

# **Reptile Mitigation Strategy Barons Cross Leominster**

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On Behalf of Persimmon Homes  
October 2023 V1



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## 1 Introduction

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### 1.1 General

TerrAqua Ecological Services have been commissioned by Persimmon Homes East Wales to produce a mitigation strategy for the protection of reptiles, for the proposed development at land referred to as Barons Cross, Leominster, Herefordshire.

### 1.2 Client Details

The following reptile mitigation strategy has been developed for the proposed Bishops Cross, Leominster, residential development for Persimmon Homes East Wales, Persimmon House, Llantrisant Business Park, Llantrisant, Rhondda Cynon Taf, CF7 8YP.

### 1.3 Site Description

**Site Name:** Barons Cross, Leominster, Herefordshire

**Authority:** Herefordshire

**Development Description:** Residential Development (Persimmon Homes)

The site covers an area of approximately 12 hectares (ha) in area and is located on the western side of the town of Leominster. Residential developments are located outside the southern and eastern boundaries with open farmland to the north and west. The site was previously used as an army camp with all buildings except one having been demolished prior to the preliminary ecological assessments of 2022 and 2023. The site includes large areas of species poor semi-improved neutral grassland with scattered trees, dense scrub and species poor hedgerows along the western, northern and eastern site boundaries. Proposals for the site include the construction of a number of residential units and associated infrastructure. In addition to the main development site agricultural fields outside the development will be used as part of the surface water attenuation system. These include fields currently under arable production and a grass ley.



## 2.2      **Current Reptile Status**

A preliminary ecological assessment of a parcel of land located at Barons Cross, Leominster, Herefordshire National Grid Reference SO47531 58644 was undertaken by TerraAqua Ecological Services Ltd in August 2020 on behalf of Persimmon Homes. A further Preliminary Ecological Assessment was undertaken in August 2022 designed to update the findings of the 2020 survey. Both preliminary assessments identified habitats within the site boundary suitable for use by common reptile species.

The results of the Phase I Survey/Preliminary Ecological Assessments highlighted habitats present within the site boundary, including those with the potential to support common reptile species. Habitats identified as suitable for reptiles included semi-improved unmanaged grassland, areas of dense scrub, hedgerows, vegetated and unvegetated earth mounds and debris around a derelict building.

The preliminary ecological assessments of 2022 and 2023 both highlighted the probability that reptiles in particular slow worm (*Anguis fragilis*) and common lizard (*Zootoca vivipara*) are likely to be present. The potential for grass snake was also highlighted (*Natrix helvetica*). A survey to establish presence/absence of reptiles and to establish an estimate of population size was completed in April/May 2023 (**Bishops Cross, Leominster, Reptile Survey and Population Estimate Report, TerraAqua Ecological Services. May 2023**). The results of the survey confirmed the presence within the site of a two reptile species namely slow worm and common lizard.



**Plate 1** semi-improved grassland with thistle



**Plate 2** semi-improved grassland tall herb area

### 2.3 Population Size

Population estimates indicate that a good population of slow worm is present within the site with population estimates of between 40 and 80 individuals and a low population of common lizard estimated between 10-20 individuals. The population estimate was calculated after a total of twenty-five survey visits and based on the maximum number of individuals recorded during a single visit. Based on the results of the survey the population estimates are considered to be a reasonable assessment of the size of the population and are suitable for use in the design of any required reptile mitigation strategy. The main habitats used by reptiles have been identified as the semi-improved grassland, earth mounds, and debris piles , in particular areas adjacent to scrub and pathways.

All common species of reptile are protected against killing or injury under Schedule 5 (sections 9 (1) and 9(5) of the Wildlife and Countryside Act 1981 (as amended). In practice this means that developers are expected to take all reasonable steps to ensure that reptiles are protected from injury or death throughout the construction and development process.

The proposed development works have the potential, if appropriate action is not taken, to cause injury or death to any reptiles present on the site. As a result, a strategy to prevent any such injury or death during the proposed works will be required. In addition, proposals for the site will result in the permanent loss of reptile habitat and the temporary loss during construction of remaining habitats. Therefore, a mitigation strategy will be required in order to ensure animals

within the site can be moved to a safe location during construction and that the receptor area is suitable for the long-term occupation of reptile species.

