

Landscape and Ecology Management Plan

Swansea Road, Merthyr Tydfil

April 2024

Ecology | Green Space | Community | GIS

Unit 1, Brassmill Lane Enterprise Centre | Bath | BA1 3JN

01225444114 | info@ethosep.co.uk

www.ethosep.co.uk



Report Produced for Merthyr Valley Homes

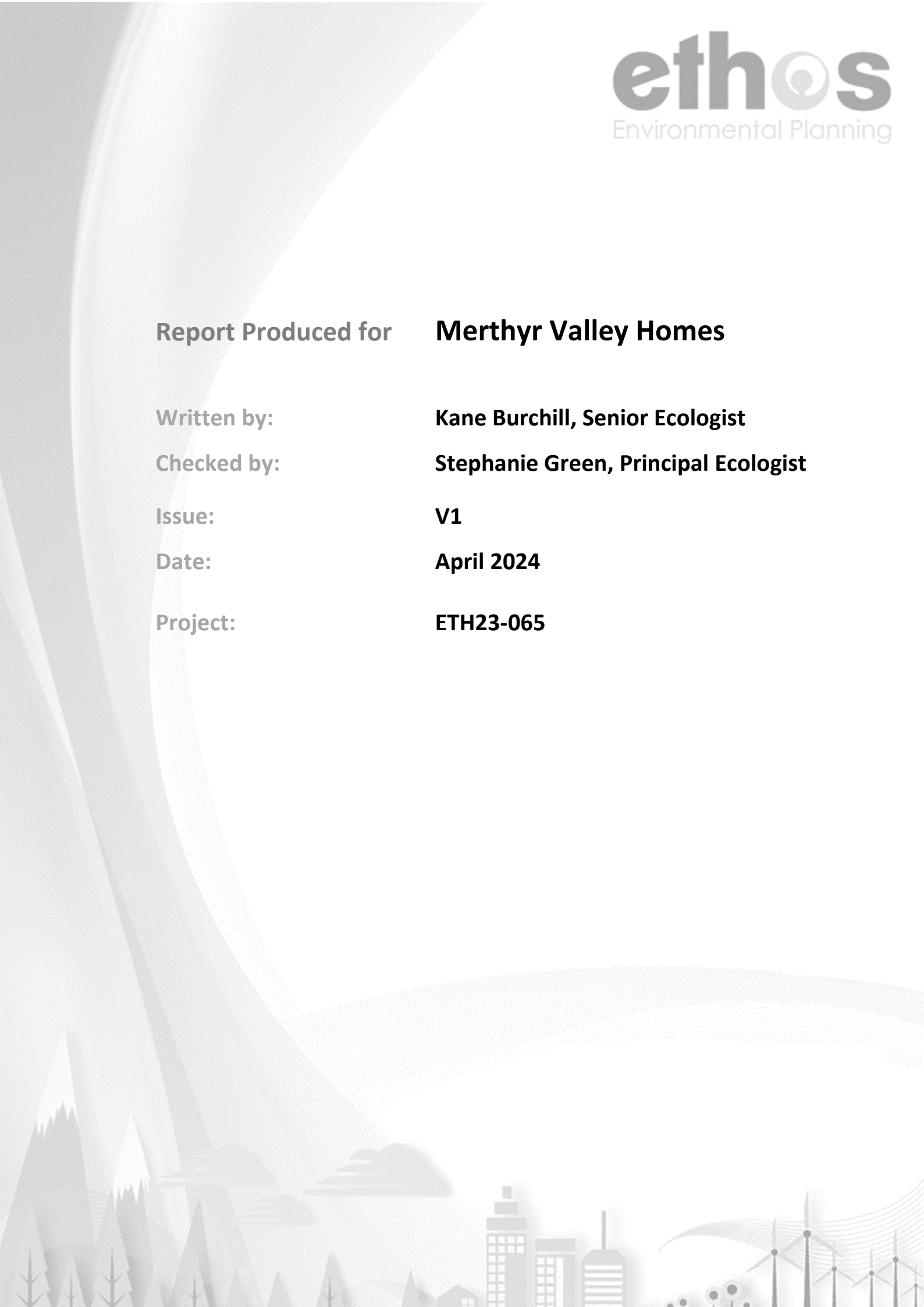
Written by: Kane Burchill, Senior Ecologist

Checked by: Stephanie Green, Principal Ecologist

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SUMMARY

- The site is located at Land at Swansea Road, Merthyr Tydfil (Central Grid Reference: SO, 02529 07051) and is subject to plans for the development of 42 residential dwellings with public open space, soft landscaping and access roads.
- This Landscape and Ecology Management Plan (EMP) has been produced by Ethos Environmental Planning to discharge Condition 17 of the granted Full planning permission for the site Land adjoining (South of) Swansea Road to the East of Waunbant Court and North West of Old Winchfawr Road Swansea Road Merthyr Tydfil (Planning Reference P/23/0197).
- The objectives of the LEMP are set out.
- Habitat establishment and management options for the site are set out in order to achieve the objectives of the LEMP. Ecological management constraints to management actions are also detailed.
- Details of ecological provisions to be installed as part of the development are included.
- A ten-year work schedule capable of being rolled out over a 30-year period is set out.
- Information on potential remedial measures and responsibilities for implementing the LEMP have been provided.

1 INTRODUCTION

- 1.1.1 Ethos Environmental Planning (Ethos) have produced this Landscape and Ecology Management Plan (LEMP) for the site at Swansea Road, Merthyr Tydfil (Central Grid Reference SO, 02529 07051), hereafter referred to as 'the site' and shown in Figure 1.
- 1.1.2 This LEMP has been produced to discharge Condition 17 of the granted Full planning permission (Planning Reference Planning Reference P/23/0197), which is as follows:

Condition 17

No development shall commence, including any works of demolition until a Landscape Ecological Management Plan (LEMP) has been submitted to and approved in writing by the local planning authority. These details shall include:

- *a plan illustrating areas of onsite habitats to be retained, protected and enhanced;*
- *details of the compensation measures to replace the loss of dwarf heath scrub, neutral grassland, acid grassland and on-site woodland;*
- *details of the enhancement measures set out in Section 7 of the Ecological Impact Report (dated December 2023);*
- *a method statement for hedgehogs and for the protection of nesting birds;*
- *details for the enhancement of the reptile receptor site to be implemented prior to the commencement of translocation;*
- *a management plan for a period of 10 years for the monitoring and maintenance of all new habitats created on site.*
- *an implementation programme including the phasing of works; and*
- *details of the qualified person who will provide ecological supervision. The development shall be carried out in accordance with the approved details*

