



**Land at Tudor Drive,
Penley, Wales LL13 0JN**

Ecological Management Plan

for Greenspace Architects Ltd

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1.0 Summary

- 1.1 Solum Environmental Ltd was appointed by Greenspace Architects Ltd in February 2015 to produce an Ecological Management Plan (EMP) for the proposed residential development of Land off Tudor Drive, Penley, Wales LL13 0JN.
- 1.2 The site was the subject of a Preliminary Ecological Appraisal, carried out by Solum Environmental Ltd and reported in September 2014. Although there are no ponds on or immediately adjacent to the site, the desktop survey identified the potential for great crested newts in the wider area. It was subsequently agreed with the Local Authority Ecologist that a reasonable avoidance methodology (RAM) would be formulated and applied to ensure that there is no harm to any great crested newts in the development of this site.
- 1.3 The proposed development site comprises approximately 0.3 ha, of which approximately 380 m² is to be enhanced specifically for the benefit of great crested newt, to ensure maintenance of the favourable conservations status of great crested newt at this location.
- 1.4 The site is bounded by Tudor Drive with a small housing estate beyond to the south, by woodland to the west, open fields to the north and a detached house and gardens, to the east.
- 1.5 The primary objectives of this EMP are to:
 - maximise biodiversity within the site
 - set out steps to minimise potential conflict between the proposed residential development and wildlife at this location.
 - maintain in the longer term the biodiverse habitat to be created at this site, great crested newt habitat in particular, and respond to changes where these threaten this resource