## 2.4 **Proposed Strategy Introduction**

Natural England requires two main aims to be met when considering appropriate actions for reptile mitigation on development sites (English Nature, 2004).

1. to protect reptiles from harm that might arise during development works
2. ensure sufficient quality and connectivity of habitat is provided to accommodate the reptile population, either on site or at an alternative site, with no net loss of local reptile conservation status

The mitigation proposals for the site will set out a methodology to achieve these aims. It is proposed in this instance that reptiles will be trapped from areas where development is proposed and moved to suitable areas immediately outside the development zone but within on site retained habitats.

In this instance it is proposed that reptiles will be moved to an area at the north of the site with retained ecological buffer zones and an extensive area of retained semi-improved grassland, adjacent hedgerows and scrub. In addition, a second area for use should numbers of reptiles be found to higher than anticipated will be created around the off-site attenuation basin to be constructed on land in the ownership of Persimmon Homes and located to the south of the development **Drawing Reptile Receptor Areas TQ: pers. Leominster. Rep. Receptor Areas v1**. The strategy will include a programme of trapping combined with sensitive habitat manipulation.

## 2.5 **Proposed Works**

Proposals for the site include the construction of residential properties with associated garages and infrastructure. During the construction process a significant percentage of existing reptile habitats will be lost or affected by the development. On completion of the development some areas within domestic gardens and within areas of soft landscaping are likely to be suitable for use by reptiles once these have matured. The proposed receptor area immediately to the north

of the construction area and within the retained on site habitats at the northern end of the development should allow animals to return to landscaped areas on completion of the development. **Reptile Receptor Areas TQ: pers. Leominster. Rep. Receptor Areas v1.**

### 3 Development Mitigation Proposals (Reptiles)

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#### 3.1 Introduction

In order to protect the reptile population, present on the site it is proposed that animals will be excluded from the construction footprint and a programme of habitat manipulation, trapping and translocation to a receptor site will be undertaken. The programme will use best practise guidelines for reptile translocation and capture (Gent & Gibson, 1998).

In this instance the construction area will be cleared of reptiles using a two-phase approach with the southern half of the site cleared in spring 2024 to allow construction of access roads and the first phase of development, and the northern half of the site cleared in Autumn 2024 or as required for future development phase. **Drawing appendix III Showing Reptile Fence, clearance area and refuga locations.**

The successful translocation of reptiles requires both careful planning and implementation. In order to ensure that the mitigation proposals are effective in successfully excluding reptiles from the site the following works will be carried out, or supervised by, an appropriately qualified ecologist:

- Selection and demarcation of proposed reptile exclusion fence lines
- Searching of fence line path and removal of reptiles in these areas prior to fence installation
- Selection of exclusion fencing type and supervision of installation of reptile exclusion fencing to appropriate specifications
- Placement of artificial refuga within the construction footprint to facilitate reptile capture
- Identification of suitable receptor site
- Supervision of any habitat enhancements required at the selected receptor site
- Trapping of reptiles and their transport to the selected receptor site

- Destructive hand search of rubble piles and other habitats to facilitate the location and trapping of reptiles
- Supervision of habitat, manipulation and vegetation stripping required on site

## 3.2 Fencing

Reptile exclusion fencing will be installed in order to assist in the translocation of reptiles. This fence line will ensure that no reptiles can re-enter the working footprint following the translocation and provide a clear demarcation of the working area.

The minimum specification and type of reptile fencing to be used is shown in **Drawing appendix III Showing Reptile Fence, clearance area and refugia locations**. Due to the phased clearance and site development reptile fencing will be installed around the southern half of the site in spring 2024 with the northern area fenced as required for future phases of construction. **Drawing appendix III Showing Reptile Fence, clearance area and refugia locations**. The southern area to be cleared in spring 2024 will be divided into three separate sections each individually fenced with exclusion fencing to assist in a phased approach to clearing the site of reptiles. However following consultation with the developer, the exact specification and route of the fencing may be amended in order to allow the fence to be effectively installed. This will depend on factors such as the need to protect tree roots and respect tree root protection zones, length of time the fencing will remain in place, the potential for vandalism and to ensure the integrity of the fence can be maintained and to allow access to working areas. This will allow the appropriate standard of fencing to be installed and remain reptile proof throughout the construction period.