- 1.1.3 This LEMP has therefore been produced to allow the discharge of Condition 17 and should be read in accordance with the Landscape Plan (Tir collective Landscape Architects, November 2023).
- 1.1.4 This LEMP is submitted alongside the Swansea Road Development Schedule and Specifications, Landscape Plan and Planting Plan. Together these documents form a Landscape Ecological Management Plan.
- 1.1.5 Any measures relating to the construction period, such as the protection of nesting birds during vegetation clearance and details of ecological supervision required during construction, are detailed within the Ecological Mitigation Strategy (Appendix 1 of this report)

1.2 LEMP Objectives

1.2.1 Objectives of the LEMP are as follows:

- To protect and enhance biodiversity and landscape elements of the site, for the first five years following completion of development, capable of being rolled out over a 10-year period.
- To provide prescriptions for ongoing management to meet the stated objectives and shown as applicable on plans and drawings for individual areas.
- To fulfil the legal requirements in relation to the protection and enhancement of the ecological features of the site.
- To provide prescriptions for management actions including a 10-year timetable of works, in line with biodiversity net gain requirements.
- Providing a list of persons responsible for undertaking specific duties.

1.3 Site Location and Description

1.3.1 The site is located at Land at Swansea Road, Merthyr Tydfil (Central Grid Reference: SO, 02529 07051), hereafter referred to as 'the site' and shown in Figure 1.

Figure 1 Site location



1.4 Development Proposals

- 1.4.1 The development proposals comprise the construction of 42 residential dwellings with associated access, as shown in Figure 2. The total size of the redline of the site is 1.5 ha.
- 1.4.2 The layout of the development requires major land and stabilisation works, which in turn negates any feasible means of retaining existing habitats on site. Some habitats will be permanently lost (to built development) and some will be retained or temporarily impacted and restored.
- 1.4.3 The layout of the development has been developed to minimise impacts on the important ecological features on site, and enhance the site for a range of protected species as follows:
- Retention and enhancement of the existing hedgerows through management.
 - The restoration of 0.2031 hectares of Acid grassland/ Lowland dry acid grassland.
 - The restoration of 0.1167 hectares of Dwarf shrub heath/ Lowland heathland.
 - The restoration of 0.1790 hectares of Woodland/ Other woodland; broadleaved.
 - Creation of a new native hedge comprising of native species such as, gorse (*Ulex europaeus*), birch, hawthorn (*Crataegus monogyna*) and rowan (*Sorbus aucuparia*).
 - Drainage ditch/Suds along eastern edge/lower slope of site which will increase the value of the site for species such as invertebrates and in turn, foraging bats and birds.
 - Tree and shrub planting within the street scene.
 - Installation of integrated and standalone ecological provisions for a range of faunal species.

Figure 2 Landscape proposals (tir collective, 2024)



2 BASELINE ECOLOGICAL CONDITIONS

2.1 This LEMP has drawn on information in the Ecological Impact Assessment (EclA) (Ethos, 2023^a). A summary of key issues from the EclA relevant to this report are summarised below:

- The site is a coal waste site and is 1.5 Ha in size. Habitats comprise neutral grassland, acid grassland, dwarf shrub heath, scattered scrub, woodland, bare ground and scattered trees.
- The acid grassland and dwarf shrub heath are habitats of principal importance in Wales (Section 7 Priority habitats). The woodland area, although small, is of Local importance for nature conservation.
- The heathland habitat is assessed to support an assemblage of invertebrate species of County importance for nature conservation.
- A low population of slow worms are present on site.
- The site is of Local importance for commuting lesser horseshoe and greater horseshoe bats moving through the landscape.
- Japanese knotweed is present in a number of areas on site.