2 Introduction

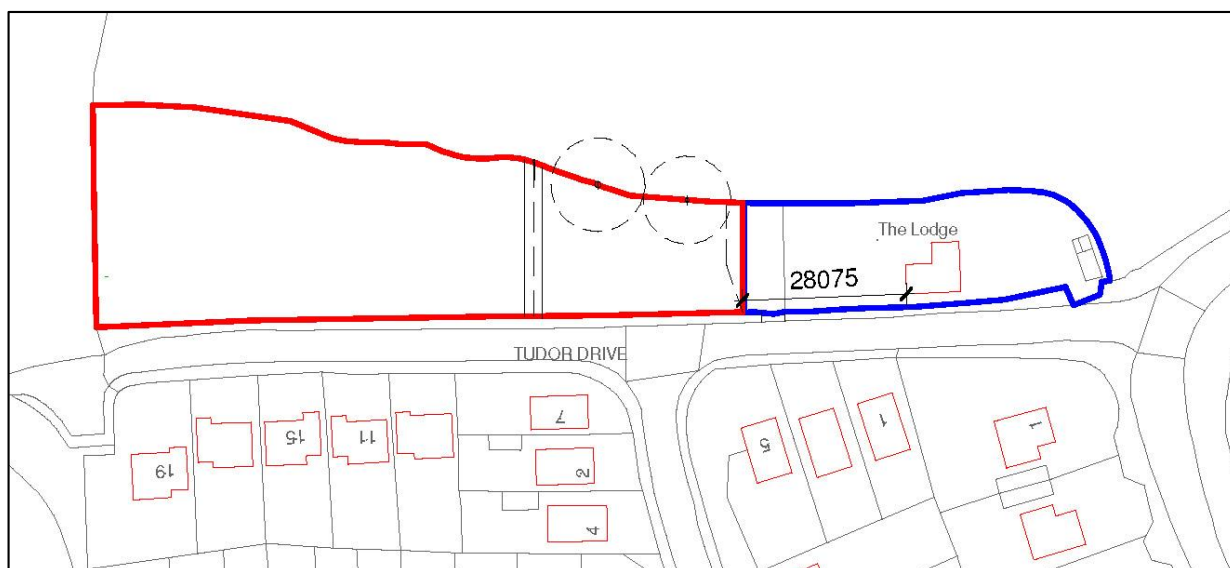
2.1 Background and Commission

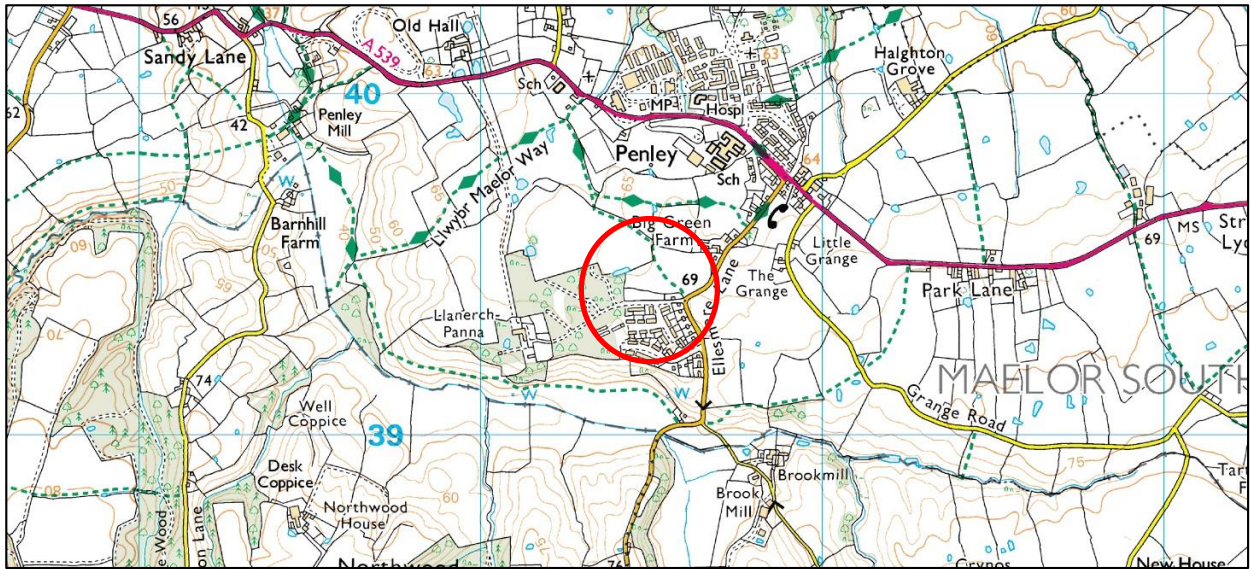
- 2.1.1 Solum Environmental Ltd was appointed in February 2015 by Greenspace Architects Ltd to produce an Ecological Management Plan (EMP) for the proposed development site off Tudor Drive, Penley, Wales LL13 0JN.
- 2.1.2 The site has been the subject of a Preliminary Ecological Appraisal, carried out by Solum Environmental Ltd and reported in September 2014. Although there are no ponds on or immediately adjacent to the site, the desktop survey identified the potential for great crested newt (GCN) in the wider area. It was agreed with the Local Authority Ecologist that reasonable avoidance measures (RAMs) would be formulated and applied to ensure that there is no harm to any great crested newts in the process of the residential development of this site.
- 2.1.3 The primary objectives of this EMP are to maximise biodiversity at this site and to ensure that the favourable conservation status of GCN is maintained within this area, as it relates to the proposed development site in particular.

2.2 Site Location and Description

- 2.2.1 The proposed development site comprises a grazed field approximately 0.3 ha off Tudor Drive, Penley, Wales (Plan 1). The site sits: behind tall, native-species hedgerow immediately north of Tudor Drive, with a small housing estate beyond; south of open, grazed fields; to the west of a small cottage and gardens and to the east of a small broad-leaved woodland (*Plan 2*).
- 2.2.2 There are a small number of mature trees within the hedgerow along the north of the site and there are several ponds in the wider, relatively flat, rural landscape surrounding the site and housing estate.
- 2.2.3 The proposed wildlife management area comprises a small area (38 m x 10 m) of the existing field, to the western boundary of the site. This area is to be managed primarily for the benefit of great crested newt, but will benefit other wildlife and enhance the site biodiversity generally.

