboratory (DEFRA), Wildlife Trust SW Wales, British Trust for Ornithology, JNCC (Joint Nature Conservancy Council).
L. Wolstenholme BSc (hons), PhD Lead Surveyor on Site	• Project Ecologist for Landsker Ecology. • PhD (Botany & plant genetics). • Field ecologist of 25+ years' experience. • Past experience includes: Ecological consultant with TEP, Warrington; Head of Botany, World Museum, Liverpool; Curator of Botany, Manchester Museum; freelance ecological services.

4. Survey Results

4.1 Desk study	
Designated Sites and significant landscape features*:	**Designated Sites:** • Afon Teifi SAC 1.7km SW • Banc y Mwldan SSSI: 1km NW • Banc y Warren SSSI: 250m NE & 1.2km NE • Afon Teifi Estuary Woodlands and Marshes SSSI 1.7km SW **Watercourses** A stream that feeds into the Nant Rhyd-y-fuwch is located on the southern perimeter of the survey area. The Nant Rhyd-y-fuwch feeds into the Afon Teifi some 2.3km downstream from the stream on site.

4.2 Site Photographs (see Figure 22 for habitat map and location of features)

Fig.6: Improved grassland in the field where the proposed lagoons will be positioned.

Fig.7:Hedgerow 2 facing east.

Fig.8: Hedgerow 3 running alongside the area of broad-leaved woodland.

Fig.9: Facing east at section of Hedgerow 3 and associated woodland where the pipe from the AD plant to slurry lagoons will be positioned.

Fig.10: Looking southwest across grassland habitat where the proposed lagoon will be situated.

Fig.11: Looking west across grassland habitat where the proposed lagoon will be situated.

Fig.12: Hedgerow 1 – facing north.

Fig.13: Badger latrine adjacent to Hedgerow 1.

Fig.14: Old silage bales potentially providing reptile/amphibian habitat.

Fig.15: Bare ground/gravel at proposed entranceway to the proposed site.

Fig.16: Area of marshy grassland where the proposed tank will be positioned within the AD site.

Fig.17: Area of woodland that the pipe from the AD site to the lagoons will pass through showing large oak.

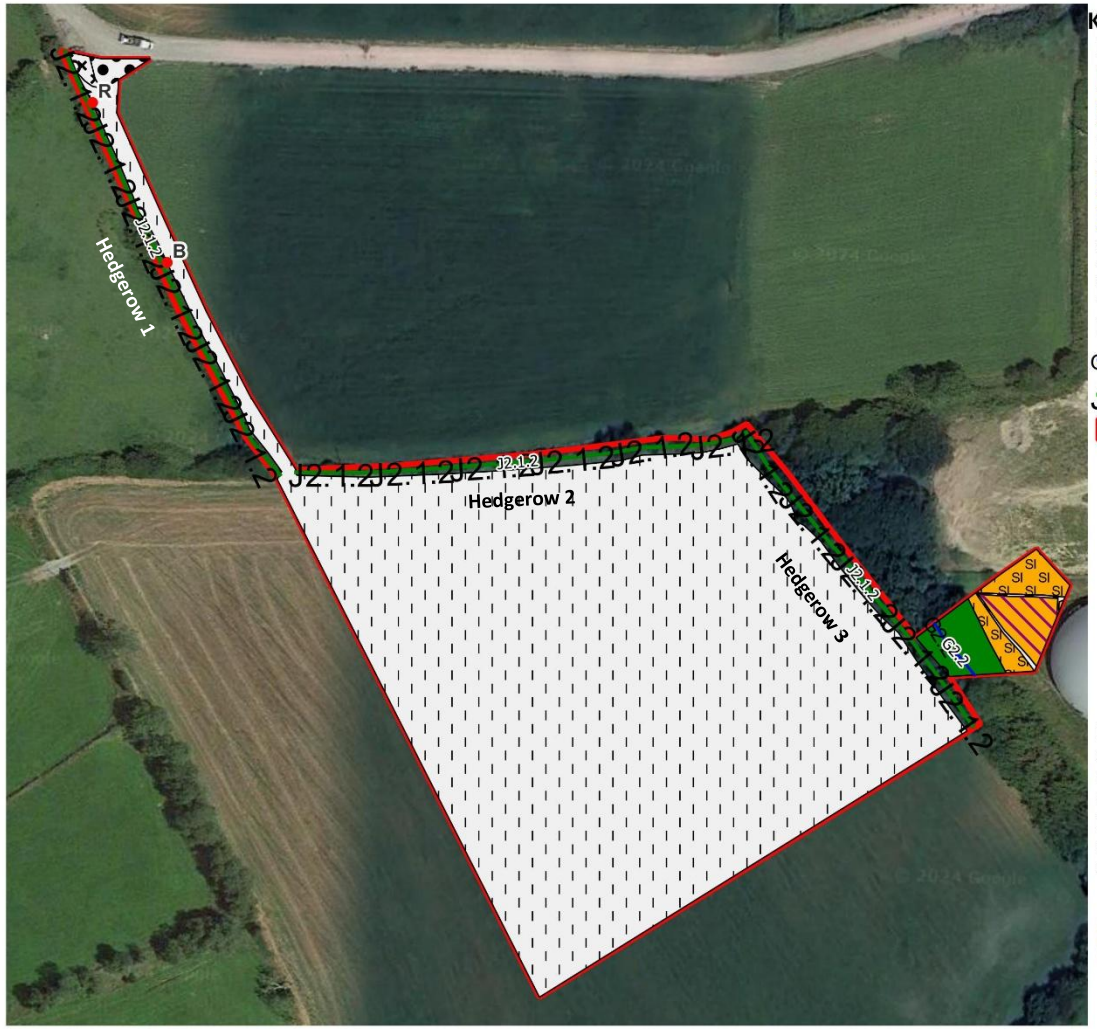
Fig.18:..Area of bramble scrub and associated woodland to the west of proposed tank on the AD site. Photograph taken facing south.