Prior to installation of the exclusion fencing, the path of the fence line will be searched, and vegetation removed to ensure no reptiles are harmed during the installation.

The fencing will be installed by a contractor with experience in reptile exclusion fencing installation. An ecologist will be on site during the installation process.

The fencing will be checked daily throughout the trapping and relocation programme, and during the construction phase, in order to ensure the fencing remains in good condition and reptiles do not find their way back onto the development site.

### 3.3 Artificial Refuga

Artificial refuga will be used as a tool to trap reptiles for relocation away from the construction footprint. Each refuga will consist of a mix of 500mm x 500mm square of roofing felt and onduline corrugated sheets. A minimum of 140 artificial refuga will be placed across the site. These will be positioned within areas of habitat considered most suitable for use by basking reptiles. The number of refuga used will be amended if capture rates are higher than anticipated to ensure the maximum numbers of animals as possible are moved from potential harm and the translocation merits increased trapping effort.

Habitat manipulation is a recognised methodology by which reptiles can be encouraged to congregate in specific areas, thereby facilitating their effective capture. Specific blocks of vegetation will be trimmed when capture rates in these areas drop to zero. This will result in these trimmed areas becoming unsuitable for reptiles and encourage the reptiles to congregate beneath refuga within the remaining islands of vegetation for ease of capture.

### 3.4 Trapping

The effectiveness of reptile trapping can be greatly influenced by survey timing and weather conditions. It is intended that trapping will, where possible, be carried out during the optimal autumn period ( March/May-September/October) under suitable weather conditions and will be suspended should weather conditions deteriorate significantly within the proposed trapping period, either through the arrival of cold and wet conditions or exceptionally warm days. If trapping occurs outside of the optimal periods, then trapping times and days will be adjusted to allow for periods of hot weather where trapping rates are likely to be significantly affected. Suitable conditions for reptile trapping are given in table 1.

**Table 1** Suitable Reptile trapping conditions

<b>Temperature range</b>	<b>9° - 18°C</b>
<b>Sunny-bright</b>	Suitable

<b>Cloudy</b>	Suitable
<b>Wind strength</b>	Low-calm

It is proposed that the trapping period will extend over a period of thirty days. In the event that no reptile species are caught within the first fifteen days of the programme trapping will cease. If reptiles are caught within this period, then trapping will continue for the full 30 days until five consecutive no catch days have been reached. If no reptiles are recorded for five consecutive days and weather conditions have remained suitable throughout this period, then it will be assumed that the site is clear and trapping will cease. In order to ensure that the site has been effectively cleared trapping will continue for five days after a nil result even if this extends beyond the initial planned thirty days of trapping.

### 3.5 **Destructive Search**

After five days of negative returns any potential reptile habitat remaining, such as rough grass, debris piles, earth mounds, and scrub will be subject to a destructive search, in order to ensure no reptiles remain concealed in these areas. This will involve the careful destruction of such areas and the capture of any reptiles found. The search will be directly supervised by an on-site ecologist.

### 3.6 **Habitat Manipulation**

Habitat manipulation will be used to discourage reptiles from specific areas prior to the translocation. The technique will also be used to ensure that all areas within the immediate construction footprint are made unsuitable for reptiles following completion of the translocation programme.

Specific areas of vegetation will be strimmed to encourage reptiles to move to certain areas to enhance the effectiveness of the trapping. The vegetation will be strimmed from south to north encouraging reptiles to move to the periphery. This vegetation manipulation will commence once reptile trapping numbers in the main central grassland reach zero or in areas where trapping is difficult.