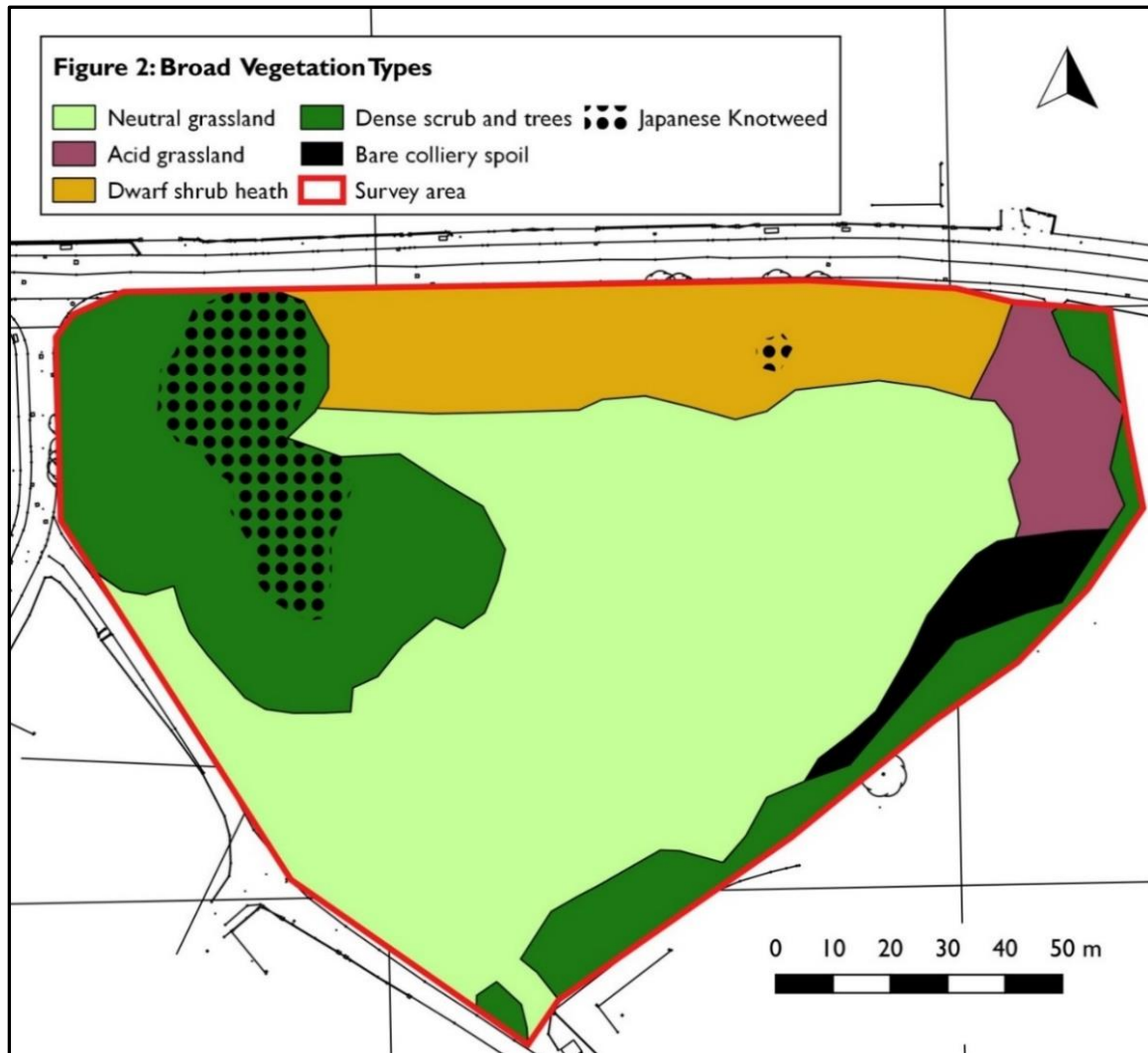


Figure 3 NVC habitat Survey (Ethos, 2023)

3 HABITAT MANAGEMENT AIMS, OBJECTIVES AND CONSTRAINTS

3.1 Aims and Objectives of the Management

3.1.1 The overall aim of habitat management is to provide a range of ecologically valuable habitats that also provide high aesthetic value for residents.

3.1.2 Objectives for the management of habitats are as follows:

- To restore and manage areas of acid grassland with a diverse sward height and botanical diversity, to achieve the criteria as a priority habitat
- To restore and manage areas of dwarf heath shrub with to achieve the criteria as a priority habitat.
- Improve habitat connectivity across the local landscape and benefit a variety of protected and notable species.
- Planting of a new native species-rich hedgerows to create additional habitat for protected and notable species.

3.2 Management Constraints

3.2.1 Management cannot be undertaken that would result in offences under protective legislation. As such, management would ensure conformity with Planning Policy Wales (2021).

3.2.2 The following provides a list of the key constraints that have been identified at the site through ecological surveys undertaken to date, along with consideration for how management prescriptions for the habitats at the site should take account of the presence of these species:

- Birds – Maintain suitable foraging and nesting habitat for birds, namely the existing hedgerows and mature trees on site as well as the created attenuation basin and planted trees. Management of scrub and trees must be timed to avoid the bird nesting season (March-August inclusive).
- Bats – Suitable foraging and commuting habitat is being retained, predominately along the south east boundary. Tree management will be undertaken sensitively to avoid impacting potential bat roosting habitat, such as cracks and crevices on trees.
- Reptiles – Create suitable terrestrial habitat for reptiles namely the eastern and northern slopes. Maintain suitable habitat within the reptile receptor site.
- Japanese knotweed – Ensure Japanese knotweed has been eradicated from site.

4 APPROPRIATE MANAGEMENT OPTIONS FOR ACHIEVING OBJECTIVES

- 4.1.1 The following section contains information relating to habitat establishment, enhancement and management on site, in order to achieve the management objectives. The habitat being created which does not contribute towards the objectives, namely the privately owned gardens will not be discussed. These are shown in Appendix 1.

4.2 Grassland – Acid Grassland Restoration

- 4.2.1 The development proposals include the restoration of the acid grassland (Lowland dry acid grassland) located along the eastern slopes of the site. Due to extensive levelling works required to make the site structurally sound, it will not be possible to retain the grassland habitat *in situ*, therefore resulting in its temporary loss. A EMP has been provided within the appendix 1 of this report detailing measures to re-create the shrub. The EMP also includes measures to harvest the existing grassland seed bank and also provides details in relation to the translocation and storage of the existing subsoil. Management measures have been detailed below to aid reestablishment of the grassland.

Management

- 4.2.2 Management actions to achieve the objectives are as follows:

- Grassland will be cut with a petrol trimmer or tractor mower three times a year (March-April, July-August and September-October). It is expected that the relaxed cutting regime will reduce the fertility of the grassland over time, which will reduce the prevalence of dominant species and will allow the herbaceous species to flower.
- The 'hay' will be left to dry and shed seed for 1-7 days and then the arisings will be removed from site. The key to the restoration will include the removal of arisings from the grassland.

4.3 Shrub – Dwarf Heath Shrub Restoration

- 4.3.1 The development proposals include the restoration of the dwarf heath shrubland located along the northern slopes of the site. Due to extensive levelling works required to make the site structurally sound, it will not be possible to retain the shrub habitat *in situ*, therefore resulting in its temporary loss. A EMP has been provided within the appendix 1 of this report detailing measures to re-create the shrub. The EMP also includes measures to harvest the existing shrub seed bank and also provides details in relation to the translocation and storage of the existing subsoil. Management measures have been detailed below to aid reestablishment of the grassland.

Management

- The shrub will be cut in spring (March and April) to promote the regeneration of ericaceous vegetation and to remove undesirable species. All arisings will be removed from the site.
- All bracken (*Pteridium spp.*) will be treated with a Glyphosate herbicide. This can also be used reduce grass cover and can be applied to cut stumps of undesirable scrub species
- If necessary, acidification may be required to modify the pH levels of the soil. This can include measures such as bracken (*Pteridium spp.*) and pine chippings. Prior to acidification measures being implemented it is recommended that a soil sample is taken.

4.4 SuDS/ Attenuation Basin

- 4.4.1 SuDS will be created in the north of the site, within the open space. A grassland border will be planted around the SuDS. The proposed SUDs has been designed in a way which benefits wildlife, as outlined below:

Design

- The SuDS will incorporate a variety of slopes, heights and depths to create varying water depths across the area. The result will be the creation of various ecological niches for wildlife.
- SuDS will facilitate the gradual seepage of water into the ground.
- Control features installed to direct run-off from the areas of hardstanding into the SuDS will be resistant to blockage.
- Vegetation within and around the SuDS will comprise native species of local provenance, where possible. Non-native invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act will never be deliberately introduced.