Fig.19: Close photograph of marshy grassland within AD site.

Fig.20: Semi-improved neutral grassland growing on bund within AD site.

Fig.21: Area of willow and ephemeral/perennial vegetation to the north of the AD site.

Figure 22: Phase 1 Habitat Map



Key

P1 Habitats

- A1.1.1 - Broadleaved woodland - semi-natural
- B2.2 - Neutral grassland - semi-improved
- B4 - Improved grassland
- B5 - Marsh/marshy grassland
- G2.2 - Running water - mesotrophic
- J1.3 - Ephemeral/short perennial
- J4 - Bare ground

Linear Features

- G2.2 - Running water - mesotrophic
- J2.1.2 - Intact hedge - species-poor
- Site Boundary

B – Badger latrine

R – Silage bale reptile feature

Phase 1 Habitat Map
Site for Proposed Bio-fertiliser lagoons
Oernant Fields
Crugmor Farm
Penparc
Ceredigion
SA43 1QY

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5. Site assessment

Habitats / protected species	**Description / notes** see Appendix 1 for species lists by habitat	**Designation Classification**
Hedgerows	• Hedgerows 1 and 2 are both dominated by blackthorn with occasional gorse present. Other woody species within these hedgerows include grey willow and hawthorn. • Both of these hedgerows are growing on hedgebanks with the ground flora consisting of species such as ivy, cleavers and wood dock. • Hedgerow 3, running alongside the woodland, is mostly composed of English elm with other woody species present including gorse, blackthorn, hawthorn and sessile oak with a ground flora that includes species such as barren strawberry, hart's-tongue fern and false brome.	Section7 listed habitat in Environment (Wales) Act 2016
Stream	• There is a small stream that runs from north to south through the strip of woodland ultimately flowing into a stream to the south. This stream is not marked on OS maps and potentially dries out in dry periods.	Section7 listed habitat in Environment (Wales) Act 2016
Improved Grassland	• The field within which the proposed bio-fertiliser lagoons will be situated and the field within which the access trackway will be constructed are dominated by Italian and perennial rye-grass and show very limited species diversity.	N/A
Ephemeral/short perennial	• There is an area of this habitat located where the entrance to the proposed access track will be. This is where a mound of soil and gravel have been deployed. A wide range of species are present here including fumitories. The species present can be expected to appear anywhere where there is disturbed soil in the local area.	N/A
Semi-improved Neutral Grassland	• There are bunds adjacent to the existing Anaerobic Digester (AD) plant that have been constructed to prevent contamination of local water courses from the AD plant. These bunds now host strips of SI neutral grassland with the dominant species being Yorkshire fog with a range of other species being present including bristly oxe-tongue.	N/A
Marshy Grassland	• The area where the proposed tank will be installed adjacent to the AD plant was damp underfoot at the time of survey and has been mapped as marshy grassland. The most abundant species is Yorkshire fog with other damp-favouring species present including soft rush, bog stitchwort and marsh bedstraw.	N/A
Semi-natural Broadleaved Woodland	• The area of semi-natural woodland is dominated by a canopy of English Elm with other woody species present including sessile oak, ash, and grey willow. Most of the trees present have trunks that are small in diameter but there are several large-trunked, mature oak and ash trees within the woodland.	Section7 listed habitat in Environment (Wales) Act 2016
Bare Ground	• The is an area of bare gravel at the proposed entrance trackway to the proposed site.	N/A
Bats	• The hedgerows, woodland and stream corridor on the site will provide foraging and commuting habitat for bats. • The large mature trees within the broad-leaved woodland contain cracks, holes and crevices that would be suitable for use as roosting sites by bats.	Conservation of Habitats and Species Regulations 2017
Badgers	• A badger latrine was noted, together with several snuffle holes adjacent to hedgerow 1. No burrows were noted within that hedgerow and it is likely that the latrine is a territorial boundary marker.	Protection of Badgers Act 1992