Plan 1: Proposed Development Site Boundary (red line)



Plan 2 : Site Location (red circle)

2.2.4 The proposed development and mitigation area is shown in *Plan 3* below.

Plan 3: Development Proposals, Including Mitigation Area

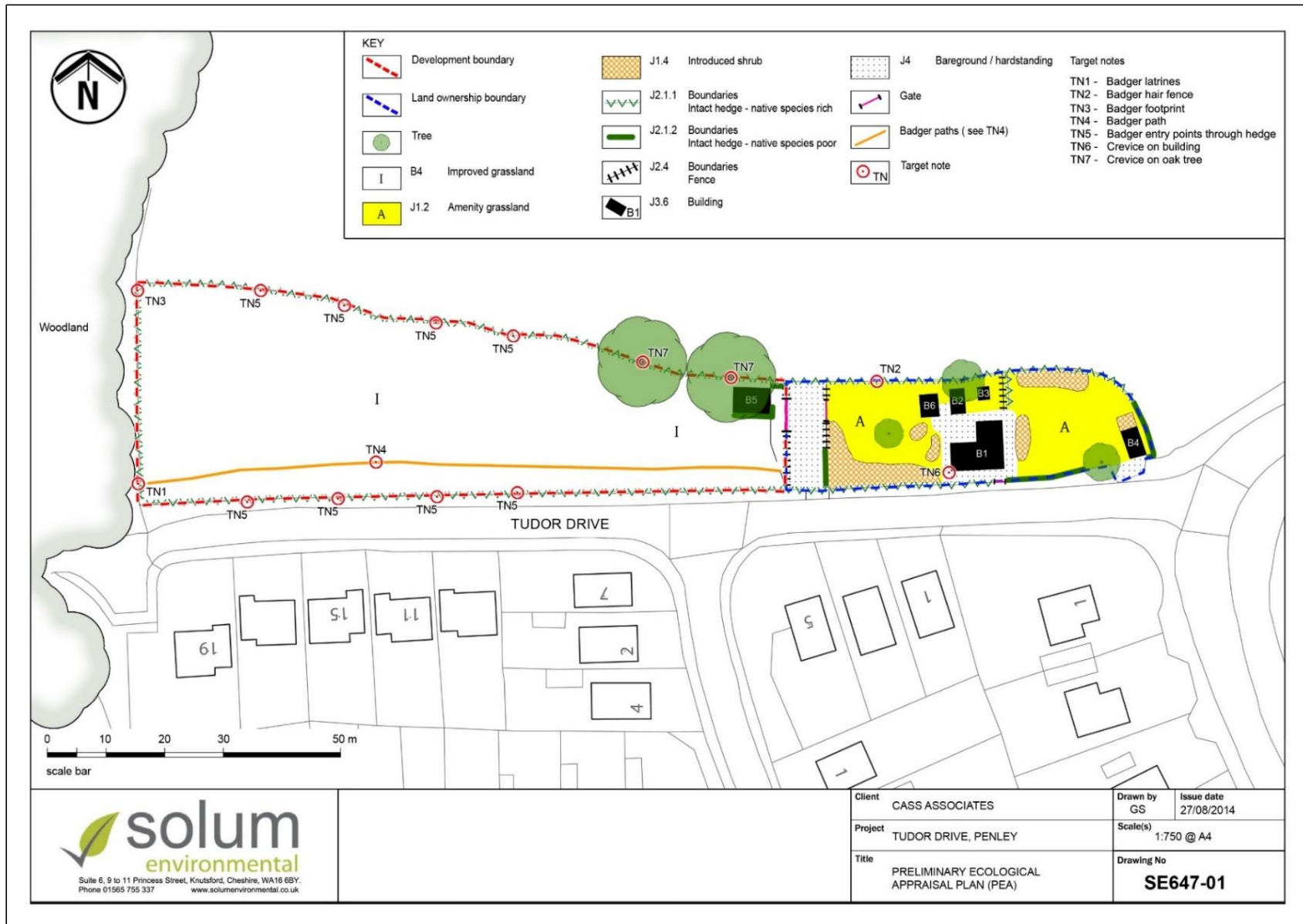
3 Existing Habitats and Protected Species