Management

- The SuDS will be allowed to colonise naturally with aquatic vegetation.
- The SuDS will be monitored for invasive plant species presence within the basin and the grassland border. If invasive plants are identified, remedial action will be required to remove any occurrences of the relevant species.
- Most of the sown meadow species in the grassland border are perennial and are slow to establish. Soon after sowing there will be a flush of annual weeds, arising from the soil seed bank. These weeds will offer shelter to the sown seedlings, are of value to invertebrates, and will die before the year is out. The annual weeds will not be cut until mid to late summer, particularly as the mixture contains yellow rattle.
- The wet meadow grassland will be cut, removed and the cuttings will be composted. This will reveal the young meadow, which will then be kept short by

mowing through to the end of March of the following year. Any residual perennial weeds such as docks will be dug out.

- In the second and subsequent years, the grassland border will be left long over winter.
- Any mowing will be undertaken after flowering in July or August. This will involve using a strimmer to reduce the vegetation to c 50mm. The grassland will then be left undisturbed for the remainder of the year.
- When any long grass is cut, the cuttings will be removed to prevent accumulation of dead plant material.

4.5 Hedgerow Planting

- 4.5.1 A new native hedgerow will be planted separating the residential development to the habitat restoration areas. This hedgerow will be planted with native species including dogwood (*Cornus sanguinea*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), spindle (*Euonymus europaeus*), blackthorn (*Prunus spinosa*), pedunculate oak (*Quercus spp.*) dog rose (*Rosa canina*), elder (*Sambucus nigra*), rowan (*Sorbus aucuparia*) and guelder-rose (*Viburnum opulus*).

Management

- Hedgerow works will be timed to avoid the breeding bird season and therefore, works will be undertaken between January and February.
- The new hedgerows will be frequently trimmed within the first 5 years to ensure dense structure.
- The hedgerows will then be cut on rotation once every three years on alternate sides (left/top/right) to ensure high fruit production.
- It is important that not all of the hedgerows are cut at the same time to ensure that foraging opportunities are still available for breeding birds. It is recommended that no more than 10 to 30% of the hedgerows are cut in any one year.
- The hedgerows will be maintained at a height of at least 1.5m.
- The structure of the hedgerows will be monitored. If the hedgerows become gappy, remedial actions will be recommended, such as coppicing or laying.
- Hedgerows will be monitored for the presence of invasive species. If invasive plant species are identified, remedial action will be required to remove any occurrences of the relevant species.

4.6 Tree Planting

- 4.6.1 Tree planting on site will comprise a mixture of woody and fruit bearing species such as hazel (*Corylus avellana*), sycamore (*Acer pseudoplatanus*) and field maple (*Acer campestre*).

Management

- Trees should be watered during establishment if the tree is under stress during dry periods.
- Trees found to be dead or dying within the first three years post-planting will be replaced like for like using the above methods.
- Pruning of dead, diseased or damaged branches should be carried out as appropriate, to promote healthy growth and natural shape, and to favour a single central leading shoot.
- All works to trees and shrubs will be carried out between September and February, in order to avoid the breeding bird season. Fruiting species should be managed later in the winter in January-February, to ensure a foraging resource is present for birds over the winter period.

4.7 Scrub Planting

- 4.7.1 Scrub planting is proposed throughout the site. Scrub species will include hazel, hawthorn, blackthorn and elder (*Sambucus nigra*) to provide suitable habitat for a range of protected species such as bats.

Management

- Dead plants will be removed and will be replaced as necessary.
- The whips will be watered in prolonged periods of dry weather to aid establishment.
- The grassland at the base of the scrub will be left uncut.
- Once established, the edge of the scrub will be maintained with a hedge trimmer to ensure scrubby edge habitat.
- The adjacent grassland will be managed to ensure a well-developed edge habitat which is scalloped in shape to increase the amount of edge habitat.
- To ensure that the scrub remains diverse in terms of structure and age classes, selected trees can be removed from the scrub block. The aim of this will be to ensure that a single species does not become dominant (>60% of species composition) and to ensure that trees do not overshadow the scrub (remove trees >5m).

4.8 Existing Hedgerows

- 4.8.1 Hedgerows and trees will be enhanced as part of the proposed development. Enhancement measures are detailed below, along with ongoing management for the existing hedgerows on site.

Management

- Hedgerow works will be timed to avoid the breeding bird season. Therefore, works will be undertaken between September and February. To ensure food resources are available for birds throughout the autumn months, works should be undertaken between January and February.
- The hedgerows will be cut on rotation once every three years on alternate sides (left/top/right) to ensure high fruit production.
- It is important that not all of the hedgerows are cut at the same time to ensure that foraging opportunities are still available for birds. It is recommended that no more than 10 to 30% of the hedgerows are cut in any one year.
- Hedgerows will be maintained at a height of at least 3m.
- Bramble will be allowed to grow within the hedgerows to provide basal density and to provide an additional foraging resource for birds.
- Hedgerows will be monitored for the presence of invasive species. If invasive plant species are identified, remedial action will be required to remove any occurrences of the relevant species.

4.9 Reptile Receptor Site

- 4.9.1 To ensure the site is best suited for reptiles, the following enhancements have been recommended to further increase the suitability of the site:

Management

- Removal of all litter and debris on site accrued from fly-tipping and vandalism.
- Varied management and mowing regimes within the grassland and scrub areas to create glades and rides, maintaining long, tussocky areas of grassland.
- Retention of current deadwood on site.
- Log and brash piles (reptile refugia) created and retained on site from any dense vegetation management. This will be implemented on the south-facing slope of the site, within the tussocky grassland.
- Any potential planting that may be required to occur should be targeted to supporting soft-bodied invertebrates that are key prey groups for slow-worm.

4.10 Lighting plan

4.10.1 Baseline light levels were low and it was assessed that the proposed works could result in an increase in artificial lighting on site. Horseshoe bats are particularly sensitive to light and retaining dark corridors across the site will be integral to maintaining the ecological function of the site for these species. A lighting strategy has been prepared to avoid impacts on the eastern hedgerows. As shown in figure 5, lux levels along the eastern boundary will maintain below 0.5 lux and will therefore allow the light sensitive species to continue to commute on site.



Figure 4 Lighting strategy (Expedite, May 23)

5 ECOLOGICAL PROVISIONS

- 5.1 As part of the development, various provisions will be installed on site to enhance the site for birds, bats and invertebrate species. Enhancing the site for invertebrates will in turn support the species which feed on them, such as hedgehog, bats, birds and badger.
- 5.2 This section of the LEMP therefore covers the locations of ecological provisions. The proposed locations of provisions are shown below in Figure 4 and the provisions are described in Table 1. If the provision suggested is unavailable, a Suitably Experienced Ecologist will suggest alternatives.