Breeding birds	• A number of bird species were noted during the survey including great tit, blue tit, song thrush, dunnock, chaffinch (in woodland), chiffchaff (in woodland), blackcap (in woodland), wren, robin, goldfinch (flying over field), blackbird, pied wagtail (AD plant) & heron (flying over). Of these, dunnock, chaffinch and heron are amber listed in Birds of Conservation Concern (BoCC) (Wales). 4 • Other Birds of Conservation Concern (BoCC 4 - amber or red listed), that are relevant to the locality and will likely be using the hedgerows and woodland on site for foraging and breeding include: song thrush, mistle thrush, fieldfare (winter visitor only), redwing (winter visitor only), bullfinch, willow warbler..	All species of nesting birds and their nest sites. Wildlife & Countryside Act (1981) BoCC (Wales) 4 species lists
Other species	• The hedgebanks offer suitable habitat for reptiles e.g. slow worm and lizards as well as amphibians. • An old, collapsed silage bale adjacent to Hedgerow 1 potential provides habitat for reptiles and amphibians.	Wildlife & Countryside Act (1981) LBAP & GSAP: Targets = maintain & expand range
Invasive non-native species	• None.	Wildlife & Countryside Act (1981) – schedule 9 listed.

6. Impact assessment without mitigation

	Impact	Level	+ve/-ve
Designated Sites	If it is ensured that there will be no leakage, seepage or run-off from the proposed lagoons, and no leakage from the pipe connecting the lagoons to the AD plant, and that the lagoons does not overflow at times of heavy downpours and deluge, the impact on designated sites will be negligible.	Negligible	Neutral
Habitats/species			
Hedgerows	There is no predicted loss of hedgerow due to the development. The construction of the gravel track alongside the hedgerow 1 potentially damages the roots of woody hedgerow species.	Negligible Minor	Neutral -ve
Stream	There will be no loss of stream habitat as a result of the development. If it is ensured that there will be no leakage, seepage or run-off from the proposed lagoons, or the pipe connecting the lagoons to the tank in the AD plant, and that the lagoon does not overflow at times of heavy downpours and deluge, the impact on the ecology of the stream & other local watercourses will be negligible.	Negligible	Neutral
Improved Grassland	An area of approximately 1.7ha of intensively farmed improved pasture has been lost to the development. This habitat is of low ecological value and is an abundant habitat in the wider local area. It is therefore considered that the loss of this habitat will have a negligible impact on the biodiversity of the local area.	Negligible	Neutral