- 3.1 The site largely comprises grazed, improved grassland, tall, species-poor hedgerows with scattered trees (2 mature oaks), with running water in an open ditch running through the broadleaved woodland to the west of the site. There is a small shed and wood store on site (see *Plan 4: Phase 1 Habitat Survey*).
- 3.2 An indication of their potential ecological value for protected species as follows:

Table 1: Summary of Existing Habitats and Potential Ecological Value to Protected Species

	Existing Habitat Type on Site	Potential Ecological Value
1	Improved grassland (0.3 ha)	Low – possibly of limited value to invertebrates. Limited value for foraging for badgers and potential value for foraging for great crested newts.
2	Two mature oaks)	Medium : Breeding birds – foraging High: Breeding birds - nesting Medium : Bats – foraging Some, limited potential for bat roosting.
3	Species-poor hedgerow (approximately 250 m)	Medium : Breeding birds – foraging Medium : Breeding birds - nesting Medium : Bats – foraging Medium : Small mammals – foraging The hedgerows represent potential habitat for great crested newts.
4	Buildings on site	Low – possibly potential for nesting birds. Some potential to provide refugia for great crested newts.

- 3.3 Overall this site was deemed to have low ecological value, but there is limited value in the foraging habitat it represents for badgers and potential foraging for great crested newt. The latter should be considered in the context of the extensive fields and hedgerows surrounding the ponds in the wider area (*Plan 2*).

Plan 4: Phase 1 Habitat Survey

4 Objectives and Management Specifications

4.1 The proposals seek to create residential development, while avoiding any detrimental impact on wildlife, principally, great crested newt, bats and badger, and generally enhance biodiversity at this location.

4.2 To achieve these ends, the overall objectives for this site are to:

- 4.2.1 Enhance the ecological value of the site in the creation of a pond/wetland area, including managed grassland for great crested newt foraging and the provision of refugia.
- 4.2.2 Enhance the ecological value of retained grassland, mature trees and hedgerows.
- 4.2.3 Allow badgers to continue to pass along and forage within the site by the provision of a protected, green corridor.
- 4.2.4 Manage the possible spread of any invasive weed species (such as ragwort and Himalayan balsam).
- 4.2.5 Maintain these habitats, the pond and wetland habitat in particular, to accommodate great crested newt over the longer term.