Figure 5 Ecological provisions

Table 1 Ecological provisions

Provision	Description and Location	Photograph
8 x Integrated Bat boxes	Installed integrally as part of the build programme, as high as possible in a sunny and sheltered spot on the south west or south east of a building.	

Provision	Description and Location	Photograph
9 x Integrated bird box such as S brick: bird nesting brick which is suitable for swift, starling and house martins.	Species: Swift. Species customisation upon request 1 brick and cavity size Completely customisable. Laser-cut PVC foamboard nest chamber and brick slip front. Lightweight and made to order. Also available for rendered walls. Easy retrofit Installation: The entrance should be a minimum height of 6-7 m above the ground or protruding parts of buildings. Greater heights are possible at any time. Attaching the box directly under the roof edge is advantageous. It is very important to ensure that there are no protruding parts, roof parts, pipes, etc. below the entrance, as Swifts approach and fly away very steeply. Therefore, the area under the entrance should be unobstructed and lead directly to the ground. It is advantageous that several nesting aids be installed for the formation of Swift colonies. Swifts do not need a minimum distance from fellow species – nesting boxes can therefore be positioned directly next to each other.	
8 x integrated sparrow terraces	Installation: The entrance should be a minimum height of 6-7 m above the ground or protruding parts of buildings.	
5 x integrated bee bricks	Cast concrete with up to 75% waste materials from Cornish China Clay industry; Contains cavities where bees will lay their eggs, sealing the entrance with mud or chewed up vegetation. Offspring emerge in the Spring and begin nesting again. Boxes should be installed at least 1 metre above the ground adjacent to vegetation.	

Provision	Description and Location	Photograph
2 x invertebrate houses	Bespoke bug hotels of every design, size and cost available; freestanding or integrated. Can be made self-made on site from various materials e.g. pallets, bricks, plant pots, logs, pine cones, straw etc). Visiting Buglife website for instruction recommended. Can be crafted ready-made by contractors e.g. Minibeast HQ – wooden structure with chambers with various materials and pre prepared drilled logs, canes etc). Different invertebrates will use the hotel depending on its location. Some prefer damp and cool whereas others before warm and sunny E.g. Solitary bees prefer the sun. To be installed in an area of open space on site.	
2 x Log piles	Small piles of logs with a diameter of >10cm should be piled within the river channel and at the channel margin. The logs can be piled loosely, providing opportunities for invertebrates. Any deadwood removed during long-term tree maintenance will be piled within the bank top buffer adjacent to the stream. The locations of the proposed log piles and deadwood piles are shown separately on Figure 4.	
Hibernacula	A good hibernaculum will be a mixture of rubble, wood and soil, and located in a suitable location close to some shrubs on a vegetated headland of a site. This will provide winter and summer refuge, cover to disappear into if disturbed, and the option to move into the sun or shade at any part of the day.	

6 WORK SCHEDULE

6.1 This section sets out the work schedule for management of habitats for the first five years, as detailed in Table 2.

Table 2 Work schedule for managing habitats on site

Habitat	Management Tasks	Timing
SuDs and swale meadow grassland	Main summer hay cut in combination with autumn and possibly spring mowing.	Annually from July onwards
Amenity grassland	- Mow regularly as a lawn but not too short (25-40mm). - To permit flowering, mowing can be relaxed from late June. Cut again when the sward gets untidy (after 4-8 weeks).	As required
Acid grassland	The acid grassland will be cut three times a year and all arisings will be removed from site.	Three times a year (March–April, July–August and September – October)
Dwarf heath shrub	- The shrub will be cut in spring and all arisings will be removed from the site. - If required, all bracken will be treated with a Glyphosate herbicide.	Annually in spring (March and April)
Existing trees and hedgerows	- Retained trees inspected, deadwood removed as required and retained on site as log piles if suitable and possible. - Existing hedgerows managed as per 'hedgerow management below.	Between September and February to avoid impacts on nesting birds
New trees and shrubs	Management of trees and shrubs as set out within the Landscape Management Plan (MHP Design Ltd, 2023).	Tree and shrub pruning required undertaken between September and February to avoid impacts on breeding birds.
Hedgerow management	- Frequently trimmed for first five years, then rotational management to allow high fruit production. - If required, hedgerows will be allowed to grow up for rejuvenation before laying or coppicing to repeat the cycle.	Management of remainder of hedgerow to be undertaken between September and February to avoid impacts on breeding birds.
Reptile receptor site	Varied management and mowing regimes within the grassland and scrub areas to create glades and rides, maintaining long, tussocky areas of grassland.	Two times a year (March–April and September – October)

7 ROLES AND RESPONSIBILITIES

- 7.1 The Client will be responsible for establishing the habitats and protected species provision detailed within this LEMP, as detailed in the previous sections. Following habitat creation, the site and reptile receptor site will then be managed by a dedicated management company established by the Client, who will be responsible for implementing the annual work plan.
- 7.2 All work will be carried out by experienced and qualified operatives holding the necessary training certificates to undertake the prescribed works. All works shall be carried out in accordance with good horticultural practice, using materials, plant and machinery appropriate to the task, undertaken in such a manner that avoids damage to the site and its surroundings. Any plant material that dies as a result of Contractors neglect will be replaced at their cost.
- 7.3 The Client will be responsible for monitoring the site, appointing appropriate professionals (ecology, arboriculture) and producing the five-year monitoring report. Updates to the LEMP following the first five years of monitoring will be the responsibility of the Client.

8 MONITORING AND REMEDIAL MEASURES

- 8.1 The key aim of monitoring is to assess the success of the management prescriptions against the management objectives. The Management Company will take responsibility for monitoring and will liaise with the Client to report on the successes and any changes proposed to management, this will comprise a 5-year review of management to be provided as a monitoring report and updates made to the EMP if required.
- 8.2 If the results of post-creation monitoring highlighted the need for management changes, the LEMP would be amended accordingly. A formal review of the LEMP would take place after five years following the completion of GI creation. The revised LEMP would contain management prescriptions for a further five to ten years. Monitoring will be undertaken for at least 30 years.
- 8.3 This section sets out how monitoring will be implemented. Table 4 provides a list of monitoring actions with appropriate methods and reporting.