	Impact	**Level**	**+ve/-ve**
Ephemeral/short perennial	A small area of this habitat will be lost to enable the construction of the entranceway track. The species that occupy this habitat appear when ground is disturbed and will appear in other areas of disturbed ground within the local area.	Negligible	Neutral
Semi-improved Neutral Grassland	There will be no loss of this habitat as a result of the development.	Negligible	Neutral
Marshy Grassland	There will be a loss of approximately 50m² to the construction of the proposed storage tank. There will also be temporary disturbance of the marshy grassland due to construction machinery etc. whilst the tank is being installed	Minor Minor (temporary)	-ve -ve (temporary)
Broad-leaved Semi-natural Woodland	A pipe will be installed from the proposed storage tank on the east side of the development to the lagoons. The installation of this pipe will involve no loss of trees or woody species aside from some potential clearance of a small number of bramble branches.	Minor (temporary)	-ve (temporary)
Bats	No loss of potential roosting sites. All hedgerow and woodland foraging habitat will be retained The bio-fertiliser lagoons are likely to host a large population of flies and other flying invertebrates. These will provide a food-source for bats and will likely lead to a positive impact for bats.	Negligible Negligible Low	Neutral Neutral +ve
Breeding birds	There will be no loss of hedgerow or woodland bird nesting and foraging habitat. There is a small chance that the installation of the storage tank to lagoons pipe through the woodland and associated hedgerow will disturb a bird's nest.	Negligible Potential moderate	Neutral Potential -ve
Badgers	Currently no badger setts will be disturbed by the proposed development. However, badgers are highly mobile animals and will readily dig a sett in a short space of time.	Negligible But potentially moderate	Neutral But potentially -ve
Other species	There will be no reduction in the quantity of habitat suitable for. hedgehogs, reptiles and amphibians in the local area. The old/collapsed silage bale potentially provide a home for reptiles and amphibians. This bale will potentially be removed as part of the works.	Negligible Potential moderate	Neutral Potential -ve

7. Recommendations

	Method	Rationale
1. Ensuring that the lagoon is watertight	The base and sides of the lagoons must be impermeable and not allow seepage or leakage of bio-fertiliser into the surrounding environment. The sides of the lagoon must be tall enough so that there is no overflow from the lagoons during periods of heavy rainfall and deluge.	• To prevent the seepage of bio-fertiliser into the ground and to protect local watercourses from pollution, particularly as all local watercourses ultimately feed into the Afon Teifi SAC.
2. The pipe connecting the lagoons to the tank in the AD plant is watertight	There must be no leakage from the pipe connecting the AD tank to the lagoons – ideally this would be a single length of pipe with no connectors.	• To prevent the seepage of bio-fertiliser into the ground and to protect local watercourses from pollution, particularly as the woodland stream ultimately feeds into the Afon Teifi SAC.
2. Planting of trees and hedgerow species along lagoon site boundaries (see Figure 23 for location)	The species chosen must be native species and locally sourced to remain in keeping with the hedgerows in the local area. Suitable species include the following: blackthorn, hawthorn, gorse, elder, pedunculate oak, elder and hazel. Other species that could be included are rowan and crab apple. Planting must be such that root growth will not compromise the lining of the lagoons.	• To provide biodiversity enhancement and connections to existing hedgerow and woodland wildlife corridors.
3. Enhancement & change of management regime of the hedgerow	Restrict any hedgerow cutting to biennial or triennial cutting, alternating sections or sides to retain sections with constant two or three year-old wood.	• Allow the permanent presence of flowering and fruiting of hedge shrub and species. • To provide enhanced, permanent, annual provision of foraging and nesting for invertebrates, birds and small mammals and their predators. Bats have been shown to benefit significantly from this type of hedge structure/ composition. • To keep the hedgerow healthy
4. No artificial lighting	There should be no artificial lighting of the lagoons	• To prevent disturbance to foraging bats which will use the hedgerow and associated woodland to the south for foraging and commuting.
5. Birds – precautionary approach	There is a possibility that a bird will be nesting (for example in bramble scrub) on the pipe route from the AD plant to the lagoons. It is therefore recommended that the laying of the pipe is undertaken outside of the bird nesting season (March-August inclusive) or if the works are to be undertaken within the nesting season that a suitably qualified and experienced ecologist undertakes a bird nesting checking in the 24 hr period prior to the works taking place. If an active nest is found on the pipe route, the works should be delayed until the young have fledged and left the nest.	• To protect breeding birds.

6. Badgers – precautionary approach	Ahead of the track construction works, it is recommended that the hedgerow bank that runs alongside the hedgerow is checked for the presence of badger setts. If a sett is found and digging works are being undertaken within 30m of this sett, a badger licence may be required.	• To protect badgers and their setts from damage.
7. Other species	It is recommended that a finger-tip search is undertaken by a suitably qualified and experienced ecologist of the section of collapsed silage bale before its removal to make way for the access trackway.	• To prevent harm to any reptiles/amphibians that may be using the collapsed silage bale as a refuge.