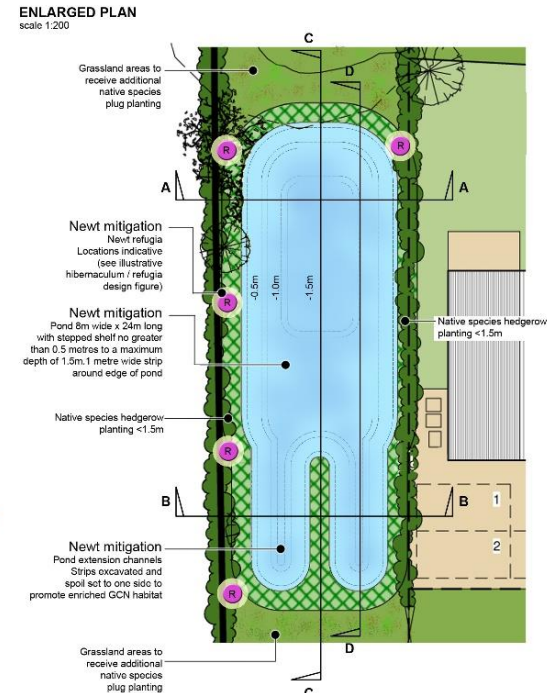
4.3 Timing of Management Work

- 4.3.1 Pond management work should normally be carried out in late autumn through winter, typically, from 1st November to 31st January, when great crested newts are unlikely to be present in ponds. These dates are for guidance only as amphibian activity will be modified by the prevailing weather. In some ponds newts may have left the pond earlier whereas in certain ponds great crested newts can overwinter in low numbers. In some cases it may be essential to do the work in the summer months because of ground conditions; however this will require careful consideration of the impacts on great crested newts and, if newts are present, a conservation licence may be required.
- 4.3.2 It is also important to consider whether the proposed pond management work will impact upon surrounding terrestrial great crested newt habitat. Large machinery can damage habitat and hibernacula if not carefully planned and the silt removed from ponds must not be deposited on areas used by great crested newts.
- 4.3.3 Any disturbance of existing hedgerows (trees, hedgerow, grassland, where the grass is allowed to grow tall) should be timed to avoid the bird nesting season (principally, March to September, inclusive).
- 4.3.4 There are no badger setts on or within 30 m of the site; there will, therefore, be no restrictions on activity in relation to badgers. If, however, pile-driving or similar high-disturbance machinery is to be used, then survey will have to be carried out up to 100 m from the site to establish if any setts are present within this radius. If any are located, a licence will be required from Natural Resources Wales for licensed work to take place between June and December.

5 Proposed Habitats

- 5.1 The proposed 'ecological' or 'wildlife' area is illustrated in Plan 5, below, which illustrates a range of conditions to be maintained – from open water to floristically rich, invertebrate-rich grassland. Refugia/hibernacula are proposed to be set within the hedgerow surrounding the pond.
- 5.2 Detailed native planting with appropriate native species will be agreed with the Local Authority Ecologist.
- 5.3 Appropriate bird and bat boxes will provided and located by a qualified ecologist.
- 5.4 The hedgerows will be planted with additional, appropriate native species.
- 5.5. It is hoped that additional ponds and wetlands might attract invertebrates and other amphibians to this location.

PROPOSED PLAN
scale 1:500
Landscape proposal as per Greenspace Architects Proposed site plan drawing number 1338.A100 E.
Newt mitigation area detailed by Solumn Environmental Ltd.



SECTION A-A
scale 1:200

Suggested hibernaculum / refugia design.
(not to scale)



The design mimics artificial and natural conditions in which great crested newts favour overwintering. Dimensions should not be below 2m length x 1m width x 1m height. The design illustrated may be suitable for locations on an impermeable substrate, such as concrete or paving. On permeable substrates, the design is largely similar but the bulk of the fill is sited in an excavated depression in the ground. Hibernacula should ideally be positioned across a site, both close to and distant from breeding ponds, always in suitable terrestrial habitat above the flood line.

Note : Design recommendations from English Nature publication -
Great crested newt mitigation guidelines August 2001 ISBN 1 85716 568 3



Client	GREENSPACE ARCHITECTS LTD	Drawn by GS	Issue date 16/02/2015
Project	TUDOR DRIVE, PENLEY	Scale(s) 1:500 @ A3	
Title	GCN MITIGATION AND COMPENSATION CONTROLS - POND	Drawing No SE715-01	

Table 2: Summary of Proposed Habitats and Potential Ecological Value to Protected Species

	Proposed Habitat Type on Site	Proposed Ecological Value	Mechanism for enhancement
1	Existing deadwood	Medium: Breeding birds – foraging and nesting' Medium/high : feeding and breeding of invertebrates.	Manage deadwood (standing and habitat piles) for the benefit of invertebrates, birds and bats
2	Tall grassland and forbs	Medium : Breeding birds – foraging Medium: Breeding birds - nesting Medium : Bats – foraging Medium : Small mammals – foraging	- Create by introduction of additional native species - Manage by occasional strimming - Create compost piles within the site
3	New and existing native hedgerow and scattered trees	Medium : Breeding birds – foraging High : Breeding birds - nesting Medium : Bats – foraging High : Bats – roosting	- Enhance with introduction of additional native species - Manage by annual inspection and replacement planting as necessary - Allow element of dead timber to remain
4	Riparian habitat	Medium : Breeding birds - nesting Medium: Birds – feeding (eg. Kingfisher, Medium: Bats – foraging Medium : Small mammals – foraging	- Create with native planting. - Remove any invasive, non-native species (principally, Himalayan balsam).
5	Marsh/marshy grassland and new ponds	High : Invertebrates High : Breeding birds – foraging High : Bats – foraging Medium : Amphibians	- Create and enhance pond with appropriate native species - Maintain open water suitable for GCN display
6	Wildflower grassland	High : Invertebrates High : Breeding birds – foraging High : Bats – foraging Medium : Small mammals - foraging	- Creation/enhancement of new wildflower grassland to include insect-attract species - Manage with annual or biannual cut
7	Nesting and roosting sites	High : bat and birds, roosting and nesting.	Install bird and bat boxes, under direction of qualified ecologist, throughout the wildlife area. Allow growth of tall grasses adjacent to hedgerow.