After the translocation programme is completed and following any necessary destructive searches the first 110mm of soil and vegetation will be scrapped from the vegetated areas of the site where construction is planned. Any reptiles located during this procedure will be captured for relocation. The works will be overseen by the onsite ecologist.

### 3.7 Handling

All reptiles caught will be placed in a suitable secure container for transport to the new location. Each container will be allow air to circulate to prevent overheating and will contain a layer of vegetation to provide cover. Different species of reptile will be transported in separate containers. All containers will be labelled and show the species of animals held in each. All animals will be immediately released on the day of capture at the selected receptor site.

The total number of animals caught per day, including species, sex and location of capture will be recorded. This will permit the decline in capture rates to be observed, and for decisions as to areas suitable for habitat manipulation to be made.

### 3.8 Receptor Sites

A requirement of any translocation programme is to ensure that the receptor site provide sufficient quantity and quality of habitat to accommodate the population of animals being moved. The reptile survey report (TerraQua 2023) concluded that a good population of slow worm, was present within the site boundary with a population estimate of between 40 and 80 individuals and a low population of common lizard between 10-20 individuals. The proposed development will lead to the permanent loss of significant areas of habitat currently suitable for slow worm and common lizard. Areas of proposed ecological buffer and landscaping planting within the final development will, in time, create suitable habitats for reptile species but initial works will lead to existing vegetation in these areas being lost.

It is therefore proposed that reptiles are translocated from the development/construction footprint to land at the northern end of the site **Reptile Receptor Areas TQ: pers. Leominster. Rep. Receptor Areas v1**. This area is in the ownership of Persimmon Homes and forms part of the ecological buffer zone and open space. The proposed receptor area extends to some 0.82Ha and includes areas of rough semi-improved grassland, scrub, and hedgerow boundaries



(plate 3). All habitats within the receptor meet the habitat requirements of both slow worm and common lizard with suitable areas for feeding, basking and natural refuge areas beneath scrub and hedgerows. The receptor area has direct connectivity through the hedgerow system to the wider countryside all of which afford suitable habitat for both species. These habitats will be provide a suitable safe and long-term receptor area for reptiles affording habitats similar to those present within the proposed construction area and provide long term undisturbed habitats for reptiles and other wildlife. In addition, the close proximity to the boundary of the proposed development site means that translocated reptiles will in time be able to easily recolonise suitable areas within the final development. It is therefore intended that any animals captured will be released into these areas, where exclusion fencing will prevent them returning to the construction zone. Reptiles will then be allowed to disperse naturally into the extensive adjacent habitats.

It is proposed that no more than eighty (80) animals will be released into the receptor area described above. Any additional animals captured will be translocated off site. It is not envisaged that more than eighty animals will require translocation during the first phase of translocation of the southern area scheduled for spring 2024.

A further release area has been identified as being suitable for the release of any animals above the eighty proposed for release at the preferred receptor area. The location of the identified “overflow” release site is shown in **Reptile Receptor Areas TQ: pers. Leominster. Rep. Receptor Areas v1**. A large field/grass ley located some 500m from the development site falls within the ownership of Persimmon Homes and is under their management control. This area of approximately 3.44Ha will be used as the attenuation area for the development. It is therefore proposed that the area around the attenuation basin will be landscaped and managed for reptile species creating enhanced opportunities at this location with the potential for use as a receptor area for reptiles in phase 2 of the site clearance. Areas around the periphery of the field margins already have habitats suitable for slow worm and common lizard. This proposed receptor site has links to the wider countryside.

Prior to the use of the receptor areas it is necessary to ensure that the carrying capacity of the site is large enough to accommodate any released animals and that no negative impact on existing populations occur. A survey of the proposed receptor area within the northern end of

the Bishops Cross development was undertaken as part of the overall site survey in May 2023. A very small number of individual slow worm (max 1) were recorded on any given visit within the proposed receptor area and therefore the use of this area as a receptor site will not have a significant impact on any existing population. This area forms part of the larger development site and therefore all reptiles found within the receptor site are considered part of the same overall population as the area to be cleared.