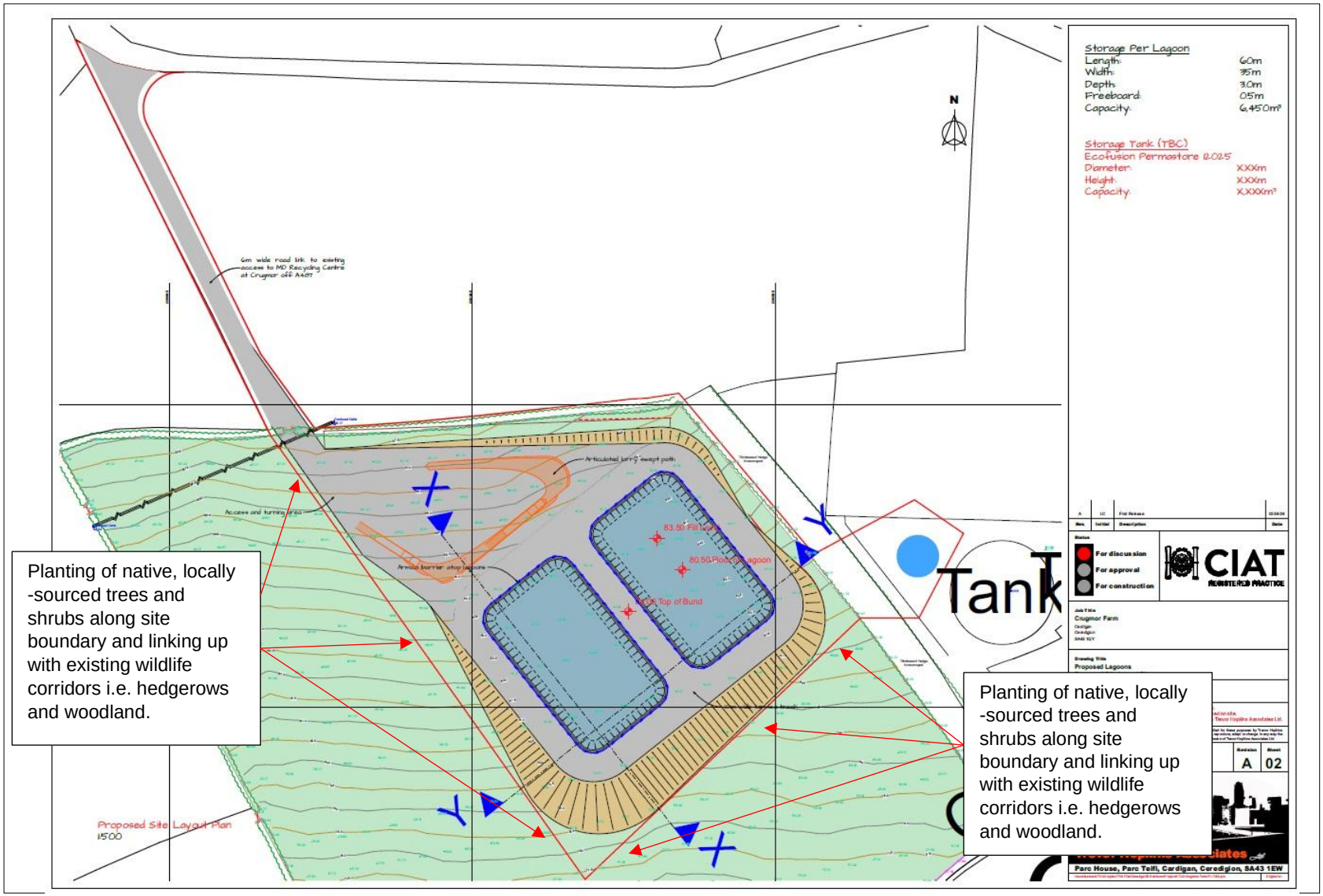

Figure 23: Suggested location of tree and shrub planting to provide biodiversity enhancement at the site.

Appendix 1 – Oernant Fields Species Lists per Habitat

The DAFOR scale is used to show the relative abundance of each species within each particular habitat such that: D = Dominant, A =Abundant, F = Frequent, O = Occasional, R= Rare. The qualifier "L" is sometimes used to mean locally so that e.g. LA means locally abundant.