6 Implementation

- 6.1 Careful consideration will need to be given to the native species introduced. Where material is sourced from non-commercial suppliers, particular care will need to be taken to avoid introducing non-native, invasive species. There are several commercial suppliers of wildflower mixes and the appropriate mix should be chosen following consideration of the ground conditions and of the appropriate management regime. Additional species can be added in subsequent seasons by over-sowing or the use of plug-planting.
- 6.2 Where possible, on-site materials soils are to be utilised. However, tree planting may require enhancement with fertilisers/organic soil improvers. In this instance, care will need to be taken to ensure there is no leakage of nitrates and other fertilisers into water bodies on site.
- 6.3 Other than the foraging and movement of badgers there is little evidence for the use of this site by other protected species. However, the following should be considered throughout the re-development process:
- Implementation of the RAMs (Solum Environmental February 2015) for great crested newt.
 - Maintaining and creating corridors along the site boundary and through the site to allow bats to commute and feed.
 - The impact of lighting and noise on commuting bats: excessive lighting and noise at night may discourage bats using commuter routes. Consideration should likewise be given to light pollution from the new buildings on foraging and commuting bats.
 - Avoiding removal of trees and shrubs during the bird breeding season (March to September, inclusive).
 - Treating invasive species, such as ragwort or Himalayan balsam (see Appendix).

7 Monitoring and Evaluation

- 7.1 In development schemes where the wildlife interest is more significant, or where there are protected species on sites, it has become best practice to employ an Ecological Clerk of Works (ECoW). In the current circumstances because of the generally low value of the site, this should not be necessary, but a suitably qualified ecologist should be available to assist with the monitoring and enhancement in the specification and timing of the implementation of the proposed works. In particular the ecologist should have expertise in the specification and siting of bird and bat boxes and in survey for great crested newts. .
- 7.2 Once implemented, the habitats should be monitored to assess the success or otherwise of the scheme. This would involve, ideally, twice annually (spring and summer) monitoring of the habitats and species on site, at least during the establishment period. The information gathered should be used to inform the maintenance regime in order to maximise site biodiversity.
- 7.3 Monitoring should include for recording invasive species (e.g. Himalayan balsam, ragwort etc.) and a management regime should be prescribed as necessary where invasive plants are observed.
- 7.4 Where there is apparent conflict between protected species on site and on-going management, the survey will be able to advise accordingly.

8 Management Schedule

Habitat	Action	Approximate Area (m ²)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Wildflower grassland/meadow areas	Strim, leaving arisings on site	20						X	X					
Tall ruderals	Strim/thin as required, leaving arisings on site	20									X			
Marsh/Marshy grassland	Selectively remove invading scrub	40									X			
Existing deadwood	Create habitat piles											X	X	
Ponds	Clear, as necessary, centre of pond to maintain open area.	300									X	X		
Invasive species	Commence programme to eradicate by hand-pulling						X	X						
Hedgerow	Trim hedgerows; create habitat piles with the arisings	240 m										X		
Entire site	Litter pick (as necessary)													
Monitoring	Monitor , including flight-path survey for bats						X							
	Monitor site flora					X				X				
	Monitor nesting birds					X				X				
	Amend management plan as necessary												X	

9.0 Contacts and Bibliography

9.1 Contacts

For further information on this survey report, contact:

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9.2 Bibliography

Bat Conservation Trust – Species data sheet (2012)

Countryside and Rights of Way Act 2000 – HMSO

The Conservation (Natural Habitats, &c.) Regulations 1994, as amended 2010. HMSO, London.