Due to the close proximity of the preferred receptor area at the northern end of the development of the development and the interconnecting habitats, it is likely that reptiles already move between these locations. As a result, the translocation of animals to the selected receptor area will increase the probability that the moved animals will survive, retain genetic integrity and eliminate the possibility of the spread of disease.

The retention of the animals within relatively close proximity to their initial habitat should allow for re-colonisation of the development site including new domestic gardens once works have been completed.

Due to its recent use as an agricultural grassland the second receptor site does not currently support a reptile population. This is the result of previous regular ploughing and cutting, however all such activities have ceased and the land is in the ownership and control of Persimmon Homes. (plate 4).



**Plate 3** Receptor Area northern end of development site



**Plate 4** Receptor Area off site location

### 3.9 Receptor Site Habitat Enhancements and Management

The proposed receptor site at the northern end of the development, has extensive good-quality habitats provided by the tall herb, scrub and rough grassland, and hedgerows. Prior to the trapping programme habitat enhancements in the form of the construction of reptile hibernacula and refugia will be created at the receptor site. This area will also be fenced to prevent translocated reptiles from returning to the construction zone. This fencing will be removed on completion of the development. to be made prior to the movement of animals to these areas. The location of the proposed reptile receptor site is shown in **Reptile Receptor Areas TQ: pers. Leominster. Rep. Receptor Areas v1.**

The proposed release site is currently a mosaic of rough grassland, tall herb, hedgerow and scrub. The habitats present are similar to those present within the area from which reptiles will be translocated and forms an extension of the current site with no barriers to reptile movement meaning that there is no differentiation in the populations between the two areas.

Prior to the translocation commencing habitat and creation will be undertaken at the immediate release site to increase the amount of open habitats suitable for reptiles. The aims of this management will be to provide and maintain:

- A diverse vegetation structure.
- Sunlight at ground level - open areas within habitats.
- Continuity of sufficient and appropriate habitat over time.
- Connectivity of areas occupied and used by reptiles.
- Features for breeding/egg-laying where appropriate.
- Hibernation areas.

In addition, the peripheral scrub and grassland mix along the northern and western boundary of the receptor site will be managed to create a scalloped edge with a mix of retained scrub and open grassland to improve structural diversity and increase basking opportunities for reptiles.

Brash from the works will be loosely stacked within the release area creating structural diversity within the site creating refuge areas for reptiles and habitat enhancements for other species including small mammals and invertebrates. Piles will be placed in a sunny location

and set within existing vegetation for example, areas of long grass or long grass so that there is cover immediately surrounding, or adjacent to, the pile.

To further enhance the release area two hibernacula will be constructed. These will be constructed from logs, tightly stacked and covered in soil. These will be positioned among existing vegetation affording immediate cover for reptiles. Each hibernacula will be a minimum of 2m x 1m with a height of 1m. The hibernacula will be set in a pre-dug pit of 40cm in depth.



**Plate 3** Example of Hibernacula

The identified extra release area off site of the development will only be used if required. The former grass ley will require a change in management with no cutting of the grass at this location from autumn 2023 through to summer 2024 when selected areas will be mown to create a diversity of structure suitable for reptiles and other species, including the creation of two hibernacula and a number of log piles within the area surrounding the constructed attenuation basin and adjacent to existing hedgerows.

## **4 Long Term Management**

### **4.1 Release Area**

The release site and wider reptile area, encompassing any off-site receptor areas, will require management to retain a mosaic of open habitats and scrub to maintain and create habitats with high structural diversity.

The immediate receptor to the north of the development areas will be managed to retain the level of scrub cover and open grassland created/retained prior to release. The scrub will be controlled on a bi-annual basis with encroaching scrub removed using hand tools. Brash will be retained and placed on existing piles to enhance and preserve these refuge areas.

The open grassland areas will be mown annually between March and November with 25% of the grassland mown within any given year. The grassland will be cut in a manner which creates low mown areas cutting through areas of taller grasses creating swales through the vegetation and creating a diverse structure.

The management of the receptor areas will be extended to include off site areas once attenuation structures have been completed. The off-site field area will be allowed to develop and remain uncut creating a long-term enhancement to existing habitats. Any area used as a receptor site will be subject to the management practices as above.