Table 3 Monitoring plan

Habitat Type Ref	Monitoring methods	Risk	Trigger for Action	Remedial Measures	Monitoring interval and timing
Acid grassland	Monitoring survey to assess if grassland has become established and supports a sufficient diversity of flowering species.	Grass seed will not take.	Grassland does not meet criteria in monitoring survey.	Re-seed and alter grassland management.	June-July
Dwarf heath shrub	Monitoring survey to assess if shrub has become established and supports a sufficient diversity of flowering species to benefit wildlife.	Shrub seed will not take.	Grassland does not meet criteria in monitoring survey.	Re-seed and alter grassland management.	June-July
Amenity grassland	Monitoring survey with a condition assessment of appropriate grassland habitat.	Grass seed will not take.	Grassland does not meet criteria in monitoring survey.	Re-seed and alter grassland management.	June-July

Habitat Type Ref	Monitoring methods	Risk	Trigger for Action	Remedial Measures	Monitoring interval and timing
Planting beds, planters and perennial planting	Monitoring survey with an assessment if the habitat meets requirements.	Shrubs die or are damaged.	10% or greater has died within first year of planting.	Additional planting to account for potential losses, planting in good conditions, and using stock which are adapted to local conditions.	June-July
New and existing trees and shrubs	Visual inspection to assess if trees and shrubs are healthy and have good fruit production.	New trees do not take, or trees and shrubs die.	10% or greater has died within first year of planting.	Additional planting to account for potential losses, planting in good conditions, and using stock which are adapted to local conditions.	July-August
Hedgerow	Monitoring survey to assess if hedgerows have good basal growth, species diversity and fruit production to provide suitable bird habitat.	Dead stock.	10% or greater has died within first year of planting.	Additional planting to account for potential losses, planting in good conditions, and using stock which are adapted to local conditions.	July-August

Habitat Type Ref	Monitoring methods	Risk	Trigger for Action	Remedial Measures	Monitoring interval and timing
Ecological provisions	Visual check to ensure provisions are still in place and undamaged.	Provisions removed or damaged.	Damage or loss of provisions.	Replacement of missing/damaged provisions on a like-for-like basis.	Any time of year
Reptile receptor site	Visual check to ensure receptor site is still suitable for reptile site.	Vegetation if left un-managed can scrub over and be unsuitable for reptiles.	Loss of suitable basking habitat on site.	Management of the vegetation on site.	Any time of year

REFERENCES

CIEEM (2017^a) *Guidelines on Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management (CIEEM), Winchester.

Ethos Environmental Planning (2023^a) *Ecological Impact Assessment*. Swansea Road, Merthyr

Ethos Environmental Planning (2024^b) *Construction Environmental Management Plan*. Swansea Road, Merthyr.

Swansea Road, Merthyr - TC23125 LA1 Landscape Strategy v12-1

Landscape Management Plan (MHP Design Ltd, 2023)

APPENDIX 1 ECOLOGICAL MITIGATION STRATEGY

9 ECOLOGICAL MANAGEMENT PLAN

9.1 Ecological Constraints

9.1.1 A UK habitat classification survey and targeted surveys for protected species were undertaken by Ethos throughout the 2022 survey season. Full survey results are detailed within 'Ecological Impact Assessment, Swansea Road, Merthyr Tydfil (Ethos, 2023) Results are summarised below in Table 2:

Table 4 Summary of important ecological features and mitigation

Ecological Feature	Significance of effects	Mitigation / Compensation
Acid grassland (Lowland dry acid grassland)	Temporary major adverse at county scale	Restoration of habitat on banks post-stabilisation works
Dwarf shrub heath (Lowland heathland)	Temporary major adverse at County level	Restoration of habitat on banks post-stabilisation works
Woodland (Other woodland; broadleaved and mixed)	Temporary minor adverse at local level	Planting of new woodland at top of bank between housing and reprofiled banks.
Section 7 species - Hedgehog	None	Precautionary working method statement during site clearance. General safe working construction measures. Measures to ensure site remains permeable post-construction
Breeding birds	None	Precautionary working method statement during vegetation clearance. Compensation measures in the form of bird boxes installed post-construction.
Bats	None	Sensitive lighting during construction. Sensitive lighting design adjacent to site boundaries. Provision of ecological buffers. Restoration of suitable bat habitat: heathland, acid grassland and woodland.
Invertebrates	Temporary minor adverse at County level	Restoration of heathland habitat (key feature) and acid grassland and woodland.

Ecological Feature	Significance of effects	Mitigation / Compensation
Reptiles	Temporary minor adverse at local level	30-day reptile translocation to off-site receptor site.
Japanese Knotweed	N/A	Eradication method statement as set out in a separate report.

10 CONSTRUCTION PLAN AND MITIGATION MEASURES

10.1 Construction Plan

10.1.1 The construction programme is anticipated to start in July 2024 and last approximately 18 months. Should timings change, the mitigation measures detailed within the CEMP will be reviewed by the ECoW and the Developer will be informed of any necessary amendments.

10.2 Risk Assessment and Mitigation Measures

10.2.1 A summary of the key construction mitigation measures has been provided in Table 3.

Table 5 Key construction mitigation measures

Ecological Feature	Risk Assessment of Potential Impacts	Mitigation
Acid grassland (Lowland dry acid grassland)	Permanent loss of priority habitat.	Full details and method statement in Section 10.7.
Dwarf shrub heath (Lowland heathland)	Permanent loss of priority habitat.	Full details and method statement in Section 10.8
Retained boundary hedgerows	Damage to roots from construction activities such as vehicles driving over roots or machinery/ equipment being stored on roots.	Full details and method statement in Section 10.6.
Hedgehog	Injury or mortality of hedgehog using the site to commute and forage.	Full details and method statement in Section 10.4.
Bats	Disturbance to foraging and commuting bats from construction lighting.	Full details and method statement in Section 3.4.
Breeding birds	Accidental damage / disturbance / destruction of nests on site during site clearance.	Full details and method statement in Section 10.5.
Reptiles	Injury or mortality of reptiles potentially present on site, particularly during vegetation clearance. Potential for crushing of reptiles by heavy machinery.	Full details and method statement in Section 10.3

Ecological Feature	Risk Assessment of Potential Impacts	Mitigation
	Permanent loss of reptile habitat, therefore reducing the amount of suitable habitat for reptiles present on site.	