English Nature (2002). Bats in roofs: a guide for surveyors. English Nature. Peterborough, UK

Harris, S., Cresswell, P. and Jefferies, D. (1989), *Surveying Badgers*. Mammal Society

Hundt L. (2012), *Bat Surveys: Good Practice Guidelines (2nd Edition)*. Bat Conservation Trust

JNCC (2010), *Handbook for Phase One Habitat Survey*. JNCC, Peterborough

Jones, K. & Walsh, A. (2001), *A Guide to British Bats*. The Mammal Society, London

Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough, UK

Mitchell-Jones, A. J. & McLeish, A. P. (2004), *The Bat Workers Manual 3rd edition*. JNCC, Peterborough

Natural England (2007), *Badgers and Development A Best Practice Guide*. Peterborough

Scottish Natural Heritage (2003), *Best Practice Guidance - Badger Surveys*. Inverness Badger Survey 2003. Commissioned Report No. 096.

UK BAP www.ukbap.org.uk

Waters, D. & Warren, R. (2003), *Bats*. The Mammal Society, London

Wildlife and Countryside Act, (1981), as amended. HMSO, London.

Yalden, D. (1993), *The Identification of British Bats*. The Mammal Society, London

Appendix 1: Treatment of Himalayan Balsam (*Impatiens glandulifera*) and Ragwort (*Senecio jacobaea*)

See also Defra guidance: <https://www.gov.uk/wild-plants-dangerous-invasive-and-protected-species>. The most effective, if labour-intensive, means of eradicating these plants is to hand-pull them before they set seed. Because of toxins present within ragwort, gloves will be required to prevent the contact of the skin with the sap. The material can be composted on site where there is no seed present. The use of herbicide within a wildlife area, especially one that has an open watercourse running through it is not recommended.

Appendix 2: Species Lists for Bat Conservation

Planting to enhance a site for bats should aim to provide a habitat rich in insects, and with the potential for alternative roosting sites. The following are examples of plant species, which can be used where appropriate, to enhance a landscape for bats.

Trees and Shrubs (of local provenance where possible)

Oak	<i>Quercus robur</i>
Ash	<i>Fraxinus excelsior</i>
Silver Birch	<i>Betula pendula</i>
Field Maple	<i>Acer campestre</i>
Hawthorn	<i>Crataegus monogyna</i>
Alder	<i>Alnus glutinosa</i>
Goat Willow	<i>Salix caprea</i>
Guelder Rose	<i>Viburnum opulus</i>
Hazel	<i>Coryllus avellana</i>
Blackthorn	<i>Prunus spinosa</i>
Elder	<i>Sambucus nigra</i>

Night-scented flowers

As bats usually feed at dusk and dawn it is advantageous to use night-scented flowers which will attract moths and other night-flying insects.

Nottingham Catchfly	<i>Silene nutans</i>
Night -flowering Catchfly	<i>S. noctiflora</i>
Bladder Campion	<i>S. vulgaris</i>
Night-scented Stock	<i>Matthiola bicornis</i>
Dame's-violet	<i>Hesperis matronalis</i>
Common Evening-primrose	<i>Oenothera biennis</i>
Soapwort	<i>Saponaria officinalis</i>

Scented herbs

Chives	<i>Allium schoenoprasum</i>
Sage	<i>Salvia officinalis</i>
Marjoram	<i>Origanum vulgare</i>
Borage	<i>Borago officinalis</i>
Mint	<i>Mentha</i> sp.

Climbers

Honeysuckle (native)	<i>Lonicera periclymenum</i>
Traveller's-joys	<i>Clematis vitalba</i>
Dog-rose	<i>Rosa canina</i>
Sweet-briar	<i>R. rubiginosa</i>
Field-rose	<i>R. arvensis</i>
Ivy	<i>Hedera helix</i>
Bramble	<i>Rubus fruticosus</i> agg.

Where re-seeding is to take place the choice of a 'conservation mix' of grass seed would be preferential. The management of grassland areas as hay meadows, without use of herbicides/fertilisers and allowing the grass to go to seed prior to cutting is beneficial allowing larval stages of the insects to develop.