Management of the overflow receptor area will when works are completed be managed in line with the protocols above.

## **5 Monitoring**

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The success of the translocation programme will be monitored. This monitoring will comprise a one-day visual survey of the site during April and September respectively of each year. Commencing the year after the completion of the development and continuing for a period of three years.

## **6 Timetable of Works**

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The expected timetable for the reptile exclusion works is given below. The timetable is based upon the assumption that the programme will be carried out during the appropriate window and during appropriate weather conditions namely between March to October with the earliest option being spring 2024. The timings are subject to change, however, the order or duration of the works should not change significantly. All trapping will be completed under appropriate weather conditions.

**Table 2** Expected timings of reptile translocation works (First translocation Phase southern)

Task	Feb	March	April	May	
Installation of reptile fencing	✓	✓			
Trapping and translocation		✓*	✓**		
Habitat manipulation		✓	✓**		
Destructive search		✓**	✓**	✓**	
Release of site for development			✓**	✓**	
Removal of reptile fencing					Following development completion

**Table 3** Expected timings of reptile translocation works (Second translocation Phase Northern)

Task	Aug	Sept	Oct	Nov	
Installation of reptile fencing	✓	✓			
Trapping and translocation		✓*	✓**		
Habitat manipulation		✓	✓**		
Destructive search		✓**	✓**	✓**	
Release of site for development			✓**	✓**	
Removal of reptile fencing					Following development completion

\* Dependent upon weather conditions

\*\* Dependent upon number of reptiles caught determining length of trapping period

Management Prescriptions Lydney Phase 3 Reptile Strategy

<b>YEAR 1</b>	<b>Habitat</b>	<b>Prescription</b>	<b>Season</b>
	Release Area Habitat Enhancements (inc off site if required)	Removal of scrub using hand tools to increase open grassland habitats and create scalloped edges around edge. No more than 50% of existing scrub and grassland to be removed.	Feb 2024
		Removal of Brash and stacking within vegetated areas to create habitat piles for reptile refuga and small mammals	Feb 2024
		Construction of two hibernacula to be constructed from logs and set in pre dug pit and covered with earth. To be located within existing vegetation in both receptor areas	Feb 2024
		Reptile exclusion fence Installation around development footprint	Feb/March 2024
		Commencement of Translocation programme	March 2024
<b>Year 2</b>	Release Area Management (inc off site if required)	Removal of scrub using hand tools to increase open grassland habitats and create scalloped edges around woodland edge. No more than 50% of existing scrub and grassland to be removed	September 2024
		Removal of Brash and stacking within vegetated areas to create habitat piles for reptile refuga and small mammals	September 2024
Development Completion		Removal of reptile exclusion fencing around development* date may vary according to build time	
<b>Year 3</b>	Release Area Management	Removal of scrub using hand tools to increase open grassland habitats and create scalloped edges around woodland edge. No more than 50% of existing scrub and grassland to be removed	November 2025
		Removal of Brash and stacking within vegetated areas to create habitat piles for reptile refuga and small mammals	November 2025
<b>Year 4</b>	Release Area Management	Removal of scrub using hand tools to increase open grassland habitats and create scalloped edges around woodland edge. No more than 50% of existing scrub and grassland to be removed	November 2026
		Removal of Brash and stacking within vegetated areas to create habitat piles for reptile refuga and small mammals	November 2026

<b>Year 5</b>	Review of Management Plan	Assess success of scrub control and management on retaining grassland habitats suitable for reptiles	
<b>Development Completion</b>	Commencement of Monitoring one year after completion of Development	Reptiles to be monitored: one-day visual survey of the site during April and September respectively of each year. Commencing the year after the completion of the development and continuing for a period of three years.	April and September