Improved Grassland Southern Field (Phase 1 Habitat Code B4)

Italian Rye-grass (*Lolium multiflorum*) A
Perennial Rye-grass (*Lolium perenne*) F
White Clover (*Trifolium repens*) F-A
Dandelion (*Taraxacum officinale*) F
Creeping Bent (*Agrostis stolonifera*) LF
Creeping Buttercup (*Ranunculus repens*) LF
Common Mouse-ear (*Cerastium fontanum*) O
Annual Meadow-grass (*Poa annua*) O
Wavy Bitter-cress (*Cardamine flexuosa*) R
Yorkshire Fog (*Holcus lanatus*) O
Wood Dock (*Rumex sanguineus*) LO (margins of field mostly)
Daisy (*Bellis perennis*) LF
Toad Rush (*Juncus bufonius*) R
Willowherb (*Epilobium* sp.) O
Common Ragwort (*Jacobaea vulgaris*) LO
Broad-leaved Dock (*Rumex obtusifolius*) LO
Curled Dock (*Rumex crispus*) R
Thyme-leaved Speedwell (*Veronica serpyllifolia*) R

Improved Grassland – Northern Field Adjacent to proposed entrance trackway (Phase 1 Habitat Code B4)

Italian Rye-grass (*Lolium multiflorum*) A
Creeping Buttercup (*Ranunculus repens*) LF
Yorkshire Fog (*Holcus lanatus*) O
Creeping Bent (*Agrostis stolonifera*) LF
Marsh Foxtail (*Alopecurus geniculatus*) LO
Annual Meadow-grass (*Poa annua*) O
Perennial Rye-grass (*Lolium perenne*) F
White Clover (*Trifolium repens*) F-A
Broad-leaved Dock (*Rumex obtusifolius*) LO
Common Mouse-ear (*Cerastium fontanum*) O

Marshy Grassland (Phase 1 Habitat Code B5) – adjacent to biodigester plant

Yorkshire Fog (*Holcus lanatus*) A
Creeping Buttercup (*Ranunculus repens*) F
Soft Rush (*Juncus effusus*) O
Broad-leaved Dock (*Rumex obtusifolius*) O
Curled Dock (*Rumex crispus*) O
Greater Bird's-foot-trefoil (*Lotus pedunculatus*) O
Rough-stalked Meadow-grass (*Poa trivialis*) O
Cleavers (*Galium aparine*) O
Perennial Rye-grass (*Lolium perenne*) O

Creeping Bent (*Agrostis stolonifera*) LF
Short-fruited Willowherb (*Epilobium obscurum*) O
Bog Stitchwort (*Stellaria alsine*) R
Common Nettle (*Urtica dioica*) R

Semi-improved Neutral Grassland (Phase 1 Habitat Code B2.2)
Yorkshire Fog (*Holcus lanatus*) A-D
Common Ragwort (*Jacobaea vulgaris*) O
Cut-leaved Crane's-bill (*Geranium dissectum*) O
Bristly Oxe-tongue (*Helminthotheca echioides*) O
Marsh Thistle (*Cirsium palustre*) R
Creeping Bent (*Agrostis stolonifera*) LF
Smooth Sow-thistle (*Sonchus oleraceus*) O
Common Nettle (*Urtica dioica*) O
Dandelion (*Taraxacum officinale*) O
Hoary Willowherb (*Epilobium parviflorum*) O
Sticky Mouse-ear (*Cerastium glomeratum*) R
Common Mouse-ear (*Cerastium fontanum*) O
Creeping Thistle (*Cirsium arvense*) O
Common Vetch (*Vicia sativa*) O
Pedunculate Oak (*Quercus robur*) seedling R
Meadow Buttercup (*Ranunculus acris*) O
Bramble (*Rubus fruticosus*) O
Hairy Sedge (*Carex hirta*) LF
Bindweed (*Calystegia sp.*) R

Semi-natural Broad-leaved Woodland (Phase 1 Habitat Code A1.1.1)

Canopy
English Elm (*Ulmus procera*) A-D (some large trees)
Grey Willow (*Salix cinerea* subsp. *oleifolia*) O
Sessile Oak (*Quercus petraea*) O
Holly (*Ilex aquifolium*) R
Hazel (*Corylus avellana*) R