10.3 Reptile translocation

Reptile receptor site

- 10.3.1 The reptile receptor site is located along Gurnos Road, 2km southwest of the proposed development site. The area comprises short-sward grassland, tussocky transitional grassland, mixed and bramble scrub and shrub areas and a woodland with deadwood present.
- 10.3.2 The site is ecologically connected to the woodland and grass habitats on the eastern side of Gurnos Road and short-sward amenity grassland to the northwest of the site. The site is 0.67ha in size and is bounded by Gurnos Road and paved public footpaths.



10.3.3 The reptile translocation site selection included the 'reptile habitat character' list from appropriate best practice guidance, namely the Natural England Technical Information Note TIN102 (2011)¹:

- location in relation to species range.
- vegetation structure.
- insolation (sun exposure).
- aspect.
- topography.
- surface geology.
- connectivity to nearby good quality habitat.
- prey abundance.
- refuge opportunity.
- hibernation habitat potential; and
- disturbance.

10.3.4 The TIN102 advice note details that typical habitats utilised for translocations include forestry land; conservation headlands; uncultivated margins and associated habitat on farms; former hay meadows and arable reversion land.

10.3.5 All of the sites discussed and put forward for consideration are smaller than the proposed development, however this is discouraged in TIN102 and has been included as a factor in the decision-making process.

10.3.6 Habitat status, connectivity, prey availability and long-term management are all factors in the decision-making process that have been considered.

10.3.7 The reptile receptor site has the broad range of suitable habitats and has the good overall ecological connectivity within the wider area. The reptile receptor site includes a diverse range of habitats that will support the translocated slow-worm population. The presence of the wooded area, scrub habitats, transitional tussocky grassland on the northern boundary and deadwood on the south of the site will also provide suitable hibernation locations.

Recommended site enhancements

10.3.8 To ensure the site is best suited for reptiles, enhancements have been recommended to further increase the suitability of site, as detailed below:

- Removal of all litter and debris on site accrued from fly-tipping and vandalism.
- Varied management and mowing regimes within the grassland and scrub areas to create glades and rides, maintaining long, tussocky areas of grassland.
- Retention of current deadwood on site.

- Log and brash piles (reptile refugia) created and retained on site from any dense vegetation management.
 - Specifically implemented on the south-facing slope of the site within the tussocky grassland.
- Creation of hibernacula within the receptor site.
- Any potential planting that may be required to occur should be targeted to supporting soft-bodied invertebrates that are key prey groups for slow-worm; and
- Continual habitat management as above to support reptiles, specifically slow-worms.

10.3.9 These habitat enhancement measures are detailed within the Landscape and Ecology Management Plan (Ethos, 2024^b).

10.3.10 The enhancement of the receptor site to support the reptile population is considered suitable and in line with appropriate best practice guidance, namely Natural England's standing advice for reptiles (Natural England, January 2022).

Reptile translocation

10.3.11 Reptile mats will be deployed at high densities across the construction footprint and along the line of the fencing. The mats will be left to 'bed in' for a minimum of seven days to ensure they are suitable for reptiles.

10.3.12 Due to the good value of habitats present within the construction footprint and the low number of reptiles identified within the footprint during the targeted surveys, a minimum of 30 days reptile translocation visits are proposed. Surveys will be undertaken daily, with any reptiles found being moved to the reptile receptor site. Surveys will be undertaken in suitable weather conditions (9-18°C, no rain) and during the reptile active season (March to October inclusive). Where the weather conditions are considered unsuitable, the survey will be rescheduled and any cancelled surveys will not be counted towards the 30 days.

10.3.13 Once the numbers of reptiles found have reached zero for five consecutive days (or a consistently very low numbers), the translocation process will be considered finished, and the construction mitigation measures below will be undertaken.

Construction mitigation measures

10.3.14 In order to avoid impacts on reptiles present on site, the following precautions will be undertaken during site clearance and are considered a requirement of the translocation process, in order to conclude reptiles have been successfully translocated from the site.

- A toolbox talk will be given to all contractors by the ECoW prior to works commencing, which will include key features for identification of UK reptile species and instructions regarding sympathetic working practices.

- All areas to be cleared will be searched by the ECoW, potential natural and artificial refugia removed and any faunal species carefully moved by hand to the hibernacula within the receptor area.
- All vegetation within the proposed construction site footprint will be cut to ~15 cm height during the reptile active season (March – October inclusive).
- Vegetation requiring removal which is considered suitable for reptiles (i.e. scrub, grassland, ruderal vegetation) will be destructively searched by the ECoW. This will involve carefully checking within and underneath any suitable refugia such as leaf piles, logs, tree trunks, small mammal burrows and rubble.
- Following a 24-hour period, the vegetation will be cut down to the ground and maintained to a short sward until commencement of construction.

10.3.15 Upon completion of the translocation exercise, the full results will be made available to the Local Planning Authority (LPA) in the form of an ecological survey results report. This will include a summary of the survey days and results, along with any appropriate additional information relating to the translocation.

10.4 Nocturnal Mammal Method Statement

10.4.1 The measures detailed within this section will allow the protection of species including bats, badger and otter during the construction period.

- A pre-construction badger check will be carried out by a Suitably Qualified Ecologist (SQE) no more than 28 days prior to the start of works on site. The results of all pre-commencement checks will be reported to the Local Planning Authority Ecologist by use of a site note, alongside any potential proposals to address further mitigation requirements that may arise.
- Excavations and trenches will either be covered at night or include an escape ramp to prevent nocturnal mammals (including hedgehog and badger) from becoming trapped.
- No construction lighting will be used along the hedgerow boundaries. Necessary security lighting will be directional to limit light spill and will be switched on for a limited period of time to provide dark periods, allowing bats to continue to forage and commute across the south of the site.

10.5 Bird Method Statement

10.5.1 In order to avoid impacts on birds present on site, the following precautions will be undertaken:

- Any hedgerow removal both during and post-construction should be undertaken outside the breeding bird season (March to August inclusive) or following a precautionary nesting bird survey by a SQE to ensure compliance with legal obligations.

- If structure demolition occurs during the breeding bird season, then the ECoW will remain on site to check all potential nesting areas for birds before works are to be undertaken on site.
- If active bird nests are identified during the survey, a buffer zone should be set up by the SQE around the nest until all young birds have fledged and left the area.

10.6 Tree and Hedgerow Protection

Before Construction

- 10.6.1 Root protection zones identified by the arboricultural report and marked out in line with the approved plan with tree protection fencing. The fencing will be marked as 'tree protection fencing' and contractors will be made aware of its presence.
- 10.6.2 Protective fencing should be erected before any materials or machinery are brought onto the whole or part of a site where a risk has been identified.