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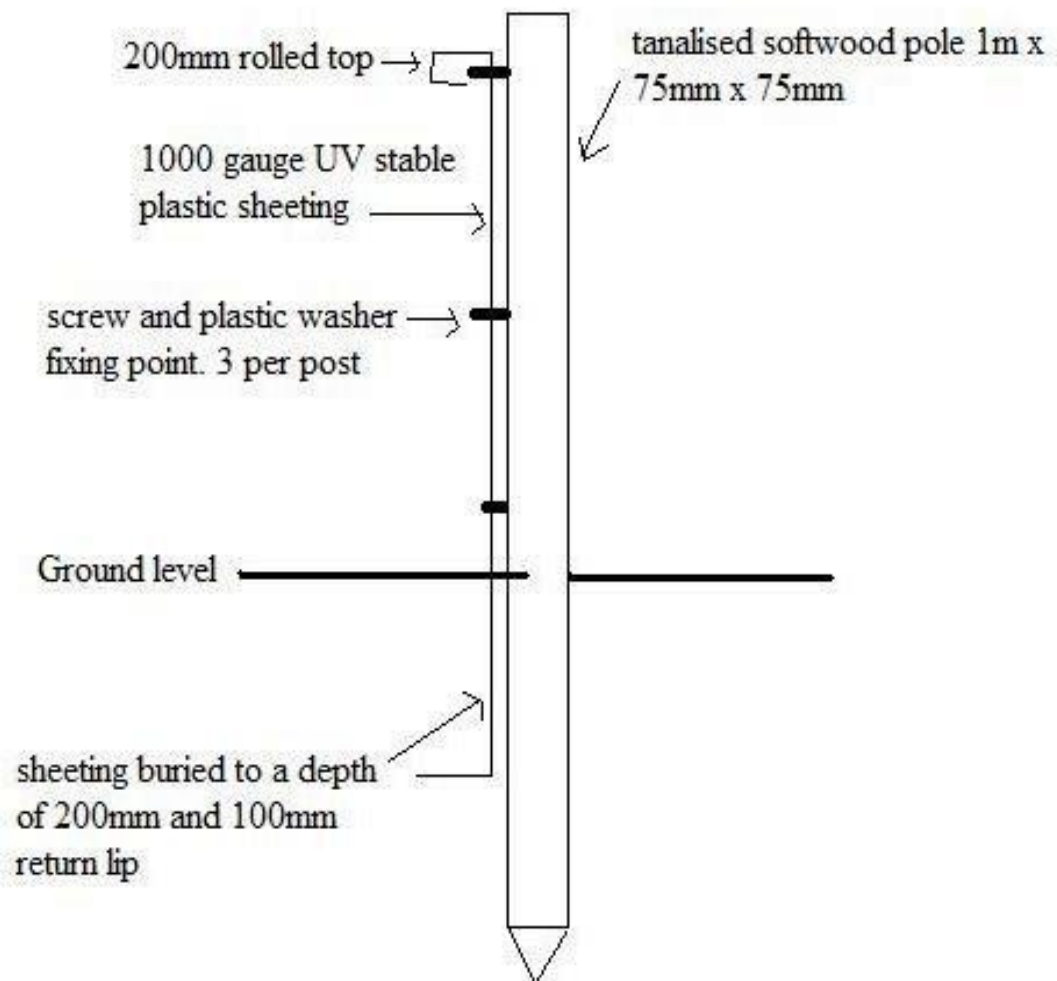
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TerrAqua Ecological Services Ltd (2023) Barons Cross, Leominster, Reptile Survey and Population Estimate Report, Persimmon Homes

## Appendix I

### Exclusion Fence Specification



## **Appendix II**

### **Aerial View Showing Proposed Reptile Receptor Area**



TerrAqua Ecological Services Ltd

Barons Court, Leominster  
for Persimmon Homes East Wales


Reptile Receptor Areas

SCALE : 1 : 2500		@ A2	DATE : 10/17/2023	
MAP FILENAME : TQ/Pers: Leominster Rep.Receptor Areas v1				

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Legend

 Reptile Receptor Area





## **Appendix III**

**Aerial view showing Reptile Fence line and Clearance Area Spring 2024  
including Refuga Locations**



**Appendix III** Aerial View Showing Reptile Fence Line, Clearance Area Spring 2024, and Refuga Locations (Image Google earth 2023)