Ephemeral/Short perennial (Phase 1 Habitat Code C3.1)
Tall Ramping-fumitory (*Fumaria bastardii*) O
Common Field-speedwell (*Veronica persica*) O
Prickly Sow-thistle (*Sonchus asper*) O
Bristly Oxe-tongue (*Helminthotheca echioides*) O
Cleavers (*Galium aparine*) O
Creeping Bent (*Agrostis stolonifera*) O
Broad-leaved Dock (*Rumex obtusifolius*) O
Common Mouse-ear (*Cerastium fontanum*) O
Dandelion (*Taraxacum officinale*) O
Tall Oat-grass (*Arrhenatherum elatius*) O
Meadow Foxtail (*Alopecurus pratensis*) O
Charlock (*Sinapis arvensis*) R
Lesser Swine-cress (*Lepidium didymum*) R

Smooth Sow-thistle (*Sonchus oleraceus*) O
Groundsel (*Senecio vulgaris*) R
Common Ramping-fumitory (*Fumaria muralis* subsp. *boraei*) O
Italian Rye-grass (*Lolium multiflorum*) R
Yorkshire Fog (*Holcus lanatus*) O
Thale Cress (*Arabidopsis thaliana*) R
Oat (*Avena sativa*) R
Perennial Rye-grass (*Lolium perenne*) R
Creeping Bent (*Agrostis stolonifera*) LF

Hedgerow 1 (trackside hedgerow) (Intact native species-poor) (Phase 1 Habitat Code: J2.1.2)
Woody Species
Blackthorn (*Prunus spinosa*) D
Gorse (*Ulex europaeus*) O
Hawthorn (*Crataegus monogyna*) O-LF
Grey Willow (*Salix cinerea* subsp. *oleifolia*) O-R

Ground Flora
Bramble (*Rubus fruticosus*) LF
Dog Rose (*Rosa canina*) O
Ivy (*Hedera helix*) A
Common Nettle (*Urtica dioica*) LF
Cleavers (*Galium aparine*) O
Wood Dock (*Rumex sanguineus*) LO
Creeping Thistle (*Cirsium arvense*) O
Tall Oat-grass (*Arrhenatherum elatius*) O
Creeping Buttercup (*Ranunculus repens*) LF
Broad-leaved Dock (*Rumex obtusifolius*) LO
Cock's-foot (*Dactylis glomerata*) O
Honeysuckle (*Lonicera periclymenum*) O
Foxglove (*Digitalis purpurea*) O

Hedgerow 2 (central hedgerow) (Intact native species-rich (Phase 1 Habitat Code: J2.1.1)

Woody Species

Blackthorn (*Prunus spinosa*) A-D
Gorse (*Ulex europaeus*) O-F
Grey Willow (*Salix cinerea* subsp. *oleifolia*) O-R

Ground Flora

Bramble (*Rubus fruticosus*) LF
Cleavers (*Galium aparine*) LF
Ivy (*Hedera helix*) LF
Yorkshire Fog (*Holcus lanatus*) O
Wood Dock (*Rumex sanguineus*) LO
Smooth Sow-thistle (*Sonchus oleraceus*) O
Bittersweet (*Solanum dulcamara*) O
Common Nettle (*Urtica dioica*) LF
Foxglove (*Digitalis purpurea*) O
Honeysuckle (*Lonicera periclymenum*) O
Tall Oat-grass (*Arrhenatherum elatius*) O
Broad Buckler-fern (*Dryopteris dilatata*) O

Hedgerow 3 (adjacent to woodland) (Intact native species-poor (Phase 1 Habitat Code: J2.1.2)

Woody Species
English Elm (*Ulmus procera*) A-D
Hawthorn (*Crataegus monogyna*) F
Gorse (*Ulex europaeus*) O
Sessile Oak (*Quercus petraea*) O
Ash (*Fraxinus excelsior*) O

Ground Flora/Hedgebank species
Bramble (*Rubus fruticosus*) A
False-brome (*Brachypodium sylvaticum*) O
Cleavers (*Galium aparine*) LF
Hart's-tongue Fern (*Asplenium scolopendrium*) O
Barren Strawberry (*Potentilla sterilis*) O
Soft Shield-Fern (*Polystichum setiferum*)

Appendix 2 – References/information – sources

https://www.ceredigion.gov.uk/resident/coast-countryside/conservation-and-wildlife/ceredigion-biodiversity-action-plan/

https://www.legislation.gov.uk/ukpga/1981/69/contents (Wildlife & Countryside Act 1981)

http://jncc.defra.gov.uk/page-4341 (schedules)

https://www.bto.org/sites/default/files/shared_documents/publications/birds-conservation-concern/birds-of-conservation-concern-4-leaflet.pdf