During Construction

- 10.6.3 Any damage to the tree protection fencing will be reported to the site manager, who will organise for it to be repaired. The fencing will be inspected every two weeks throughout the construction period by the site manager or designated persons.

10.7 Acid Grassland Restoration

- 10.7.1 The development proposals include the restoration of the acid grassland (Lowland dry acid grassland) located along the eastern slopes of the site. Due to extensive levelling works required to make the site structurally sound, it will not be possible to retain the grassland habitat *in situ*, therefore resulting in its temporary loss. To facilitate the re-colonisation of the habitats post-construction, the following method statement will be followed:

Harvesting the seed bank

- The groundworks will be undertaken in two phases. Groundworks along the northern and eastern slopes will be carried out as part of phase 1 with the remainder of the site being undertaken as part of phase 2.
- The phasing of the groundworks allows for the seed bank and subsoil to be stored on site, minimising disturbance cause during transit.
- The seed bank of the acid grassland will be harvested in July during dry weather. A vacuum harvester will be used due to the accessibility of the slopes.
- Once fully harvested, the seed bank will be spread out over tarpaulin to dry and raked through the day. Whilst drying, the seed bank will be sheltered. The seed bank can take between two – seven days to dry and must be raked frequently.
- Once dry, the seed bank will be stored in a cool dry location on site in a dumpy bag on a wooden pallet.

Material handling and storage

- During dry weather, to avoid compaction of the soil, the soil on the eastern slope will be mechanically stripped through the use of a heavy-duty excavator.
- When the soil is stripped from the site, the topsoil and subsoil will be handled and stored separately.
- Topsoil, typically 500 to 4000mm, will be stored on site in mounds no higher than three metres. Soil will be capped off to avoid creating crevices.
- The subsoil, typically 200mm depth, will be stored on site in mounds no higher than five metres.

Restoration of acid grassland

- Once the all the ground level works are completed, the subsoil will be evenly distributed throughout the receptor area.
- The topsoil will then be evenly distributed over the top of the receptor area.
- The harvested seed bank will then be planted within the restoration area and then managed as set out in the LEMP.
- It is likely that the seed bank will need to be supplemented with a suitable commercial seed mix; this is set out within the LEMP.

10.8 Dwarf Heath Shrub Restoration

10.8.1 The development proposals include the restoration of the dwarf heath shrubland located along the northern slopes of the site. Due to extensive levelling works required to make the site structurally sound, it will not be possible to retain the shrub *habitat in situ*, therefore resulting in its temporary loss. To facilitate the re-colonisation of the habitats post-construction, the following method statement will be followed:

Harvesting the seed bank

- The ground works will be undertaken in two phases. Ground works along the northern and eastern slopes will be carried out as part of phase 1 with the remainder of the site being undertaken as part of phase 2.
- The phasing of the ground works allows for the seed bank and subsoil to be stored on site, minimising disturbance cause during transit.
- The seed bank of the dwarf heath shrub will be harvested in July during dry weather. A harvester/seed collector will be used depending on the accessibility of the slopes.
- Once fully harvested, the seed bank will be spread out over tarpaulin to dry and raked through the day. Whilst drying, the seed bank will be sheltered. The seed bank can take between two – seven days to dry and must be raked frequently.
- Once dry, the seed bank will be stored in a cool dry location on site in a dumpy bag on a wooden pallet.

Material handling and storage

- The soil on the northern slope will be mechanically stripped through the use of a heavy-duty excavator. These works will be undertaken during dry weather to avoid compaction of the soil.
- When the soil is stripped from the site, the topsoil and subsoil will be handled and stored separately.
- Topsoil, typically 500 to 4000mm, will be stored on site in mounds no higher than three metres. Soil will be capped off to avoid creating crevices.
- The subsoil, typically 200mm depth, will be stored on site in mounds no higher than five metres.

Restoration of dwarf heath shrub

- Once the all the ground level works are completed, the subsoil will be evenly distributed throughout the receptor area.
- The topsoil will then be evenly distributed over the top of the receptor area.
- The harvested seed bank will then be planted within the restoration area and then managed as set out in the LEMP.
- It is likely that the seed bank will need to be supplemented with a suitable commercial seed mix, as detailed within the LEMP.

10.9 General Good Practice Mitigation Measures

10.9.1 The following section details general good practise measures which will be adopted during the construction process. It will be the responsibility of the site manager to ensure that all staff are inducted and made aware of these recommendations.

Dust generation

10.9.2 Generation of dust will be mitigated by wetting down and/or the use of screening if appropriate. This will avoid dust deposition on sensitive habitats such as the unnamed watercourse on the eastern boundary.

Excavations and trenches

10.9.3 All excavations and trenches will either be covered at night or include an escape ramp to prevent nocturnal species such as hedgehog from becoming trapped. This could be in the form of a roughened plank of wood. The trenches/pits will be inspected each morning to ensure no badgers or other species have been trapped.

Contractor materials and hazardous waste

10.9.4 All chemicals and hazardous materials and waste will be stored in-line with best practice guidelines, ensuring they are secure and cannot be accessed by roaming animals.

Sympathetic working practices

- 10.9.5 Avoid creating potential refuges. Keep the site tidy and store materials off the ground, for example on pallets where possible, to avoid protected species such as reptiles utilising crevices.
- 10.9.6 Store materials away from areas of retained vegetation which are considered suitable for reptiles (e.g. hedgerows).
- 10.9.7 Staff should simply demonstrate awareness when working and moving materials. Should an animal be found, it should be gently moved, for example in a clean bucket, to a suitable location within habitat well away from the working area.

11 RESPONSIBLE PERSONS AND LINES OF COMMUNICATION

11.1 Toolbox Talk

11.1.1 The Lead Contractor, and other supervisors as deemed appropriate, will be given a toolbox talk by the appointed ECoW.

11.1.2 This will comprise:

- The legal protection afforded to protected species;
- The precautionary methods of working (outlined in this document);
- Contractors will be made aware of the sensitive habitats on site; and
- The procedures to follow in the event that any protected species are discovered during the works.

11.1.3 It will be the responsibility of the Lead Contractor to ensure that all site operatives, including sub-contractors are informed of the CEMP. Site inductions will contain details on the ecologically sensitive areas present on site. The purpose of protective fencing, wildlife exclusion barriers and warning signs, and the potential consequences of removing or damaging them, will be explained to all site personnel during the toolbox talk.